

# Security Entrance Lane

**FirstLane® 960**

**FirstLane® 970**



## Engineering Specifications

## **PART I – GENERAL**

### **1.01 SECTION INCLUDES**

This section covers the furnishing and installation of a Security Entrance Lane for pedestrian access control.

### **1.02 REFERENCES**

- A. The Security Entrance Lane must be evaluated and approved per CAN / CSA – SPE-1000 – Model Code for the Field Evaluation of Electrical Equipment.

### **1.03 SYSTEM REQUIREMENTS**

- A. The pedestrian Security Entrance Lane must control and restrict pedestrian traffic between secured and unsecured zones.
- B. Must feature double swing obstacles to securely block the pedestrian's path and prevent access in restricted areas without authorization.
- C. Must be automatically operated and bidirectional, allowing traffic in both directions. Each direction must be independently configurable in one (1) of these three (3) states:
  - 1. **Free:** all persons are authorized to pass under all conditions.
  - 2. **Controlled:** each person must present a valid means of authentication to the reader before being authorized to pass. In this mode, violations are detected.
  - 3. **Locked:** no one is authorized to pass, and authentication means are ignored.
- D. Must be designed to operate in either "Normally Open" or "Normally Closed" operation mode:
  - 1. In the "**Normally Closed**" mode, the security entrance lane provides a closed passageway and will only open upon acceptance of an authorized signal.
  - 2. In the "**Normally Open**" mode, the security entrance lane provides a passageway that is always open in the rest position and will only close at unauthorized entry or tailgating attempts.
- E. Must use the access control system to grant or deny access to the facility and operate with a variety of user authentication devices such as card reader devices, ticketing systems or barcode reader systems.
- F. Design of the unit must be able to accommodate an integration of two (2) readers (one for each direction) within its housing or to accommodate surface mounted reader(s).
- G. Design of the unit must feature physical and electronic security to detect and deter unauthorized use.
- H. Must be designed to guarantee user safety and ease of passage.
- I. Design of the security entrance lane must provide visual and audible notifications for intuitive process and high throughput.
- J. Must provide equal access for barrier free path of travel.
- K. Can be implemented in a single lane or as multiple adjacent lanes and combine narrow and wide lanes in the same array.
- L. The equipment must include photoelectric sensors for presence detection positioned in at least one (1) horizontal row including a safety zone near swinging obstacles.

**1.04 SUBMITTALS**

- A. Submit product data: equipment description, dimensions, electrical wiring diagrams for installation, and manufacturer's technical manuals on each product to be used, including:
  - 1. Preparation instructions and recommendations.
  - 2. Storage and handling requirements and recommendations.
  - 3. Installation instructions.
  - 4. Operation and maintenance manuals.
- B. Provide shop drawings and indicate component connections, anchoring methods and installation details.

**1.05 DELIVERY, STORAGE AND HANDLING**

- A. Deliver equipment to job site in manufacturer's original packaging, undamaged and with complete installation instructions.
- B. Store indoors in a controlled environment, protected from construction activities and debris.

**1.06 PROJECT/SITE CONDITIONS**

- A. Install the security entrance lane on a leveled finished floor.

**1.07 QUALITY ASSURANCE**

- A. Manufacturer Qualifications:
  - 1. Manufacturer must be a company specialized in designing and manufacturing security entrance lanes with a proven minimum experience of fifteen (15) years.
- B. Source Limitations: obtain the security entrance lanes from Automatic Systems.

**1.08 WARRANTY**

- A. Automatic Systems warrants its **FirstLane**<sup>®</sup> products against defective parts for a period of **two (2) years** from the date of invoicing if regular maintenance is performed. This warranty excludes normal wear on finishes or damage that occurs due to abuse or misuse. Obtain full warranty terms from Automatic Systems.

## **PART II – PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Manufacturers: subject to compliance with requirements, provide products by the following:
1. AUTOMATIC SYSTEMS,  
Avenue Mercator 5,  
1300 Wavre, Belgique  
Phone : 800 263 6548  
Fax : 450 659 0966  
Home page: [www.automatic-systems.us](http://www.automatic-systems.us) / [www.automatic-systems.ca](http://www.automatic-systems.ca)  
E-mail: [sales.nam@automatic-systems.com](mailto:sales.nam@automatic-systems.com)
- B. Products:
1. FirstLane® Security Entrance Lane, Model FirstLane 960 & FirstLane 970

### **2.02 CONSTRUCTION**

- A. Frame:
1. Must be made from Sturdy and stable steel with RoHS anti-corrosion zinc plating treatment.
  2. Visible parts of the frame must be made using brushed #4 AISI 304L stainless steel.
  3. The housing must be made of a mix of painted steel and AISI 304L stainless steel.
  4. Front panels must be made of black RAL9005 painted extruded aluminum, with integrated dynamic pictograms.
- B. Side panels:
1. Side panels must be made of clear 5/16 in (8 mm) thick tempered monolithic glass that cannot be removed without appropriate tools.
- C. Top cover:
1. To be manufactured from 5/16 in (8 mm) thick monolithic tempered glass with black screen printing. The glass top must be resistant to scratches and allow the integration of contactless readers and pictograms without the need for cutouts.
- D. Swing obstacles:
1. To be manufactured from clear, 3/8 in (10 mm) thick tempered monolithic glass.
- E. Enclosure:
1. Design of the unit's enclosure must ensure an IP 40 degree of protection.

### **2.03 DIMENSIONS**

- A. Lane width:
1. The walkway width for standard equipment, **FL960**, must be 24 3/16 in (615mm).
  2. The walkway width for barrier free path of travel (ADA), **FL970**, must be 36 in (915 mm).
- B. Dimensions:
1. Maximum Length: 51 3/16 in (1300 mm).
  2. Maximum Width: 7 11/16 in (195 mm).
  3. Maximum Height: 38 5/8 in (981 mm)

## 2.04 OPERATION

- A. Normal Operation (available for “**Normally Closed**” & “**Controlled**” configurations):
  - 1. In the stand-by position, the passageway must be securely blocked by means of double swing doors.
  - 2. Upon receipt of an opening pulse from the access control system, the obstacles must pivot in the direction of the passage into the lane, consequently freeing the passageway.
  - 3. The obstacles must immediately close after passage, or after a configurable delay.
  - 4. If an unauthorized person follows an authorized person (tailgating) or attempts to enter from the opposite direction, the unit must detect the unauthorized passage and activate the alarm conditions.
- B. Emergency Operation:
  - 1. The unit must have an available input in order to receive the “fire alarm” signal. When the emergency signal is activated, the unit must react in the following way:
    - a. The obstacles must automatically open in the direction of egress and remain open.
    - b. Green signals must be displayed on the pictograms in both directions.
  - 2. This operating mode must remain in operation as long as the emergency signal is active. After the emergency signal has been turned off, the unit must return to its previous operating mode.
- C. Power Failure:
  - 1. In case of power failure, the doors must breakaway manually with minimal force.
  - 2. After the power supply has been restored, the unit must return to its previous operating mode.

## 2.05 SECURITY

- A. Must provide double swing obstacles for immediate lane closure.
- B. Each unit must have an integrated electromagnetic brake to lock the obstacles in the event of a forced entry attempt.
- C. Passage must be electronically controlled in both directions to detect and deter unauthorized persons entering into the secured zone:
  - 1. Passage with an unauthorized means of authentication.
  - 2. Passage in the opposite direction.
  - 3. Unauthorized person following an authorized person, i.e. tailgating,
  - 4. Obstruction of an infrared beam path.
- D. The security entrance lane must ensure that one (1) valid authentication allows only one (1) valid entry to the restricted area by using infrared sensors to determine the direction of the passage and number of pedestrians passing through the passageway at one time.
- E. Passage must be electronically controlled in both directions by a minimum of 24 pairs of T/R cells (48 cells). The physical distance between two cells must be approx. 1 3/4 in (45 mm) providing with a reduced distance of 1 in (24.5 mm) (when considering the virtual beams created by the cross beams):
  - 1. Each sensor must be composed of a separate emitter and receiver, no reflectors must be used.

2. Sensors must be deployed in a matrix configuration made up of criss-cross beams, such that each optical receiver must detect the beams from several optical emitters; the optical detection matrix must offer at least 70 detection beams.
  3. Detection beams must be controlled by an algorithm capable of tracking the user's passage in the lane from entry to exit point. This advanced tracking algorithm must allow for:
    - a. Effective detection of Tailgating.
    - b. Luggage has a specific signature that allows it to be differentiated from human beings.
    - c. Detection of children of all sizes.
    - d. Detection of U-turn before/after the obstacles.
    - e. Detection of users moving in the wrong direction.
    - f. Detection of crawling users.
    - g. Existence of a continuously active security zone (because there are no obstacles in front of the cells).
    - h. Great reduction in false alarms due to luggage (because tracking is activated as soon as the lane is being entered).
- F. In the event an unauthorized behavior is detected, the unit must close the swinging obstacles and activate the alarm conditions.

## 2.06 SAFETY

- A. The unit must be sized to withstand at least 225 lbs (1000N) of direct force applied on each side of the handrail, when respecting recommended installation.
- B. Must be designed to avoid entrapment and prevent pinching points with safety clearance of at least 1 in (25 mm) between the handrail and the swinging obstacles.
- C. Must be designed to operate in "SOFTWARE EGRESS" operating mode:
  1. "SOFTWARE EGRESS" operating mode: powered and during an emergency, the obstacles can be unlocked by a simple push and open automatically in the direction of the evacuation (direction B - exit), but unable to be opened from the unsecured side (direction A).
    - a. Manual opening force for automatic swing obstacles must not exceed 50 lbs (222 N).
    - b. Audio and visual alarms notify both security personnel and users of the evacuation in process.
    - c. At the end of a configurable delay, the obstacle closes automatically and the unit resumes previous operating mode.
    - d. The obstacles are electromechanically locked in case of a forced entry attempt in direction A (entry).
- D. When combined with a fire alarm system, the obstacles must open automatically in the direction of egress to free the passage as long as a fire alarm occurs and the emergency signal is active.
- E. The mobile obstacles must be made of safety glass with rounded edges (no sharp edges).
- F. The cells located on either side of the obstacles must define a security zone. This zone must ensure the safety of users by prohibiting the opening or closing of the obstacles when a user comes too close to them (regardless of whether the user is authorized or not).

- G. The gaps between the obstacles and the unit must be reduced to a minimum to prevent fingers being caught and unwanted objects ending up inside the unit.
- H. The operating force of the swing obstacles must be limited and comply with limitations of obstacle force Subject 2593 Outline for investigation and CAN/CSA - C22.2 n°247-92 (R2008).

## 2.07 PEDESTRIAN GUIDANCE

- A. A dynamic function pictogram must be integrated into the glass upper plate and located near the reader integration area. It must indicate the user's access authorization and operate independently in both directions.
- B. A dynamic directional pictogram must be integrated in the front and back end covers. It must indicate the state of the lane and provide good visibility from a distance to ensure a large flow of passage.
- C. Audible notification must be incorporated into each passageway to provide status of the lane and alarm conditions with two (2) distinctive audible tones:
  - 1. At the first level, the user and the guard are informed that a person has entered the lane without authorization:
    - a. Allows user to attempt authorization, before going into a full alarm.
    - b. Guard gets a notification that a lane violation may occur.
  - 2. At the second level, the user and the guard are warned that someone has passed without authorization:
    - a. Notifies the user that they have passed through the lane without authorization.
    - b. Guard gets a notification that a lane violation has occurred and takes appropriate actions.

## 2.08 DRIVE UNIT

- A. A brushless DC permanent magnet motor with rugged, flat gearbox ensuring fast movement of the obstacle must be used.
- B. A controller providing progressive accelerations and gradual decelerations of the obstacles, for safe and smooth movement without vibrations.
- C. Magnetic sensor to control the position and the speed of the mobile obstacle with high precision.
- D. Drive unit must be silent; the noise level generated from the unit must not exceed 55dB (measured at a distance of 1 m from the unit).

**2.09 CONTROLLER**

- A. Microprocessor-based controller with the following characteristics:
  - 1. ARM9™ processor.
  - 2. LINUX operating system.
  - 3. IP interface.
  - 4. USB interface.
  - 5. CAN Bus interface.
  - 6. Embedded web server, accessible by a simple web browser, to monitor in real time the lane, set operating modes, advanced parameters and provide diagnostics for quick detection of any source of a problem.
  - 7. IP communication interface for extended settings and functions.
- B. The controller must have equipment diagnostic capability and the ability to be configured:
  - 1. The diagnostic software must be web based and embedded in the controller.
  - 2. The communication between the diagnostic software and a device must be 10/100Base-T Ethernet.
  - 3. The embedded diagnostic software must be accessible by a web browser from any device.
  - 4. The diagnostic software must provide the following features:
    - a. Real time monitoring of the lane.
    - b. Operating modes and advanced parameter settings.
    - c. Quick detection of the source of the problem and trouble notification with the unit.
- C. The equipment must have the ability to be controlled through web based monitoring software (supplied separately by manufacturer).
  - 1. The monitoring software must be web based.
  - 2. The communication between the monitoring software and the security entrance lane must be 10/100Base-T Ethernet.
  - 3. The monitoring software must be accessible by a web browser from any device.
  - 4. The monitoring software must provide the following features:
    - a. Control all installed units.
    - b. Change the operating mode of the units.
    - c. Show the status of the units (in service, fraud, technical error, etc.).
    - d. Scheduler.
    - e. Events log.
    - f. Statistics.



### 2.10 POWER SUPPLY

- A. Power supply (per lane) must meet the following requirement:
  - 1. 110 VAC 60 Hz
- B. Power consumption in operation (per lane) must not exceed the following numbers:
  - 1. At rest: 20W maximum.
  - 2. During operation: 35W maximum.
  - 3. Peak : 80W maximum

### 2.11 PERFORMANCE

- A. Opening Time & Closing Time:
  - 1. The opening time of the obstacles must not exceed 1.0 second.
  - 2. The closing time of the obstacles must not exceed 1.0 second.
- B. Operating Temperatures: 32° to 122°F (0° to 50°C)
- C. MCBF (Mean Cycles Between Failures): 2 000 000 cycles

### 2.12 OPTIONAL EQUIPMENT

**\*\* NOTE TO SPECIFIER \*\***  
*Delete the following subparagraphs in brackets if this optional equipment is not required, or add as necessary.*

- 1. [Customized glass obstacles with pattern or logo]
- 2. [Monitoring Panel, available as 'Server' versions, to control all arrays and lanes, regardless of where the units are installed in the building]
- 3. [Configurable interactive control panel.]
- 4. [Reader integration within housing - Dimension to be validated by AS]
- 5. [Barcode reader assembly integration - Dimension to be validated by AS]
- 6. [Surface mounted reader integration]

**PART III – EXECUTION****3.01 INSPECTION**

- A. The installation site must be inspected prior to the turnstiles installation to highlight and advise the contractor of any site conditions that are not meeting specified product installation requirements. These conditions include but are not limited to the followings:
  - 1. Security Entrance Lane must be installed on a leveled concrete pad.
  - 2. Power supply and control wiring must be installed following manufacturer's recommendations.
- B. Proceed with product installation only once the unsatisfactory conditions have been corrected.

**3.02 INSTALLATION**

- A. Security Entrance Lane must be installed in strict accordance to the manufacturer's instructions. Set the units level on the floor and anchor them securely in place following the manufacturer's instructions written in the installation manuals.

**3.03 ADJUSTMENT**

- A. Security Entrance Lane must be adjusted/fine-tuned according to the manufacturer's documentation after its installation in order to offer optimal performance.

**3.04 INSTRUCTION**

- A. A factory trained technician must demonstrate to the owner's maintenance crew the proper operation and the necessary service requirements of the equipment, including exterior maintenance.

**3.05 CLEANING**

- A. Clean turnstile and area carefully after installation to remove excess caulk, dirt and labels.

**3.06 MAINTENANCE**

- A. Maintain the equipment according to the manufacturer's instructions.

**Automatic Systems reserves the right to change this specification at any time without notice.**

END OF SECTION