

SECTION 11 14 53
Automated Exit Lane Breach Control Technology

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes the manufacturing, delivery, installation and commissioning of a complete pedestrian exit lane breach control corridor. The exit lane breach control (ELBC) corridor shall consist of the wall support structure, glass walls, ceiling support structure, fully automatic doors, automatic gate, pedestrian guide rails, 3D Stereo Sensors, video analytic intruder detection, I/O for remote operation, activation sensors, safety sensors and all required hardware for securely anchoring the assembled unit to the finished floor. The unit shall have an "open ceiling" concept.

1.2 RELATED INFORMATION

- A. Section 08 71 53 "Security Door Hardware" for lock cylinders for exit lane breach control corridor doors when in lockdown mode.
- B. Section 08 80 00 "Glazing" for general requirements for handling and installation of factory-installed glazing products specified in this Section.
- C. Section 09 60 00 "Flooring" for finished flooring products installed in conjunction with installation of exit lane breach control corridor.
- D. Division 26 sections for electrical power conductors, cables, and conduits for electrical service to exit lane breach control corridor, including disconnect switches, and for conduit for low-voltage power and control wiring required for work of this Section.

1.3 REFERENCE STANDARDS

- A. American Society of Civil Engineers/Structural Engineering Institute (ASCE/SEI): www.asce.org:
 - 1. ASCE/SEI 7 Minimum Design Loads for Buildings and Other Structure
- B. American Architectural Manufacturer's Association (AAMA): www.aama.org:
 - 1. AAMA 2603 Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels
- C. ASTM International (ASTM): www.astm.org:
 - 1. ASTM B633 Standard Specification for Electrodeposited Coatings of Zinc on Iron and Steel
 - 2. ASTM C1048 Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
 - 3. ASTM C1172 Standard Specification for Laminated Architectural Flat Glass
 - 4. ASTM F1941 Standard Specification for Electrodeposited Coatings on Threaded Fasteners
- D. Code of Federal Regulations (CFR):
 - 1. 16 CFR 1201 Safety Standard for Architectural Glazing Materials

- E. International Code Council (ICC): www.iccsafe.org:
 - 1. ICC A117.1 Accessible and Usable Buildings and Facilities (ANSI)
 - 2. ICC-ES AC193 Mechanical Anchors in Concrete Elements
 - 3. ICC-ES AC308 Post-Installed Adhesive Anchors in Concrete Elements
- F. Safety Glazing Certification Council (SGCC): www.sgcc.org:
 - 1. Certified Products Directory
- G. U.S. Architectural & Transportation Barriers Compliance Board: www.access-board.gov:
 - 1. Americans with Disabilities Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities
- H. ANSI/CAN/UL Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems (UL325)
 - 1. Units must be tested and approved to meet UL325 and 2593, specifically section 29.4.3 for closing speed

1.4 ADMINISTRATIVE REQUIREMENTS

- A. Pre-installation Conference: Conduct conference online prior to delivery of components. Include representatives of Contractor, Owner[, Architect], system Installer, Installers of electrical and data connections, and others affecting or affected by the Work. Review the following:
 - 1. Requirements of Contract Documents.
 - 2. Project access.
 - 3. Temporary security requirements.
 - 4. Work restrictions.
 - 5. Schedule coordination.
 - 6. Staging requirements.
 - 7. Temporary facilities and controls.
 - 8. Delivery, storage, and handling.
- B. Coordination:
 - 1. Coordinate installation of exit lane breach control corridor with [installation of] [modification of existing] floor, wall, and ceiling construction and connections to building services.
 - 2. Coordinate installation of anchors and blocking indicated on approved exit lane breach control corridor shop drawings.

1.5 ACTION SUBMITTALS

- A. Product Data: For exit lane breach control corridor structure and detection system.
- B. Shop Drawings: For exit lane breach control corridor.
 - 1. Include plans, elevations, sections, and details. Show compliance with accessibility requirements through dimensioned diagrams.
 - 2. Installation-specific dimensioning, [including coordination of related existing ceiling, wall, and floor-mounted elements to remain] [including coordination of related new ceiling, wall, and floor-mounted elements specified elsewhere].

3. Locations and requirements for recesses and attachments to other work, including general construction, anchorage methods and locations, and service connections and locations.
4. Include diagrams for power, signal, and control wiring including dimensioned connection locations.
5. Indicate finish and glazing details.
6. Include door hardware locations, mounting heights, and installation requirements.

1.6 INFORMATIONAL SUBMITTALS

- A. Qualification Data: For qualified Installation firm.
- B. Field quality-control reports.
- C. Warranty: Sample of unexecuted manufacturer warranty.

1.7 CLOSEOUT SUBMITTALS

- A. Operation and Maintenance Data: For exit lane breach control corridor, to include in maintenance manuals.

1.8 QUALITY ASSURANCE

- A. Manufacturer Qualifications: A qualified manufacturer listed in this Section with minimum ten (10) years experience in manufacture of similar products in successful use on similar projects and able to provide exit lane breach control corridor meeting specified requirements.
 1. Maintenance Proximity: Qualified personnel located not more than [2] hours normal travel time from Installer's place of business to Project site.
 2. Approval of Manufacturers and Comparable Products: Submit the following in accordance with project substitution requirements, within time allowed for substitution review:
 - a. Completed and signed Substitution Request form.
 - b. Product data, including certified independent data indicating compliance with requirements.
 - c. Samples of each finish component.
 - d. Sample submittal from similar project.
 - e. Project references: Minimum of five installations of similar equipment not less than two years old, with Owner contact information.
 - f. Sample warranty.
- B. Installer Qualifications: Experienced Installer approved by exit lane breach control corridor manufacturer for installation of exit lane breach control corridor required for this Project, who has completed installations similar in material, design, and extent to that indicated for this Project with a record of successful in-service performance.
- C. Glazing Fabricator Qualifications: Certified by primary glazing manufacturer.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Protect components according to manufacturer's written instructions. Prevent damage from condensation, temperature changes, direct exposure to sun, or other causes.

1.10 WARRANTY

- A. **Manufacturer's Warranty:** Manufacturer's standard form in which manufacturer agrees to repair or replace components of exit lane breach control corridor that demonstrate deterioration or faulty operation due to defects in materials or workmanship under normal use within warranty period specified.
1. Warranty Period, Drive and Detection Components: 1 year from date of completion of installation, testing, commissioning and owner acceptance.
 2. Warranty Period, Fixed Structure: 5 years from date of completion of installation.
 3. Exit lane corridors shall not be used by passengers in normal functional use until the system is accepted in writing by the owner.
- B. The warranty shall execute a three-tier approach to repairing downed units in the following manner:
1. Tier 1 – The manufacturer shall train designated airport maintenance staff and provide a troubleshooting guide, to triage the down unit prior to contacting the manufacturer service support designee. The triage instructions shall attempt to resolve a high degree of potential issues causing down time by failure.
 2. Tier 2 – Should Tier 1 triage attempts deem unsuccessful; the manufacturer shall provide a phone support contact to provide additional triage instructions. Internet access to the controls shall be required with access allowed by the owner.
 3. Tier 3 – Should Tier 2 triage attempts deem unsuccessful; the manufacturer shall dispatch a qualified technician to the downed unit to arrive within 48 hours. Internet access to the controls shall be required with access allowed by the owner.
- C. Exit lane corridors shall not be placed in service for passengers use until the system has been accepted in writing, by the owner.
- D. **Continuing Maintenance Service Agreement (CSMA):** If called for in the Request for Proposal (RFP), the manufacture shall be prepared to provide an extended maintenance agreement proposal to Owner for maintenance of exit lane breach control corridor by qualified personnel of assembly Installer, beyond the warranty period. The extended agreement shall cover an additional three (3) year period without requiring evaluation of the units. Units older than four (4) years may be evaluated by the manufacturer prior to accepting an extended maintenance plan.
- E. **Preventative Maintenance Inspections (PM):**
1. It is recommended each unit undergo a PM inspection six (6) months after commissioning, and one (1) time at the end of the warranty period. After the initial warranty period, it is recommended each unit undergo a PM inspection once per quarter.
 - a. The PM Inspection shall verify operation of exit lane breach control corridor, adjust, alignment, lubricate as required to bring assembly into manufacturer's recommended clearance tolerances and to provide smooth operation for operating and sensor components.
 - b. Perform manufacturer's recommended tests to verify system is operating within published specifications.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Product: Provide **dormakaba Automated Exit Lane Model PIL-M02 16** Exit Lane Breach Control Corridor manufactured by:

dormakaba USA Inc
Dorma Drive, Drawer AC
Reamstown, PA 17567
704-774-7368
bill.seibert@dormakaba.com

1. Comparable products of other manufacturers subject to approval by [Architect] [Owner] in accordance with Instructions to Bidders and Division 01 General Requirements
2. No substitutions per Owner's request.

- B. Source Limitations: Provide exit lane breach control corridors through one source from a single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

- A. Accessibility Standard: Comply with applicable provisions in ADA-ABA Accessibility Guidelines for Buildings and Facilities] [and] [ICC A117.1] [requirements of authorities having jurisdiction].
- B. Safety Glazing: Provide glass panels that comply with 16 CFR 1201, Category II requirements for safety glazing.

2.3 SYSTEM DESCRIPTION

- A. General: Provide manufacturer's standard exit lane breach control corridor. Where not otherwise indicated, provide manufacturer's products as indicated in published product literature and as required for complete exit lane breach control corridor.
- B. Exit Lane Breach Control Corridor: Floor-supported, self-supporting enclosure consisting of stainless steel framing and panels with glass infill panels, glazed doors, and hinged gates, forming a controlled-access secure path of travel configured to allow high-volume single-direction pedestrian movement, and to sense, deter, and provide local and remote notification for attempts to enter corridor from the restricted direction. The modular enclosure is equipped with a series of motion presence and video analytic sensors that detect unattended objects left within the corridor area. As pedestrians pass through the corridor, full-height and half-height double swing doors automatically open and close based upon selected operating mode. Combined, the physical barrier and sensor system provide secure detection, entry prevention, and separation of facility users from persons posing a risk to the public.
1. Aluminum-framed, stainless steel-clad structural components do not meet the requirements of this specification. Top and bottom rails will be extruded aluminum profiles with stainless steel cladding. Portals and visible parts will be completely finished in stainless steel.
- C. System Configuration: [Single unit] [Double unit] [Triple unit] with [Two (2) Full Height Doors] [Three (3) Full Height Doors] [As indicated on Drawings].Clear door and unit width shall be no less than 1120mm (44-1/8")

2.4 OPERATION MODE DESCRIPTIONS

- A. Free-Flow Mode: In the static position, two full-height door pairs and a half-height gate are closed and locked. As single or multiple users exiting the air side approach the unit, an activation sensor detects the users and opens airside set of doors. As the users proceed through the exit lane and approach the landside set of doors, an activation sensor detects the users and opens the landside doors and half-height gate, thus allowing continuous exit flow.
- B. Interlock Mode: In the static position, the two full-height door pairs are closed and locked; the half-height gates remain in the open position. As the single or multiple user exits the airside approach the unit, an activation sensor detects the user and opens the airside doors to allow user or group of users to proceed to the landside doors which remain in the closed and locked position. Once an adequate count of users fill the corridor compartment, a voice announcement shall advise the users to stand clear of the airside doors as they begin to close. Once the airside set of doors are clear, closed, and locked, the landside set of doors and half-height gate open and allow users to exit.
- C. Maintenance Mode:
 - 1. Secure Side: Keyswitch on secure side activates maintenance mode. Secure side full height doors remain open, while second set of full height doors and half-height gates remain closed and locked. All security features are disabled.
 - 2. Non-Secure Side: Keyswitch on non-secure side activates maintenance mode. Non-secure side full height doors and half-height gates remain open, while airside set of full height doors remain closed and locked. All security features are disabled.
- D. Lock Down Mode: Activated at unit panel or remotely; locks all doors.
- E. Hold Open Mode: Activated locally or remotely; opens all doors.

2.5 COMPONENTS

- A. Wall and Glazing Framing: Stainless steel formed shapes, of width and thickness standard with manufacturer, with the following features:
 - 1. Concealed wire chase at top and bottom rails.
 - 2. Limiting bottom profile / rail directing wheeled traffic away from wall.
 - 3. Electrical Cabinet within unit provided. No wiring shall be placed on top of the unit.
- B. Glass Wall Panels: Provide glass panels with safety glazing labeling.
 - 1. Laminated Glass: ASTM C 1172, consisting of two plies of fully tempered [clear] [ultraclear low-iron] [tinted] [translucent obscure] float glass, ASTM C1048, Kind FT, Condition A, Type I, Quality-Q3, with 0.060 inch (1.5 mm) thick polyvinyl butyral interlayer.
 - a. Glass used on walls shall be 3/8 inch (10mm) overall thickness.
 - b. Glass used on full height swing doors shall be 1/4" (6mm) overall thickness.
 - c. Interlayer color shall be optional and specified by the architect.
 - 2. Source Limitations for Glass: All glass shall be provided with the system, supplied by the manufacturer.
- C. Ceiling Structure: Overhead soffits with sensor housings and LED lighting; otherwise, no physical ceiling.

- D. Floor Attachment: Rails supporting the wall panels shall be extruded aluminum profiles with stainless steel cladding. . The floor anchoring system shall be provided by the manufacturer.
- E. Interlock Doors: Pair of full-height power-operated glass door panels, configured in one-way traffic pattern.
 - 1. Controls and sensors:
 - a. Microwave sensors open doors and gates; infrared sensors provide safety curtain when operating doors and gates.
 - b. 3D Stereo Sensor and Video analytics sensors on non-protected side recognize attempted passage from non-protected to protected side.
 - c. Floor and doors are configurable to meet the airports' safety/security needs, comprising of (11) eleven different zones..
 - d. Traffic lights indicate green for open/to proceed or red for closed.
 - 2. Power Door Operators:
 - a. Closing Speed: Less than 2.0 seconds.
- F. Automatic Gates: One or more pairs of power-operated fast-closing swinging gates made of PETG panels, configured in one-way traffic pattern, with a directional plaque mounted on each panel. Opening and closing safety sensors are located on the non-secure side of interlock doors. Light grids running throughout the length of the corridor and a safety curtain provided by active infrared sensors are used in combination with low energy drive units to provide for pedestrian safety.
 - 1. Nonsecure Side Controlled Access: Owner supplied access control for unit service.
 - 2. Power Gate Operators:
 - a. Closing Speed: Less than 0.6 seconds.
- G. Door Operator Settings under Special Condition Failure:
 - 1. Component: Airside doors close and lock; landside doors and gates lock in open position.
 - 2. Power Outage: Airside doors close and lock; landside doors and gates remain unlocked.
 - 3. Emergency Evacuation:
 - a. Fail Secure: Airside doors lock in a closed condition; landside doors and gates shall be in an unlocked condition to prevent any chance of entrapment.
- H. Interior Lighting: Manufacturer's standard LED lighting systemPower Requirements: 120VAC, 20A dedicated circuit. Halogen lighting is not permitted.
 - 1. Refer to Division 26 electrical power section for online UPS and surge control serving this unit as recommended by system manufacturer.
- I. Thrown-in Object Detection: Sensor array configured to detect objects thrown into the exit lane corridor from the landside.
- J. Lighted Directional Signals: Animated arrow signals in a flat screen display directing pedestrian traffic (in lieu of pictographs).

2.6 SECURITY SYSTEM

- A. General: Provide manufacturer's standard inside corridor and exit side security packages providing presence detection, object detection, and reverse flow detection, with local and remote alarm and access control interface capabilities.
- B. Inside Corridor Security Package: Object detection camera system and floor-scanning light grids providing presence and abandoned object detection. Multiple zone microwave motion sensors detect reverse motion within corridor, setting off pre-alarm followed by full alarm, released by user leaving the corridor on the secured side before reentering.
- C. Exit Side Security Package: Video analytics providing detection of reverse user flow, with audible pre-warning followed by full alarm and lockdown initiation. Half-height gates close immediately followed by the closing of full-height doors. System actively scans to identify if user turns and leaves corridor, allowing system to reset and reopen or to remain in full shutdown pending manual reset. video analytics set off pre-alarm or full alarm which initiates closing of gates and doors, depending on the position of the intruder within the corridor.
- D. Control Interface: Interactive touch Panel with LED error code display, controls for switching functional modes, with input port and dry contacts for remote operation.
Unit must have (37) thirty-seven different Inputs/Outputs for the airport to choose from.
- E. Voice Annunciation System: Programmable voice module with most likely about 2MB storage capacity and loudspeaker, integrated into portal of interlock doors.

2.7 ACCESSORIES

- A. Hardware and Accessories, General: Manufacturer's standard operating hardware and accessories.
- B. Structural Anchors: For applications indicated to comply with certain design loads, use manufacturer-furnished fasteners, or provide fastener systems with working capacity greater than or equal to the design load.

2.8 FINISHES

- A. Surface Preparation: Remove tool and die marks and stretch lines, or blend into finish.
- B. Stainless Steel Polished Finishes: Grind and polish surfaces to produce uniform finish, free of cross scratches.
 - 1. Run grain of directional finishes with long dimension of each piece.
 - 2. Finish: [Directional Satin Finish, No. 4] [insert custom finish description].
 - 3. When polishing is completed, clean and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.
- C. Powder-Coat Finish: Manufacturer's standard coating preparation and application meeting approved samples.
 - 1. Color: [Insert RAL color number selection].

2.9 FABRICATION

- A. Fabrication, General: Factory fabricate exit lane breach control corridor in accordance with approved shop drawings and published system descriptions.

- B. Glass Fabrication: Fabricate glazing panels in sizes, profiles, and configurations shown on Drawings.
 - 1. Provide holes and cutouts in glass to receive hardware, fittings, and accessories prior to tempering glass. Do not cut, drill, or make other alterations to glass after tempering.
 - 2. Factory glaze components indicated as factory glazed on approved shop drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. The Owner shall evaluate and confirm the installation site conditions comply with the exit lane breach control corridor manufacturer's written requirements including tolerances, floor structure, lighting conditions, and concealed services, and are prepared for installation.
- B. The Owner shall verify that the supporting floor meets the following requirements:
 - 1. Overall Levelness: Within 1/4 inch (6 mm) of design elevation indicated on approved shop drawings.
 - 2. Sloped floors shall be flat within 1/4 inch (6 mm) of design elevation, with the slope equal to slope indicated on approved shop drawings.
 - 3. Installed finished floor material and color matches flooring approved in advance by manufacturer.
- C. The Owner shall validate electrical and communication system rough-ins for compliance with approved shop drawings.
- D. Proceed with installation once conditions affecting installation and performance meet the manufacturer's written requirements.

3.2 INSTALLATION

- A. General: Install exit lane breach control corridor according to manufacturer's written installation instructions and approved shop drawings. Install unit in presence of manufacturer-authorized service representative.
- B. Install exit lane breach control corridor after other finishing operations have been completed.
- C. Install panels, doors and frames, railings, accessories, and installation materials required to provide a complete exit lane breach control corridor. Secure exit lane breach control corridor to building structure using manufacturer's recommended fasteners suitable for application. Install exit lane breach control corridor level and plumb.
- D. Tolerances: Install exit lane breach control corridor in accordance with the manufacturer's written instructions.
- E. Building Services Provided by Owner:
 - 1. Sprinkler heads in accordance with drawings and requirements of authorities having jurisdiction [and requirements of Division 21 sprinkler system sections].
 - 2. Electrical power service and data systems to the supplied exit lane corridor.

3.3 FIELD QUALITY CONTROL

- A. Manufacturer's Field Service: Manufacturer-authorized service representative shall test and inspect components, assemblies, and equipment installations, including connections to building services and system software.
- B. Remove and replace components, assemblies, and equipment installations that do not pass inspections or where inspections indicate that units do not comply with specified requirements.

3.4 ADJUSTING

- A. Adjust operable components to produce smooth operation and uniform fit. Confirm that locks engage accurately and securely.
- B. Replace damaged components.
- C. Lubricate hardware and other moving parts.

3.5 CLEANING

- A. Clean components in accordance with manufacturer's written instructions. Do not use cleaning agents or methods not approved by glass manufacturer.
- B. Clean exposed metal surfaces to factory new appearance.

3.6 DEMONSTRATION AND TRAINING

- A. Manufacturer-authorized service representative shall provide startup services and train Owner's personnel to adjust, operate, and maintain exit lane breach control corridor.

END OF SECTION 11 14 53