



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

ARCHITECTURAL SPECIFICATION

TQ Automatic 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 Revolving Door System. Provide complete system that has been fabricated and tested for proper operation at the factory. It includes curved side walls, canopy, ceiling, door wings, hardware, glass, drive system, sensor system and emergency collapsing mechanism as required for installation.

1.02 RELATED SECTIONS

- A. Section 07915 - Sealants, 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

1.03 QUALITY ASSURANCE

- A. Manufacturer shall be a company specializing in the supply of automatic revolving doors with a minimum of 10 years experience.

1.04 SUBMITTALS

- A. Submit project specific shop drawings and finish samples.
- B. Indicate pertinent dimensions, general construction, component connections and locations, anchorage methods and locations.

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. Install revolving doors on finished floor only. Floor must be dead level at any point within the footprint of the revolving door.

1.07 WARRANTY

Boon Edam warrants its products against defects in material and workmanship for a period of one (1) year from the date of substantial completion or one and one half (1 ½) 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.

PART II – PRODUCTS

2.01 MANUFACTURER

TQ Automatic 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. Curved Side Walls and Canopy: Shall have a standard diameter of 8'-0" (I.D.), 10'-0" (O.D.), 12'-0" (O.D.) and be manufactured from six (6) extruded aluminum posts, four (4) 300 mm (12") high one-piece extruded aluminum canopies and two (2) extruded aluminum bottom rails.
- B. Door Wings: Three door wings 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. Each section must be secured in position and removable only by authorized personnel.

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. Adjustment of rotation speed through a digital setting
 - 2. Constant regulation of rotation speed
 - 3. Adjustment of startup/run torque through a digital setting to minimize force required to stop door
 - 4. Adjustment of stopping distance through a digital setting
- B. Braking Assembly: Positive braking and stopping shall be performed by electromagnetic brake assembly incorporated within the drive system. The brake unit to remain unlocked at all times until locked by electric locking system.
- C. Controls: Microprocessor-based electronics utilizing a 2000-step Programmable Logic Controller (PLC) with the following characteristics:
 - 1. RAM & ROM memory
 - 2. Self-diagnostics for quick detection of problem source
 - 3. Visual display of problem source
- D. Collapsing Mechanism: Precision-engineered door hangers and disks to allow the door wings to be collapsed, or folded and stored in a bookfold position. Hangers and disks are finished in black and provide tension to hold the door wings in position when the electric locking is released. The wings shall be capable of being collapsed outward under pressure on the outer stile not to exceed 130 pounds.
- E. Electric Shaft Locking (optional on 8'-0" and 10'-0" diameter doors): A fail-safe electromagnetic shaft lock with a three (3) position post-mounted key switch to activate locking. When engaged, the electric shaft locking will prevent rotation of the door wings. Electric locking is disengaged by loss of power or signal from building/fire/smoke alarm (Requires a 4 wire system, 208V 1 Phase, 60Hz, 20A, service from above, by others)
- F. Surface Applied Slide Bolt Locks (Optional): Two (2) standard 1 3/4" x 5 5/8" surface-mounted deadbolt locks with removable keyed cylinders that lock into the ceiling or floor on the two interior door wings.
Note: Not available on 12'-0" diameter doors.
- G. Two-Point Recessed Locks (Optional): Two (2) standard concealed two point recessed locks with removable, profile style keyed cylinders that lock into the ceiling and floor on the two interior door wings.

- H. Anti-Entrapment Sensors (Optional): Sensors in the ceiling that detect an individual inside the revolving door compartments after the door has been locked electrically, and disengages the shaft locking mechanism to prevent entrapment.
- I. Lights: Provide (4) 12V 20W Halogen lamps, 4 3/4" diameter lights to be recessed into ceiling. (110V power service required from above by others.)

2.04 SENSOR SYSTEM

- A. M.M.S. Microwave Motion Detectors: Two (2) microwave motion detectors, one mounted to the canopy on each side of the door that will start the rotation of the door upon actuation. Detection pattern must be adjustable directly or by remote control.
- B. T.R.S. (Top Rail Sensors) (optional on 8'-0" and 10'-0" diameter doors): Active infrared sensors mounted to the top rail of each door wing that will detect presence in front of each door wing and stop the door immediately. Sensors must be adjustable for pattern size and distance from door wing.
- C. E.B.S. (Endwall Buffer Sensors) (optional on 8'-0" and 10'-0" diameter doors): Two (2) active infrared sensors mounted in front of the curved side walls that will detect presence and stop the door immediately. The EBS sensors should be capable of switching on as each door wing approaches the endpost of each side wall and off as each door wing departs the endpost of each side wall.
- C. S.R.B. (Sensor Rail Bentwall): A multi-directional, closed-contact pressure sensitive switch contained within a black rubber profile mounted to the edge of each inbound endpost that will immediately stop the door's rotation if compressed.
- D. S.R.D. (Sensor Rail Doorwing): 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 stop the door's rotation if compressed.
- E. Handicap Button: Two (2) Handicap "Push to Slow" Buttons mounted on the inbound endposts that will reduce the rotating speed of the revolving door to approximately 1/2 the regular speed for approximately one revolution.
- F. Emergency Stop Button: Two (2) Emergency Stop Buttons mounted on the inbound endposts that will immediately stop the door when pressed.
- G. Key Switch: A key switch mounted on the interior endpost that will turn the door on/off.

2.05 HARDWARE/MATERIALS

- A. Tempered Glass: All flat glass in door wings shall be 1/4" clear tempered safety glass, all curved glass shall be 1/4" 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 meet ANSI standard Z 97.1.
- C. Aluminum Extrusions: All commercial grade extrusions shall be of aluminum alloy 6063-T6 per ASTM B-221.
- D. Aluminum Sheets: Shall meet ASTM B-209 and be of .063 minimum thickness.
- E. Weather Stripping: Genuine horsehair weather stripping on all required edges of door wings to provide a seal between door wings and drum that meets ASTM E-283.
- F. Bumpers: rigid, rubber-tipped bumper located on the top door rail of each door wing to prevent door wings from contacting one another when in the bookfold position.
- G. Glazing Seal: All glass to be sealed with push in glazing vinyl.
- H. Pivot: Floor mounted pivot under the center shaft to provide smooth rotation.
- I. Center Shaft: Extruded center shaft shall be of aluminum alloy 6061-T6 per ASTM B-221 with connections to the speed control and pivot.

2.06 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, Fluoropon; 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

- E. Inspection: Installer must examine the location and advise the Contractor of any site conditions unacceptable for proper installation of product. These conditions include but are not limited to the following:
3. Door must be installed on finished floor.
 4. Finished floor must be dead level at any point within the footprint of the door.
 5. Power supply must be installed.
- Installation shall not begin until these unacceptable conditions are rectified.
- F. 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.
- G. Adjustment: Installer shall adjust door, hardware and sensors for smooth operation and proper performance.
- H. 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.
- I. 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.

ARCHITECTURAL SPECIFICATION

TQA-S Security

One-way Traffic 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 One-way Traffic Security Revolving Door System. Provide complete system that has been fabricated and tested for proper operation at the factory. It includes curved side walls, canopy, ceiling, ceiling lights, door wings, hardware, glass, positioning system, emergency collapsing mechanism and sensor system as required for installation.

1.02 RELATED SECTIONS

- A. Section 07915 - Sealants, 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 security revolving doors with a minimum of 10 years experience.
- B. Installer shall supply a factory trained supervisor during installation of the door.

1.04 SUBMITTALS

- A. Submit project specific shop drawings and finish samples.
- B. Indicate pertinent dimensions, general construction, component connections and locations, anchorage methods and locations.

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. Floor must be dead level at any point within the footprint of the revolving door.

1.07 WARRANTY

Boon Edam warrants its products against defects in material and workmanship for a period of one (1) year from the date of substantial completion. 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

TQA-S One-Way Traffic 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. Curved Side Walls and Canopy: Shall have a standard diameter of 9'-0" (I.D.) or 10'-0" (O.D.) and be manufactured from six (6) extruded aluminum posts, four (4) 12" high one-piece extruded aluminum canopies and two (2) extruded aluminum bottom rails.
- B. Door Wings: Three 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. Each section must be secured in position and removed only by authorized personnel.

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. Adjustment of normal rotation speed through a digital setting.
 - 2. Adjustment of handicap slow rotation speed through a digital setting.
 - 3. Constant monitoring and regulation of rotation speed.
 - 4. Adjustment of startup/run torque through a digital setting to minimize force required to stop door.
 - 5. Adjustment of stopping distance through a digital setting.
 - 6. Password-protected Security over Frequency Control settings.
- B. Braking Assembly: Positive braking and stopping shall be performed by electromagnetic brake assembly incorporated within the drive unit. The brake unit to provide the following characteristics:
 - 1. Lock immediately after signal from IRS sensor system, contact mat system, or signal from the security office
- C. Controls: Must be microprocessor-based electronics utilizing a 2000-step Programmable Logic Controller (PLC) with the following characteristics:
 - 1. RAM & ROM memory
 - 2. Self-diagnostics for quick detection of problem source
 - 3. Visual display of problem source
- D. Emergency Collapsing Mechanism: Precision-engineered door hangers and disks to allow the door wings to be collapsed under pressure and stored in a bookfold position. Hangers and disks are finished in black and provide tension to hold the door wings in position when the 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.
- E. UPS Un-interruptable Power Supply: A battery pack provides back-up power in the event of a power failure. Depending on its use, the door will continue to function for 15 to 30 minutes after a power failure.

2.04 SECURITY EQUIPMENT

- A. IRS Infrared Blocking Sensor System: Ceiling mounted infrared sensors capable of performing the following functions:
 - 1. Detecting the presence of a person within the restricted zone of the door and preventing unauthorized entry by stopping the door and sounding the alarm. Sensors must be capable of detecting the unauthorized presence in time frame that does not require the door to reverse direction to allow egress.
- B. Floor Contact Blocking Mats: Floor mounted contact mats in the restricted zone which can determine the presence of a person and immediately stop and lock the door and notify security either through a silent or audible alarm.
- C. Direction Sensor System: A sensor that will lock the 3-wing doorset immediately if the doorset is pushed in the opposite direction of travel and sound the alarm.
- D. Hang Sensor (optional): A calibrated load-cell attached to a pivoting support assembly located in the canopy that can detect increased weight on the rotating doorset and immediately lock the door and sound the alarm.

2.05 SENSOR SYSTEM

- A. M.M.S. (Microwave Motion Sensor): One (1) microwave motion sensor mounted on the air-side canopy of the door that will start the rotation of the door upon activation. Detection pattern must be adjustable directly or by remote control.
- B. E.B.S. (Endwall Buffer Sensors): Two (2) active infrared sensors mounted vertically in front of each of the curved sidewalls that will detect presence and stop the door immediately. The EBS sensors should be capable of switching on as each door wing approaches the endpost of the sidewall and switches off as each door wing departs the endpost of each sidewall.
- C. S.R.B. (Sensor Rail Bentwall): A multi-directional, closed-contact pressure sensitive switch contained within a black rubber profile mounted to the edge of each inbound endpost that will immediately stop the door's rotation if compressed.
- D. S.R.D. (Sensor Rail Doorwing): 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 stop the door's rotation if compressed.
- E. Handicap Button: A Handicap "Push to Slow" Button mounted on the outbound endpost that will reduce the rotating speed of the revolving door to approximately 1/2 the regular speed for approximately one revolution.
- F. Torque Limiting: A setting within the programming of the Frequency Controller in the drive system that allows the rotation force to be minimized, allowing the doorset to be stopped manually by applying pressure against its rotation.
- G. Emergency Egress Doors: The three (3) doors shall be capable of folding in the direction of egress and allow for unobstructed egress in case of emergency.

2.06 COMMUNICATION SYSTEM

- A. Digital Voice Module: Provide a digital voice module capable of outputting a security message "Security violation, Please exit the door" upon a signal from the door's security system.

2.07 HARDWARE/MATERIALS

- E. Tempered Glass: All flat glass in door wings shall be 1/4" clear tempered safety glass, all curved glass shall be 1/4" clear bent tempered safety glass. All glass shall meet ANSI standard Z 97.1.
- F. Laminated Glass (Optional): 7/16" clear curved laminated safety glass is available as an option. All glass shall meet ANSI standard Z 97.1.
- G. Aluminum Extrusions: All commercial grade extrusions shall be of aluminum alloy 6063-T6 per ASTM B-221.
- H. Aluminum Sheets: Shall meet ASTM B-209 and be of .063 minimum thickness.
- I. Weather Stripping: Genuine horsehair weather stripping on all required edges of door wings to provide a seal between door wings and drum that meets ASTM E-283.
- J. Bumpers: rigid, rubber-tipped bumper located on the top door rail of each door wing to prevent door wings from contacting one another when in the bookfold position.
- K. Glazing Seal: All glass to be sealed with push in glazing vinyl.
- L. Pivot: Floor mounted pivot under the center shaft to provide smooth rotation.
- M. Center Shaft: Extruded center shaft shall be of aluminum alloy 6061-T6 per ASTM B-221 with connections 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, Fluropon; 70% Kynar Fluoropolymers).
 - 2. AAMA 2604 High Performance Organic Coatings (e.g.: Powder Coating).
- C. Stainless Steel Clad Type 304
 - 1. #4 Brushed Satin
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 - 3. #8 Highly Polished (mirror finish)
- D. Bronze Clad Alloy #280 (Muntz Metal)
 - 1. #4 Brushed Satin
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PART III – EXECUTION

3.01 INSTALLATION

- E. Inspection: Installer must examine the location and advise the Contractor of any site conditions unacceptable for proper installation of product. These conditions include but are not limited to the following:
 - 3. Door must be installed on finished floor.
 - 4. Finished floor must be dead level at any point within the footprint of the door.
 - 5. Power supply must be installed.Installation shall not begin until these unacceptable conditions are rectified.
- F. 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.
- G. Adjustment: Installer shall adjust door, hardware and sensors for smooth operation and proper performance.
- H. 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.
- I. 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.