

Comet All-Glass Revolving Door

Division 8 – Door and Windows

Section 08 42 33 – Revolving Doors



PART I – General

1.01 SECTION INCLUDES

- A. This section covers the furnishing and installation of a complete Manual Revolving Door System. Provide complete system that has been fabricated and tested for proper operation. It includes curved sidewalls, canopy, ceiling, door wings, hardware, glass, speed control and emergency collapsing mechanism as required for installation.

1.02 RELATED SECTIONS

- A. Section 07915 - Sealants, Caulking and Seals
- B. Section 08400 - Entrances and Storefronts
- C. Section 08710 - Door Hardware
- D. Section 08810 - Glass and Glazing
- E. Section 09600 - Flooring
- F. Section 16123 - Electrical Supply and Termination

1.03 REFERENCES

- A. ANSI/BHMA A156.27 – American National Standard for Power and Manual Operated Revolving Pedestrian Doors
- B. ANSI Z97.1 - American National Standard for Safety Glazing Materials used in Buildings
- C. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum
- D. AAMA 2604 - Voluntary specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels
- E. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels
- F. ASTM A 480/A 480M - Standard Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet, and Strip
- G. ASTM B 209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
- H. ASTM B 221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes
- I. ASTM A 36 / A36 Standard Specification for Carbon Structural Steel
- J. 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

1.04 COORDINATION

- A. Recesses: Coordinate size and location of recesses in floor construction for revolving door entrance components including anchorages for frames and supports.
- B. Anchorages: Manufacturer shall furnish drawings and directions for installing anchorages that are to be embedded into concrete.
- C. Layout Template (Optional): Manufacturer shall provide precision cut floor layout template.

1.05 QUALITY ASSURANCE

- A. Manufacturer shall be a company specializing in the supply of manual revolving doors with a minimum of ten (10) years of experience.
- B. Installer shall supply a factory-trained supervisor during installation of the door.
- C. All Revolving Doors must be pre-erected and tested in factory prior to shipment.

1.05 SUBMITTALS

- A. Manufacturer shall submit project specific shop drawings and finish samples as required.
- B. Manufacturer shall indicate pertinent dimensions, general construction, component connections and locations, and anchorage methods and locations.
- C. Manufacturer shall provide sample of unexecuted manufacturer warranty.
- D. Manufacturer shall provide test reports proving that they have tested and met the requirements of "ASHRAE" air infiltration requirements "90A" and "90.1" per the "ASTM E-283" testing parameters.

1.06 CLOSEOUT SUBMITTALS

- A. Manufacturer shall submit appropriate operation and maintenance manual.
- B. Manufacturer shall submit copy of the revolving door "As-Built" shop drawings.
- C. Manufacturer shall submit copy of the executed revolving door warranties.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Manufacturer shall deliver materials to job site in manufacturer's packaging undamaged, complete with installation and operating manuals.
- B. Manufacturer shall store materials off ground, under cover, protected from weather and construction activities.

1.08 WARRANTY

- A. International Revolving Door warranties its doors against defects in material and workmanship for a period of twelve (12) months from the date of shipment of the product. This warranty excludes glass breakage, normal wear on finishes or damage that occurs due to abuse, misuse or acts of God.
- B. International Revolving Door warranties its overhead speed control for a period of one-hundred and twenty (120) months from the date of shipment of the product. This warranty excludes normal wear on finishes or damage that occurs due to abuse, misuse or acts of God. This warranty is void if work is performed on speed control by a non-factory authorized technician.
- C. International Revolving Door warranties its floor speed control for a period of sixty (60) months from the date of shipment of the product. This warranty excludes normal wear on finishes or damage that occurs



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due to abuse, misuse or acts of God. This warranty is void if work is performed on speed control by a non-factory authorized technician.

- D. International Revolving Door warrants its electronic components for a period of twelve (12) months. This warranty excludes damage that occurs due to abuse, misuse, water damage or act of God. This warranty is void if work is performed on electronic components by a non-factory authorized technician.
- E. Finish Warranty Period: Anodized finishes: Five (5) years, painted finishes: Five (5) years **(Ten (10) and Twenty (20) year finish warranties available).**

PART 2 – Materials and Products

2.01 MANUFACTURER

- A. Comet All-Glass Revolving Door
Manufactured By: International Revolving Door
2138 N. Sixth Ave, Evansville, IN 47710.
(812) 425-3311 Homepage: <http://www.internationalrevolvingdoor.com/>
- B. Limitations: Obtain revolving door entrance components through one source from a single manufacturer.

2.02 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 by 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)
- E. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70 under UL 325

2.03 DOOR CONSTRUCTION

- A. Basis of Design: International Revolving Door Comet Revolving Door
- B. Extruded Aluminum Curved Enclosure Walls: Shall have a custom specified diameter no smaller than 6'-6" and be manufactured from four (4) extruded aluminum posts, and two (2) 4" extruded aluminum bottom rails.
 - 1. Enclosure walls shall be fastened and fit with tight hair line butt-joints.
 - 2. Enclosure wall shall be 1-5/8" thick.
 - 3. Enclosure walls shall have 4" or 5" mullions (Optional).
 - 4. Enclosure walls shall have a 1" top rail to support ceiling glass.
 - 5. Enclosure wall shall have a 4" Sightline.



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- C. Formed Aluminum Bronze and Stainless Steel Curved Enclosure Walls: Finish metal cut, formed and reinforced over stainless steel sub-frame. Welds on exposed surfaces to dressed and finished after welding. Bottom rail of walls to have removable glass stop for field glazing.
1. Enclosure substructure to be made and reinforced with stainless steel for corrosion resistance.
 2. Bronze and stainless steel enclosure walls to be fully welded assembly.
 3. Aluminum enclosure walls shall be fastened and fit with tight, hair line, butt-joints.
 4. Fabricate revolving door individual assemblies using reinforced and face welded surface joinery where applicable, with all welds dressed flush and finish blended to match adjacent surfaces (Per American Welding Society standards).
 5. Enclosure walls shall have a 1" top rail to support ceiling glass.
 6. Where bends in steel forming are required, all stretch lines and die marks shall be refinished to blend with adjacent surfaces.
 7. Enclosure wall shall be 1-3/4" thick.
- D. Free-standing Design: Free Standing Design doors have a 1-1/2" structural steel square bar running from the sub-floor to the canopy in each wall post and mullion (Optional).
- E. Canopy: The canopy shall consist of one (1) or two (2) pieces of glass. Two (2) piece canopies shall have a metal transom panel finished to match.
1. Canopy glass shall be supported with a 1" top rail on the enclosure walls.
 2. Canopy glass shall be fastened with spanner caps finished to match.
 3. Canopy glass shall be laminated safety glass and have a minimum 13/16" thickness.
 4. Canopy glass shall be tempered safety glass and have a minimum 13/16" thickness (Optional).
- F. Comet (Herculite) Door Wings: Three (3) or four (4) door wings as designed and manufactured of Comet design extrusions. Door wings must utilize removable rubber and felt weatherstripping on two sides, and rubber on one side. The door wings will have no inside or outside stile, and shall have an outside vertical airlock retainer. Door rails shall have a minimum 3-3/4" custom height. Door wings must be capable of folding forward or backward allowing for emergency egress. Door wings are available in aluminum, clad bronze or clad stainless steel.
1. Wing extrusions shall have a minimum thickness of .125".
 2. Wing glass shall be 1/2" tempered glass.
 3. Where bends in steel forming are required, all stretch lines and die marks shall be refinished to blend with adjacent surfaces.
- G. Saturn Door Wings (Optional): Three (3) or four (4) door wings as designed and manufactured with a stainless steel tube welded substructure. Door wings must utilize removable rubber and felt weatherstripping on two sides and rubber on one side. The inside stile shall be removable and have a custom width no less than 1-3/4", the outside stile shall be a custom width no less than x 2-1/2", and the bottom and top rail shall be a custom height no less than 3". Door wings must be capable of folding forward or backward allowing for emergency egress. Door wings are available in aluminum, bronze or stainless steel.
1. Fabricate revolving door individual assemblies using reinforced and face welded surface joinery for bronze and stainless-steel door wings, with all welds dressed flush and finish blended to match adjacent surfaces (Per American Welding Society standards).
 2. Aluminum wings shall have fitted, hair line, butt joints.



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3. Where bends in steel forming are required, all stretch lines and die marks shall be refinished to blend with adjacent surfaces.
 4. Wing glass shall be ¼" tempered glass.
- H. Saturn S Narrow Stile Door Wings (Optional): Three (3) or Four (4) door wings as designed and manufactured of narrow stile aluminum extrusions and reinforced with internal aluminum door corners for strength. Door wings must utilize removable rubber and felt weather stripping on two sides and rubber on one side. The inside stile shall be 1-3/4" x 1-3/4", the outside stile shall be 1-3/4" x 2-1/2", and the bottom and top rail shall be 1-3/4" x 3". Door wings must be capable of folding forward or backward allowing for emergency egress. Door wings are available in clad bronze or stainless steel.
1. Where bends in steel forming are required, all stretch lines and die marks shall be refinished to blend with adjacent surfaces.
 2. Door wings shall have a 4" sightline.
- I. Fasteners: No visible fasteners shall be used except those necessary for the application of manufacturer's hardware, and glass molding. Fasteners shall be corrosion-resistant, non-staining, non-bleeding, and compatible with adjacent materials.

2.04 EQUIPMENT

- A. In-Floor Speed Control: attaches to the bottom disc of the center rotating shaft with a stainless-steel speed control stub shaft plate and limits the rotation speed of the door to a preset RPM not to exceed 12 revolutions per minute. Operating in an oil bath, the centrifugal braking unit can be adjusted for lower maximum speeds to meet NFPA, BOCA requirements.
1. The overhead speed control device shall engage at 10 rpm and limit the turning speed to 12 rpm.
 2. The speed control shall have a 100-1 gear ratio and must be designed to prevent rapid acceleration.
 3. The speed control housing shall be cast iron.
 4. The speed control shall have a stainless-steel stub shaft plate that mounts to the speed control.
- B. Emergency Collapsing Mechanism: Precision-engineered door hangers and disks that allow the door wings to be collapsed, or folded, and stored in a book-fold position. Collapsing mechanism shall permit the wings to fold to emergency exit position allowing a minimum aggregate width of 36 inches. Pressure setting shall be capable of being adjusted from 60 pounds to a maximum setting of 220 pounds. The adjusting device shall be accessible without removal of wings, center shaft or discs. Pressure setting shall be preset and tested in the factory and shall only be adjusted in the field to meet the specific needs of the building.
1. Door wings are held in radial positions by means of self-lubricating plungers, engaging in the top and bottom disc of each wing. Excess pressure shall rotate plunger from disc "V-groove".
 2. The hangers will have two (2) replaceable bronze guide pins.
- C. Lights (Optional): Provide LED lights embedded in overhead metal canopy transom (Requires two (2) piece canopy with metal canopy transom and a 110-120 VAC power service from above, by others).

2.05. HARDWARE



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- A. Adjusting Screw: Bronze screw used to adjust the pressure required to book-fold rotating wings.
- B. Bumpers: Rigid, architectural bronze and rubber-tipped bumper located on the top door rail of each door wing to prevent door wings from contacting one another when in the book fold position; (1) per wing. Bumpers are available in the following finishes:
1. #4 Satin Brushed Bronze or Chrome
 2. #8 Polished Mirrored Bronze or Chrome
 3. #4 Statuary Bronze (Optional)
 4. Painted to Match (Optional)
- C. Center Shaft: Steel center shaft shall connect the speed control and floor pivot using the stainless-steel pivot pin.
- D. Center shaft Housing: Extruded center shaft housing shall be of aluminum alloy 6061-T6 per ASTM B-221 and shall cover the steel center shaft. Center shaft housing shall have felt pile providing positive air lock at cent of door.
- E. Discs: Precision machined disc from bronze casting, mounted on center shaft that receives the hanger breakaway mechanism; two (2) per center shaft. The Disc face shall be 1-1/2" thick and comes in the following finishes:
1. #4 Satin Brushed Bronze or Chrome
 2. #8 Highly Polished (mirror finish) Bronze or Chrome
 3. #4 Statuary Bronze
 4. Painted to Match (Optional)
- F. Floor Grates (Optional): Stainless Steel embed frame in the radius of the door. Designed for recessed mats and to provide a smooth transition between flooring. If used, this ring is required to be installed in the floor prior to the installation of the door.
- G. Guide Pin: Bronze pin that connects the hanger to the disc on the center shaft; (2) per hanger.
- H. Hanger: Precision machined hanger from bronze casting that mounts the rotating wing to the disc on the center shaft; two (2) per rotating wing. The hangers shall be of 1/8" minimum thickness, hangers are available in the following finishes:
1. #4 Satin Brushed Bronze or Chrome
 2. #8 Highly Polished (mirror finish) Bronze or Chrome
 3. #4 Statuary Bronze
 4. Painted to Match
- I. Pivot: Floor mounted under center shaft to provide smooth rotation. Must be of teflon filled acetyl or similar material, resilient, self-lubricating, and have a replaceable snap-in bushing. Overhead pivot available with in-floor speed control.
- J. Horizontal Push Bars: Provide 1" diameter round horizontal push bar; one (1) per wing. Push bars available in aluminum, stainless steel, or architectural bronze. Push bars are available in the following finishes:



1. #4 Satin Brushed Bronze or Stainless Steel
 2. #8 Highly Polished (mirror finish) Bronze or Stainless Steel #4 Statuary Bronze
 3. Anodized to Match
 4. Painted to Match
- K. Vertical Push Bars (Optional): Provide 1" diameter round full length push bar; one (1) per wing. Push bars available in aluminum, stainless steel, or architectural bronze. Push bars are available in the following finishes:
5. #4 Satin Brushed Bronze or Stainless Steel
 6. #8 Highly Polished (mirror finish) Bronze or Stainless Steel #4 Statuary Bronze
 7. Anodized to Match
 8. Painted to Match
- L. Custom Push Bars (Optional): Per Architects specified manufacturer
- M. Surface Applied Locks: Precision machined, architectural bronze 2" x 3-11/16" surface-mounted deadbolt locks with removable, keyed cylinders that lock into the ceiling or floor on the two interior door wings; two (2) per revolving door. Locks available in the following finishes:
1. #4 Satin Brushed Bronze or Chrome
 2. #8 Highly Polished (mirror finish) Bronze or Chrome
 3. #4 Statuary Bronze
 4. Painted to Match (Optional)

2.06 POWER REQUIREMENTS

- A. 110-120 volts, single phase 60 HZ

2.07 MATERIALS/FINISH

The following materials and finishes are available for the enclosure walls, rotating door wings and ceiling.

- A. Tempered Glass: All flat glass in door wings shall be 1/2" clear tempered safety glass. All glass shall meet ANSI standard Z 97.1.
1. Glass etching/printing per architect
 2. Tint Color per Architect from Manufacturer's full line
 3. Ultra-clear low-iron glass (optional)
- B. Laminated Glass: All curved glass in door wall shall be 9/16" clear curved laminated safety glass. All flat glass for door canopy shall be 13/16" clear laminated safety glass. All glass shall meet ANSI standard Z 97.1.
1. Glass etching/printing per Architect
 2. Tint Color per Architect from Manufacturer's full line
 3. Ultra-clear low-iron glass (optional)
- C. Weatherstripping: Weatherstrips shall be made of dual durometer extruded Santoprene and woven felt. Weatherstrip to be installed in top rails, stiles and bottom rails; designed to properly engage the curved enclosure walls, revolving door ceiling and floor. Special adjustment feature will allow for three-eighths inch adjustment.



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- D. Glazing Sealants: Silicone, single component – Spectrem 1 (Tremco) or silicone, single component – 791 (Dow Corning)
- E. Metal Finishes: Shall Comply with NAAMMs “Metal Finishes Manual for Architectural and Metal Products” for recommendations for applying and designating finishes.
- F. Aluminum Extrusions: All commercial grade extrusions shall be of aluminum alloy 6063-T6 per ASTM B-221 and be of .125” minimum thickness. Finishes available:
1. AAMA 611 Architectural Class 1 Clear Anodized Type AA-M10C22 A41
 2. AAMA 611 Architectural Class 1 Anodized Type AA-M10C22 A44: Light, Medium and Dark Bronze, Black and Champagne
 3. Custom Anodized Finish by Architect
 4. AAMA 2605 Superior Performing Organic Coatings (e.g.: Duranar, Fluropon; 70% Kynar Fluoropolymers)
 5. AAMA 2604 High Performance Organic Coatings (e.g.: Powder Coating)
- G. Aluminum Sheet: All aluminum sheet metal shall meet ASTM B-209, be of H15 or H34 temper 5005 alloy and shall be of .063” minimum thicknesses. Finishes available:
1. AAMA 611 Architectural Class 1 Clear Anodized Type AA-M10C22 A41
 2. AAMA 611 Architectural Class 1 Anodized Type AA-M10C22 A44: Light, Medium and Dark Bronze, Black and Champagne
 3. AAMA 2605 Superior Performing Organic Coatings (e.g.: Duranar, Fluropon; 70% Kynar Fluoropolymers)
 4. AAMA 2604 High Performance Organic Coatings (e.g.: Powder Coating)
- H. Stainless Steel Sheet: All stainless-steel sheet shall meet ASTM 240/A 240M, shall be Type 304 and shall be of .060” minimum thickness; Type 316 is available as an option. Finishes available:
1. #4 Brushed Satin
 2. #6 Brushed Satin
 3. #7 Highly Polished (mirror finish)
 4. #8 Highly Polished Non-Directional (mirror finish)
- I. Steel Sections: ASTM A 36; shapes to suit mullion sections.
- J. Steel Sheet: ASTM A 653/A 653M; 0.105” (2.6 mm) minimum thickness.
- K. Bronze Sheet: All bronze sheet shall be alloy #280 (Muntz) and be of .062” minimum thickness; #220 (Commercial) and Nickel Silver are available as options. Finishes available:
1. #4 Brushed Satin; Lacquered
 2. #4 Statuary Bronze; Lacquered
 3. #6 Brushed Satin; Lacquered
 4. #8 Highly Polished (mirror finish); Lacquered

PART III – EXECUTION

3.01 Examination



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- A. Inspection: Installer must examine the location and advise the Contractor of any site conditions unacceptable for proper installation of product. These conditions include but are not limited to the following:
1. Door must be installed on finished floor
 2. Finished floor must be dead level at any point within the footprint of the door
 3. Verify electrical power and control connections are properly located and of correct characteristics
 4. Verify recessed and supplemental framing comply with requirements on approval shop drawings
- B. Installer shall proceed with installation once conditions affecting installation and performance of revolving door entrance meet manufacturer's requirements.

3.02 REVOLVING DOOR INSTALLATION

- A. General: Comply with revolving door entrance manufacturer's written installation instruction and approved shop drawings.
- B. Construction: Install revolving doors in accordance with manufacturer's printed instructions. Set units level, plumb, and with uniform hairline joints. Anchor securely into place. Use only factory-authorized installers. Revolving door to be installed after other finishing operations have been completed.
- C. Structural Connection: Secure revolving door entrance components to building structure and supports as indicated on approved shop drawings, utilizing approved fasteners and spacing (for doors without the free-standing option).
- D. Glass Installation: Install glass and enclosure panels in accordance with Section 088000 "Glazing".
- E. Electrical Power: Complete connections to electrical power, lighting and controls in accordance with requirements of respective Division 26 and Division 28 Sections.
- F. Lubrication: Lubricate breakaway mechanism disc "V-groove", hanger guide pins, and floor pivot lithium grease.

3.03 REVOLVING DOOR ADJUSTMENT

- A. Hardware and Operating Components: Adjust to produce smoother operation, and tight, uniform fit
- B. Door Rotations per Minute: Adjust speed control to required timing and force
- C. Door Locks: Adjust latches and locks for smooth operations

3.04 REVOLVING DOOR MAINTENANCE



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- A. Off-Site Instruction: A factory-trained technician shall demonstrate to the owner's maintenance crew the proper operation of the door and the necessary service requirements such as lubrication, cleaning, and inspection of components upon completion of installation.
- B. On- Site Instruction (Optional): A factory-trained technician shall demonstrate to the owner's maintenance crew the proper operation of the door and the necessary service requirements such as lubrication, cleaning, and inspection of components upon completion of installation.
- C. Cleaning: Installer shall clean metal and glass surfaces carefully after installation to remove excess caulk, dirt and labels.
- D. Routine Maintenance: Every three months, fold wings and check operation. Use a clean, dry paintbrush to remove any accumulation of dirt from areas around the hold plunger and V-recess. Wipe off guide pins and pilot pin on hangers and wipe out grooves in disc with a slightly oiled cloth to ensure trouble free operation.
- E. Technical Support: Manufacturer shall provide twelve (12) months of over the phone technical support.

IRD Group, Inc. dba: International Revolving Door reserves the right to change this specification at any time without notice.



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