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[ARCHITECTURAL FIRM]
[PROJECT NAME]

CRANE 2000A
AUTOMATIC REVOLVING DOOR

SECTION 08 42 33 – REVOLVING DOOR ENTRANCES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes automatic revolving door entrances.

B. Related Requirements:
1. Section 03 3000 "Cast-in-Place Concrete" for blockouts for recesses required for revolving door entrance.Section 05 50 00 "Metal Fabrications" for overhead supports that attach revolving door entrance framing to structure.
2. Section 08 41 13 "Aluminum-Framed Entrances and Storefronts" for adjacent aluminum entrance doors and storefront framing.
3. Section 08 44 13 "Glazed Aluminum Curtain Walls" for adjacent glazed aluminum curtain wall framing.
4. Section 08 88 00 "Glazing" for general requirements for installation of glass units in revolving door entrances.
5. Division 26 electrical power section for wiring requirements for revolving door entrances.

1.2 REFERENCE STANDARDS

A. American Architectural Manufacturers Association (AAMA)
1. AAMA 611 Voluntary Specification for Anodized Architectural Aluminum

B. American Association of Automatic Door Manufacturers (AAADM)
1. AAADM Certification Training Program

C. ASTM International (ASTM)
1. ASTM A 36 / A36 Standard Specification for Carbon Structural Steel.
2. ASTM A 240 / A 240M Standard Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
3. ASTM A 666 Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar
4. ASTM B 209 Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
5. ASTM B 221 / ASTM B 221M Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
6. ASTM C 1048 Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass
7. ASTM C 1172 Standard Specification for Laminated Architectural Flat Glass
8. ASTM E 283 Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
9. ASTM E 330 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls By Uniform Static Air Pressure Difference.

D. Builders Hardware Manufacturers Association (BHMA)

1. BHMA A156.27 Power and Manual Operated Revolving Pedestrian Doors

E. Code of Federal Regulations
   1. 16 CFR 1201 Safety Standard for Architectural Glazing Materials

F. International Code Council (ICC)
   1. ICC A117.1 Accessible and Usable Buildings and Facilities (ANSI)

G. National Fire Protection Association (NFPA)

   1. NFPA 70 National Electric Code.
   2. NFPA 101 Life Safety Code.

1.3 ADMINISTRATION

A. Coordination:
   1. Recesses: Coordinate size and location of recesses in floor construction for revolving door entrance components including anchorages for frames and supports.
   2. Anchorages: Furnish setting drawings, templates, and directions for installing anchorages that are to be embedded into flooring.

B. Pre-installation Conference: Conduct conference at Project Site with Installation team.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of revolving door entrance specified.
   1. Include details, material descriptions, dimensions and profiles, and finishes.
   2. Include rated capacities, operating characteristics, electrical characteristics, and specialties and accessories.

B. Shop Drawings: For revolving door entrances.
   1. Include plans, elevations, sections, attachment details, dimensions, required clearances, methods of field assembly, and location and size of each field connection.
   2. Indicate enclosures, speed control units, and components.
   3. Include diagrams for power, signal, and control wiring.

C. Samples for Verification: For each exposed component including hardware, for each color and finish selected, as required by architect.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified installer.

B. Field quality control reports.

C. Warranty: Sample of unexecuted manufacturer warranty.

D. Manufacturers product information and applicable sustainability program credits that are available towards a LEED rated product certification.
   1. Credit MR 4.1 and 4.2: Manufacture's or fabricator's certificate indicating percentage of post-consumer recycled content by weight and pre-consumer recycled content by weight for each product specified under this section.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For revolving door entrances, to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: Experienced Installer equipped and trained by manufacturer for installation and maintenance of units required for this Project, and who employs a Certified Inspector.

B. Certified Inspector Qualifications: Certified by AAADM.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Package revolving door entrance components individually with fasteners and installation templates; label and identify each package with door opening designation corresponding to Door Schedule.

B. Store components in weather-protected area in manufacturer's unopened packaging until ready for installation.

C. Protect materials from exposure to weather. Do not deliver until Rough Opening is Complete and Ready for Installation.

1.9 WARRANTY

A. Special Manufacturer's Warranty: Standard form in which manufacturer agrees to repair or replace components of revolving door entrances that demonstrate deterioration or faulty operation due to defects in materials or workmanship under normal use within warranty period specified.

1. Fabrication Warranty Period: One year from date of Substantial Completion.
2. Auto Drive and Sensor Warranty: One Year
3. Finish Warranty Period: Anodized finishes: Five (5) Years, Painted Finishes: Five (5) Years **[Ten (10) and Twenty (20) year finish warranties available]**

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Basis-of-Design Product: Provide revolving door entrances manufactured by dormakaba Crane Revolving Door, dormakaba, Lake Bluff, IL; (844)-SPEC-NOW (844)773-2669; email: **specnow.us@dormakaba.com** ; website: www.dormakaba.us

B. [Substitutions: Requests for substitution and product approval in compliance with the specification must be submitted in writing and in accordance with the procedures outlined in Division 1, Section "Substitution Procedures". Approval of requests is at the discretion of the architect, owner, and their designated consultants.]

C. [Substitutions Not Permitted]

D. Source Limitations: Obtain revolving door entrance components through one source from a single manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. Performance Standard: Comply with ANSI A156.27.

B. Opening Force, Maximum Turning Speed, Emergency Breakout, and Entrapment-Prevention Force: Comply with cited BHMA standard and requirements of authorities having jurisdiction.

C. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201.

D. Air Infiltration: Maximum air leakage through fixed glazing and framing areas of 1.25 cfm/sq. ft. (6.4 L/s x sq. m) of fixed entrance-system area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa).

2.3 REVOLVING DOOR ENTRANCES

A. Automatic Revolving Door Entrances with Breakout: Manufacturer's standard **[three-wing]** four-wing automatic revolving door entrances, including center shaft, wings, enclosure walls, canopy, glass and glazing, controls, hardware and accessories as required for a complete and functional installation of sizes and configuration indicated on Drawings.
1. Basis of Design: **dormakaba Crane 2000A Series**.
2. Unit Size and Attachment: As indicated on Drawings.
3. Automatic revolving door operation: initiation and activation by sensor.
4. Drive Unit: The door is equipped with heavy duty gear/motor drive assembly, activation and safety detection network, and solid state microprocessor based control panel. The drive unit consists of heavy duty Helical Bevel Gear Reducer driven by a 1/3 HP AC motor, Pulse Encoder, Index Sensor and Slip Ring.
5. Curved Enclosure Walls: Manufacturer's standard, with 1-3/4-inch- (45-mm-) thick tubular framing members.
6. Book-fold Mechanism Device: Emergency egress door leaves are configured with door hardware to permit collapse under adjustable pressure of 60 to 130 lbs (265 to 800 N) applied to outer stile edge.
    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.
    b. Mechanism: Wings are held in radial positions by means of steel balls, engaging in top and bottom disc of each wing. Excess pressure shall rotate balls from socket and allow each wing to be book-folded. Tension shall be adjustable.

2.4 ENTRANCE COMPONENTS

A. Center shaft shall be one-piece type Solid Steel with Center Shaft Cover to be Aluminum Extrusion Finished to Match the Door And fit contour of wing, with felt seal mounted in wing stiles providing positive air lock at center of door.
1. Enclosure

a. **[Formed & Welded Bronze] [Formed & Welded Stainless steel] [Extruded Aluminum]** Frames: Finish metal cut, formed and reinforced, and fitted over metal sub-frame fully welded with exposed finishes dressed after welding. Enclosure bases removable for field glazing.
b. Post and Base: Interior post to base connections surface welded, ground, blended, and polished to match adjacent finish. Tightly fit snap-in enclosure bases, removable for glazing.
c. Curved Enclosure Glass: 7/16" Clear laminated glass.

Contract SPEC NOW for custom wing construction options.

2. Wings, Stile and Rail Metal-Framed: Extruded aluminum **[Clad bronze] [Clad stainless steel], finished to match enclosure frame, with [narrow] [medium] Wide** stiles, Herculite & Patch Fit.

Canopy customizable up to 3 feet. Contact SPEC NOW for more information.

3. Canopy Metal: Aluminum sheet, 0.125-inch- (3.18-mm-) thick fully formed and welded **[Formed and welded Stainless Steel] [Fully formed and welded Bronze** with fascia [3-1/8 inch (79.4 mm)] high, finished to match enclosure frame**]**

4. Locks: Mortised deadbolt locks, one each located in two adjacent wing bottom rails for interior locking into floor.

Contact SPEC NOW for further information on full floor grates

B. **Welded Floor Grilles: Concentrically Curved quarter quadrant (90 degree section) radius Grilles fabricated from concentrically rolled circles of stainless steel are to be welded and formed from 304 stainless steel ¼" x 1" solid bars and polished to a Satin finish. Complete with recessed floor pan welded from 12-gauge stainless steel with an available drainage fitting. (see drawing for details).**

C. Canopy Ceiling Lights: Manufacturer's standard recessed LED fixtures – Two (2) Per Door.

2.5 SAFETY CONTROL DEVICES

A. Safety Control Devices:

1. Provide primary and/or secondary safety devices located vertically at the entrances and force-sensitive door leaves. All devices shall be incorporated as follows:
   a. Vertical Safety Sensors (enclosure wall bumpers):
      1) Two (2) total compressible safety switches on the outer drum wall entrances. Activation shall cause the door to stop and reverse.
   b. Force-Sensitive Door Leaves (heel guard):
      1) When an obstacle prohibits or slows rotation of the door, (at a value higher than the pre-set resistance of the door) rotation will stall and cease for 3 seconds. If no obstacle is detected after 3 seconds, the rotation of the door will resume.
   c. Emergency Stop:
      1) The revolving door shall include one (1) emergency stop push button. When the button is pressed, the rotation shall stop.

d. Slow Speed Operation:
   1) When need for means of slower egress, a push to slow button shall be engaed to slow the rotation of the door by ½ RPM. Push to slow button shall be located adjacent to the emergency stop button in accordance with AAADM.

B. [Emergency Operation

1. Loss of power and/or fire alarm input will initiate the release of the electro-magnetic lock allowing for the door panels to be manually pushed to the emergency egress position (book-fold position).]

2.6 ACCESSORIES

A. Lock Cylinders: As specified in Section 08 71 00 "Door Hardware."

B. Weather Seals: Manufacturer's standard rubber and felt **[horse hair]** sweeps at wing lead edges and tops, and rubber at bottom.

2.7 POWER REQUIREMENTS

A. Electrical Characteristics:
   1. Voltage: 120 volts, single phase, 60 Hz.
   2. Refer to Division 26 electrical sections for wiring connections.

2.8 MATERIALS

A. Aluminum Extrusions: ASTM B 221; 6063 alloy, T5 temper, 0.125 inch (3 mm) minimum thickness except stops and canopy covers 0.0625 inch (1.58 mm).

B. Aluminum Sheet: ASTM B 209; 5005 alloy, H15 or H34 temper, 0.080 inch (2 mm) minimum thickness.

C. Stainless Steel: ASTM A 240/A 240M; Type [304] [316], rollable temper, 0.060 inch (1.5 mm) minimum thickness.

D. Bronze Sheet: ASTM B 455, architectural bronze alloy **[No. 220 Commercial] [No. 280 Muntz] [nickel silver]**, 0.125 inch (3 mm) minimum thickness.

E. Steel Sections: ASTM A 36; shapes to suit mullion sections, galvanized.

F. Sheet Steel: ASTM A 653/A 653M; galvanized to G90 (Z275), 0.106 inch (2.6 mm) minimum thickness.

G. Fasteners and Accessories: Corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

H. Glass Panels, General: Provide glass panels that comply with 16 CFR 1201, Category II requirements for safety glazing. Permanently mark glazing with certification label of the SGCC.

1. Enclosure Bent Glass Panels: 7/16" Clear Laminated glass units, [11.1 mm] [14.3] thick, consisting of two plies of 5 mm thick fully-tempered glass with 0.060 mil PVB interlayer **[9/16" Also Available].**
2. Framed Wing Glass Panels:
   a. ¼" (Stile & Rail)
   b. [3/8" (Stile & Rail [required for vertical push bar])]
   c. [½" Stile & Rail, herculite]
3. Tint Color: **[As selected by Architect from manufacturer's full line] [Match selected tint color of adjacent building glass] For Enclosure and Canopy – Clear Glass is recommended for Wings (Safety Recomendation).**

2.9 FINISHES

Contact SPEC Now for custom finish options. Choose type of finish and type color and/or metal.

A. Comply with NAAMMs "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Rotating and Curved Enclosures: ***(Typically, same finish on both enclosures)***
1. Anodized Aluminum Finishes:
   a. Clear AA M12C22A41 Anodized Class 1
   b. **[Dark] [Medium] [Light] Bronze, [Black] [Champagne**] AA M12C22A44 Class1
   c. Custom Anodized Finish as selected by architect.

2. Painted and or Powder Coat Finish:
   a. [Powder coat painted to match architects sample.]
   b. [Kynar finish, [2 coat] [3 coat], to match architects sample.

3. Clad Finish: Cladding shall be factory finished at manufacturers facility using .36 thick metal cladding panel surface utilizing tesa® 4965 tape. Heat and humidity resistant, the specialized adhesive tape is comprised of a polyester backing coated on both sides with a transparent modified acrylic adhesive and a tensile strength of 20 N/cm. tesa® 4965 is recognized per UL standard 969. UL file: MH 18055.
   a. [Stainless Steel #4 Satin]
   b. [Stainless Steel #6 Satin]
   c. [Stainless Steel #7 Mirror Polished]
   d. [Custom Stainless as selected by the architect.]
   e. [bronze #4Satin]
   f. [bronze #6 Satin]
   g. [bronze #7 Mirror Polished]
   h. [US10B statuary finish]
   i. [Special Bronze as selected by the architect]

Over 60 available configurations and variations in design to choose from. Please contact SPEC NOW for customized options and more information.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine revolving door entrance opening to determine if work is within revolving door entrance manufacturer's required tolerances and ready to receive work.

1. Verify recesses and supplemental framing comply with requirements on approved shop drawings.

2. Verify electrical power and control connections are properly located and of correct characteristics.

B. Proceed with installation once conditions affecting installation and performance of revolving door entrance meet manufacturer's requirements.

3.2 REVOLVING DOOR ENTRANCE INSTALLATION

A. General: Comply with revolving door entrance manufacturer's written installation instructions and approved shop drawings.

B. Install revolving door entrances after other finishing operations have been completed.

C. Set units level, plumb, and true to line, with uniform joints. Maintain assembly dimensional tolerances, aligning with adjacent Work.

D. Secure revolving door entrance components to building structure and supports as indicated on approved shop drawings, utilizing approved fasteners and spacing.

E. Install glass and enclosure panels in accordance with Section 088000 "Glazing."

F. Install perimeter type sealant, backing materials, and to installation requirements in accordance with Section 079200 "Joint Sealants."

G. Complete connections to electrical power, lighting, and controls in accordance with requirements of respective Division 26 and Division 28 Sections.

H. Install door panels, with operators and controls. Fit, align, and adjust assembly for smooth operation.

3.3 ADJUSTING

A. Adjust operating components and hardware to produce smooth operation and tight, uniform fit.

B. Adjust revolving door entrances to required timing and force.

C. Adjust latches and locks for smooth operation.

D. Replace damaged components and accessories.

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AUTOMATIC REVOLVING DOOR

3.4 CLEANING

A. Clean finished surfaces in accordance with manufacturer's written instructions. Do not use cleaning agents or methods not approved by manufacturer.

B. Clean exposed metal surfaces to factory new appearance.

END OF SECTION 084233