

SPECIFICATIONS FOR CRANE ALL-WELDED REVOLVING DOORS

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DIVISION 8 - DOORS AND WINDOWS

SECTION 08470 - REVOLVING DOORS

(Note: Within this section, double back slash marks (\ \) enclose language that should be originally selected for deletion or inclusion in its entirety. For example, when double back slash marks enclose an entire paragraph regarding bronze materials and bronze is not to be used, delete the entire wording within the set of enclosed double back slash marks.

If the wording within the set of double back slash marks is chosen to be included, the single back slash marks within the wording indicate other choices to be made by the specifier.

Single back slash marks (\) enclose words, numerals, or terms that should be carefully considered and edited by the specifier.

Parentheses () enclose content that is informational only for the specification writer and should not be included in the edited document.)

PART 1 - GENERAL

1.01 DESCRIPTION

A. This section includes the furnishing and installation of a complete revolving door assembly including metal, glass, and hardware as detailed and specified. (Crane All-Welded construction is a proprietary specification - there are no equals. Welded construction requires that each piece be sanded after fabrication to remove telegraphing weld marks. This sanding operation is labor intensive and will add 20% to the cost of the door. This type of construction has proven to have a useful life of 20 years or more with annual maintenance.)

1.02 RELATED WORK COVERED BY OTHER SECTIONS OF THIS SPECIFICATION INCLUDING BUT NOT LIMITED TO:

- A. Installation of glass - Section 08800 "Glazing".
- B. Furnishing of cylinders for locks - Section 08700 "Finish Hardware".
- C. Perimeter caulking and sealing of canopy cover - Section 07900 "Sealants"
- D. Floor work within enclosure including all holes and cut-outs - Section _____.
- E. Electrical hook-up and lamps for ceiling fixtures if required - Division 16 "Electrical".
- F. Swing doors and frames, tube mullions and transom bars, shims and sealant adjacent to revolving door - Section 08410 "Entrances and Storefronts".
- G. Field touch-up of bronze is specified in Section 01700 "Final Cleaning." Section"_____".

1.03 QUALITY ASSURANCE

A. Manufacturer shall provide the name and address of 5 current similar projects within the architect's area code, city, state or country.

B. References

- AGMA American Gear Manufacturers Association
- ANSI American National Standards Institute (Safety glazing)
- ASME American Society of Mechanical Engineers (Welding)
- ASTM American Society of Testing and Materials
- CDA Copper Development Association (Bronze alloys)
- DIN Deutschland Engineering Normalization
- IRDA International Revolving Door Association
- NAAMM National Association of Architectural Metal Manufacturer
- NEMA National Electrical Manufacturers Association

C. Manufacturer shall have all welding performed by certified welders, having passed the American Welding Society (AWS) tests within the previous 12 months.

D. Manufacturer shall label each door unit with the manufacturer's name, model number, serial number and date of manufacture. Motorized doors shall include the voltage required and the amperage draw.

1.04 SUBMITTALS

A. PRODUCT DATA: Submit manufacturer's standard literature and details for proof of compliance with specifications. Delete inapplicable information. Include information on maintenance of finishes, weathersweep replacement, and lamp replacement.

B. SHOP DRAWINGS: Submit \one sepia and three blue line prints\ or \1 DXF or AUTO CAD disk\ showing sections of all members, dimensional plans and elevations including anchors and all other components. Minor variations in details for the purpose of improving fabrication and installation procedures, but not affecting the exterior design concept or structural stability will be given consideration if submitted.

C. FINISH SAMPLES: Submit two (2) 3" x 5" samples of the metal and finish specified.

1.05 WARRANTY

A. Units shall be warranted against defective materials and workmanship for a 5-year period from the date of \installation\ \substantial completion.\ The speed control shall be warranted for a period of 5 years. No warranty on glass nor for normal wear and tear on weathersweep material will be required. Electronics warranted per manufacturer's literature.

\1. Applied finishes shall be warranted for the length of time stated in the manufacturer's literature for finish selected.\

1.06 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Materials shall be packed, unloaded, stored, and protected to avoid abuse, damage, and defacement from any source.

B. When unloading, remove all paper type wrappings that are wet or which could become wet.

C. Store inside, if possible, in a clean, well drained area free of dust and corrosive fumes.

D. Stack vertically or on edge so that water cannot accumulate on or within materials, using wood or plastic shims between components to provide water drainage and air circulation.

E. Cover materials with tarpaulins or plastic hung on frames to provide air circulation and prevent contaminants from contacting finished metal.

F. Keep water away from stored assemblies.

G. When installing, protect materials from lime, mortar, run-off from concrete and copper, careless handling of tools, weld splatter, acids, roofing tar, solvents, and abrasive cleaners.

H. Owner will pay for stored materials if project is delayed.

I. Owner will request a waiver of lien from the manufacturer prior to release of final payment.

PART 2 - PRODUCT

2.01 MANUFACTURER

A. Revolving doors shall be All-Welded type as indicated on Drawings and as manufactured by Crane Revolving Door Company, Inc.

2.02 MATERIALS AND FINISHES

A. All welded construction requires all-welded metal to be ground down, polished, and blended to remove distortions created by the concealed welds and by surface welds.

B. Aluminum, exposed and clad: Minimum thickness .125", except snap-in glass stops and canopy covers shall be minimum thickness .0625"; all exposed extrusions and sheets shall be Aluminum Association alloy as recommended by manufacturer for the use intended and required to produce the specified finish. All other extrusions shall be 6063-T52, sheets 5005-H34 AQ as required for the use intended.

1. All concealed aluminum shall be anodized for protection.

2. Interior grade anodized aluminum (0.4 mils thickness) shall not be acceptable for exterior surfaces.

3. Exposed finishes:

a. Natural anodized finish - NAAMM AA-M31 M32-C22-A41 (minimum thickness of 0.7 mils), Natural aluminum color. -or-

a. Colored anodized finish - NAAMM AA-M31 M32-C22-A44 (minimum thickness of 0.7 mils), integral color Medium Bronze. Dark Bronze. -or-

a. Painted finish - NAAMM AA-M32-C12-A11 painted per manufacturer's instructions, color to match approved sample.

Liquid coat Powder coat Manufacturer _____,
Designation_____.

B. Stainless Steel: Extrusions and Sheets, Type 304, .060" minimum sheet thickness.

1. Finish:

a. #4 Satin #6 Fine Satin #7 Mirror-Like #8 Mirror Custom per architects sample.

C. Bronze: Extruded architectural CDA alloy 385, 0.125" minimum thickness except glass stops; breakform CDA 280 Muntz metal CDA 220 Commercial bronze CDA Nickel silver sheet .062" minimum sheet thickness.

1. Finish:

a. \Satin and lacquered\ \Mirror finish and lacquered.\
\Satin, statuary and lacquered.\ \

D. Steel: All steel shapes, plates and tubes shall conform to ASTM A36-94. Mild steel reinforcing bar shall be .250" minimum thickness. Steel reinforcing sheet shall be minimum .106" thickness. All steel shall be prime coated to prevent corrosion due to electrolysis.

\E. Galvanized Steel: Minimum thickness .060" steel sheet shall conform to ASTM A527.\

F. Glass: Fabricate and deliver \curved glass for the enclosure and\ flat glass for the wings \and canopy\, to match the profiles shown on the Drawings. Thicknesses shall be as required to comply with all applicable provisions of governing codes. All glass shall meet the code. Where safety glazing is required, shall fulfill requirements of ANSI Z97.1.

1. Glass for Wings:

a. Glass shall be \1/4" clear tempered float\ \3/8" clear tempered float\ \1/2" clear tempered float for Herc style wings.\ (Clear only, for safety.)

\2. Glass for Enclosures:

\a. Glass shall be \7/16"\ \9/16"\ nominal thickness bent laminated float,\clear.\ \tinted.\ (Please specify color and type if tinting is required.) -or-

\a. Glass shall be \1/4"\ \3/8"\ nominal thickness bent tempered float, \clear.\ \tinted.\ (Please specify color and type if tinting is required.) -or-

\a. Enclosures without center posts: Glass shall be two pieces 9/16" nominal thickness bent laminated float, \clear.\ \tinted.\ (Please specify color and type if tinting is required.) \

\3. Glass for Canopy:

\a. Glass shall be two pieces 9/16" nominal thickness laminated float with center divider, \clear.\ \tinted.\ (Please specify color and type if tinting is required.) (No tempered ceiling glass.)\ -or-

\a. Glass shall be one piece \11/16"\ \13/16"\ nominal thickness laminated float without center divider - clear or tinted. (Please specify color and type if tinting is required.) (No tempered ceiling glass.)\ \

2.03 EQUIPMENT

\A. Manual Speed Control

1. Precision machined steel casting with precision machined 100-1 gear train, steel brake drum, adjustable and replaceable brake blocks. Adjust speed to comply with

applicable Life Safety and governing codes. The peripheral speed shall not exceed 210 Feet Per Minute (70 Meters Per Minute).

(Note: A door with a canopy less than 3-1/8" high or a glass ceiling requires a floor mounted speed control.)

\a. Overhead Speed Control - Mount overhead in the minimum 3-1/8" high metal canopy with rubber isolation mounts and 1/8" thick insulation panel.\ -or-

\1.) Slide-A-Side Speed Control - Speed control with roller and steel track and retractable center shaft to allow bookfolded wings to be rolled to one side.\ \ -or-

\a. Floor Speed Control - Mount in steel cement case complete with removable cover plate:

1. Shape shall be \Rectangular.\ \Round.\

\2. Material shall be \Stainless steel.\ \Bronze.\ \Aluminum.\

\2. Material shall be \Stainless steel pan for terrazzo.\ \Stainless steel pan for granite flooring.\ \ \

\A. Automatic or Power Operated

1. Precision machined aluminum casting with precision machined gears, electric clutch and 1/8 hp 90V.D.C. motor drive. (Requires 4-1/2" minimum canopy height for overhead mount. Floor mounting not recommended.) Three position switch: Position 1- sensor activation start, Position 2 - continuous rotation at 4 rpm, and Position 3 - off.

2. Safety sensors: contact switches on the enclosure post (2), back pressure sensor and two push-to-slow buttons (and emergency stop button). \Leading edge safety beam mounted in canopy.\ \Heel contact switch mounted to leading edge of each bottom rail.\ \Dual range sensor mounted horizontally across each wing to detect objects 18" and again 6" from door.\ \The 18" range shall activate the voice announcement "Please step forward" and the 6" range shall turn off power to the door.\ (Note: Any option requires an increase in canopy height.)

3. Two lock bolt engagement detection switches, mounted in canopy.

4. A horizontal door rail installed at push bar height shall be used in lieu of the push bar. (Push bars are not recommended for automatic doors.)

5. Programmable "OASIS" Control Panel shall be mounted in the interior quadrant of the canopy. A 120V 20 amp dedicated circuit is required for the control panel.

\a. Access shall be provided to the motor drive train and to the control panel by this section.\

\a. Access shall be provided to the motor drive train and to the control panel under another section of the specifications.\

6. Signage: Signage shall be per current IRDA Safety Standards. \ \

\A. Security

1. Provide precision machined high grade cast iron helical bevel gear box meeting DIN 6 and AGMA 12 quality levels. Provide an electromagnetic brake and 1/4 horsepower 90 volt DC NEMA motor. "OASIS" programmable controller shall be hand-held for adjusting and programming by one technician. Contractor to ensure access to "OASIS" controller. Patented bookfold lock shall prevent inadvertent bookfold under normal operations; lock shall be tied to fire alarm for safety release. 120 VAC 20 amp service to canopy, hookup to fire alarm system, hook-up to card readers to be by Division 16 "Electrical" contractor.

2. Safety Sensors: Quarter post centered tape switches (4) shall be provided at each edge of enclosure wall with two lock bolt engagement detection switches.

3. Signage: Signage, log book, and quarterly inspection by a factory certified technician shall be as per current IRDA proposed ANSI Safety Standards. \

4. Pressure sensitive mats: Shall detect non-approved traffic. Door shall stop and activate voice annunciators. Two speakers shall be mounted in soffit.

5. Interior activation device:

\a. Push button start: Button switch shall be at accessible height and shall be labeled "Push-to-start." -or-

\a. Sensor start: Sensor device shall be motion detector mounted overhead to cover path of egress. -or-

\a. Card key start: Mounting bracket for card reader shall be mounted on right side on quarter post. Bracket shall include red and green indicator lights. \Card reader to be provided by Crane. \ \Card reader to be provided by Division 16 "Electrical" contractor. \

6. Exterior activation device:

\a. Push button start: Button switch shall be at accessible height and shall be labeled "Push-to-start." -or-

\a. Sensor start: Sensor device shall be motion detector mounted overhead to cover path of egress. -or-

\a. Card key start: Mounting bracket for card reader shall be mounted on right side on quarter post. Bracket shall include red and green indicator lights. \Card reader to be provided by Crane. \ \Card reader to be provided by Division 16 "Electrical" contractor. \

\7. Additional safety features:

\a. Heel contact switch on the leading edge of each bottom rail. Contact shall stop door and activate voice message.\ \

\b. Leading edge beam mounted in canopy: Interruption of beam shall stop rotation of door.

2.04 CURVED ENCLOSURE WALLS

\A. Metal and Glass, as indicated:

\1. Aluminum and glass, as detailed: Aluminum extrusions and breakformed sheet closely fitted with tight hairline joints. Tightly fit enclosure bases, removable for glazing. Aluminum reinforcing bar welded in place. Welds shall be on the unexposed surface, equally spaced, 8" maximum center to center. Exposed metal shall be dressed after welding to original finish. A 2" minimum clearance shall be maintained between the enclosure wall and wing for ease of operation and safety. \ -or-

\1. Stainless Steel and glass: Stainless steel sheet cut, formed and reinforced with stainless steel sheet and mild steel bar welded into place. Welds shall be equally spaced, maximum 8" center to center on unexposed surface. Exposed surfaces to be dressed after welding. Interior post to base connections shall be surface welded. Welds to be ground down, blended, and polished to match adjacent finish. Tightly fit snap-in enclosure bases, removable for glazing. A 2" minimum clearance shall be maintained between the enclosure wall and wing for ease of operation and safety.\ -or-

\1. Bronze (Muntz Metal): Bronze sheet cut, formed, and reinforced with galvanized sheet and mild steel bar welded into place. Welds shall be equally spaced, maximum 8" center to center on the unexposed surface. Exposed surface to be dressed after welding. Interior post to base connections shall be surface welded. Welds to be ground down, blended, and polished to match adjacent finish. Tightly fit snap-in enclosure bases, removable for glazing. A 2" minimum clearance shall be maintained between the enclosure wall and wing for ease of operation and safety.\ \

\A. Metal, as indicated:

1. Welded Construction: Reinforcing shall be welded into place. Welds shall be equally spaced, maximum 8" center to center on the unexposed surface. Exposed surface shall be dressed after welding. Screws, where required, shall be Phillips flat head, countersunk, equally spaced maximum 12" center to center, finished to match door. Use concealed fasteners wherever possible. Interior surface shall be reinforced with honeycomb panels for sound deadening and to prevent "oil canning."

\2. Aluminum: Aluminum sheet cut, formed, and reinforced with aluminum sheet and aluminum bar and honeycomb, as detailed.\ -or-

\2. Stainless Steel: Stainless steel sheet cut, formed, and reinforced with stainless steel, mild steel bar and honeycomb, as detailed.\ -or-

\2. Bronze: Bronze sheet cut, formed, and reinforced with galvanized sheet and mild steel bar, as detailed.\ \

2.05 WINGS

\A. Three - wing, as indicated\

\A. Four - wing as indicated\

1. Wings shall be \narrow stile\ \wide stile\ \tempered glass style\ \with manufacturers standard dimensions\ \with custom dimensions\ \ as detailed. \Include \muntin bars\ \12" high bottom rails\ \ as detailed.\

\2. Aluminum: Provide extruded aluminum with closely fit hairline joints, snap-in glass stops. Corners shall be closely fitted and bolted with tight hairline joints.\ \ -or-

\2. Stainless Steel: Provide cut and formed stainless sheet welded to mild steel bar and to formed and welded stainless steel sheet. Welds to be on the unexposed surface, equally spaced maximum 8" center to center. Exposed metal to be dressed after welding to its original shape. Glass stops to be solid bar, closely fitted and removable for glazing. All four corners of each wing shall be welded with welds ground down, blended, and polished to match adjacent finish.\ \ -or-

\2. Bronze: Provide cut and formed bronze sheet welded to mild steel bar and to formed and welded galvanized reinforcing. Welds to be on the unexposed surface, equally spaced maximum 8" center to center. Exposed surface to be dressed after welding to its original shape. Glass stops to be solid bar, closely fitted and removable for glazing. All four corners of each wing shall be welded with welds ground down, blended, and polished to match adjacent finish.\ \

2.06 CANOPY

\A. Metal, as indicated:

1. Facia to soffit welds to be equally spaced on the unexposed surface, maximum 3" center to center. Exposed surface to be dressed after welding to its original level. Canopy cover shall be of the same material and finish as the door, screwed into place with Phillips oval head sheet metal screws, equally spaced 12" maximum center to center. Interior metal reinforcing to be \welded in place.\ \held in place with two-sided tape.\ \Interior surface shall be reinforced with honeycomb panels for sound deadening and to prevent "oil canning." \

\2. Aluminum: Provide extruded and sheet aluminum reinforcing. Reinforcing blocks for bolting the canopy to the enclosure wall shall be aluminum.\ -or-

\2. Stainless steel: Provide stainless steel sheet. Reinforcing shall be stainless steel. Reinforcing blocks for bolting the canopy to the enclosure wall shall be mild steel.\ -or-

\2. Bronze: Provide bronze sheet. Reinforcing shall be galvanized steel. Reinforcing blocks for bolting the canopy to the enclosure wall shall be mild steel.\

\A. Glass Ceiling, as indicated:

1. Provide \solid bar\ \or fabricated\ deck ring of \aluminum\ \stainless steel\ \bronze\ and screw applied glass stops. Glass stop screws shall be countersunk, equally spaced maximum 10" center to center, Phillips oval head machine screws. Fasteners concealed under glass shall be Phillips flat head machine screws and exposed fasteners, where required, shall be Phillips oval head machine screws. Pivot bearing to be mounted in the \center muntin\ \hole in glass.\ This feature requires the speed control to be floor mounted.

2.07 BOOKFOLD DEVICE

A. Chilled cast, precision machined bronze hangers and discs finished to match door. Adjustable spring tension set in field by installer to comply with applicable Life Safety and governing codes.

(Purpose: To allow the individual door wings to bookfold like leaves of a book when pressure is applied and rotation is restricted.)

(History: In 1942 five hundred people were trapped in the Coconut Grove Restaurant fire in Boston. Since such time all revolving doors in the USA must have a bookfold device.)

B. Mechanism: Wings shall be held in radial positions by means of stainless steel balls, engaging in top and bottom disc of each wing. Excess pressure shall rotate balls from socket and allow each wing to be bookfolded. Tension shall be adjustable.

C. Center shaft shall be one-piece type with housing to fit contour of wing, with felt seal mounted in wing stiles providing positive air lock at center of door.

2.08 PUSH BARS

\A. The push bars shall be 1/2" x 1-1/2" \aluminum\ \stainless steel\ \bronze\ bar finished to match the door (one per wing), mounted with through bolts. (Not supplied for Automatic or Security Doors.)\ -or-

\A. The push bars shall be 1" diameter bars of the same material and finish as the door wings, mounted with concealed fasteners, or custom push bars as detailed. (Not supplied for Automatic or Security Doors.)\ -or-

\A. Horizontal Muntin Bars in each wing at push bar height in lieu of push bar. Required on Automatic or Security Doors. Optional for Manual doors.\ -or-

\A. Flush mounted push plate per detail in lieu of push bar for \Manual\ \Automatic\ \Security\ Doors. \

2.09 BUMPER

A. A 5/8" diameter x 2 -1/8" rubber tipped bumper, finished to match the door. One per wing installed on the top rail - to separate wings when bookfolded.

2.10 LOCKS

\A. Two special revolving door type deadlocks, finished to match door - cylinder to be furnished and installed by Section 08700 "Finish Hardware". Surface mounted \on top rail\ \on bottom rail with dust proof strikes.\ \ -or-

\A. For "Herc" style wings: Two concealed deadlocks. \Top rail mounted\ \bottom rail mounted.\ \

2.11 PIVOT BEARING

A. Pivot bearing, opposite the speed control, to allow free rotation of the center shaft.

\1. Floor Pivot Assembly shall consist of bearing, lubricant and upper and lower retainers. The bearing shall be a ball thrust type bearing. The lubrication fitting shall be accessible without dismantling door. Upper and lower retainers shall be plastic castings using PTFE lubricated, glass fiber reinforced nylon castings.\ -or-

\1. Overhead Pivot Assembly shall consist of sealed ball type radial bearing firmly mounted in place and accessible.\

2.12 WEATHERSWEEP

\A. Black EPDM and woven felt on wings to engage the enclosure side walls and ceiling. EPDM only to engage the floor.\

\A. Nylon brush-type weathersweep.\

2.13 FASTENERS

A. All exposed fasteners shall be finished to match doors.

\2.14 CEILING LIGHTS (Inapplicable for Glass Ceilings)

\A. Provide two Crane special ceiling lights including white painted metal housing for fluorescent fixture and white painted ballast, light lens with flush mounted snap-in trim ring of the same material and finish as the soffit. Lamps required, FC8T9, and hook-up are not supplied by Crane.\

\A. Provide cut outs in soffit for down lights, provided as specified under another section, as shown in details.\

\A. Provide two Incandescent light - each with 2 bulbs with sockets and mounting angle and lens. Mounting by installer. Electrical hook-up by Division 16 "Electrical". Lens installed with tape.\ \

PART 3 - EXECUTION

3.01 EXAMINATION

A. Installer shall examine area and conditions under which revolving doors are to be installed. Notify the contractor in writing of conditions detrimental to the proper and timely completion of the work. The finished floor shall be smooth and level and the adjacent work in its proper place before the door shall be installed.

3.02 INSTALLATION

A. Comply with the manufacturer's specifications, recommendations, installations manual and approved shop drawings.

B. Set units plumb and level. Set the enclosure base in sealant and anchor securely in place. Provide a full size floor template to facilitate installation.

C. Bolt canopy to the enclosure wall in field.

D. Finished surfaces shall be cleaned and left free of imperfections. All protective tape and labels shall be removed.

3.03 ADJUST AND CLEAN

A. Adjust speed control and bookfold tension to comply with all applicable Life Safety and governing codes.

B. Advise contractor of protective treatment and other precautions required through the remainder of the construction period to insure that the revolving doors will be without damage or deterioration (other than normal weathering) at the time of acceptance.

3.04 MAINTENANCE

A. Maintenance: All moving parts shall be kept clean and lubricated, bookfold tension must be tested and adjusted annually. Weathersweeps must be inspected and replaced every two to three years to insure proper operation.

\B. Bronze requires annual maintenance. A professional metal finisher may be retained by the owner for the annual maintenance. Touch-up and annual maintenance is not included in this section.\

(Proposed IRDA/ANSI Safety requirements require that a log be maintained by the owner for all automatic and/or security doors. They also require inspection by factory certified maintenance personnel, \biannually for automatic doors.\ \ quarterly for security doors.\)