SECTION 08110 - STEEL DOORS AND FRAMES - INLAND

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes steel doors and frames

1.2 QUALITY ASSURANCE

A. Steel Door and Frame Standard: Comply with ANSI A 250.8, unless more stringent requirements are indicated.

B. Fire-Rated Door Assemblies: Assemblies complying with NFPA A 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Ceco Door Products; a United Dominion Company.
   2. Curries Company.
   3. Pioneer Industries, Inc.
   4. Republic Builders Products.
   5. Steelcraft; a division of Ingersoll-Rand.

2.2 MATERIALS

A. Hot-Rolled Steel Sheets: ASTM A1011/A1011M Commercial Steel (CS), Type B; free of scale, pitting, or surface defects; pickled and oiled.

B. Cold-Rolled Steel Sheets: ASTM A1008/A1008M Commercial Steel (CS), or ASTM A 620/A 620M, Drawing Steel (DS), Type B; stretcher-leveled standard of flatness.

C. Metallic-Coated Steel Sheets: ASTM A 653/A 653M, Commercial Steel (CS), Type B, with an A40 zinc-iron alloy (galvannealed) coating; stretcher-leveled standard of flatness.

D. Interior Doors: Complying with ANSI 250.8 for level and model and ANSI A250.4 for physical-endurance level indicated.
   1. Level 3 and Physical Performance Level A. Model 2 16 Ga (Seamless). Vertical seam continuously welded, seam dressed smooth

E. Exterior and High-Security Interior Doors: Complying with ANSI A250.8 for level and model and ANSI A250.4 for physical-endurance level indicated. 14 Ga.
   1. Level 4 and Physical Performance Level A, Model 2 (Seamless)
      Vertical seam continuously welded, seam dressed smooth.

2.3 FRAMES

A. General: ANSI A250.8; conceal fastenings, unless otherwise indicated.

B. Frame Steel Sheet Thickness:
   1. 0.067 inch (18 gauge) for Level 3 steel doors.
   2. 0.093 inch (16 gauge) for Level 4 steel doors

C. Door Silencers: Three silencers on single-door frames and two silencers on double-door frames.

D. Plaster Guards: 0.016-inch-thick, steel sheet plaster guards or mortar boxes to close off interior of openings.

E. Supports and Anchors: Not less than 0.042-inch-thick zinc-coated steel sheet.
   1. Masonry Wall Anchors: 0.177-inch-diameter, steel wire complying with ASTM A 510 may be used in place of steel sheet.

F. Inserts, Bolts, and Fasteners: Manufacturer's standard units. Zinc-coat items that are to be built into exterior walls according to ASTM A 153/A 153M, Class C or D as applicable.

2.4 FABRICATION

A. General: Fabricate steel door and frame units to comply with ANSI A 250.8 free from defects including warp and buckle. Where practical, fit and assemble units in manufacturer's plant.

B. Exterior Doors: Fabricate doors, panels, and frames from metallic-coated steel sheet. Close top and bottom edges of doors flush as an integral part of door construction or by addition of 0.053-inch-thick, metallic-coated steel channels with channel webs placed even with top and bottom edges.

C. Interior Door Faces: Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units, from cold-rolled steel sheet.

D. Core Construction: Vertical steel stiffeners with fiberglass insulation between stiffeners.

E. Clearances for Non-Fire-Rated Doors: Not more than 1/8 inch at jambs and heads, except not more than ¼ inch between pairs of doors. Not more than ¾ inch at bottom.

F. Clearances for Fire-Rated Doors: As required by NFPA 80.

G. Tolerances: Comply with SD1117.

H. Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable

requirements in ANSI A 250.6 and ANSI A 115 Series specifications for door and frame preparation for hardware.

I. Frame Construction:
   1. Fabricate frames with mitered or coped and continuously welded corners and seamless face joints. Provide temporary spreader bars.

J. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.

K. Locate hardware as indicated or, if not indicated, according to ANSI A 250.8.

L. Glazing Stops: Manufacturer's standard, formed from 0.032-inch-thick steel sheet.
   1. Provide non-removable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
   2. Provide screw-applied, removable, glazing stops on inside of glass, louvers, and other panels in doors.

M. Astragals: As required by NFPA 80 to provide fire ratings indicated.

2.5 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.

B. Comply with SSPC-PA 1, "Paint Application Specification No. 1", for steel sheet finishes.

C. Apply primers and organic finishes to doors and frames after fabrication.

D. Galvanized Steel Sheet Finishes:
   1. Surface Preparation: Clean surfaces with non-petroleum solvent so that surfaces are free of oil or other contaminants. After cleaning, apply a conversion coating of the type suited to the organic coating applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.
      a. Galvanizing Repair Paint: High-zinc-dust-content paint for re-galvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.
   2. Baked-Enamel Finish: Immediately after cleaning and pre-treating, apply manufacturer's standard 2-coat, baked-enamel finish consisting of prime coat and thermosetting topcoat, with a minimum dry film thickness of 1 mil for topcoat. Comply with paint manufacturer's instructions for applying and baking to achieve a minimum dry film thickness of 2 mils.
      a. Color and Gloss: As selected by Contract Administrator from manufacturer's full range of choices for color and gloss.

E. Steel Sheet Finishes:
   1. Surface Preparation: Solvent-clean surfaces to comply with SSPC-SP 1 to remove dirt, oil, grease, and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel to comply with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-P 8 (Pickling).

2. Pre-Treatment: Immediately after surface preparation, apply a conversion coating of type suited to organic coating applied over it.
3. Baked-Enamel Finish: Immediately after cleaning and preparation, apply manufacturer's standard 2-coat, baked-enamel finish consisting of prime coat and thermosetting topcoat that complies with ANSI A250.3. Comply with paint manufacturer's instructions for applying and baking to achieve a minimum dry film thickness of 2 mils.
    a. Color and Gloss: As selected by Architect from manufacturer's full range of choices for color and gloss.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Placing Frames: Comply with provisions in SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
    1. Wall Anchors: Provide at least three anchors per jamb. For openings 90 inches or more in height, install an additional anchor at hinge and strike jambs.
    2. Gypsum Board Partitions: For in-place partitions, install knock-down, drywall slip-on frames.
    3. Fire-Rated Frames: Install according to NFPA 80.

B. Door Installation: Comply with ANSI A 250.8. Shim down as necessary to comply with SDI 122 and ANSI/DHIA 115.1G.
    1. Fire-Rated Doors: Install within clearances specified in NFPA 80.
    2. Smoke Control Doors: Install to comply with NFPA 105.

C. After installation, remove protective wrappings from doors and frames and touch up prime coat with compatible air-drying primer.

END OF SECTION 08110

Issue Date: 04.27.12

SECTION 08211 - FLUSH WOOD DOORS

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes solid core doors as follows:

1. Doors with wood-veneer faces and factory finishing.
2. Factory fitting wood doors to frames and factory machining for hardware.

1.2 SUBMITTALS

A. Product Data: For each type of door.

B. Shop Drawings: Indicate location, size, and hand of each door; elevation of each kind of door; construction details; location and extent of hardware blocking; mortises, holes, and cutouts; requirements for veneer matching; factory finishing and other pertinent data.

C. Samples: For each face material and finish.

1.3 QUALITY ASSURANCE

A. Quality Standard: Comply with AWI's "Architectural Woodwork Quality Standards Illustrated."

B. Forest Certification: Provide doors made from wood products obtained from forests certified by an FSC-accredited certification body to comply with FSC 1.2, "Principles and Criteria."

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Algoma Hardwoods Inc.
2. Eggers Industries; Architectural Door Division.
3. Mohawk Flush Doors, Inc.
4. Southwood Door Co.
5. VT Industries Inc.
6. Marshfield Inc.

2.2 DOOR CONSTRUCTION

A. Adhesives: Do not use adhesives containing urea formaldehyde.

B. Particleboard: Do not use particleboard made with binder containing urea-formaldehyde resin.

C. Doors for Transparent Finish:

1. Grade: Premium, with Grade A faces.
2. Species and Cut: White birch, rotary cut.
3. Match between Veneer Leaves: Book match.

D. Interior Veneer-Faced Solid-Core Doors:

1. Core: Particleboard.
2. Construction: Five plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

2.3 FABRICATION

A. Fabricate doors in sizes indicated for Project-site fitting.

B. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements in NFPA 80 for fire-rated doors.

C. Factory machine doors for hardware that is not surface applied.

D. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.
1. Louvers: Factory install louvers in prepared openings.

2.4 FACTORY FINISHING

A. General: Finish doors at factory.

B. Grade: Premium.

C. Finish: NWWDA I.S.1-A System TR-6 catalyzed polyurethane and OP-6.

D. Effect: Semifilled finish.

E. Sheen: Semigloss.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.

B. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.

C. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.

D. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

END OF SECTION 08211

Issue Date: 04.27.12

SECTION 08410 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS - INLAND

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Interior and exterior storefront systems.

1.2 PERFORMANCE REQUIREMENTS

A. Provide systems, including anchorage, capable of withstanding loads and thermal and structural movements indicated without failure when supporting when supporting full dead loads and without framing members transferring stresses to glazing.

B. Structural Performance: Provide systems, including anchorage, capable of withstanding loads indicated.

1. Deflection Normal to Glazing Plane: Limited to 1/175 of clear span or ¾ inch, whichever is smaller.
2. Deflection Parallel to Glazing Plane: When carrying full dead load, not to exceed amount that reduces glazing bite below 75 percent of design dimension and that which reduces edge clearance between framing members and glazing or other fixed components to less than 1/8 inch.

C. Structural Testing: ASTM E 330 at 150 percent of inward and outward wind-load design pressures for duration required by design wind velocity without system evidencing material failures, structural distress, deflection failures, or permanent deformation of mail framing members exceeding 0.2 percent of clear span.

D. Provide signed/sealed structural calculations showing compliance with design loads and the minimum anchorage to the support structure.

E. Air Infiltration: Limited to 0.06 cfm/sq.ft. of system surface area when tested according to ASTM E 283 at a static-air-pressure difference of 1.57 lbf/sq.ft.

F. Water Penetration: No water leakage when tested according to ASTM E 331 at minimum differential pressure of 20 percent of inward acting wind-load design pressure but not less than 6.24 lbf/sq.ft.

G. Temperature Change (Range): Accommodate 120 deg F ambient and 180 deg F material surfaces. Insert U-factors of specific system components below if required.

H. Condensation Resistance Factor (CRF): Not less than 60 per AAMA 1503.1.

I. Average Thermal Conductance (U-Value): Not more than 0.36 Btu/sq.ft. x h x deg F per AAMA 1503.1. Thermally broken construction: provide systems that isolate aluminum exposed to exterior from aluminum exposed to interior with material of low thermal conductance.

1.3 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace systems that fail in materials and workmanship within two years from date of Substantial Completion. Failure includes, but is not limited to the following:

a. Structural failures including, but not limited to, excessive deflection.
b. Failure of system to meet performance requirements.
c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
d. Failure of operating components to function normally.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Design standard is based on Kawneer TriFab 451T- VG thermally broken system. Subject to compliance with requirements, provide products by one of the following:

1. Butler Manufacturing Company; Vistawall Architectural Products.
2. EFCO Corporation.
3. Kawneer Company, Inc. TriFab 451T-VG
4. US Aluminum;

2.2 MATERIALS

A. Aluminum: ASTM B 209 sheet; ASTM B 221 extrusions.

B. Glazing: Specified in Division 8 Section “Glazing.” Storefront system to accommodate 1” insulated glazing.

C. Gaskets, Sealants, and Joint Fillers:

1. For joints within framing system, as recommended in writing by manufacturer for joint type indicated.
2. For joints at perimeter of systems as specified in Division 7 Section “Joint Sealants.”

D. Bituminous Paint: SSPC-Paint 12, except containing no asbestos, cold-applied asphalt mastic paint formulated for 30-mil thickness per coat.

2.3 COMPONENTS

A. Doors: 1-3/4 inch thick glazed doors with minimum 0.125-inch thick, extruded tubular rail and stile members, mechanically fastened corners with reinforcing brackets that are deep penetration and fillet welded or that incorporate concealed tie-rods, and with snap-on extruded- aluminum glazing stops and performed gaskets.

1. Interior Doors: Provide ANSI/BHMA A156.16 silencers, three on strike jamb of single-door frames and two on head of double-door frames.

a. Site Design: Wide, 4-1/2 inch minimum width.

2. Exterior Doors: Provide compression weather stripping at fixed stops. At other locations, provide sliding weather stripping retained in adjustable strip mortised into door edge.

a. Stile Design: Wide, 4-1/2 inch minimum width.

B. Fasteners, Flashings, and Accessories: Compatible with adjacent materials, corrosion-resistant, nonstaining, and nonbleeding. Use concealed fasteners except for application of door hardware.

1. Reinforce members as required to retain fastener threads.

2. For hardware application, use countersunk Phillips flat-head machine screws finished to match framing members or hardware being fastened, unless otherwise indicated.

2.4 HARDWARE

A. General: Provide heavy-duty units indicated in sizes, number and type recommended by manufacturer for entrances indicated. Finish exposed parts to match door finish, unless otherwise indicated.

B. Offset Pivots: ANSI/BHMA A156.4, Grade 1 with exposed parts of cast-aluminum alloy. Provide top, bottom, and intermediate pivots at each door leaf.

C. Closers, General: Comply with manufacturer's recommendations for closer size, depending on door size, exposure to weather, and anticipated frequency of use.

1. Closing Cycle: Comply with requirements of authorities having jurisdiction or the Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," whichever are more stringent.

2. Opening Force: Comply with the following maximum opening-force requirements for locations as indicated:

a. Interior Doors: 5 lbf.

b. Exterior Doors: 8 lbf.

D. Surface-Mounted Overhead Closers: ANSI/BHMA A156.4, Grade 1. Provide cover and the following:

1. Mounting: Hinge side.
2. Hold Open: Automatic, 110 degrees.
3. Back Check: Adjustable
4. Product: Norton 8100 BF.

E. Door Stops: ANSI/BHMA A 156.16, Grade 1, floor-or wall – mounted door stop, as appropriate for door location indicated, with integral rubber bumper.

F. Mortise Cylinders: Manufacturer's standard, 6-pin, mortised cylinders complying with ANSI/BHMA A156.5, Grade 1 requirements.

G. Lockset Faceplates: Manufacturer's standard extruded-aluminum faceplate for lock type indicated that lays flush with door stile.

2.5 FABRICATION

A. Fabricate framing in profiles indicated for flush glazing (without projecting stops). Provide subframes and reinforcing of types indicated or, if not indicated, as required for a complete system.

1. Frame Construction: Head-and-sill receptor with shear blocks at intermediate horizontal members.

B. Fabricate components to drain water passing joints and condensation and moisture occurring or migrating within the system to the exterior.

C. Doors and Door Framing: Reinforce to support imposed loads and for hardware indicated. Cut, drill, and tap for factory installed hardware before finishing components.

D. Factory assemble framing and components to greatest extent possible. Disassemble components only as necessary for shipment and installation.

2.6 ALUMINUM FINISHES

A. Clear Anodic Finish: Class II, AAMA 607.1.

B. High-Performance Organic Finish: Two-coat thermocured system with fluoropolymer coats containing not less than 70 percent polyvinylidene fluoride resin by weight; complying with AAMA 605.2.

1. Color and Gloss: As indicated on Finish Schedule.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Isolate metal surfaces in contact with incompatible metal or corrosive substrates, including wood, by painting contact surfaces with bituminous paint or primer or by applying sealant or tape recommended by manufacturer.

B. Install components to drain water passing joints, condensation and moisture occurring or migrating within the system to the exterior.

C. Install glazing to comply with requirements of Division 8 Section "Glazing" unless otherwise indicated.

D. Install sealants at system perimeter to comply with requirements of Division 7 Section “Joint Sealants”.

E. Install framing components true in alignment with established lines and grades to the following tolerances:

1. Variation from Plane: Limit to 1/8 inch in 12 feet over total length.
2. Alignment: For surfaces abutting in line, limit offset to 1/16 inch. For surfaces meeting at corners, limit offset to 1/32 inch.
3. Diagonal Measurements: Limit difference between diagonal measurements to 1/8 inch.

F. Install doors without warp or rack. Adjust doors and hardware to provide tight fit at contact points and smooth operation.

G. The installation shall be examined and certified by the independent testing laboratory to confirm the correct anchorage to the building structure.

END OF SECTION 08410

Issue Date: 04.27.12

SECTION 08711 - DOOR HARDWARE - INLAND

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Commercial door hardware.

1.2 QUALITY ASSURANCE

A. Supplier Qualifications: Person who is or employs a qualified DHI Architectural Hardware Consultant.

B. Keys: Deliver keys to Owner

C. Templates: Obtain and distribute templates for doors, frames, and other work specified to be factory prepared for installing door hardware.

D. Standards: Comply with BHMA A156 series standards. Grade 1, unless Grade 2 is indicated.

E. Certified Products: Provide door hardware that is listed in BHMA directory of certified products.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Product: Subject to compliance with requirements, provide the product named for each door hardware item indicated in Door Hardware Sets.

2.2 DOOR HARDWARE

A. Scheduled Door Hardware: Provide door hardware according to Door Hardware Sets at the end of Part 3. Manufacturers' names are abbreviated.

2.3 PIVOTS AND HINGES

A. Manufacturers:
1. Hinges:
   a. Hager Companies (H).
   b. McKinney Products Company; Div. of ESSEX Industries, Inc. (MCK).
   c. Stanley Commercial Hardware; Div. of The Stanley Works (STH).

B. General: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.

C. Non-removable Pins: Provide set screw in hinge barrel that prevents removal of pin while door is closed; for out-swinging exterior doors and out-swinging corridor doors with locks.

D. Screws: Phillips flat-head screws; screw heads finished to match surface of hinges.
1. Metal Doors and Frames: Machine screws (drilled and tapped holes).
2. Wood Doors and Frames: Wood screws.
3. Fire-Rated Wood Doors: Threaded-to-the-head wood screws.

2.4 MECHANICAL LOCKS AND LATCHES

A. Manufacturers:
1. Best Lock Corporation (BLC).

B. Bored Lockset Design: As scheduled.

C. Dummy Trim: Match knob lock trim and escutcheons.

D. Lock Throw: Comply with labeled fire door requirements.

E. Backset: 2-3/4 inches (70 mmn), unless otherwise indicated.

2.5 BOLTS

A. Fire-Rated Doors: Comply with labeled fire door requirements.

B. Flush Bolts: BHMA Grade 1, unless Grade 2 is indicated, designed for mortising into door edge.
1. Manufacturers:
a. Glynn-Johnson; an Ingersoll-Rand Company (GJ).
b. Hager Companies (HAG).
c. Ives, H. B. (IVS).

2.6 EXIT DEVICES

A. Manufacturer:
1. Yale Security Products; Yale Securities Inc.; 2100F-F01.

B. Panic Exit Devices: Listed and labeled for panic protection, based on testing according to UL 305.

C. Fire Exit Devices: Complying with NFPA 80 that are listed and labeled for fire and panic protection, based on testing according to UL 305 and NFPA 252.
1. Dummy Push Bar: Non-functioning push bar matching functional push bar.
2. Outside Trim: Pull with cylinder; material, finish, and design to match locksets and latchsets, unless otherwise indicated.

2.7 OPERATING TRIM

A. Push-Pull Design: As scheduled.
   1. Manufacturers:
      a. Hager Companies (HAG)
      b. Ives. H. B. (IVS).

2.8 CLOSERS

A. Surface-Mounted Closers:
   1. Manufacturers:
      a. LCN Closers; an Ingersoll-Rand Company (LCN).
      b. Norton Door Controls; Div. of Yale Security Inc. (NDC).
      c. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).

2.9 PROTECTIVE TRIM UNITS

A. Protective Trim Units: Sized 1-1/2 inches (38mm) less than door width on push side and ½ inch (13mm) less than door width on pull side, by height scheduled or indicated. Fasten with exposed machine or self-tapping screws.
   1. Material: Metal
      a. Manufacturers:
         1) Hager Companies (HAG)
         2) Rockwood Manufacturing Company (RM).

2.10 STOPS AND HOLDERS

A. Stops and Holders: Provide floor stops for doors, unless wall or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic. Where floor or wall stops are not appropriate, provide overhead holders.
   1. Manufacturers:
      a. Hager Companies (HAG).
      b. Ives, H. B. (IVS).
      c. Triangle Brass Manufacturing Company, Inc. (TBM)

B. Silencers for Door Frames: Neoprene or rubber; fabricated for drilled-in application to frame.

2.11 DOOR GASKETING AND THRESHOLDS

A. Door Gasketing: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide non-corrosive fasteners for exterior applications and elsewhere as indicated.
   1. Manufacturers:
      a. Gasketing & Door Bottoms:
         1) National Guard Products, Inc. (NGP).
         2) Pemko Manufacturing Co., Inc. (PEM).

2. Air Leakage: Not to exceed 0.50 cfm per foot (0.000774 cu. m/s per m) of crack length for gasketing other than for smoke control, as tested according to ASTM E 283.
3. Smoke-Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled, based on testing according to UL 1784.
4. Fire-Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled, based on testing according to UL 10B or NFPA 252.
5. Sound-Rated Gasketing: Assemblies that are listed and labeled, based on testing according to ASTM E 1408.
6. Gasketing Materials: Comply with ASTM D 2000 and AAMA 701/702.

B. Thresholds: Of type scheduled or indicated.
1. Manufacturers:
   a. National Guard Products, Inc. (NGP).
   b. Pemko Manufacturing Co., Inc. (PEM)

2.12 MISCELLANEOUS DOOR HARDWARE

A. Boxed Power Supplies: Modular unit in NEMA ICS 6, Type 4 enclosure; filtered and regulated; and listed and labeled for use with fire alarm systems.

2.13 CYLINDERS, KEYING, AND STRIKES

A. Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
1. Manufacturer:
   a. Same manufacturer as for locks and latches.
2. Number of Pins: Six.
3. High-Security Grade: BHMA Grade 1 A, listed and labeled as complying with UL437 (Suffix A).
4. Manufacturer’s standard; finish face to match lockset; removable cores.

B. Keying System: Factory-registered keying system; master or grand master key system.
1. Keys: Provide nickel-silver keys permanently inscribed with a visual key control number and “DO NOT DUPLICATE” notation. In addition to one extra blank key for each lock, provide three change keys and five master or grand master keys.

C. Strikes: Manufacturer’s standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set.

2.14 FABRICATION

A. Base Metals: Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes. Do not furnish manufacturer’s standard materials if different from specified standard.

B. Fasteners: Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated. Provide steel machine or wood screws or steel through bolts for fire-rated applications.

C. Spacers or Sex Bolts: For through bolting of hollow metal doors.

D. Fasteners for Wood Doors: Comply with requirements of DHI WDHS.2, “Recommended Fasteners for Wood Doors”.

E. Finishes: Comply with BHMA A156.18.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Examine doors and frames for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

B. Steel Door and Frame Preparation: Comply with DHI A115 series. Drill and tap doors and frames for surface-applied hardware according to SDI 107.

C. Wood Door Preparation: Comply with DHI A115-W series.

D. Mounting Heights: Comply with the following requirements, unless otherwise indicated.

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Custom Steel Doors and Frames: DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."
3. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."

E. Adjust and reinforce attachment substrates as necessary for proper installation and operation. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
1. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
1. Door Closers: Adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches (75 mm) from the latch, measured to the leading edge of the door.

3.2 FIELD QUALITY CONTROL

A. Inspections: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

3.3 DOOR HARDWARE SETS

A. See drawings for the individual Hardware Sets to be used.

MANUFACTURER ABBREVIATIONS:
BE - Best
DO - Dorma
GJ - Glynn-Johnson
H -Hager
NGP - National Guard Products
RKW - Rockwood
Y-Yale
I - Ives

END OF SECTION 08711

Issue Date: 04.27.12

SECTION 08800 – GLAZING - INLAND

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes glazing for the following products and applications:

1. Windows.
2. Doors.
3. Glazed curtain walls.
4. Glazed entrances.
5. Interior borrowed lites.
6. Storefront framing.

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide glazing systems capable of withstanding normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, and installation; failure of sealants or gaskets to remain watertight and airtight; deterioration of glazing materials; or other defects in construction.

B. Glass Design: Glass thickness designations indicated are minimums and are for detailing only. Confirm glass thicknesses by analyzing Project loads and in-service conditions. Provide glass lites in the thickness designations indicated for various size openings, but not less than thicknesses and in strengths (annealed or heat treated) required to meet or exceed the following criteria:

1. Glass Thicknesses: Select minimum glass thicknesses to comply with ASTM E 1300, according to the following requirements:

a. Specified Design Wind Loads: As indicated.
b. Probability of Breakage for Vertical Glazing: 8 lites per 1000 for lites set vertically or not more than 15 degrees off vertical and under wind action.

1) Load Duration: 60 seconds or less.

c. Minimum Glass Thickness for Exterior Lites: Not less than 6 mm.
d. Thickness of Tinted and Heat-Absorbing Glass: Provide the same thickness for each tint color indicated throughout Project.

2. Thermal Movements: Provide glazing that allows for thermal movements resulting from a maximum change (range) of 120 deg F, in ambient and surface temperatures, respectively, acting on glass framing members and glazing components. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

C. Thermal and Optical Performance Properties: Provide glass with performance properties specified based on manufacturer's published test data, as determined according to procedures indicated below:

1. For monolithic-glass lites, properties are based on units with lites 6 mm thick.
2. For laminated-glass lites, properties are based on products of construction indicated.
3. For insulating-glass units, properties are based on units with lites 6mm thick and a nominal ½-inch wide interspace.
4. Center-of-Glass U-Values: NFRC 100 methodology using LBL-35298 WINDOW 4.1 computer program, expressed as Btu/ sq. ft x h deg F.
5. Center-of-Glass Solar Heat Gain Coefficient: NFRC 200 methodology using LBL-35298 WINDOW 4.1 computer program.
6. Solar Optical Properties: NFRC 300.

1.3 QUALITY ASSURANCE

A. Sealant Compatibility and Adhesion Testing: Use sealant manufacturer’s standard test methods to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.

B. Fire-Rated Assemblies: Where glazing products are used in fire-rated assemblies, comply with requirements of specific assembly specified in other sections of these specifications.

1. Door Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252.

2. Window Assemblies: Complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 257.

C. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201 and ANSI Z97.1.

D. Glazing Publications: Comply with recommendations of the following, unless more stringent requirements are indicated. Delete option in subparagraph below if no laminated glass is specified for Project.

1. GANA Publications: “Glazing Manual” and “Laminated Glass Design Guide”.
2. SIGMA Publications: SIGMA TM-3000, “Vertical Glazing Guidelines”.

E. Insulating-Glass Certification Program: Permanently marked with certification label of Insulating Glass Certification Council.

1.4 WARRANTY

A. Special Warranty: Manufacturer's standard form, made out to Owner and signed by manufacturer, in which manufacturer agrees to furnish replacements for units that deteriorate from normal use by developing defects attributable to the manufacturing process, f.o.b. the nearest shipping point to Project site, within warranty period.

1. Coated Glass:

    a. Defects: Peeling, cracking, and other indications of deg radation of metallic coating.
    b. Warranty Period: 10 years from the date of Substantial Completion.

2. Laminated Glass:

    a. Deterioration: Edge separation, delamination that materially obstructs vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.
    b. Warranty Period: Five years from date of Substantial Completion.

3. Insulating Glass:

    a. Warranty Period: Ten years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS MATERIALS

A. Annealed Float Glass: ASTM C 1036, Type I (transparent flat glass), Quality-Q3 (glazing select); class as indicated in schedules at the end of Part 3.

B. Heat-Treated Float Glass: ASTM C 1048; Type I (transparent flat glass); Quality-Q3 (glazing select); class, kind, and condition as indicated in schedules at the end of Part 3.

1. Fabrication Process: By horizontal (roller-hearth) process with roll-wave distortion parallel to bottom edge of glass as installed.

C. Coated Class, General: Provide coated glass complying with requirements indicated in this Article and in schedules at the end of Part 3.

1. Provide Kind HS (heat-strengthened) coated float glass in place of coated annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in “Performance Requirements” Article. Provide Kind FT (fully tempered) where safety glass is indicated.

D. Polished Wired Glass: ASTM C 1036, Type II (patterned and wired glass, flat), Class I (clear), Quality q8 (glazing); Form 1 (wired, polished both sides) Mesh m2 (square), 6.4 mm thick.

E. Laminated Glass: Comply with ASTM C 1172 for kinds of laminated glass indicated and other requirements specified, including those in the Laminated-Glass Schedule at the end of Part 3.

1. Interlayer: Cured resin, clear or in colors, and of thickness indicated with a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after laminating glass lites and installation.

F. Insulating-Glass Units: Preassembled units consisting of sealed lites of glass separated by a dehydrated interspace, and complying with ASTM E 774 for Class CBA units and with requirements specified in this Article and in the Insulating-Glass Schedule at the end of Part 3.

1. Provide Kind HS (heat-strengthened) float glass in place of annealed glass where needed to resist thermal stresses induced by differential shading of individual glass lites and to comply with glass design requirements specified in "Performance Requirements" Article. Provide Kind FT (fully tempered) where safety glass is indicated.
2. Overall Unit Thickness and Thickness of Each Lite: Dimensions indicated in the Insulating-Glass Units Schedule at the end of Part 3 are nominal and the overall thicknesses of units are measured perpendicularly from outer surfaces of glass lites and unit's edge.
3. Sealing System: Dual seal with manufacturer's standard primary and secondary sealants.
4. Spacer: Aluminum with mill or clear-anodized finish.
5. Corner Construction: Manufacturer's standard.
6. Overall Unit Thickness and Thickness of Each Lite: 1" and 6 mm.
7. Interspace Content: Air.

2.2 GLAZING TAPES

A. Back-Bedding Mastic Glazing Tape: Preformed, butyl-based elastomeric tape with a solids content of 100 percent with or without spacer rod as recommended in writing by tape and glass manufacturers for application indicated and complying with ASTM C 1281 and AAMA 800 for products indicated below:

1. AAMA 806.3 tape, for glazing applications in which tape is subject to continuous pressure.
2. AAMA 807.3 tape, for glazing applications in which tape is not subject to continuous pressure.

2.3 GLAZING GASKETS

A. Compression Gaskets: Molded or extruded gaskets of type and material indicated below and profile and hardness required to maintain watertight seal:

1. EPDM dense compression gaskets complying with ASTM C 846.
2. Silicone dense compression gaskets complying with ASTM C 1115.
3. EPDM or silicone soft compression gaskets complying with ASTM C 509, Type II, black.

2.4 MISCELLANEOUS GLAZING MATERIALS

A. General: Provide products of material, size, and shape complying with referenced glazing standard, requirements of manufacturers of glass and other glazing materials for application indicated, and with a proven record of compatibility with surfaces contacted in installation.

B. Cleaners, Primers, and Sealers: Types recommended by sealant or gasket manufacturer.

C. Setting Blocks: Elastomeric material with a Shore A durometer hardness of 85, plus or minus 5.

D. Spacers: Elastomeric blocks or continuous extrusions with a Shore A durometer hardness required by glass manufacturer to maintain glass lites in place for installation indicated.

E. Edge Blocks: Elastomeric material of hardness needed to limit glass lateral movement (side walking).

2.5 FABRICATION OF GLAZING UNITS

A. Fabricate glazing units in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with written instructions of product manufacturer and referenced glazing publications, to comply with system performance requirements.

PART 3 - EXECUTION

3.1 GLAZING

A. General: Comply with combined written instructions of manufacturers of glass, sealants, gaskets, and other glazing materials, unless more stringent requirements are indicated, including those in referenced glazing publications.

1. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings not firmly bonded to substrates.
2. Protect glass edges from damage during handling and installation. Remove glass with edge damage or other imperfections that, when installed, could weaken glass and impair performance and appearance from Project site and legally dispose of off Project site.
3. Apply primers to joint surfaces where required for adhesion of sealants, as determined by sealant compatibility and adhesion testing.
4. Install setting blocks in sill rabbets, sized and located to comply with referenced glazing publications, unless otherwise required by glass manufacturer. Set blocks in thin course of compatible sealant suitable for heel bead.
5. Do not exceed edge pressures stipulated by glass manufacturers for installing glass lites.
6. Provide spacers for glass lites where length plus width is larger than 50 inches unless gaskets and glazing tapes are used that have demonstrated ability to maintain required face clearances.

B. Protection

1. Protect exterior glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface.
2. Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter.

C. Remove and replace glass that is broken, chipped, cracked, or abraded or that is damaged from natural causes, accidents, and vandalism, during construction period.

3.2 MONOLITHIC FLOAT-GLASS SCHEDULE

A. Uncoated Clear Float Glass FG: Class 1 (clear) Condition A (uncoated surfaces) where tempering is required to resist thermal stresses induced by differential shading of individual glass lites or resist wind loads.

3.3 LAMINATED-GLASS SCHEDULE

A. Laminated Glass LG: Kind LHS (tow lites of heat-strengthened float glass).

1. Inner Lite: Float glass, Class 1 (clear), Kind FT (tempered).

a. Clear

b. Thickness; 6 mm.

2. Outer Lite: Float glass, Class 1 (clear), Kind FT (tempered).

a. Clear

b. Condition A (uncoated surfaces).

c. Thickness: 6 mm.

3. Plastic Interlayer: 0.030 inch thick.

a. Interlayer Color: Clear.

3.4 INSULATING – GLASS SCHEDULE

A. Uncoated Insulating Glass IG:

1. Overall Unit Thickness and Thickness of Each Lite: 1” and 6 mm.
2. Interspace Content: Air
3. Indoor Lite: Float glass, Class 1 (clear) float glass, annealed Kind HS (heat strengthened) or TP (tempered), Condition A (uncoated surfaces).
4. Outdoor Lite: Float glass, Class 2 (tinted, heat absorbing, and lite reducing) Kind HS (heat strengthened) or FT (tempered), Low E coating on #2 surface..

a. Tint Color:

1) “Atlantica” by PPG Industries.
2) “EverGreen” by Pilkington Libbey-Owens-Ford.

END OF SECTION 08800

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