

SECTION 081113

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Hollow steel doors and frames.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 087100 - Door Hardware.
 - 3. Section 088000 - Glazing.

1.2 REFERENCES

- A. American National Standards Institute (ANSI)/Steel Door Institute (SDI):
 - 1. A250.3 - Test Procedure and Acceptance Criteria for Factory Applied Finished Painted Steel for Steel Doors and Frames.
 - 2. A250.4 - Test Procedure and Acceptance Criteria for Physical Endurance for Steel Doors, Frames, Frame Anchors and Hardware Reinforcings.
 - 3. A250.8 - Recommended Specifications for Standard Steel Doors and Frames.
 - 4. A250.10 - Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
 - 5. A250.11 - Recommended Erection Instructions for Steel Frames.
- B. ASTM International (ASTM):
 - 1. A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvannealed) by the Hot-Dip Process.
 - 2. A1008/A1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability.
 - 3. C518 - Standard Test Method for Steady State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
- C. Steel Door Institute (SDI) 117 - Manufacturing Tolerances for Standard Steel Doors and Frames.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Show locations, elevations, dimensions, model designations, fire thermal acoustical ratings, preparation for hardware, and anchoring details.
 - 2. Product Data: Show elevations, dimensions, gages of metal, hardware reinforcing gages and locations, and anchor types.
- B. Quality Control Submittals:
 - 1. Certificates of Compliance: Certification that products furnished comply with ANSI/SDI A250.3, ANSI/SDI 250.4, and ANSI/SDI A250.10.

1.4 QUALITY ASSURANCE

- A. Doors: ANSI/SDI A250.8.
 - 1. Grade:
 - a. Interior: II - Heavy Duty.
 - b. Exterior: III - Extra Heavy Duty.
 - 2. Model: 1 - Full Flush.
 - 3. Exterior doors: Maximum thermal transmittance (U-value) of 0.50, tested to ASTM C518.

- B. Frames: ANSI/SDI A250.8, Grade III - Extra Heavy Duty.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Ship door frames with removable angle spreader; do not remove until frame is installed.
- B. Store doors upright in protected, dry area, off ground or floor, with at least 1/4 inch space between individual units.
- C. Do not cover with non vented coverings that create excessive humidity.
- D. Remove wet coverings immediately.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Ceco Door. (www.cecodoor.com)
 - 2. Curries. (www.curries.com)
 - 3. Pioneer Industries, Inc. (www.pioneerindustries.com)
 - 4. Steelcraft. (www.steelcraft.com)
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Steel Sheet: ASTM A1008/1008M, cold rolled.
- B. Galvanized Steel Sheet: ASTM A653/A653M, hot dipped, Structural Quality, Class G40 galvanized.
- C. Door Core:
 - 1. Exterior doors: Foamed-in-place polyurethane insulation
 - 2. Interior doors: Resin impregnated fibrous honeycomb.

2.3 ACCESSORIES

- A. Glass, Glazing Sealers, and Accessories: Specified in Section 088000.
- B. Primer: Zinc rich type.

2.4 FABRICATION

- A. Fabricate doors and frames in accordance with ANSI/SDI A250.8.
- B. Fabricate exterior doors and frames from galvanized steel sheet.
- C. Fabricate exterior frames with 3/8 inch vinyl thermal break separating interior and exterior surfaces.
- D. Doors:
 - 1. Fabricate interior doors from minimum 18 gage sheets.
 - 2. Fabricate exterior doors from minimum 16 gage sheets.
 - 3. Close top and bottom edges of doors with steel channel, minimum 16 gage, extending full width of door, and spot welded to both faces, with top channel flush and bottom channel recessed.

- E. Frames:
 - 1. Fabricate from minimum 14 gage sheets.
 - 2. Close corner joints tight with trim faces mitered and face welded, full profile welded, or continuously welded and ground smooth.
 - 3. Anchors:
 - a. Provide one anchor at each jamb for each 30 inches of door height.
 - b. Design anchors to provide positive fastenings to adjacent construction.
 - c. Provide one floor anchor welded to each jamb.
 - 4. Where frames will be filled with concrete or grout, install silencers in frames before erection.
 - 5. Mullions for paired doors: Removable type, of same profiles as jambs.
- F. Accurately form to required sizes and profiles.
- G. Grind and dress exposed welds to form smooth, flush surfaces.
- H. Do not use metallic filler to conceal manufacturing defects.
- I. Fabricate with internal reinforcement for hardware specified in Section 087100; weld in place.
- J. Glazing Stops:
 - 1. Manufacturer's standard, screw on type with mitered corners.
 - 2. Form stops from minimum 20 gage steel; prefit for field glazing.
 - 3. Locate screws within 1 inch of ends of stops and maximum 8 inches on center.
 - 4. Install glazing stops on secure side of frames.
- K. Design Clearances:
 - 1. Between door and frame: Maximum 1/8 inch.
 - 2. Between meeting edges of pairs of doors:
 - a. Non-fire rated doors: 3/16 inch plus or minus 1/16 inch.
 - b. Fire-rated doors: 1/8 inch plus or minus 1/16 inch.
 - 3. Undercut:
 - a. Non-fire rated doors: Maximum 3/4 inch.
 - b. Fire-rated doors: Comply with NFPA 80.
 - 4. Between face of door and stop: 1/16 to 3/32 inch.
- L. Manufacturing Tolerances: In accordance with SDI-117.

2.5 FINISHES

- A. Dress tool marks and surface imperfections to smooth surfaces.
- B. Clean and chemically treat steel surfaces.
- C. Touch up damaged metallic coatings.
- D. Apply manufacturer's standard rust inhibiting primer paint, air-dried or baked on, meeting requirements of ANSI/SDI A250.10.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install doors and frames in accordance with ANSI/SDI A250.11.
- B. Set plumb and level.
- C. Secure to adjacent construction using fastener type best suited to application.
- D. Install glass as specified in Section 088000.

E. Install hardware in accordance with Section 087100.

3.2 ADJUSTING

A. Touch up minor scratches and abrasions in primer paint to match factory finish.

END OF SECTION

SECTION 081376

BIFOLDING METAL DOORS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Aluminum framed bifolding door system.
 - 2. Shop glazing.
 - 3. Operating hardware.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 087100 - Door Hardware.
 - 3. Section 088000 - Glazing.

1.2 REFERENCES

- A. American Architectural Manufacturers Association (AAMA) CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.
- B. American Architectural Manufacturers Association/Window and Doors Manufacturers Association (AAMA/WDMA) - 101/I.S.2 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors.
- C. ASTM International (ASTM) B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Include locations, elevations, sections, materials, finishes, and attachments.
 - 2. Samples: 3 x 3 inch coating samples in specified or selected color.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.
- B. Conform to applicable accessibility code for locating hardware.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Handle products in accordance with AAMA CW-10.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Contract documents are based on products by Panda Windows and Doors. (www.panda-windows.com)
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Biparting Metal Doors:
 - 1. TS 60 Thermally broken Bifold Door System by Panda Windows and Doors or approved substitute.
 - 2. Door Panels: TS 60 system: Non-thermal aluminum extrusions with mitered corners, attached with aluminum corner gussets.
 - 3. Frames: 1/8 inch thick, thermally broken by 15/16 inch polyamide bar.
 - 4. Performance Criteria:
 - a. Condensation Resistance Factor (CRF): Minimum 45.
 - b. Thermal Transmittance (U Factor): 0.35.
 - c. Solar Heat Gain Coefficient (SHGC): 0.40.
- B. Aluminum Extrusions: ASTM B221, 6063-T5 commercial quality.
- C. Glass and Glazing Accessories: Specified in Section 088000.
- D. Track System:
 - 1. Source: TS 60 Track System by Panda Windows and Doors or approved substitute.
 - 2. Description: 2 13/16 inch high aluminum top track with 2 1/2 inch high surface mounted aluminum bottom track.
- E. Operating Hardware:
 - 1. Hinges: Top and bottom hinges, attached to top carrier and lower guides.
 - 2. Locking Hardware: Pin locking systems to lock vertical adjustment once heights are set.
 - 3. Wheel Carriage: Synthetic nylon covered wheels with encased stainless steel ball bearings and double sliding rollers, capable of supporting up to 450 pounds per set.
 - 4. Handles:
 - a. Manufacturer's standard-shaped handles with ergonomic grip on inside and out and lock set with profile cylinder. Operation of lock set is by turn of key from outside and thumb turn from inside, with three point locking hardware operated by 90 degree turn of handle. Lock keyed to Section 087100.
 - b. Style: Bi-fold D-Handle with Hinges: Dark Bronze.
 - 5. Weatherstripping: Manufacturer's standard EPDM gasket and dense felt brushes around entire system to create closed, weather tight seal.

2.3 ACCESSORIES

- A. Fasteners:
 - 1. Series 300 stainless steel for wet locations and exposed fasteners.
 - 2. Stainless or fluoropolymer coated steel for other locations.

2.4 FABRICATION

- A. Fabricate to AAMA/WDMA - 101/I.S.2.
- B. Fabricate with minimum clearances and shim spaces around perimeter, yet enabling installation and dynamic movement.
- C. Accurately fit and secure joints and intersections. Make joints flush, hairline, and weathertight.
- D. Fabricate in largest practical units.
- E. Conceal fasteners and attachments from view.
- F. Reinforce corners and intersections of frames and mullions.
- G. Form glass stops and closures of same material as frame.

2.5 FINISHES

- A. Aluminum: AAMA2604, Powder Coated, color to be selected from manufacturer's standards.
- B. Apply bituminous coating to aluminum surfaces in contact with cementitious materials.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Install components plumb and level, in proper plane, free from warp and twist.
- C. Anchor to supporting construction.
- D. Installation Tolerances:
 - 1. Maximum variation from plumb or level: 1/8 inch in 3 feet or 1/4 inch in any 10 feet, whichever is less.
 - 2. Maximum misalignment of members abutting end to end: 1/32 inch.

3.2 ADJUSTING

- A. Adjust for smooth operation.
- B. Touch up minor scratches and abrasions to match original finish.

END OF SECTION

SECTION 081513
LAMINATED DOORS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Laminated plastic doors.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 087100 - Door Hardware.
 - 3. Section 088000 - Glazing.

1.2 REFERENCES

- A. Architectural Woodwork Institute/Architectural Woodwork Manufacturers of Canada/Woodwork Institute (AWI/AWMAC/WI) - Architectural Woodwork Standards.
- B. Association of Electrical and Medical Imaging Equipment Manufacturers (NEMA) LD-3 - High Pressure Decorative Laminates.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Show locations, elevations, dimensions, and preparation for hardware.
 - 2. Samples:
 - a. 6 x 6 inch door samples showing edges, core, and faces.
 - b. 3 x 3 inch laminate samples showing selected color.
 - 3. Warranty: Sample warranty form.
- B. Quality Control Submittals:
 - 1. Certificates of Compliance: Manufacturer's certification that doors comply with specified acoustical requirements.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Package doors in heavy plastic with identifying marks; slit plastic wrap on site to permit ventilation, but do not remove from plastic until ready to install.
- B. Do not deliver doors until building is substantially water and weather tight.
- C. Store doors upright with at least 1/4 inch between doors, in protected, dry area.
- D. Environmental Requirements: Maintain following conditions in building for minimum 7 days prior to, during, and after installation of doors:
 - 1. Temperature: 60 to 80 degrees F.
 - 2. Humidity: 25 to 55 percent.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
 - 1. Eggers Industries. (www.eggersindustries.com)
 - 2. VT Industries, Inc. (www.vtindustries.com)
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Laminated Doors:
 - 1. AWI/AWMAC/WI Architectural Woodwork Standards, Section 9.
 - 2. Core type:
 - a. Solid, non rated: Particleboard.
 - 3. Facings: High pressure plastic laminate, NEMA LD-3, Grade HGS, refer to Door Schedule for color.
 - 4. Glazing beads: Noncombustible material with laminate veneer to match door facings.
 - 5. Adhesives: Waterproof type.

2.3 ACCESSORIES

- A. Glass and Glazing Accessories: Specified in Section 088000.

2.4 FABRICATION

- A. Fabricate doors in accordance with AWI/AWMAC/WI Architectural Woodwork Standards, Section 9.
 - 1. Grade: Custom.
 - 2. Performance Level: Extra Heavy Duty.
 - 3. Edge Type: Manufacturer's option.
 - 4. Number of plies: 3.
- B. Prefitting; fit doors to frames at factory with following clearances:
 - 1. Non-rated doors:
 - a. Width: Cut hinge and lock edges equally.
 - b. Height: Cut bottom edge only; maximum 3/4 inch.
 - 2. Edge clearances:
 - a. Jambs and head: 1/8 inch maximum between door and frame.
 - b. Sills without thresholds: 1/8 inch maximum between door and top of finish floor.
 - c. Sills with thresholds: 1/4 inch maximum between door and top of threshold.
 - d. Meeting stiles of pairs: 1/8 inch maximum between doors.
 - 3. Lock edge: Bevel 1/8 inch in 2 inches.
- C. Premachining: Machine doors at factory to receive hardware specified in Section 087100.

PART 3 EXECUTION

3.1 PREPARATION

- A. Condition doors to average humidity that will be encountered after installation.

3.2 INSTALLATION

- A. Install doors in accordance with AWI/AWMAC/WI Architectural Woodwork Standards.
- B. Install doors plumb and level.
- C. If field cutting for height is necessary, cut bottom edge only, 3/4 inch maximum.

- D. Seal field cut surfaces.
- E. Install door hardware in accordance with Section 087100.
- F. Install glass as specified in Section 088000.
- G. Installation Tolerances:
 - 1. Warp: Maximum 1/4 inch in any 3'-0" x 7'-0" portion of door, measured with taut string or straight edge on concave face of door.

END OF SECTION

SECTION 083100

ACCESS DOORS AND PANELS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Access doors and frames for wall and ceiling surfaces.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

- A. ASTM International (ASTM) A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
- B. Underwriters Laboratories (UL) 10B - Standard for Fire Tests of Door Assemblies.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data: Provide sizes, types, finishes, scheduled locations, and details of adjoining work.

1.4 QUALITY ASSURANCE

- A. Fire Door Construction: Conform to UL 10B.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Contract Documents are based on products by Acudor Products, Inc. (www.acudor.com)
- B. Other Acceptable Manufacturers:
 - 1. Babcock-Davis, Inc. (www.babcockdavis.com)
 - 2. J.L. Industries. (www.jlindustries.com)
 - 3. Milcor. (www.milcorinc.com)
- C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Stainless Steel: ASTM A666, Type 304, rollable temper.

2.3 FABRICATION

- A. Non-Rated Door and Frame Unit:
 - 1. Source: Lightweight Insulated Access Door by Best Access Systems, or approved substitute.
 - 2. Size: 36 inches x 36 inches
 - 3. Accessories: Weather gasket.
 - 4. Materials: Minimum 16 gage stainless steel.
- B. Fabricate fire rated door panels of two sheets of minimum 20 gage stainless steel sheet. Fill core with noncombustible insulation.
- C. Weld, fill, and grind joints to flush and square appearance.

- D. Hardware:
 - 1. Continuous steel hinges, 175 degree opening.
 - 2. Handle operated cam lock.

2.4 FINISHES

- A. Doors: No 4, Brushed.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install units in accordance with manufacturer's instructions.
- B. Install plumb and level in openings. Secure rigidly in place.
- C. Position units where indicated or where required to provide convenient access to concealed work requiring maintenance.

END OF SECTION

SECTION 083336
SIDE COILING GRILLES

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Side coiling grilles.
 - 2. Operating hardware and supports.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 087100 - Door Hardware.

1.2 REFERENCES

- A. American Architectural Manufacturers Association (AAMA) 611 - Voluntary Specification for Anodized Architectural Aluminum.
- B. ASTM International (ASTM):
 - 1. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 2. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.

1.3 SYSTEM DESCRIPTION

- A. Operation: Manual.
- B. Design Cycle Life: 20,000 cycles.

1.4 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
 - 2. Product Data: Provide information on component construction, anchorage method, and hardware.
- B. Closeout Submittals:
 - 1. Operation and Maintenance Data.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Contract documents are based on products by Overhead Door Corporation.
www.overheaddoor.com
- B. Other Acceptable Manufacturers:
 - 1. CHI Overhead Doors. www.chiohd.com
 - 2. Janus International Corporation. www.janusintl.com
 - 3. Raynor. www.raynor.com
- C. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Aluminum:
 - 1. Extrusions: ASTM B221, 6063-T5 or T6 alloy and temper.
 - 2. Sheet: ASTM B209, alloy and temper best suited to application.

2.3 COMPONENTS

- A. Grille:
 - 1. Source: Security Grill Model 683 by Overhead Door Corporation or approved substitute.
 - 2. Description: Standard body, top mounted, side-folding security grill.
 - 3. Pattern: Brick.
 - 4. Post Type: Intermediate post, bottom shoot bolt.
- B. Track and trolled assembly: Extruded aluminum.
- C. Lock: Intermediate post, concealed cylinder-operated shoot bolt accessible from one side only; locks keyed to Section 087100.

2.4 FINISHES

- A. Aluminum: AAMA 611, Architectural Class I anodized to 0.0007 inch minimum thickness, clear.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install grille assembly in accordance with manufacturer's instructions.
- B. Anchor to adjacent construction without distortion or stress.
- C. Fit and align grille assembly including hardware, level and plumb, to provide smooth operation.

3.2 ADJUSTING

- A. Adjust grilles for smooth operation throughout full operating range.

END OF SECTION

SECTION 083613

SECTIONAL OVERHEAD DOORS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Sectional doors.
 - 2. Operating hardware and supports.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 087100 - Door Hardware.

1.2 REFERENCES

- A. American Architectural Manufacturers Association (AAMA) 611 - Voluntary Specification for Anodized Architectural Aluminum.
- B. American National Standards Institute / Door and Access Systems Manufacturers Association International (ANSI/DASMA):
 - 1. 102 - American National Standard Specifications for Sectional Doors.
 - 2. 105 - Test Method for Thermal Transmittance and Air Infiltration of Garage Doors.
- C. ASTM International (ASTM):
 - 1. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 2. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
- D. National Fenestration Rating Council (NFRC) 400 - Procedure for Determining Fenestration Product Air Leakage.

1.3 SYSTEM DESCRIPTION

- A. Design Requirements: Design doors to withstand:
 - 1. Positive and negative design wind loads in accordance with Building Code without permanent deformation or damage.
 - 2. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 160 degrees F.
- B. Design Cycle Life: 10,000 cycles.
- C. Panels: Stile and rail aluminum.
- D. Track and Operating Hardware: Vertical lift type.
- E. Operation: Manual, push up.
- F. Air Infiltration: Maximum 1.0 cubic feet per square foot, tested to NFRC 400 or ANSI/DASMA 105.

1.4 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
 - 2. Product Data: Provide information on component construction, anchorage method, and hardware.
 - 3. Samples: 3 x 3 inch paint samples showing specified color.
- B. Closeout Submittals:
 - 1. Operation and Maintenance Data.

1.5 QUALITY ASSURANCE

- A. Door Assembly: Meet requirements of ANSI/DASMA 102.

1.6 WARRANTIES

- A. Furnish manufacturer's warranties providing coverage against:
 - 1. Panel delamination: 10 years.
 - 2. Door and operating system: 3 years.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Contract documents are based on products by Overhead Door Corporation. (www.overheaddoor.com)
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Aluminum Sheet: ASTM B209, 5005 alloy, H14 temper, plain surface.
- B. Aluminum Extrusions: ASTM B221, 6063 alloy, T5 or T6 temper.
- C. Glazing: Clear tempered glass, minimum 1/4 inch thick.

2.3 COMPONENTS

- A. Sections:
 - 1. Source: Model 511 Modern Aluminum by Overhead Door or approved substitute.
 - 2. Type: Stile and rail aluminum.
 - 3. Joints: Welded or internally reinforced with cast aluminum brackets.
- B. Door Nominal Thickness: 2 inches.
- C. Glazed Lights: Full panel width, three glazed lights per panel, set in place with resilient glazing channel.
- D. Track: 3 inches wide, roll formed galvanized steel, continuous one piece per side, with galvanized steel mounting brackets.
- E. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized stainless steel, with floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
- F. Lift Mechanism: Torsion spring on cross head shaft, with braided steel lift cables.
- G. Sill Weatherstripping: Resilient strip, one piece, fitted to bottom of door panel, full length contact.

- H. Head and Jamb Weatherstripping: Roll formed steel aluminum section, fitted with resilient weatherstripping.
- I. Lock: Interior and exterior handle, locks keyed alike.

2.4 FINISHES

- A. Aluminum: AAMA 611, Architectural Class I anodized to 0.0007 inch minimum thickness, dark bronze color.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install door assembly in accordance with manufacturer's instructions.
- B. Anchor to adjacent construction without distortion or stress.
- C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- D. Fit and align door assembly including hardware, level and plumb, to provide smooth operation.
- E. Position head and jamb weatherstripping to contact door sections when closed; secure in position.

3.2 ADJUSTING

- A. Adjust to operate smoothly throughout full operating range.
- B. Touch up minor scratches and abrasions in finish coat to match factory finish.

END OF SECTION

SECTION 083816

TRAFFIC DOORS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Traffic doors.
 - 2. Operating and attachment hardware.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Include plans, elevations, and details of construction, including thickness, glazing, hardware, and accessories.
 - 2. Product Data: Descriptive data on doors and accessories.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Contract Documents are based on products by Eliason Corp. (www.eliasoncorp.com)
- B. Substitutions: Under provisions of Division 01.

2.2 MANUFACTURED UNITS

- A. Double-Acting Traffic Doors:
 - 1. Model: SCP-6 High Pressure Laminate Traffic Door by Eliason Corp., or approved substitute.
 - 2. Description: Seven ply exterior grade plywood faced both sides with .032 inch thick decorative high pressure laminate.
 - 3. Door core: 3/4 inch moisture resistant composite wood.
 - 4. Laminate: Wilsonart Standard Platinum Matte Finish D315-60
 - 5. Hardware: Easy Swing hinge system by Eliason Corp., or approved substitute.
 - 6. Glazing: 1/4 inch thick clear acrylic set in black rubber moldings. ADA Compliant, refer to Drawings for dimensions.
 - 7. Laminate: Wilsonart Platinum Matte Finish D315-60.

2.3 ACCESSORIES

- A. Fasteners: Stainless or cadmium plated steel, type best suited to application.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Maintain uniform clearances at head, jambs, sill, and meeting stiles.
- C. Install hardware and accessories.
- D. Set plumb, level, and rigid.

3.2 ADJUSTING

- A. Adjust doors for proper operation.
- B. Adjust gasketing to contact appropriate surfaces and form seal.

END OF SECTION

SECTION 084113

ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Aluminum entrance doors and frames.
 - 2. Aluminum framed glazed storefronts.
 - 3. Glass infill panels.
 - 4. Door hardware.

- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 079200 - Joint Sealers.
 - 3. Section 087100 - Door Hardware.
 - 4. Section 088000 - Glazing.

1.2 REFERENCES

- A. American Architectural Manufacturers Association (AAMA):
 - 1. CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.
 - 2. 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems.
 - 3. 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems.
 - 4. 611 - Voluntary Specification for Anodized Architectural Aluminum.
 - 5. 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.

- B. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other Structures.

- C. ASTM International (ASTM):
 - 1. B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
 - 2. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 3. E283 - Standard Test Method for Rate of Air Leakage through Exterior Windows, Curtain Walls and Doors.
 - 4. E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors under the Influence of Wind Loads.
 - 5. E331 - Standard Test Method for Water Penetration of Exterior Windows, Doors, and Curtain Walls by Uniform Static Air Pressure Differential.

1.3 SYSTEM DESCRIPTION

- A. Design Requirements: Design exterior systems to withstand:
 - 1. Design wind pressure in accordance with ASCE 7, with maximum allowable deflection of L/175, tested in accordance with ASTM E330.
 - 2. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 160 degrees F.
 - 3. Movement between door system and adjacent construction.
 - 4. Dynamic loading and release of loads.
 - 5. Deflection of supports.
 - 6. Overhead structure deflection of 1/2 inch.

- B. Performance Requirements:
1. Air infiltration, tested to ASTM E283.
 - a. Entrances:
 - 1) Single door: Maximum 0.5 CFM per minute per linear foot of perimeter crack, at static pressure differential of 6.24 PSF.
 - 2) Pairs of doors: Maximum 1.0 CFM per minute per linear foot of perimeter crack, at static pressure differential of 6.24 PSF.
 - b. Storefront: 0.06 CFM per square foot of fixed area at static pressure differential of 6.24 PSF.
 2. Water infiltration: No uncontrolled water leakage, tested to ASTM E331 at minimum test pressure of 6.24 PSF for inswing doors and 15.0 PSF for outswing doors and storefront.
 3. Uniform structural loading: No glass breakage or permanent damage to fasteners or system components, tested to ASTM E330 at 1.5 times design pressure.
 4. Thermal transmittance due to conduction (Uc): Maximum 0.60, tested to AAMA 1503 on two 6'-0" x 6'-0" units with 1 inch clear insulating glass.
 5. Condensation resistance factor (CRF): Minimum 50, tested to AAMA 1503.

1.4 SUBMITTALS

- A. Submittals for Review:
1. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, trim, sealers, hardware, and accessories.
 2. Samples:
 - a. 3 x 3 inch coating samples in specified color.
 - b. 12 inch long aluminum framing system samples showing profile and finish.
 - c. 12 x 12 inch door corner showing corner construction, reinforcement, and glazing.
 - d. Each hardware item.
- B. Quality Control Submittals:
1. Test Reports: Certified results of previous tests by a recognized independent laboratory substantiating compliance with specified design and performance criteria, current within past 5 years.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.
- B. Conform to applicable accessibility code for locating hardware and for door opening force requirements.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Handle products in accordance with AAMA CW-10.

1.7 WARRANTIES

- A. Furnish manufacturer's installer's year warranty providing coverage against water leakage through storefront system and reduction of performance.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers:
1. U.S. Aluminum (www.crlaurence.com)
 2. Kawneer Co., Inc. (www.kawneer.com)
 3. Oldcastle Building Envelope. (www.oldcastlebe.com)
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

- A. Aluminum:
 - 1. Extrusions: ASTM B221, 6063-T5 alloy and temper.
 - 2. Sheet: ASTM B209, alloy and temper best suited to application.

2.3 COMPONENTS

- A. Entrances Doors: Wide stile configuration with nominal 5 inch vertical stiles and top rail and 10 inch bottom rail, thermally broken.
- B. Storefront: Flush glazing system designed to receive 1 inch glass by means of elastomeric gaskets; 2 inch face width x 4-1/2 inch depth, center multi-plane glass application, thermally broken.
- C. Door Hardware: Specified in Section 087100.

2.4 ACCESSORIES

- A. Fasteners:
 - 1. Series 300 stainless steel for wet locations and exposed fasteners.
 - 2. Stainless or fluoropolymer coated steel for other locations.
- B. Joint Sealers: Specified in Section 079200.
- C. Glass and Glazing Accessories: Specified in Section 088000.
- D. Weatherstripping: Replaceable, nonporous synthetic wool pile type.

2.5 FABRICATION

- A. Fabricate with minimal clearances and shim spaces around perimeter.
- B. Accurately fit and secure joints and intersections. Make joints flush, hairline, and weathertight.
- C. Fabricate in largest practical units.
- D. Conceal fasteners and attachments from view.
- E. Fabricate fascias, covers, closures, flashings, and trim members from same material as storefront.
- F. Fabricate aluminum components with integral low conductance thermal barrier located between exterior and interior exposed components that eliminates metal-to-metal contact.
- G. Doors:
 - 1. Mechanically fastened and welded corner construction.
 - 2. Fabricate stiles and rails of minimum 0.188 inch thick extrusions and glass stops from minimum 0.050 inch thick extrusions.
 - 3. Provide weatherstripping at door head, jambs, meeting stiles, and sills.
 - 4. Prepare with internal reinforcements for door hardware.

2.6 FINISHES

- A. Aluminum: AAMA 611, Architectural Class I anodized to 0.0007 inch minimum thickness, clear.
- B. Apply bituminous coating to aluminum surfaces in contact with cementitious materials.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Install components plumb and level, in proper plane, free from warp and twist.
- C. Anchor to supporting construction.
- D. Set thresholds and sill members exposed to weather in mastic and secure.
- E. Install hardware using templates provided by manufacturer.
- F. Install glass and accessories in accordance with Section 088000.
- G. Installation Tolerances:
 - 1. Maximum variation from plumb or level: 1/8 inch in 3 feet or 1/4 inch in any 10 feet, whichever is less.
 - 2. Maximum misalignment of members abutting end to end: 1/32 inch.
 - 3. Sealant space between framing members and adjacent construction: 1/2 inch plus or minus 1/8 inch.

3.2 FIELD QUALITY CONTROL

- A. Testing and Inspection Services:
 - 1. At beginning of installation, Architect will select one location for field testing:
 - a. Test specimen size: Minimum 100 square feet.
 - b. Include two glass panels, perimeter sealers, splices, and frame intersections.
 - 2. Perform water infiltration testing in accordance with AAMA 501.2:
 - a. Test pressure: 30 to 35 PSF.
 - b. Allowable water infiltration: None.
 - 3. Perform air infiltration testing in accordance with AAMA 503:
 - a. Minimum test pressure: 2/3 of laboratory test pressure with minimum pressure of 4.18 PSF.
 - b. Maximum allowable rate of air leakage: 1.5 times laboratory test rate.
 - 4. If test area fails to meet specified air or water infiltration testing:
 - a. Submit description of proposed remedial work to Architect.
 - b. Complete remedial work on test specimen and repeat testing.
 - c. When test results meet specified requirements, incorporate remedial work into other work on Project.
 - 5. When installation is 50 percent complete, Architect will select one additional locations for field testing.
 - 6. For each area with failing test results, Architect will select one additional locations for field testing.

3.3 ADJUSTING

- A. Adjust hardware for smooth operation.
- B. Adjust doors to operate with maximum opening forces in accordance with applicable accessibility code.
- C. Touch up minor scratches and abrasions to match original finish.
- D. Adjust weatherstripping to contact appropriate surfaces and form weather seal.

END OF SECTION

SECTION 084226

ALL-GLASS STOREFRONTS

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. All-glass storefront with top and bottom channels.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.
 - 2. Section 088000 - Glazing.

1.2 REFERENCES

- A. American Architectural Manufacturers Association (AAMA):
 - 1. CW-10 - Care and Handling of Architectural Aluminum from Shop to Site.
 - 2. 611 - Voluntary Specification for Anodized Architectural Aluminum.
 - 3. 2603 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Architectural Extrusions and Panels.
 - 4. 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Architectural Extrusions and Panels.
 - 5. 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Architectural Extrusions and Panels.
- B. ASTM International (ASTM):
 - 1. A666 - Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
 - 2. B36/B36M - Standard Specification for Brass Plate, Sheet, Strip, and Rolled Bar.
 - 3. B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
 - 4. E330 - Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls, and Doors Under the Influence of Wind Loads.

1.3 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Show plans, elevations, and details, including type and thickness of metal and glass, methods of glazing, anchoring, and joining, sealers, trim, and accessories.
 - 2. Samples:
 - a. 6 inch long top and bottom channel samples showing profile and finish.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Handle products in accordance with AAMA CW-10.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Contract documents are based on products by C.R. Laurence Co., Inc. (www.crlaurence.com)
- A. Substitutions: Under provisions of Division 01.

1.2 MATERIALS

- A. Aluminum Extrusions: ASTM B221, 6063-T5 alloy and temper.
- B. Glass and Glazing Accessories: Specified in Section 088000.

1.3 ACCESSORIES

- A. Fasteners: Type best suited to application; finish to match channels.

1.4 FABRICATION

- A. Fabricate storefront with top and bottom channels:
 - 1. Style: Square profile, 1 1/2 inches high.
 - 2. Construction: Extruded aluminum.
- B. Assemble in shop as much as practical, with channels bonded to glass.
- C. Fabricate components with square edges and smooth surfaces.
- D. Locate joints symmetrically.

1.5 FINISHES

- A. Aluminum: AAMA 611, Architectural Class II anodized to 0.0004 inch minimum thickness, clear.
- B. Apply bituminous coating to aluminum surfaces in contact with cementitious materials.

PART 2 EXECUTION

2.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved Shop Drawings.
- B. Install components plumb and level, free from warp and twist.
- C. Anchor to supporting construction.
- D. Set thresholds and sill members exposed to weather in mastic and secure.
- E. Install hardware using templates provided.
- F. Seal vertical joints in storefront glass with silicone sealers.
- G. Installation Tolerances:
 - 1. Maximum variation from plumb or level: 1/8 inch in 3 feet or 1/4 inch in any 10 feet, whichever is less.
 - 2. Maximum misalignment of members abutting end to end: 1/32 inch.
 - 3. Joint opening dimensions at glass: Plus or minus 1/8 inch.

2.2 ADJUSTING

- A. Touch up minor scratches and abrasions to match original finish.

END OF SECTION

SECTION 087100

DOOR HARDWARE

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Hardware for steel, laminated plastic, and aluminum doors.
 - 2. Weatherstripping and thresholds.
 - 3. Sound Smoke seals.
 - 4. Hardware for other sections referencing this section.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 SUBMITTALS

- A. Submittals for Review:
 - 1. Shop Drawings: Schedule hardware by door type and location; show door size, hand, thickness, edge bevel, hardware components and quantities, keying, and finishes.
 - 2. Product Data: Manufacturer's descriptive data for each component.
 - 3. Warranty: Sample warranty form.
- B. Closeout Submittals:
 - 1. Copy of approved hardware schedule.
 - 2. Keying list.
 - 3. Keys; tag with mark corresponding to keying schedule.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.
- B. Conform to applicable accessibility code for locating hardware and for door opening force requirements.

1.4 DELIVERY, STORAGE AND HANDLING

- A. Pack hardware items separately, with fasteners, installation instructions, and templates.
- B. Mark containers with item number corresponding to hardware schedule.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Contract documents are based on products by Bommer Industries, Inc. (www.bommer.com), Von Duprin by Allegion. (www.allegion.com), Best Access Systems. (www.bestaccess.com), LCN by Allegion. (www.allegion.com), Ives by Allegion (www.allegion.com), Assa Abloy (www.assaabloy.com), Pemko Manufacturing Co., Inc. (www.pemko.com), and Reese Enterprises, Inc. (www.reeseusa.com)
- B. Substitutions: Under provisions of Division 01.

2.2 MANUFACTURED UNITS

- A. Door Hardware Selections: Refer to Door Hardware Schedule.

- B. Key Control System:
 - 1. Cabinet: Sheet steel with baked enamel finish, piano hinged door, and lock keyed to building system.
 - 2. Capacity: 150 percent of locks required for project.
 - 3. Horizontal metal strips for key hook labeling with plastic strip cover over paper labels.

2.3 FINISHES

- A. Finishes:
 - 1. To ANSI/BHMA A156.18.
 - 2. Selections: Refer to Door Hardware Schedule.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install hardware in accordance with approved hardware schedule and manufacturer's instructions.
- B. Install mortise items flush with adjacent surfaces.
- C. Install locksets, closers, and trim after finish painting.
- D. Set thresholds in mastic and secure.
- E. Mount closers so that closers and closer arms are not visible on corridor or public side of doors or on exterior of building.
- F. Mounting Heights - Finished Floor to Center Line of:
 - 1. Locksets: 38 inches.
 - 2. Push and pull plates: 42 inches.
 - 3. Dead locks: 48 inches.
 - 4. Push pad exit devices: 42 inches.
 - 5. Cross bar exit devices: 38 inches.
 - 6. Top hinge: Maximum 10 inches from frame head.
 - 7. Bottom hinge: Maximum 12-1/2 inches from floor.
 - 8. Intermediate hinges: Equally spaced.
- G. Connect electric hardware to power supply, security system, and fire alarm and detection system.
- H. Set key cabinet in place, place keys in cabinets, label and index.

3.2 PROTECTION

- A. Remove or protect hardware until painting is completed.

3.3 ADJUSTING

- A. Test and adjust hardware for quiet, smooth operation, free from binding and rattling.
- B. Adjust doors to operate with maximum opening forces in accordance with applicable accessibility code.

3.4 SCHEDULE

- A. Refer to Door Hardware Schedule in Drawings.

END OF SECTION

SECTION 088000

GLAZING

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Glass for other sections referencing this Section.
- B. Related Sections:
 - 1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

- A. ASTM International (ASTM):
 - 1. C509 - Standard Specification for Elastomeric Cellular Preformed Gasket and Sealing Material.
 - 2. C794 - Standard Test Method for Adhesion-In-Peel of Elastomeric Joint Sealants.
 - 3. C864 - Standard Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
 - 4. C920 - Standard Specification for Elastomeric Joint Sealants.
 - 5. C1036 - Standard Specification for Flat Glass.
 - 6. C1048 - Standard Specification for Heat-Treated Flat Glass-Kind HS, Kind FT, Coated and Uncoated Glass.
 - 7. C1115 - Standard Specification for Dense Elastomeric Silicone Rubber Gaskets and Accessories.
 - 8. E1300 - Standard Practice for Determining Load Resistance of Glass in Buildings.
- B. Consumer Product Safety Commission (CPSC) 16 CFR 1201 - Safety Standard for Architectural Glazing Materials.
- C. Glass Association of North America (GANA) Glazing Manual.
- D. Insulating Glass Manufacturers Alliance (IGMA) SIGMA TM-3000 - Glazing Guidelines for Sealed Insulating Glass Units.

1.3 SYSTEM DESCRIPTION

- A. Glass Thicknesses:
 - 1. Indicated thicknesses are minimums; select actual glass thicknesses by analyzing loads and conditions.
 - 2. Provide glass in thicknesses and strengths to meet or exceed following criteria:
 - a. Comply with ASTM E1300.

1.4 SUBMITTALS

- A. Submittals for Review:
 - 1. Product Data: Descriptive data and performance attributes for glass.
 - 2. Samples:
 - a. 12 x 12 inch glass samples.
 - b. 1/4 x 1/4 x 3 inch long sealant samples in each color.
- B. Quality Control Submittals:
 - 1. Test Report: Preconstruction adhesion and compatibility test report from glazing sealant manufacturer, based on submitted samples or acceptable data from previous testing of current formulations with similar products.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: Minimum 3 years documented experience in work of this Section.
- B. Regulatory Requirements:
 - 1. Provide safety glass for locations subject to human impact as required by Building Code.
 - 2. Safety glass: Tested and labeled to CPSC 16 CFR 1201.

1.6 PROJECT CONDITIONS

- A. Perform glazing when ambient temperature is above 40 degrees F.
- B. Perform glazing on dry surfaces.

1.7 WARRANTIES

- A. Insulating Glass Units: Provide manufacturer's 10 year warranty against material obstruction of vision through unit due to:
 - 1. Intrusion of dust or moisture.
 - 2. Internal condensation.
 - 3. Film formation on internal glass surfaces caused by failure of hermetic seal except failure caused in whole or in part by breakage or fracturing of any portion of glass surface.
- B. Glass Coatings: Provide manufacturer's 10 year warranty against peeling, cracking, or deterioration of coating under normal conditions.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Acceptable Manufacturers - Glass:
 - 1. Guardian Industries Corp. (www.guardian.com)
 - 2. Oldcastle BuildingEnvelope. (www.oldcastlebe.com)
 - 3. Pilkington Architectural. (www.pilkington.com)
 - 4. PPG Industries, Inc. (<http://www.ppg.com/>)
 - 5. Viracon, Inc. (www.viracon.com)
- B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS - GLASS

- A. Clear Glass: ASTM C1036, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select.
- B. Clear Tempered Glass: ASTM C1048, Type 1 transparent flat, Class 1 clear, Quality q3 glazing select, Kind FT fully tempered.

2.3 ACCESSORIES

- A. Setting Blocks: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; 80 to 90 Shore A durometer hardness.
- B. Spacers: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone; 50 to 60 Shore A durometer hardness.

- C. Glazing Gaskets:
 - 1. Dense compression gaskets: ASTM C864, neoprene or EPDM, or ASTM C1115, silicone or thermoplastic polyolefin rubber, molded or extruded shape to fit glazing channel retaining slot; black color.
 - 2. Soft compression gaskets: ASTM C509, Type II, black, molded or extruded, neoprene, EPDM, silicone or thermoplastic polyolefin rubber, of profile and hardness required to maintain watertight seal; black color.
- D. Glazing Sealant: ASTM C920, Type S, Grade NS, Class 25; single component silicone, low modulus, non sag, color to be selected from manufacturer's full color range.
- E. Sealant Backing: ASTM C1330, Type O, size and density to control glazing sealant depth and produce optimum glazing sealant performance.
- F. Primer: As recommended by glazing sealant manufacturer.

2.4 FABRICATION

- A. Heat Strengthened or Tempered Glass:
 - 1. Comply with ASTM C1048.
 - 2. Process in horizontal position so that inherent roller distortion will run parallel to building floor lines after installation.
- B. Sealed Insulating Glass:
 - 1. Comply with ASTM E2190.
 - 2. Fabricate spacer bar frame of tubular aluminum filled with desiccant.
 - 3. Bond spacer bar frame to glass panes with twin primary seals.
 - 4. Fill space outside frame to glass edge with elastomeric sealant.
- C. Fabrication Tolerances: ASTM C1036 and ASTM C1048.
- D. Glass Identification:
 - 1. Apply manufacturer's label indicating type and thickness to each light of glass. Show position of exterior face when installed, where applicable.
 - 2. Etch manufacturer's label on each light of tempered glass.
- E. Source Quality Control:
 - 1. Preconstruction adhesion and compatibility testing:
 - a. Perform adhesion test including ultraviolet exposure through glass on production samples of metals and glass in accordance with ASTM C794.
 - b. Test glass units, glazing materials, and glass framing members with specified finish for sealant compatibility, priming, and preparation requirements for optimum adhesion and performance.

PART 3 EXECUTION

3.1 PREPARATION

- A. Clean glazing rabbets; remove loose and foreign matter.
- B. Remove protective coatings on metal surfaces.
- C. Clean glass just prior to installation.

3.2 INSTALLATION - GENERAL

- A. Install glass in accordance with glass manufacturer's instructions.

- B. Maintain manufacturer's recommended edge and face clearances between glass and frame members.

3.3 INSTALLATION - GASKET GLAZING METHOD

- A. Fabricate gaskets to fit openings; allow for stretching of gaskets during installation.
- B. Set soft compression gasket against fixed stop or frame with bonded miter cut joints at corners.
- C. Set glass centered in openings on setting blocks.
- D. Install removable stops and insert dense compression gaskets at corners, working toward centers of glass, compressing glass against soft compression gaskets to produce weathertight seal.
- E. Seal joints in gaskets.
- F. Allow gaskets to protrude past face of glazing stops.

3.4 INSTALLATION - SEALANT GLAZING METHOD

- A. Apply sealant to full depth of permanent stops.
- B. Press glass into sealant with slight lateral movement to ensure adhesion.
- C. Apply sealant to full depth of removable stops. Secure stops in position, forcing contact with sealant bead and completely filling joint.

3.5 PROTECTION

- A. After installation, mark glass with an 'X' using removable plastic tape.

3.6 SCHEDULE

- A. Type GL-1 :
 - 1. Description:
 - a. Outboard lite: 1/4 inch thick clear glass, heat strengthened or tempered where required, with low-e coating on No. 3 surface. Solarban 60 by PPG Industries, Inc., or approved substitute.
 - b. Inboard lite: 1/4 inch thick clear glass, tempered where required.
 - 2. Total unit thickness: 1 inch.
 - 3. Performance characteristics:
 - a. Visible light transmittance: 62.
 - b. Winter Nighttime U factor: .24.
 - c. Summer Daytime U factor: .21.
 - d. Solar Heat Gain Coefficient: .62 maximum.
 - 4. Locations: Aluminum-Framed Entrances and Storefront and Bifolding Metal Doors.
- B. Type GL-2
 - 1. Description: 1/4 inch thick clear tempered glass.
 - 2. Locations: Glazed openings at locations subject to human impact.
- C. Type GL-3:
 - 1. Description: 1/4 inch thick clear glass.
 - 2. Locations: Glazed openings at locations not subject to human impact.

END OF SECTION