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ARCHITECTURAL SPECIFICATIONS

CLEANROOM SLIDING DOORS

UltraClean™ Atmospheric I
Linear Drive Automatic Slide Door System
Compliant with ISO Class 3 Cleanroom

C9.1

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DIVISION 08 - OPENINGS **SECTION 08 42 29.23 SLIDING AUTOMATIC ENTRANCES**

Specifier Note: Coordinate and edit articles and paragraphs below to suit project requirements. Add section numbers and titles per CSI "MasterFormat" and specifier's practice. Consult with manufacturer regarding performance requirements for units applicable to project, as well as, related equipment and accessories required.

PART I – GENERAL

1.01 SUMMARY

- A. **WORK INCLUDED:** Furnish complete automatic aluminum door system, as specified, that has been manufactured, fabricated and installed as per manufacturer's criteria without defects, damage or failure.
- B. **RELATED WORK:**
1. Concrete: Division 03, applicable sections.
 2. Masonry: Division 04, applicable sections.
 3. Openings: Division 08, applicable sections.
 4. Electrical: Division 26, applicable sections.

1.02 REFERENCES

- A. INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO) 14644: Cleanrooms and associated controlled environments
1. ISO Class 3: Level of maximum particles allowed per cubic meter at specified particle size
 - a. Note: Federal Standard (FS) 209E Class 10 for Cleanrooms was cancelled by GSA November 29, 2001; specifications for testing and monitoring for continued compliance with ISO 14644 supersede FS-209E.
- B. AMERICAN ASSOCIATION OF AUTOMATIC DOOR MANUFACTURERS (AAADM).
- C. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
1. ANSI Z97.1: Safety Glazing Materials Used in Buildings - Methods of Test.
 2. ANSI A156.10 - 2011: For Power Operated Pedestrian Doors; Sliding Doors section.
 3. ANSI A156.5: Standard for Auxiliary Locks and Associated Products
- D. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) B221: Aluminum-Alloy Extruded Bars, Rods, Shapes and Tubes.
- E. BUILDING OFFICIALS AND CODE ADMINISTRATORS INTERNATIONAL (BOCA)
- F. INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS / UNIFORM BUILDING CODE (ICBO/UBC)
- G. INTERNATIONAL CODE COUNCIL / INTERNATIONAL BUILDING CODE (ICC/IBC)
- H. NATIONAL FIRE PROTECTION ASSOCIATION (NFPA) 101: Safety to Life from Fire in Buildings & Structures.
- I. THE ALUMINUM ASSOCIATION (AA) Aluminum Finishes Manual.
- J. INTERTEK, WARNOCK HERSEY (ETL): Testing Laboratory and Certification Agency joined with ETL SEMKO
- K. UNDERWRITERS LABORATORY, INC. (USA & CANADA) UL 325: Electrical Door, Drapery, Gate, Louver, and Window Operators and Systems.



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1.03 SUBMITTALS

- A. SHOP DRAWINGS & PRODUCT DATA: Submit drawings and product data showing layout, profiles, product components including anchorage, accessories, finish and glazing details (where required).
- B. CLOSEOUT SUBMITTALS: Submit the following:
 - 1. Owner's Manual & Warranty document as specified herein.
 - 2. AAADM inspection compliance form completed and signed by certified AAADM inspector prior to doors being placed in operation as proof of compliance with ANSI A156.10 - 2011.

1.04 QUALITY ASSURANCE AND PERFORMANCE REQUIREMENTS

- A. INSTALLERS QUALIFICATIONS: Installer shall be factory trained, certified by AAADM, and experienced to perform work of this section.
- B. MANUFACTURER'S QUALIFICATIONS: Manufacturer to have minimum (5) five years successful experience in the fabrication of automatic doors of the type required for this project. Manufacturer capable of providing field service representation during installation, approving acceptable installer and approving application method.
- C. CERTIFICATIONS: Automatic sliding door systems and options shall be factory certified to meet performance design criteria in accordance with the following standards:
 - 1. Certificate of Compliance of ISO Class 3 Cleanroom (as determined by independent testing lab approved for ISO 14644).
 - 2. ANSI A156.10 - 2011: For Power Operated Pedestrian Doors; Sliding Doors section.
 - 3. NFPA 101: Code for Safety to Life from Fire in Buildings & Structures.
 - 4. ETL Listed: Tested to UL 325 Standard
 - 5. BOCA: Means of Egress, Power Operated Doors
 - 6. ICBO/UBC: Egress Through Lobbies
 - 7. ICC/IBC: Egress Section
- D. OPERATING RANGE: -30° F to 130° F (-34° C to 54° C)
- E. OPENING FORCE REQUIREMENTS FOR EMERGENCY EGRESS:
 - 1. Slide-swing panels shall require no more than 50 lbf. (222 N) of force to swing open. Slide-swing panels shall be capable of swinging out 90° from any position of slide movement.
 - 2. Slide-swing panels shall have torsion spring designed to re-close panel if pushed open in the direction of egress. Total weight of ETL listed slide-swing panel shall not exceed 156 lbs. (70.7 kg).
 - 3. If power fails, slide panels can be manually slid open with no more than 15 lbf (222 N) of force.
 - 4. Units are ETL listed as an exit way and are compliant with NFPA 101.
- F. CLOSING FORCE REQUIREMENTS: Maximum force required to prevent sliding panel from closing = 28 lbf. (124.5 N) Adjustable Reversing Circuit will reopen door unit if closing path is obstructed.
- G. HEADER CAPACITY: Header shall be capable of supporting slide panel up to 350 lbs. (158.7 kg) with header span up to 9'-0" (2743mm) without intermediate supports

1.05 WARRANTIES

- A. MANUFACTURER'S WARRANTY: Units to be warranted against defect in material and workmanship for a period of one year from the Date of Substantial Completion. Manufacturer's warranty is in addition to, and not limited to, other rights owner may have under Contract Documents.
- B. DISTRIBUTOR'S WARRANTY: 1 year warranty: Labor/ transportation charges for defective parts replacement.



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1.06 PROJECT CONDITIONS

FIELD MEASUREMENTS: Verify actual dimensions/openings by field measurements before fabrication and record on shop drawings. Coordinate with fabrication and construction schedule to avoid construction delays.

1.07 DELIVERY, STORAGE AND HANDLING

- A. ORDERING AND DELIVERY: Comply with factory's ordering instructions and lead time requirements. Delivery shall be in factory's original, unopened, undamaged containers with identification labels intact.
- B. STORAGE AND PROTECTION: Provide protection from exposure to harmful weather conditions and vandalism.

PART II – PRODUCTS

2.01 MANUFACTURER

HORTON AUTOMATICS, a division of Overhead Door Corporation, shall manufacture automatic sliding door(s) of type(s) and size(s) specified on plans and door schedule.

2.02 EQUIPMENT

- A. MANUFACTURED DOOR UNITS: Shall include operator, header with roller track, carrier assemblies, framing, sliding door panel, sidelite, activation, safety devices and accessories required for complete installation.
 - 1. Configuration: Single Slide
 - 2. Mounting Type:
 - a. Perimeter mounted within rough opening
 - b. Surface mounted
 - 3. Door Type:
 - a. Type 010: Sliding panel 'X' shall slide along along fixed sidelite 'O' or wall 'P'.
 - b. Type 110: Slide-swing panel 'SX' shall slide along sidelite 'O' or wall 'P'.
- B. OPERATOR: The Electric Operating Mechanism shall be Profiler® Series 2000 Linear Drive. The operator shall be mounted and concealed within the header.
 - 1. Operation shall be accomplished through a sealed 1/8 HP DC permanent magnet motor working with a threadless, induction hardened stainless steel 1/2" (13mm) diameter linear drive shaft. Maximum current draw shall not exceed 3.15 amps. A linear travel block describes a helical path along the rotating shaft utilizing six aircraft quality ball bearings acting as an integral clutch. Linear drive shaft shall be self lubricating by means of integral oiler located in the travel block.
 - 2. Master Control shall be 16 bit microprocessor controller with dual on-board seven-segment alphanumeric diagnostic display and position encoder. The encoder shall monitor revolutions of the operator shaft and send signals to microprocessor controller to define door position and speed. The control shall have minimum of 28 programmable parameters including the following functions as required by ANSI A156.10 - 2011:
 - a. Adjustable opening and closing speeds.
 - b. Adjustable back-check and latching.
 - c. Adjustable braking.
 - d. Adjustable hold-open time between 1 to 30 seconds.
 - e. Adjustable Reversing Circuit will reopen door unit if closing path is obstructed.
 - f. Separate day and night modes of operation with security over-ride.
 - 3. Finger Safety: Strike rail of sliding panel will stop short of adjacent sidelite; resulting opening is net slide.
 - 4. On/Off Switch shall be supplied. When switched OFF, unit reverts to free manual operation (likewise during electrical power failure).



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C. SECURITY AND SAFETY POWER FAIL OPTIONS:

1. Automatic lock: Automatically locks slide function of door when in closed position. Additional power supply for autolock not acceptable.
 - a. Autolock Fail Secure: If power fails the lock engages.
 - b. Autolock Fail Safe: If power fails the lock disengages.
2. Monitored Power Fail Options (battery back-up):
 - a. Software Selectable Power Fail Open: If power fails the door slides open.
 - b. Software Selectable Power Fail Close: If power fails the door slides closed.

D. PROFILER® HEADER: Shall be slim 4" (102mm) deep by 6" (152mm) high aluminum construction with extruded z-profile reinforcement for dead load and lateral strength. Header shall have removable face plate for service and adjustment of operator and controls. Header mounts flush to 4" framing jambs.

Optional: Stainless steel or anodized aluminum hood.

E. CARRIER ASSEMBLIES AND HEADER ROLLER TRACK: Carrier assemblies shall support door panels with minimum four rollers per panel. Rollers will be steel, high quality ball bearing wheels 1-1/4" (32 mm) diameter. Anti-Derailing shall be accomplished by means of a continuous aluminum extrusion full length of slide panel travel. Overhead header roller track shall be continuous aluminum, nylon covered, and replaceable.

F. SLIDING PANEL AND SIDELITE: Shall be aluminum, 1-3/4" (44 mm) deep with narrow stile rails. An intermediate, horizontal rail (muntin bar), 2 1/4" (57 mm) wide, shall be furnished for safety and division of glass (optional on 010 units). Standard bottom rail shall be 4" (102mm) tall. Sliding panels shall have concealed bottom guides to stabilize slide travel.

1. Weather-stripping: Captured in extruded aluminum door panel. Surface applied self-adhesive weatherstripping not acceptable. Adjustable spring-loaded double astragal with double neoprene weather-strip at lead edge, double neoprene at interlock rails
2. Standard glazing prep to be for 1/4" (6 mm) glass using beveled horizontal glass stops.
3. Sliding Panel and Sidelite Options shall be:
 - a. Medium stile construction: 3 3/4" (95mm) wide vertical rails with 6 1/2" (165mm) tall bottom rail. Note: Medium stile construction will reduce slide opening.
 - b. Wide stile construction: 5" (127mm) wide vertical rails with 6 1/2" (165mm) tall bottom rail. Note: Wide stile construction will reduce slide opening.
 - c. Surface applied push bar 1 1/2" (32mm) wide in lieu of standard muntin bar.
 - d. Custom horizontal muntins from 1/2" (13mm) to 10" (254mm) wide.
 - e. Custom bottom rails up to 10" (254mm) tall.

G. BREAKOUT PANELS: Slide-swing panels can swing out minimum 90° from any position of slide movement and require no more than 50 lbf. (222 N) of force applied at the lock stile to open.

1. Slide-swing panels shall have torsion spring designed to re-close panel if pushed open in the direction of egress.
2. Breakout mechanism shall provide support across full width of the door, in normal operating mode. In breakout mode, torsion assembly shall support weight of the door to minimize drop during emergency egress. Total weight of ETL listed slide-swing panel shall not exceed 156 lbs. (70.7 kg).
3. Slide-swing panels shall include intermediate horizontal rail.
4. Units with breakout feature are ETL listed as an exit away and are compliant with NFPA 101.

H. JAMBS/FRAME: Shall be aluminum. Jamb dimensions to be:

1. 1 3/4" (44mm) deep by 4" (102mm) wide.

J. OPTIONAL LOCKING HARDWARE: ANSI A156.5, Grade 1, 2-Point Locking provided and installed in strike rail shall include:



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1. Hookbolt Latch, 5/8" laminated stainless steel, latching into jamb or adjacent strike rail.
2. 3/8" hex-bolt into breakout carrier frame.
3. Keyed 1 5/32" (29 mm) Cylinder mounted on exterior side with 31/32" (25 mm) backset
4. Thumbturn mounted on interior side.

2.03 RELATED EQUIPMENT

- A. **ACTIVATING DEVICE:** Shall be 24 VAC, class II circuit. Switch to be located on each side of the opening and shall be one of the following:
1. Touchless wall mounted switch (optional jamb mounted) using diffused scanning technology with adjustable range up to 15" (381 mm). Junction box included.
 2. Motion Sensor: Mounted above opening on header or wall.
 3. Pull Chain Switch: Momentary contact switch, ceiling mounted with available chain length of 114" (2896 mm).
 4. Push Plate Wall Switch: Momentary contact switch, 6 1/4" (159 mm) dia. stainless steel plate on standard junction box.
- B. **THRESHOLD PRESENCE SENSORS:**
1. Header mounted sensors shall provide active infrared presence detection on each side of the door unit and shall remain active throughout the entire door opening and closing cycle.
 2. Hold-open beams: Two pulsed infrared photoelectric beams to be mounted in vertical rails of sidelite or in jambs. Sender/receiver arrangement parallels door opening.
- C. **OPTIONAL INTERLOCK CONTROLLER:** Multiple doors entering a clean room and/or vestibule area shall include a microprocessor based interlock control to prevent two doors from being open at the same time. The control shall keep track of the order of request from the activation switch. Design shall control up to eight doors and shall have a memory capable of remembering order of open requests.

2.04 RELATED WORK REQUIREMENTS

- A. **ELECTRICAL:** 120 VAC, 50/60 cycle, single phase, dedicated 20 amp circuit per operator. Non-North American voltages can be 240 VAC 50/60 cycle (operator must have 240 volt power supply).
- B. **GLASS AND GLAZING:** Glass stops, glazing vinyl and setting blocks for field glazing as per Safety Glazing standard ANSI Z97.1.2. Contractor to coordinate acquisition of glass in thickness and type in accordance with manufacturer's recommendations for prescribed design.

2.05 MATERIALS, FINISHES AND FABRICATION

- A. **EXTRUDED ALUMINUM:** ASTM B221, 6063-T5 alloy and temper, anodized:
1. Structural Header Sections: Minimum 3/16" (5 mm) thickness.
 2. Structural Frame Sections: Minimum 1/8" (3 mm) thickness.
 3. Structural Panel Sections: Commercial grade.
- B. **FINISHES** (for all exposed aluminum surfaces): Shall be one of the following:
1. 204-R1 Clear: Arch. Class 2 Clear Anodized Coating, AA-MI2C22A31.
 2. Paint Coating:
 - a. Powder Coat: 100% V.O.C. free fluoropolymer resin-based. Standard and custom colors available including wood grain finish.
 - b. Wet Paint: Standard and custom colors available.
 3. Clad with stainless steel, #4 brushed finish.



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C. PANEL CONSTRUCTION:

1. Corner block type with 3/16" steel backup plate construction, mechanically secured with minimum of four hardened steel screws. Sash consists of snap-in glass stops, snap-in glazing beads and vinyl gaskets.
2. Slide-swing doors to be supplied with adjustable glass setting block to allow for adjusting of door to meet site conditions eliminating the need for additional shims.

D. FRAME CONSTRUCTION: Butt joints, mechanically secured with screws and formed alum. corner brackets.

E. OPERATOR CONSTRUCTION: Electromechanical, modular type construction.

PART III - EXECUTION

3.01 EXAMINATION

SITE VERIFICATION OF CONDITIONS: Installer must verify that base conditions are acceptable for product installation according to with manufacturer's instructions. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of work. Do not start work until all negative conditions are corrected.

3.02 INSTALLATION

- A. GENERAL: Installer shall be factory trained, certified by AAADM, and experienced to perform work of this section. Install door units plumb, level and true to line, without warp or rack of frames or sash with manufacturer's prescribed tolerances. Provide support and anchor in place. Provide weather-tight construction.
- B. ELECTRICAL: General or electrical contractor to install all wiring to operator on a separate circuit breaker routed into header. General or electrical contractor also to install all necessary power and low voltage wiring for proper operation of associated security systems.

3.03 CLEANING, ADJUSTMENT AND PROTECTION

- A. CLEANING: After installation, installer will clean product surfaces and lubricate operating equipment for optimum condition and safety. Advise contractor of precautions required through the remainder of the construction period, to ensure that doors will be without damage or deterioration at the time of acceptance.
- B. ADJUSTMENT: AAADM certified technician to inspect and adjust installation. Comply with ANSI A156.10-2011.

Note: Horton Automatics reserves the right to make product improvements and change specifications without notice.

END OF SECTION