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ARCHITECTURAL SPECIFICATIONS

SECURITY REVOLVING DOOR ENTRANCES

Control Flow® 2-Way Card Access Security Series 9200 with Matless Anti-Tailgate Revolving Door System **F12.1**

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DIVISION 08 - OPENINGS

SECTION 08 42 33.13 – SECURITY REVOLVING DOOR ENTRANCES

Specifier Note: Coordinate and edit articles and paragraphs below to suit project requirements. Add section numbers and titles per CSI "MasterFormat" and specifier's practice. Consult with manufacturer regarding performance requirements for units applicable to project, as well as, related equipment and accessories required.

PART I – GENERAL

1.01 SUMMARY

- A. WORK INCLUDED: Furnish complete revolving aluminum door system, as specified, that has been manufactured, fabricated and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.
- B. RELATED WORK:
 - 1. Concrete: Division 03, applicable sections.
 - 2. Masonry: Division 04, applicable sections.
 - 3. Thermal and Moisture Protection: Division 07, applicable sections.
 - 5. Openings: Division 08, applicable sections.
 - 6. Electrical: Division 26, applicable sections.

1.02 REFERENCES

- A. AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA) 101: Appendix Dissimilar Materials.
- B. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):
 - 1. ANSI 156.27: Power and Manual Operated Revolving Pedestrian Doors
 - 2. ANSI Z97.1: Safety Glazing Materials Used in Buildings - Methods of Test.
- C. AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) B221: Aluminum-Alloy Extruded Bars, Rods, Shapes and Tubes.
- D. THE ALUMINUM ASSOCIATION (AA): Aluminum Finishes Manual
- E. INTERTEK, WARNOCK HERSEY (ETL): Testing Laboratory and Certification Agency joined with ETL SEMKO
- F. UNDERWRITERS LABORATORY, INC. (USA & CANADA) UL 325: Electrical Door, Drapery, Gate, Louver, and Window Operators and Systems.

1.03 SUBMITTALS

- A. SHOP DRAWINGS & PRODUCT DATA: Submit drawings and product data showing layout, profiles, product components including anchorage, accessories, finish and glazing details (where required).
- B. QUALITY ASSURANCE AND CLOSEOUT SUBMITTALS: Submit the following:
 - 1. Manufacturer's Operation and Maintenance Data.
 - 2. Warranty document as specified herein.

1.04 QUALITY ASSURANCE

- A. INSTALLERS QUALIFICATIONS: Installer shall be factory trained and experienced to perform work of this section.



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B. MANUFACTURER'S QUALIFICATIONS: Manufacturer to have minimum (5) five years successful experience in the fabrication of revolving doors of the type required for this project. Manufacturer capable of providing field service representation during installation, approving acceptable installer and approving application method.

1.05 WARRANTIES

A. MANUFACTURER'S WARRANTY: Units to be warranted against defect in material and workmanship for a period of one year from the Date of Substantial Completion. Manufacturer's warranty is in addition to, and not a limitation of, other rights owner may have under Contract Documents.

B. DISTRIBUTOR'S WARRANTY: One year warranty: Labor & transportation charges for defective parts replacement.

1.06 PROJECT CONDITIONS

FIELD MEASUREMENTS: Verify actual dimensions/openings by field measurements before fabrication and record on shop drawings. Coordinate with fabrication and construction schedule to avoid construction delays.

1.07 DELIVERY, STORAGE AND HANDLING

A. ORDERING AND DELIVERY: Comply with factory's ordering instructions and lead time requirements. Delivery shall be in factory's original, unopened, undamaged containers with identification labels intact.

B. STORAGE AND PROTECTION: Provide protection from exposure to harmful weather conditions and vandalism.

PART II – PRODUCTS

2.01 MANUFACTURER

HORTON AUTOMATICS, a division of Overhead Door Corporation, shall manufacture security revolving door(s) of type(s) and size(s) specified on plans and door schedule.

2.02 EQUIPMENT

A. MANUFACTURED DOOR UNITS: Shall be Control Flow™ Series 9200 Two-Way Card Access Security, Matless Anti-Tailgate with collapsing four-wing design. Units shall include operator, enclosure/drum with canopy, door wings/panels, center shaft and bottom pivot.

B. OPERATOR: The operating mechanism shall be an adjustable power operator mounted within the enclosure canopy. The operator shall be supplied with 1/4 HP 500 RPM high torque motor, 90 VDC electric brake, gear box, and control panel and shall be ETL approved & tested to UL 325 Standard. Non-listed units shall not be acceptable.

1. The double seal, corrosion-proof, cast iron gear case shall contain case hardened (60Rc) helical gears in synthetic, low temperature oil bath lubrication.
2. A 1 1/2" (38 mm) diameter solid steel center shaft shall serve as main linkage to connect the operator to the revolving door wings. The at-rest position of the door wings shall be adjustable to suit the traffic and desired function.
3. An RS-485 port shall be provided for communication with external display (by others) to monitor door status, violations and operation.

C. MASTER CONTROL: The Microprocessor Master Control shall be a multiprocessor digital control system utilizing time-division multiplexed operations to provide precision motor-drive, sensor monitoring, and automated setup. All inputs will have an adjacent LED to verify input signals. Three (3) sets of programmable Form C contacts will be available for monitoring door functions or violations.



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1. Parameters: Ninety-nine (99) adjustable functions shall be provided including (but not limited to):
 - a. Door speeds
 - b. Time delays
 - c. Reaction to, and force required for safety stops
 - d. Adjust card request storage,
 - e. Safety stops before idle
2. Modes: Shall define how the door will be used. Key switch shall be provided for selecting operating modes. Fourteen (14) operating modes shall be provided including (but not limited to):
 - a. Totally secure, Card reader access for entry and exit
 - b. Card reader entry and free exit
 - c. Motion sensor activation for entry and exit
 - d. Freewheel mode
3. Diagnostics: Shall be used to set-up and maintain unit via a wireless Local Remote Control (LCP) with seven segment diagnostic display from outside the door. Adjustments at the control or via a wired remote shall not be considered equal. The logic will perform a self-set up, not requiring technician intervention or changes to ensure a safe installation. Sixteen (16) diagnostic modes shall be provided including (but not limited to):
 - a. Calculating unit speed in RPM's
 - b. Testing voice module
 - c. Global relearn (sets safety sensitivity to optimum level)
 - d. Checking motor and brake voltage and current
4. Voice Annunciator: Four (4) digital field programmable voice messages shall be provided and shall be 100% solid state. Tape recorded message will not be accepted.
5. Dual zone security sensor array in ceiling will be able to discern whether the user is entering or leaving the secured zone of the door and communicate to microprocessor control.

D. TRAFFIC CONTROL FUNCTIONS - SELECTABLE DAY/NIGHT OPERATION:

1. Two-Way Security: Traffic shall be controlled from both directions. (Note: '+' positioning preferred for best security). The Access Control System (ACS) device (by others) shall be placed at entrance to each side to obtain authorization for passage through door. Note: signals from the ACS shall be normally open contacts that close for a duration of 1/4 sec to 1 sec. This action shall cause electric brake to unlock and set operator in motion ('x' position) or look for zone activation ('+' position). This actuation shall cause door to revolve at rate of 3 to 4 RPM's (adjustable-regulated by ANSI 156.27) for 1/2 turn ('x' position) or 1/4 turn ('+' position), then stop at the next 'at-rest' position. Electric brake shall then lock door. Any attempt of entry from unauthorized side during this operation shall be detected. The only way passage will be allowed from either side is by a signal from the ACS or key switch provided. One-way security requires a motion sensor or push button.
2. Day Operation/Non-Security Mode: Upon signal (dry contact) from security personnel or ACS, control shall operate as a two-way free access door in both directions (selectable). Actuation shall be from motion sensors (optional), activated by logic software. Any zone signal shall cause door to turn to avoid entrapment. LED shall glow green denoting day operation. Upon release of dry contact, door shall automatically return to previous mode (selectable).
3. Authorization: The ACS (by others) shall be mounted adjacent to entrance on both sides of revolving door. Mounting can be done on manufacturer's standard mounting bracket as supplied for the type of ACS furnished. Door status bracket shall include visual signal light and audio tone device. Upon valid presentation, the door's CPU will accept signal, red LED will turn off, green LED will illuminate and an audible tone (adjustable) will sound. To prevent entrapment the door's CPU will not accept user's presentation if user is standing in activation zone at the time presentation is made (selectable). However, audible tone will sound to indicate a valid presentation but indicator light shall remain red.
4. Activation and Passage: After door's CPU accepts valid presentation and indicator light turns green, user will enter enclosure. Door will activate as per 'x' or '+' position and then rotate at a speed of 3-4 RPM counter



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clockwise to allow single passage only and then relock to prevent tailgating in same direction of travel. If tailgating individual has also made valid presentation, door will continue revolving to allow nonstop passage. Door will be capable of continuous nonstop revolutions as long as valid presentations are made. Door will be capable of up to 960 simultaneous entries and exits per hour. User shall be given three attempts or seven seconds to complete passage. If passage is completed on first or second attempt, another valid presentation will be required for the next user.

5. Anti-Tailgating/Opposite Direction Of Travel: Attempted unauthorized passage will result in door being locked by electric brake when unauthorized presence is detected. A solid state voice annunciator will inform intruder "Security Violation. Door Will Reverse." Door will then rotate backward to a position allowing secure area to be cleared. When secure area is cleared by intruder, door will resume normal rotation, allowing authorized entry to be completed.
6. Violation: Attempted unauthorized passage will result in door being locked by electric brake when unauthorized presence is detected. A solid state voice annunciator will inform intruder "Security Violation . . . Door Will Reverse." Door will then rotate backward to a position allowing secure area to be cleared. The voice annunciator will state "Please Exit Door" then "Re-enter" to inform authorized person to clear and then reactivate zone to resume to normal rotation, allowing entry to be completed.

E. SAFETY: The following safety features shall be provided as per ANSI A156.27:

1. Entrapment Protection - Collapsing Mechanism: Door design shall be equipped with Magnetic Breakaway and completely collapse in case of emergency as required by Codes.
 - a. Electromagnets shall be capable of holding with more than 1000 lbs. (4400 N) min. force to maintain system integrity and hold door wings in their respective positions under normal conditions.
 - b. Door manufacturer shall supply a circuit to be connected to the building's alarm system. Activation of the fire alarm, smoke detector or remote emergency button shall remove power to the door's electromagnetic locks and allow the wings to fully collapse into the bookfold position.
 - c. Door manufacturer shall supply an emergency switch to be mounted near the door and shall be labeled "Break Glass to Release Magnetic Locks." When power is released, door operation will stop and wings shall maintain their respective positions but can be broken away into true book-fold position with 80-130 lbs (355-578 N) of force (adjustable).
2. Alarm Contacts: Shall be provided to activate remote signal (by others) when door has loss of power.
3. Torque Limiting: Shall be provided via a back pressure sensing circuit adjusted so that 20-30 lb. (67-133 N) back pressure will stop door's rotation.
4. Cushioned Wall Safety Edges: Shall be provided at throat entrances to stop door's rotation when depressed for more than 1/4 of a second.
5. Bump-to-Idle™ (Safety Stop Before Idle): If back pressure circuit or safety edge is activated during normal authorized operation, door will stop and remain disengaged in an unlocked and idle position. A voice annunciator will be activated to say "Please Push Door Forward." Door wings shall be free to rotate manually in either direction toward a normal at rest and locked '+' position. Door will then reset for normal operation on next authorized passage.

F. ENCLOSURE: Shall be extruded aluminum and glass/glazing material and shall be constructed maintaining proper clearances and weather seal.

1. Segmented® Design: Shall be 1 3/4" (44 mm) deep with standard glazing prep for 1/4" (6 mm) flat glass/glazing material and offset to interior. Optional glazing prep: for 1/8" (3 mm) to 1-5/16" (33 mm) flat glass/glazing/ bullet-resistant material.
2. Round Design: Shall be 1 3/4" (44 mm) deep with standard glazing prep for 7/16" (6 mm) curved glass/glazing material and offset to interior. Optional glazing prep: 1/8" (3 mm) to 9/16" (14 mm).
3. Canopy: Standard canopy shall be round with curved aluminum 1/8" (3) fascia panels and shall be minimum 12" (305 mm) high. Interior ceiling shall be 3/4" thick plywood laminated with .060" (1.5 mm) aluminum to match door finish.



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Canopy options shall include:

- a. Extended canopy.
- b. Segmented® canopy on Segmented® enclosure.
- c. Cropped canopy.
- d. Exterior roof fabricated from .090" (2 mm) anodized aluminum.
- e. Two ceiling lights with energy efficient lighting systems with flush lens.
- f. Backlit fluorescent signage placed on one or both sides of canopy.

G. **PANEL/DOOR WING:** Shall be aluminum, 1-3/4" (44 mm) deep with narrow stile construction. Perimeter weather-stripping utilizing affixed sweeps shall ensure weatherseal. Standard glazing prep to be for 1/4" (6 mm) glass/glazing material and shall have sloped stops on horizontal rails. An intermediate, horizontal muntin bar, 2 1/4" (57 mm) wide, shall be furnished on each wing for safety and division of glass.

Door Wing options shall include:

1. Medium stile rails.
2. Additional standard horizontal muntin bars.
3. Optional horizontal muntin bars: 8" (203 mm), or 10" (254 mm) wide
4. Optional bottom rails: 8" (203 mm), or 10" (254 mm) tall.
5. Prep for glazing 5/16" (16 mm) to 1-5/16" (33 mm).

H. **HARDWARE:** Provided shall include:

1. Locks with five pin cylinders and concealed bolts provided on two door wings.
2. Bottom pivot/bearing: Surface mounted with no excavation below floor line required.
3. Center Shaft: 1-1/2" (38 mm) diameter steel shaft with connections to operator and bottom pivot/bearing.

2.03 RELATED WORK REQUIREMENTS

- A. **ELECTRICAL:** 120/240 VAC, 50/60 cycle (field selectable), single phase, 15 amp. Remote switch locations shall require routing of low voltage class II wiring to the operator controls. Remote switch locations shall be predetermined and wired before installation.
- B. **GLASS AND GLAZING:** Glass stops, glazing vinyl and setting blocks for field glazing as per Safety Glazing standard ANSI Z97.1.2. General contractor to coordinate acquisition of glass, not already provided by manufacturer, in thickness and type in accordance with manufacturer's recommendations for prescribed design.
1. Door Wing Glazing: Standard material will be flat safety glass in clear, 1/4" (6 mm) tempered. Optional: Glass up to 1-5/16" (33 mm) insulated or bullet-resistant material up to Level III.
 2. Enclosure Glazing - Segmented®: Standard material will be flat safety glass in clear, 1/4" (6 mm) tempered. Optional: Glass up to 1-5/16" (33 mm) insulated or bullet-resistant material up to Level III. Enclosure glass can be tinted or with 1/8" aluminum.
 3. Enclosure Glazing - Round: Standard material will be curved safety glass in clear, 7/16" laminated. Optional: 1/4" (6 mm) tempered, 9/16" laminated. Enclosure glass can be tinted or with 1/8" aluminum.

2.04 MATERIALS, FINISHES AND FABRICATION

- A. **EXTRUDED ALUMINUM:** ASTM B221, 6063-T5 alloy and temper, anodized:
1. Structural Drum/Enclosure Sections: Minimum 1/8" (3 mm) thickness.
 2. Structural Panel/Door Wing Sections: Commercial grade.
- B. **FINISHES** (for all exposed aluminum surfaces): Shall be one of the following:
1. 204-R1 Clear: Arch. Class 2 Clear Anodized Coating, AA-MI2C22A31.
 2. 313-R1 Dark Bronze: Arch. Class 1 Anodized Coating, AA-MI2C22A44.



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3. 312-R1 Light Bronze: Arch. Class 1 Anodized Coating, AA-MI2C22A44.
4. 315-R1 Black: Arch. Class I Anodized Coating, AA-MI2C22A44.
5. Special Paint Coating: Color as selected.
6. Cladding (door wings and round drum only): shall be stainless steel or muntz metal (brass alloy) in #8 mirror finish or #4 brushed satin finish.

C. DOOR WING CONSTRUCTION:

1. Corner block type with 3/16" steel backup plate construction, secured with minimum of four hardened steel screws. Sash consists of snap-in glass stops, snap-in glazing beads and vinyl gaskets.
2. Weatherstripping material captured in extruded aluminum door panel. Surface applied self-adhesive weatherstripping not acceptable.

D. ENCLOSURE CONSTRUCTION: Butt joints secured with screws and formed aluminum corner brackets.

PART III - EXECUTION

3.01 EXAMINATION

SITE VERIFICATION OF CONDITIONS: Installer must verify that base conditions are acceptable for product installation as per manufacturer. Notify Contractor in writing of conditions detrimental to acceptable completion of work. Negative conditions to be corrected in a manner acceptable to the installer and manufacturer.

3.02 INSTALLATION

- A. **GENERAL:** Install door unit(s) plumb, level and true to line, without warp or rack of enclosure. Drum enclosure can be center connected to adjacent construction or 'throat connected' (at entry vertical rails). Allow for 1/4" shim space each side and at canopy. Anchor in place. Unit is free-standing with no additional support required. Adjacent construction not to bear down on revolving door.
- B. **DISSIMILAR MATERIALS:** Comply with AAMA 101, Appendix Dissimilar Materials by separating aluminum materials and other corrodible surfaces from sources of corrosion or electrolytic action contact points.
- C. **WEATHER-TIGHT CONSTRUCTION:** Install enclosure with joint filler or gaskets and sealant. Coordinate installation with wall flashings and other components of construction.
- D. **ELECTRICAL:** Contractor to install all wiring to operator on a separate circuit breaker routed into canopy.

3.03 CLEANING, ADJUSTMENT AND PROTECTION

- A. **CLEANING & ADJUSTMENT:** Adjust operator and controls for optimum safety and include the following:
 1. Remove temporary coverings and protection of adjacent work areas.
 2. Remove construction debris from construction site and legally dispose of debris.
 3. Repair or replace damaged installed products.
 4. Clean product surfaces and lubricate operating equipment for optimum condition and safety.
- B. **ADVISE CONTRACTOR:** of precautions required to ensure doors will be undamaged at the time of acceptance.

Note: Horton Automatics reserves the right to make product improvements and change specifications without notice.

END OF SECTION