ARCHITECTURAL SPECIFICATION
SPEEDLANE COMPACT
SECURITY OPTICAL TURNSTILE

BOON EDAM

YOUR
ENTRY
EXPERTS.

CONTENTS

SECURITY OPTICAL TURNSTILE SECTION 11-14-00
PEDESTRIAN CONTROL EQUPMENT
(GATES/TURNSTILES)

PART I GENERAL

1.01 SECTION INCLUDES

A. This section covers the furnishing and installation of a complete Security Optical Turnstile. Provides complete system that has been fabricated, assembled, and tested for proper operation at the factory.
B. It includes cabinet, removable cover panels, swinging glass panels, motor columns with drive system, hardware, cabling, self-diagnostics tool, safety system and infrared sensor system as required for installation.

1.02 RELATED SECTIONS

A. Section 09600 - Flooring
B. Section 16123 - Electrical Supply and Termination
C. Section 11 14 – Pedestrian Control Equipment
D. Section 11-14.13.19 – Turnstiles
E. Section 11-14.53 – Pedestrian Security Equipment

1.03 REFERENCES

A. ANSI Z97.1 - American National Standard for Safety Glazing Materials used in Buildings.
B. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
C. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
D. ASTM A 480/A 480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip.
E. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
F. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.04 QUALITY ASSURANCE

A. Manufacturer shall be a company specializing in the supply of security optical turnstiles with a minimum of 10 years' experience.
B. Manufacturer shall supply a factory-trained supervisor during installation of the security optical turnstile.
C. Manufacturer must provide for a local, factory-trained, field service technician to competently service the security optical turnstile; and to provide for the local support of the customer's service technicians, in the event that the customer's trained technician is not available.

1.05 SUBMITTALS

A. Submit project specific shop drawings, finish samples and Operating & Maintenance Manuals.
B. Indicate pertinent dimensions, general construction, component connections and locations, anchorage methods and locations, hardware, and installation details.

1.06 DELIVERY, STORAGE AND HANDLING

A. Deliver materials to job site in manufacturer's packaging undamaged, complete with installation instructions.
B. Store off ground, under covered area, protected from weather and construction activities.

1.07 PROJECT/SITE CONDITIONS

A. The Speedlane Compact Security Optical Turnstile installs on finished floor only.
B. Floor must be level within 1/8" (2mm) at any point within the footprint of the Speedlane array.
C. Floor must be complete with conduit supplied to meet manufacturer's specified drawings.

1.08 WARRANTY

Boon Edam warranties its products against defects in material and workmanship for a period of twenty-four (24) months from the date of shipment of the product. This warranty excludes glass breakage, normal wear on finishes or damage that occurs due to abuse, misuse or acts of God.

PART II – PRODUCTS

2.01 MANUFACTURER

Boon Edam, Inc., 402 McKinney Parkway, Lillington, NC 27546.
(910) 814-3800 Fax: (910) 814-3899 Homepage: www.boonedam.us

2.02 PRODUCT

Boon Edam Speedlane Compact Security Optical Turnstile models:

Speedlane Compact Security Optical Turnstile includes stainless steel cabinets with swinging glass panels. Tested and certified to confirm with the following Norms and Standards:

A. UL Standards (325, 294, and 2593 USA)
B. CSA (22.2 #247 Canada).
C. Machine Directive (2006/42/EC)
D. EMC Directive (2004/108/EC)
E. RoHS Directive (2011/65/EU)
F. Low Voltage Directive (2014/35/EU)
G. REACh Directive (1907/2006/EU)
H. WEEE Directive (2012/19/EU)

2.03 TURNSTILE CONSTRUCTION

A. **Frame Cabinet Dimensions:** 1200mm (47-1/4"): Length, by 150mm (5-7/8") Wide
B. **Clear Opening Dimensions:** Two, clear opening dimensions are available. 615mm (24-3/16") and 915mm (36") standard.
C. **Cabinet Cover Panels**: The cabinet cover panels shall be manufactured from #4 brushed stainless steel.

D. **Swinging Glass Panels**: The swinging panels are to be manufactured from 10mm flat, clear tempered safety glass.
E. **Top Cover Plate**: The top cover plate is to be manufactured from black powder coated steel (RAL9005 finish) and also with LED indicators to identify authorization status. Lexan lenses of 90mm x 200mm x 70mm (W x L x H) to accommodate the mounting provisions of most RFID card or bar code reader devices inside or on top of the cabinet.
F. **Front Cover**: The Front Cover is to be manufactured from #4 Stainless steel with an integrated traffic indicator to identify whether the lane is Open (Green Arrow) or the lane is Closed (Red Cross).
G. **Motor Column and Plinth (base) covers**: Black powder coated stainless steel.
H. **Control system:** The control system will be a microprocessor controlled Closed Area Network

2.04 EQUIPMENT

A. **Drive System**: The electromechanical drive system that is specially designed for the Speedlane Compact is mounted inside the cabinet(s) together with all the controls. The drive system may allow for bi-directional or one-way traffic. (Requires 110-240 VAC, 1 Phase, 15A service from below)
B. **Locking Device**: The locking device is an electromagnetic brake activated in the closed position and will withstand up to 120Nm of pushing force.
C. **Power Loss**: In the event of power loss, the Speedlane Compact barriers can be opened manually for egress.
D. **Controls**: The controls are a factory installed, purpose-built microcontroller platform with embedded custom software.

2.05 COMMUNICATION SYSTEM

A. **Authorized entry method**: The Speedlane shall signal the user when the unit receives the authorized access signal from the access control system.
B. **Audible sounds:** Audible notification is provided to the user indicating authorization status of the lane.
    1. Access Granted
    2. Access Denied
    3. Alarm Indication (Tailgate/Intruder).
C. **Visual signals:** An LED indicator on the top plate of the unit. The following functions are available standard:
    1. Standby: White, “Breathing”
    2. Access granted: Solid Green
    3. Access Denied: Solid Red
D. **Security Reporting:** The Speedlane must have the capability of providing security violation alerts to the access control system or an on-site remote panel (not supplied by Boon Edam).

2.06 SECURITY EQUIPMENT

A. **Actuation**: Barrier actuation by card reader in both entry and exit directions.
B. **Actuation Device**: Although mounted to the turnstile, actuation devices are provided by the Access Control Integrator.
C. **Sensor System**: A series of infrared sensors incorporated inside of the cabinet to perform the following functions:
    1. Entry sensors: These sensors detect the initial presence of the user, once the person has passed the entry sensors, any following unauthorized users must also be granted access, otherwise a tailgate detection will occur resulting in an alarm.
    2. Tailgate Sensors: These sensors detect the presence of an individual who has passed through the entry sensors and is moving into the safety sensor area. In conjunction with the Entry sensors, the unit can detect directional movement and indicate potential unauthorized/tailgating or entry attempts.
    3. Safety Sensors: Six sensors cover the area near and around the swinging glass panel (barrier). If a user stops in the Safety Sensor area, the glass panels will not close on the user. For safety

purposes, the glass panels will also not close on users who tailgate. Rather, an alarm will generate indicating an unauthorized entry has been attempted.

4. Return Signal Booking Sensors: These sensors tell whether an authorized user has passed through the unit. A signal is generated from the controller to the Access Control System to verify the user has successfully passed into the authorized direction of travel.
5. Trolley Detection Sensors: These sensors indicate that a trolley/suitcase has entered with an authorized user. When activated, the lane will remain open an extended period to allow for proper passage of the trolley/suitcase.

D. **Inputs and Outputs**: The control module includes a series of field configurable inputs and outputs which can be selected for optimal use:
   1. Inputs: Five inputs are available. Specific inputs will be configured as listed in Section 2.08 Access Control and Fire Alarm Integration
   2. Outputs: Five outputs are available in a Normally Open state. Outputs are listed in Section 2.08 Access Control and Fire Alarm Integration.
   3. Service Tool Software: PC software allowing connection to the control system to enable the following activities:
      a. Upload and download of software and configuration capabilities
      b. Setting of times, and I/O configuration adjustments
      c. Monitoring and troubleshooting of sensor matrices
      d. Maintenance tracking
      e. Comma Separated Values (CSV) event log file reporting system for service, maintenance, and configuration tracking methods

2.07 SAFETY SYSTEM

A. **Safety Sensors:** Sensors cover the area near and around the swinging glass panel (barrier). If a user stops in the Safety Sensor area, the glass panels will not close on the user. For safety purposes, the glass panels will also not close on users who tailgate. Rather, an alarm will generate indicating an unauthorized entry has been attempted.

B. **Torque:** A preset parameter within the programming of the drive system enables the rotation force to be minimized, allowing the swinging glass panels to be stopped manually by applying pressure against their rotation.

2.08 ACCESS CONTROL AND FIRE ALARM INTEGRATION

A. The turnstile must be capable of integrating with the Access Control System (ACS) and Fire Alarm System via a series of dry contact potential free input signals. Control wiring from the ACS system will be connected (integrated) to the turnstile via an I/O board, or terminal strip, supplied within the turnstile control system (ACS cabling supplied by others).

B. **Control Inputs and Outputs**: Signals from the ACS control the following functions of the Optical Turnstile and are connected to the designated I/O board or terminal strips. A total of 4 pairs of stranded 20 AWG Shielded Conductors are recommended for the inputs, 1 pair of 18 AWG Shielded Conductors for Fire Alarm Relay Input and 5 pairs of stranded 20 AWG Shielded Conductors for the Alarm Outputs:

Input/output	Functional Description
Input 1	Pulse to non-secure
Input 2	Pulse to secure
Input 3	Authorization denied to non-secure
Input 4	Authorization denied to secure
Input 5	Not installed
Input 6	Not installed
Input 7	Not installed

Input 8	Fire Alarm
Output 1	Malfunction alarm
Output 2	Booking pulse to non-secure
Output 3	Booking pulse to secure
Output 4	Intruder alarm combined
Output 5	Tamper alarm
Output 6	Not installed

C. **Fire Alarm**: Each master cabinet must have it's own dedicated fire alarm relay signal, normally closed contact (opens on active alarm), dry contact circut. Turnstiles can be programmed to open in desired direction – toward the non-secure side (egress) or toward the secure side. All LED's will illuminate green. Once the alarm is reset the lanes will resume normal operation. Fire alarm overrides all other functions.

2.09 SEQUENCE OF OPERATION

A. **Authorization, Pulse to Secure**: Upon approach to the unit, the White LED indicator on the cabinet top will pulse indicating where a user is to present their credential. Authorization from the Access Control System (ACS) or remote panel button is required before the unit will open. After valid authorization, the top LED will illuminate solid green and the swinging glass panels will open in the direction of travel to indicate authorization has been granted.

B. As the user moves into the lane, the entry sensors detect presence, whereas the panels remain open. As the authorized person progresses through the tailgate sensors, they scan the compartment looking for potentially unauthorized intruders tailgating. If a second, consecutive authorized request (or any additional requests) are made during the exiting process, the unit will remain open. Safety sensors scan the compartment to prevent closing on any user or object. If an unauthorized user enters the lane and activates the entry sensors and tailgate sensors, an audible alarm will generate indicating an intruder has attempted to tailgate through the lane. The LED indicators will illuminate red for a set period. After the intruder exits, the lane will reset and the glass panels will close. For safety purposes, the glass panels will default to remain open when a person or object is detected by the safety sensors combined with the tailgate sensors.

C. After authorized passage, the booking pulse to secure sensor will provide a signal to the ACS indicating the user has passed through the lane. This provides anti-passback and mustering capabilities.

D. Once the user clears the last sensor in the lanes, lane closure of the panels results in a locked and secured barrier position; and the individual will be considered inside the secure zone of the building. However, any time the safety sensors detect a person or object during a passage, the panels in the lane will immediately reopen in the last recorded direction of passage and alarm if tailgating is detected.

E. **Fire/Life Safety**: All authorized life-safety and emergency alarm contacts must drop signal to automatically open the glass gates to the open exiting position.

F. **Authorization, Pulse to Non-Secure**: Identical to the "Authorize In" sequence of operation above.

I. **Fire/Life Safety**: All authorized life safety and emergency contacts must drop signal to automatically open the glass gates to the open exiting position. Life safety overrides all other functions.

J. Upon power loss, the units are fail-safe standard.

2.10 PERFORMANCE/THROUGHPUT

The Speedlane Compact can provide two-way traffic, one-way traffic, or a blocked barrier (closed entry/exit). Throughput is defined as the number of people per minute which can pass through an optical turnstile in *one direction only*. The average throughput of the Speedlane is approximately 25-30 people per minute.

2.11 HARDWARE/MATERIALS

A. **Sheet Metal:** All sheet metal shall be 304 #4 brushed stainless steel or powder coated steel.
B. **Safety Glass**: The swinging panel barrier glass shall be 10mm clear safety glass.
C. **Hardware:** All hardware to have metric thread to conform to ISO or DIN standard.
D. **Sensor Window Panel:** Dark Grey IR Polycarbonate

2.12 FINISH

The following finishes are available for the removable panels, bottom plinth covers, face and top cover plate.

A. Stainless Steel Cover Panels Clad Type 304 -
1. #4 Brushed Satin

B. Powder Coated
1. Plinth Covers - RAL 9005 gloss 80%
2. Motor Columns – RAL 9005 gloss 80%
3. Top cover – RAL 9005 gloss 80%

2.13 ADDITIONAL OPTIONS

The following are additional features and options available with the Speedlane Compact.
1. Platform installation – units installed to above ground platforms/ramp.
2. Push to Release – Glass panels will release with nominal direct pressure.

PART III – EXECUTION

3.01 INSTALLATION

A. **Inspection:** Installer must examine the location and advise the Contractor of any site conditions unacceptable for proper installation of product. The minimum conditions necessary to initiate installation are:
   1. Floor must be dead level at any point within the footprint of the Speedlane.
   2. Finished floor must be installed.
   3. Floor must be complete with conduit supplied to meet manufacturer's specified drawings.
   4. Power supply (110-240VAC) must be installed. Power and communication come from the floor to the secure side of the cabinet as per approved specified drawings.
B. **Erection:** Install turnstile in accordance with manufacturer's printed instructions. Set units level, plumb, and with uniform, hairline joints. Anchor securely into place. Use only factory trained installers.
C. **Adjustment:** Installer shall adjust turnstile, hardware and sensors for smooth operation and proper performance.
D. **Instruction:** A factory-trained installer shall demonstrate to the owner's maintenance crew the proper operation of the Security Optical Turnstile and the necessary service requirements such as lubrication, cleaning, and inspection of components upon completion of installation.

E. **Cleaning:** Clean metal and glass surfaces carefully after installation to remove excess caulk, dirt and labels.

Boon Edam, Inc. reserves the right to change this specification at any time without notice.