HORTON AUTOMATICS - ARCHITECTURAL SPECIFICATIONS, 5/2005

GRAND® SERIES 9600 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, Shapes and 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 Grand® Series 9600 Automatic Revolving Door with collapsing four-wing or three-wing design. Units shall include operator, enclosure/drum with canopy, door wings/panels attached to display or clear core, center shaft and bottom pivot. 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 1750 RPM high torque 90 VDC motor, 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) or 2" (51 mm) diameter 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.

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. Operating modes provided shall include (but not be limited to):
   a. Full Automatic - Motion sensor activation for entry and exit
   b. Exit only – door not locked but responds only to interior activation
   c. Continuous run – after activation expires, door will continue to run at reduced speed until activation signal is received
   d. Optional: Park – stops all activating signals so door will stop and lock (requires electric brake)
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 voltage, current and optional brake voltage
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.

D. AUTOMATIC ACTIVATION:

1. Two motion sensors shall be placed at revolving door entrance to detect someone approaching door. This actuation shall cause door to revolve at the rate of 3-5 RPM (adjustable) for one complete turn after actuating signal is removed. Door will then slow for 1/2 revolution then stop at the ‘at-rest’ position.
2. A momentary contact switch with 1" (25 mm) diameter push button shall be placed at each entrance to the door. The switch mounting plate read "Push Button to Slow Door". Pushing this button will cause door to revolve at 1-2 RPM for a selected amount of time. A digital voice annunciator will say "Door In Slow Speed, Do Not Push." Slow speed operation will be protected by a tracking governor only allowing more than 1 RPM over the adjusted speed. Note: Door can annunciate “Caution, door speed will increase” before resuming normal run speed (selectable).

E. COLLAPSING MECHANISM: The door operator shall stop when a door wing is out of position (broken out) more than 15 degrees. Wings shall be hydraulically cushioned upon collapsing and can be held around core for free and clear exit on either side of shaft.

1. Stormlock™: Electromagnetic locking system shall be provided to guard against high wind conditions. Electromagnets shall be capable of holding with more than 1000 lbs. (4400 N) minimum force to maintain system integrity and hold door wings in their respective positions. (Note: Under normal conditions this feature should be turned off and should only be used during storm conditions.)
2. Alarm Circuit: Shall be supplied and 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 completely bookfold in case of emergency as required by Codes.
3. Emergency Switch: Shall be provided and 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): Door wings shall be free to rotate manually in either direction and magnetic locks will disengage when power is removed.
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 operation, door will stop and go into the IDLE MODE. Door wings shall be free to rotate manually in either direction. After a forward manual push, the door will then restart at reduced speed and gradually accelerate to normal speed.
6. VistaStop™: Sensor shall be mounted at top of door wing and detect a 28" (710 mm) minimum high person or equivalent in rotating path 10" (254 mm) minimum from the face of the wing, and shall cause door to stop or slow to maximum allowed kinetic energy speed. The sensor shall provide a minimum active area for the width of wing less 15" from center shaft and 5" from outer edge of outer stile.
7. FootGuard™: Cushioned contact switch sensor shall be mounted at wing bottom rail and be active in the rotating path of the wing. It shall be active within 2" (50mm) from outer edge of the outer stile end and 6" (150mm) from the center of the door and not higher than 4" (100mm) from the finished floor. Contact switch shall require no more than 10 lbf. (54N) pressure to activate. Upon receipt of signal, door shall stop rotating.
8. Entryguard™ Sensor Option: An infrared device will be tied to door rotation and stop the door any time an object is detected when the display case is within 24" (612 mm) (adjustable) of the entrance throat post. This distance shall be adjustable within software and its function selectable to slow or stop depending on customer choice.

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: 1/8" (3 mm) to 1-5/16" (33 mm).
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 24 high. Side panels shall be 1/8" aluminum. Interior ceiling shall be 3/4" thick plywood

laminated with .060” (1.5 mm) aluminum. Ceiling shall include eight ceiling lights with energy efficient lighting systems with flush lens.

Canopy options shall include:

a. Canopy Height: Short canopy with minimum of 12” (305 mm) to extended canopy beyond standard 24” (specify).
b. Round canopy on segmented enclosure.
c. Cropped canopy.
d. Exterior roof fabricated from .090" (2 mm) anodized aluminum.
e. 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 medium 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. Prep for glazing 5/16" (16 mm) to 1-5/16" (33 mm).

I. CORE: Rotating central portion of door unit shall have top and bottom hydraulic closers for each wing to cushion emergency wing collapse. Core shall be extruded aluminum with glass/glazing material and perimeter weatherseal and shall be one of the following designs:

1. Display Core: Shall be three or four wing configuration. Core shall be constructed with fixed display panels and metal apron with one hinged access panel to display. Access panel shall have lock. Weight limit for Display floor shall be 200 lbs. (90 kg.)
2. Clear Core: Shall be four wing configuration.

J. HARDWARE: Provided shall include:

1. Locks with five pin cylinders and concealed bolts provided on two door wings and core.
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.
4. Hydraulic Closers: Shall be double acting and closing speed shall be adjustable.

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 AND CORE CONSTRUCTION: Butt joints mechanically secured by means of screws and formed aluminum corner brackets. Sash consists of snap-in glass stops, snap-in glazing beads and vinyl gaskets. Round enclosure shall be silicone glazed and not require glass stops or sash.

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