HORTON AUTOMATICS - ARCHITECTURAL SPECIFICATIONS, 8/2005

CONTROL FLOW™ SERIES 9200 CARD ACCESS SECURITY
AUTOMATIC REVOLVING DOOR

DIVISION 8 - DOORS AND WINDOWS
SECTION 08470 - REVOLVING ENTRANCE DOORS

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 automatic 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. Masonry: Division 4, applicable sections.
2. Electrical: Division 16, applicable sections.
3. Storefront: Glass; Hardware: Division 8, applicable sections.
4. Perimeter Sealants: Insulation: Division 7, applicable sections.

1.02 REFERENCES

A. AMERICAN ARCHITECTURAL MANUFACTURERS ASSOCIATION (AAMA):
1. 101: Appendix Dissimilar Materials
2. 605.2: Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.

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, Shapesand Tubes.

D. THE ALUMINUM ASSOCIATION (AA): Aluminum Finishes Manual

1.03 SUBMITTALS

A. PRODUCT DATA: Submit manufacturer's complete product and installation data.

B. SHOP DRAWINGS: Submit drawings showing layout, profiles, product components including anchorage, accessories, finish and glazing details (where required).

C. 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.

B. MANUFACTURER’S QUALIFICATIONS: Manufacturer to have minimum (5) five years successful experience in the fabrication of automatic 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 and 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: Comply with factory's ordering instructions and lead time requirements.

B. DELIVERY: Deliver items in factory's original, unopened, undamaged containers with identification labels intact.

C. STORAGE AND PROTECTION: To 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 automatic 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 Card Access Security with collapsing four-wing design. Units shall include operator, enclosure/drum with canopy, door wings/panels, center shaft, bottom pivot and security mats. Unit shall join adjacent construction at center of enclosure or at throat (entry area) of enclosure.

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 approved by a nationally recognized testing laboratory. 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. Motor drive shall be enclosed to prevent EMI noise from affecting the microprocessor control.
   3. 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 either plus (+) or (x) position and shall be adjustable to suit the traffic and desired function.

C. MASTER CONTROL: The Microprocessor Master Control Panel (MCP) shall be a multiprocessor digital control system utilizing time-division multiplexed operations to provide precision motor-drive, constant sensor monitoring, and automated setup. An RS-232 port shall be provided for communication with external display (by others) to monitor door status, violations and operation. All inputs will have an adjacent LED to verify input signals. Modular MCP shall be capable of exchanging the individual control components without having to replace the entire system. Three (3) sets of programmable Form C contacts will be available for monitoring door functions or violations.

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. A key switch shall be provided for selecting operating modes or a single security pass function. 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 sensitvity 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 mats will be able to discern whether the user is entering or leaving the secured zone of the door and communicate to MCP.
6. Optional Visdom HS® "Anti-Piggyback": Shall prevent two users from entering or exiting on a single presentation. The system shall be adjustable to meet security requirements and provide RS170 video display. (See, also, Section 2.02.D.7).

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

1. Two-Way Security: Traffic shall be controlled from both directions. 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 mat 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, push button or mat activation.
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 mat 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 operation (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 on activation mat 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: (Note: '+' positioning preferred and is described): After door's CPU accepts valid presentation and indicator light turns green, user will enter enclosure and step onto activation mat. Door will then rotate at a speed of 3-4 RPM counter clockwise 90 degrees 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 floor mat to resume to normal rotation, allowing entry to be completed.
7. Optional Vision System: Visdom HS®: Stand-alone machine vision product shall integrate 3D stereovision technology, binocular image sensors, dedicated Digital Signal Processor (DSP), and RS170 video display with graphics overlay all in single ceiling mounted package. Separate CPU systems will not be accepted.
    a. System shall detect piggybacking and tailgating violations with date/time overlay on video.
    b. System shall provide selectable security levels for detecting no person, single person, multiple people, and suspicious activity.
    c. System will include video output for monitoring or DVR feed with current status message.
    d. Operating temperature range shall be 0° C to 50° C.
    e. Storage temperature range shall be -40° C to 65° C
    f. Humidity (non-condensing) range shall be 10% to 90%.

E. COLLAPSING MECHANISM: Door design shall be equipped with Magnetic Breakaway and completely bookfold in case of emergency as required by Codes. Driving the door to some emergency position other than bookfold with a UPS or other power supply is not acceptable.
    1. 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.

2. 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.
3. 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).

F. SAFETY: The following safety features shall be provided as per ANSI A156.27:
1. Entrapment Protection ('Fail-Safe' during power loss): Magnetic locks will disengage and door wings shall be free to rotate manually in either direction when power is removed. Operators that fail-secure or require UPS power to fail-safe are not acceptable.
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.

G. 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 match contour of enclosure and shall be minimum 12" (305 mm) high. Side panels shall be 1/8" aluminum. Interior ceiling shall be 3/4" thick plywood laminated with .060" (1.5 mm) aluminum to match door finish.

   Canopy options shall include:

   a. Extended canopy.
   b. Round canopy on segmented enclosure.
   c. Cropped canopy.
   d. Exterior roof fabricated from .090" (2 mm) anodized aluminum.
   e. Butyl roof membrane for exterior applications (silver finish only)
   f. Two ceiling lights with energy efficient lighting systems with flush lens.
   g. Backlit fluorescent signage placed on one or both sides of canopy.

H. 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 (except on clad units). An intermediate, horizontal muntin bar shall be furnished on each wing for safety and division of glass.

   Door Wing options shall include:

1. Additional horizontal muntin(s) of size and type indicated.
2. Medium stile rails

3. Prep for glazing 5/16" (16 mm) to 1-5/16" (33 mm).

I. 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 ll 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 ll Clear Anodized Coating, AA-MI2C22A31.
   2. 313-R1 Dark Bronze: Arch. Class ll Anodized Coating, AA-MI2C22A32.
   3. 312-R1 Light Bronze: Arch. Class ll Anodic Coating, AA-MI2C22A32.
   4. 315-R1 Black: Arch. Class ll Anodic Coating, AA-MI2C22A32.
   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, mechanically 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.
   3. Optional bullet-resistant material can be added inside all aluminum profiles to receive up to Level III rating.

D. ENCLOSURE CONSTRUCTION: Butt joints, mechanically secured by means of screws and formed aluminum corner brackets.

E. OPERATOR CONSTRUCTION: Electromechanical, modular type construction.

PART III - EXECUTION

3.01 EXAMINATION

SITE VERIFICATION OF CONDITIONS: Installer must verify that base conditions previously installed under other sections are acceptable for product installation according to with manufacturer's instructions. Notify the Contractor in writing of conditions detrimental to the proper and timely completion of work. Do not start work until all negative conditions are corrected in a manner acceptable to the installer and manufacturer.

3.02 INSTALLATION

A. GENERAL: Install door units plumb, level and true to line, without warp or rack of enclosure or sash with manufacturer's prescribed tolerances. Provide support and anchor in place.

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: General or electrical contractor to install all wiring to operator on a separate circuit breaker routed into canopy.

3.03 CLEANING, ADJUSTMENT AND PROTECTION

A. CLEANING: After installation, installer to take following steps:
   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. ADJUSTMENT: Installer to adjust operator and controls for optimum condition and safety.

C. ADVISE CONTRACTOR: of precautions required through the remainder of the construction period, to ensure that doors will be without damage or deterioration (other than normal weathering) at the time of acceptance.

END OF SECTION