



4050 South 500 West, Salt Lake City, UT 84123 • (801) 261-8980 • FAX (801) 261-1612

ARCHITECTURAL SPECIFICATION

Tourlock 180 + 90 Security Revolving Door

DIVISION 8 – DOORS AND WINDOWS

SECTION 08470 – REVOLVING DOORS

PART I – GENERAL

1.01 SECTION INCLUDES

- A. This section covers the furnishing and installation of a complete Automatic Security Revolving Door System. Provides a complete system that has been fabricated, assembled, and tested for proper operation at the factory.
- B. It includes curved side walls, canopy, ceiling, access hatch, ceiling lights, door wings, hardware, glass, motor drive system, emergency collapsing mechanism, communication system, safety system and infrared sensor system as required for installation.

1.02 RELATED SECTIONS

- A. Section 07915 - Sealant, Caulking and Seals
- B. Section 08400 - Entrances and Storefronts
- C. Section 08710 - Door Hardware
- D. Section 08810 - Glass and Glazing
- E. Section 09600 - Flooring
- F. Section 16123 - Electrical Supply and Termination
- G. Section () - Security Systems

1.03 QUALITY ASSURANCE

- A. Manufacturer shall be a company specializing in the supply of automatic security revolving doors with a minimum of 10 years experience.
- B. Manufacturer shall supply a factory-trained supervisor during installation of the door.
- C. Manufacturer must completely assemble and test the operation of the door in the factory prior to shipping.
- D. Manufacturer must provide for a local, factory-trained, field service technician to competently service the doors; 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.
- E. Installer requirements: Temporary labor or glass contractors are not acceptable. The manufacturer must provide trained and experienced service technicians located within a 50-mile radius of the installation.

1.04 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.

1.05 DELIVERY, STORAGE AND HANDLING

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

1.06 PROJECT/SITE CONDITIONS

- A. Revolving doors install on finished floor only.
- B. Floor must be dead level at any point within the footprint of the revolving door.

1.07 WARRANTY

The manufacturer must warranty its products against defects in material and workmanship for a period of (1) one year from the date of substantial completion or (1 ½) one and one half years from date of shipment. This warranty excludes glass breakage, normal wear on finishes or damage that occurs due to abuse, misuse or acts of God. An extended parts and labor warranty is available through factory trained distributors. The manufacturer must be able to provide warranty service, which is locally based and trained within a 50-mile radius.

PART II – PRODUCTS

2.01 MANUFACTURER

Tourlock 180 +90 Automatic Security Revolving Door as manufactured by:
Boon Edam, Inc., 4050 South 500 West, Salt Lake City, Utah 84123.
(801) 261-8980 Fax: (801) 261-1612 Homepage: www.boonedam.com

2.02 DOOR CONSTRUCTION

- A. Side Walls and Canopy: Shall have a standard inside diameter of 6'6" or 7'-0" and be manufactured from six (6) extruded aluminum posts, six (6) 12" high one-piece extruded aluminum canopies and four (4) extruded aluminum bottom rails. (Segmented Sidewalls are not acceptable due to premature equipment failure, compromised security, excessive noise, and visual appearance.)
- B. Door Wings: Four (4) doors as designed and manufactured of 1 3/4" wide aluminum extrusions and reinforced with internal aluminum door corners for strength. Door wings must utilize removable horsehair weather stripping on three sides. Door wings must be capable of folding forward or backward allowing for emergency egress.
- C. Ceiling: Shall be fabricated of formed aluminum sheet in a pie-shaped configuration. The ceiling system must lock and secure each section in a secured position, and can only be removed by authorized personnel. Servicing of the doors and access to the controls must be from the floor position. (Doors that require servicing access from the top are not acceptable).

2.03 EQUIPMENT.

- A. Drive System: Overhead drive system with one 1/4 HP AC motor attached to the internal structural framing. The door shall be powered by a 208-230 VAC, 1-phase service. The motor shall utilize an internal angle encoder for constant monitoring of door position and a Frequency Controller to provide for the following characteristics:
 - 1. Throughput: Adjustment of rotation speed through a digital setting.
 - 2. Throughput/Safety: Constant regulation of rotation speed.
 - 3. Safety: Adjustment of startup/run torque through a digital setting to minimize force required, in order to stop and alarm the door, in the event of an obstruction.
 - 4. Safety: Adjustment of stopping distance through a digital setting.
 - 5. Security: Password-protected Security over Frequency Control settings.
- B. Braking Assembly: Positive braking and stopping shall be performed by DC dynamic braking incorporated within the drive system. Other auxiliary disc brakes are not considered to be equal. The brake unit is to provide the following characteristics:
 - 1. Remain locked at all times until unlocked by authorized signal from the access control device or emergency system.
 - 2. Lock immediately after a signal from IRS sensor system or other incorporated system.
- C. Controls: Microprocessor-based electronics utilizing a minimum of a 2000-step Programmable Logic Controller (PLC) with the following characteristics:
 - 1. RAM & ROM memory
 - 2. Lithium batter backup
 - 3. Self-diagnostics for quick detection of problem source
 - 4. Visual display of problem source

- D. Emergency Collapsing Mechanism: Precision-engineered center shaft door hangers and disks that allow the door wings to be collapsed under pressure and stored in a bookfold position. Center shaft hangers and disks are finished in black and provide tension to hold the door wings in position when the center shaft electric locking is released. The door wings shall be capable of being collapsed outward under pressure on the outer stile not to exceed 130 pounds. (Overhead door wing hangers are not acceptable. Magnetic locking on each separate door wing is not acceptable.)
- E. Communication System:
 1. Normal frequent authorized users: Upon presenting a card, biometric method, or any other authorized entry method, the door must signal the use via a bell, when the door receives the authorized access signal back from the access control system.
 2. The door must both voice annunciate, and visually signal the authorized user to step into the door in order to start the rotation of the door.
 3. The visual signal must be located 60" above the floor on the vertical jamb of the door entrance.
 4. Voice annunciation and visual signals must be utilized in the event of an UN-authorized entry attempt, or security violation. In addition, a violation light signal must be activated within the UN-authorized entry compartment, in order to distinguish which door compartment has been compromised.
 5. The door must have the capability of communicating a security violation to either an access control system, or an on site remote panel.

2.04 SECURITY EQUIPMENT

- A. IRS Infrared Sensor System: Ceiling mounted infrared sensors capable of performing the following functions:
 1. Detecting the presence of a person after receiving an authorized signal from the access control system, and initiating door rotation. The door must remain in a standby mode in the X position and must not start rotating until the authorized person enters the door. Initiating door rotation from the "+" position is unacceptable.
 2. Detecting the presence of a person within the door, and preventing UN-authorized entry in the form of tailgating by immediately stopping the door, sounding the alarm and annunciating proper instructions. The door must stop in a position, which allows the UN-authorized tailgating person to exit the door compartment without being trapped, and therefore eliminating the UN-safe reversing of the door.
 3. Reversing is UN-acceptable during and UN-authorized entry attempt. Reversing in UN-safe and slows traffic throughput.
 4. Detecting the presence of a person in a compartment in order to track the person's presence and position within the door, and to ensure that the authorized person actually passed completely through the door.
 5. Sensors other than infrared are not acceptable.
- B. Direction Sensors: Sensors that will lock the 4-wing doorset immediately if the doorset immediately if the doorset is pushed in the opposite direction of travel, and then sound the alarm and annunciate proper instructions
- C. Activation: Activation of the Tourlock by an external card reader, biometrics, or any other access control device, which provides a dry contact to the control box of the door. Card reader or the activation devices are not by Boon Edam. Mounting pedestals for access control devices are not included.
- D. Weight Sensor System (Optional): Electronic Load Cells installed in a steel frame in the floor of the door and capable of performing the following functions:
 1. Measure the weight on the floor mat in the door compartment.
 2. Determine if the measured weight exceeds the weight of the pre-set parameters. If the weight is outside of the preset parameters, the door will immediately stop and the alarm will activate.
- E. Anti-Passback System: Provide resting position, which prohibits the physical passback of access cards from the secure to non-secure areas. Doors resting in the "+" position are unacceptable.
- F. Anti-Passback System (Optional): Provide signal from door to access control system indicating that authorized user has successfully passed through the door. Connection to access control system by access control system supplier. Doors utilizing the "x" rest position only as an anti-passback solution are not considered equal.

2.05 SAFETY SYTEM

- A. Safety Switches: A system of pressure sensitive switches in front of a fixed sidewalls (standard), and in front of the rotating door wings (optional), that will stop the door's rotation immediately upon compression. All switches must be tied into the programmable logic controller, give a visual signal when malfunctioning and cause the door to stop rotation until corrected. System components shall be incorporated as follows:
1. S.R.B. (Safety Rail Bentwall Switch) Standard: A multi-directional, closed-contact pressure sensitive switch contained within a black rubber profile mounted to the edge of each inbound right side wall that will immediately stop the door's rotation if compressed.
 2. S.R.D. (Safety Rail Doorwing) Optional: A multi-directional closed-contact pressure sensitive switch contained within a black rubber profile mounted to the bottom rail of each door wing, that will immediately top the door's rotation if compressed. (Recommended when the general public will be utilizing the doors during day hours.)
- B. Torque Limiting: A setting within the programming of the Frequency Controller in the drive system that allows the rotation force to be significantly minimized, allowing the doorset to be stopped manually by applying minimal pressure against its rotation. The Direction Sensors will not allow for the manual forced rotation of the door in the reverse direction, while utilizing the Torque Limiting feature.
- C. Emergency Egress Doors: The four (4) door wings shall be capable of book-folding in the direction of egress and allow for unobstructed egress in cases of emergency or fire alarm signal.
- D. IRS Infrared Safety Sensor: Overhead sensors detect last second or delayed entries into the door, while preventing the pinching of persons or objects between the door wing and the end wall safety switch.
- E. Reversing Button: A flush mounted button recessed in the vertical mid-post, which allows for the reversing of the door in the even that a person or object is entrapped in either side compartment. The button will only reverse the door when certain criteria are met. The button's activation is controlled by the encoder and PLC logic and tied to al IRS presence sensors within the entrapped compartment. The buttons are inactive during normal door operation.

2.06 PERFORMANCE/THROUGHPUT

The revolving door unit must be a 4-wing SIMULTANEOUS TWO-WAY TRAFFIC door. Throughput is defined as the number of people per minute, which can pass through a door in *one direction only*. Throughput is a function of the number of compartments in the door, times the number of full revolutions a door can safely make in a one-minute time frame. The number of door compartments is four (4). The safe maximum number of revolutions per minute is six (6). The maximum throughput utilizing simultaneous entering and exiting is forty-eight (48). Taking into consideration all user and environmental factors, the average expected throughput in any one direction is between 15 and 18 people per minute.

2.07 HARDWARE/MATERIALS

- A. Tempered Glass: All flat glass in door wings shall be ¼" clear tempered safety glass, all curved glass shall be ¼" clear bent tempered safety glass. All glass shall meet ANSI standard Z 97.1.
- B. Laminated Glass (Optional): 7/16" clear curved laminated safety glass is available as an option. All glass shall met ANSI standard Z 97.1.
- C. Aluminum Extrusions: All commercial grade extrusions shall be of aluminum alloy 6063 -T6 per ASTM B-221.
- D. Weather Stripping: Genuine horsehair weather striping on all required edges of door wings to provide a seal between door wings and drum that meets ASTM E-283.
- E. Glazing Seal: All glass to be sealed with push in glazing vinyl.
- F. Pivot: Floor mounted pivot under the center shaft to provide smooth rotation.
- G. Center Shaft: Extruded center shaft shall be of aluminum alloy 6061-T6 per ASTM B-221 with connection to the speed control and pivot.

2.08 FINISH

The following finishes are available for the enclosure walls, rotating door wings and ceiling.

- A. Anodized Coatings
 - 1. AAMA 611 Architectural Class 1 Clear anodized Type AA-M10C22 A41
 - 2. AAMA 611 Architectural Class 1 anodized Type AA-M10C22 A42: Light, Medium and Dark Bronze, Black and Champagne.
- B. Painted Coatings
 - 1. AAMA 2605 Superior Performing Organic Coatings (e.g.: Duranar, Fluorpon; 70% Kynar Fluoropolymers).
 - 2. AAMA 2604 High Performance Organic Coatings (e.g.: Powder Coating).
- C. Stainless Steel Clad Type 304
 - 1. #4 Brushed Satin
 - 2. #6 Brushed Satin Fine-Lined
 - 3. #8 Highly Polished (mirror finish)
- D. Bronze Clad Alloy #280 (Muntz Metal)
 - 1. #4 Brushed Satin
 - 2. #8 Highly Polished (mirror finish)

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. These unacceptable conditions include but are not limited to the following:
 - 1. Floor must be dead level at any point within the footprint of the door.
 - 2. Finished floor not yet installed.
 - 3. Exterior grade for adequate drainage must be properly designed.
 - 4. Power supply must be installed.
- B. Erection: Install revolving doors 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 door, 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 door 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.
- F. Installer Requirements: Temporary labor or glass contractors are not acceptable. The manufacturer must provide trained and experienced service technicians located within a 50-mile radius of the installation. If required, the local Service Company must be able to respond in person within six (6) hours.

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