

SECTION 08110 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

DESCRIPTION OF WORK: _____

Extent of standard steel doors and frames is indicated and scheduled on drawings.

Finish hardware is specified elsewhere in Division 8.

Building in of anchors and grouting of frames in masonry construction is specified in Division 4.

QUALITY ASSURANCE:

Provide doors and frames complying with Steel Door Institute "Recommended Specifications: Standard Steel Doors and Frames" (SDI-100) and as herein specified.

Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated or required, provide fire-rated door and frame assemblies that comply with NFPA 80 "Standard for Fire Doors and Windows", and have been tested, listed, and labeled in accordance with ASTM E 152 "Standard Methods of Fire Tests of Door Assemblies" by a nationally recognized independent testing and inspection agency acceptable to authorities having jurisdiction.

Comply with UL 10C requirements for Positive Pressure Fire Testing.

Provide fixed metal label at each fire assembly component.

SUBMITTALS:

Product Data: Submit manufacturer's technical product data substantiating that products comply with requirements.

Shop Drawings: Submit for fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of finish hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.

Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.

Indicate coordination of glazing frames and stops with glass and glazing requirements.

DELIVERY, STORAGE AND HANDLING:

Deliver hollow metal work cartoned or crated to provide protection during transit and job storage. Provide additional sealed plastic wrapping for factory-finished doors.

Inspect hollow metal work upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.

Store doors and frames at building site under cover. Place units on minimum 4 inches high wood blocking. Avoid use of non-vented plastic or canvas shelters that could create humidity chamber. If cardboard wrapper on door becomes wet, remove carton immediately. Provide 1/4 inches spaces between stacked doors to promote air circulation.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Manufacturer: Subject to compliance with requirements, provide steel doors and frames by one of the following:

Steel Doors and Frames, (General):

Allied Steel Product, Inc.
Amweld/Div. American Welding & Mfg. Co.
Ceco Corp.
D& D Specialties
Pioneer Bldrs. Products Corp./Div. CORE Industries, Inc.
Steelcraft/Div. American Standard Co.
Republic Builders Products Corp./Subs. Republic Steel.

MATERIALS:

Hot-Rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, complying with ASTM A 569 and ASTM A 568.

Cold-Rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A 366 and ASTM A 568.

Galvanized Steel Sheets: Zinc-coated carbon steel sheets of commercial quality, complying with ASTM A 526, or drawing quality, ASTM A 642, hot dipped galvanized in accordance with ASTM A 525, with A60 or G60 coating designation, mill phosphatized.

Supports and Anchors: Fabricate of not less than 18- gage galvanized sheet steel.

Inserts, Bolts and Fasteners: Manufacturer's standard units, except hot-dip galvanized items to be built into exterior walls, complying with ASTM A 153, Class C or D as applicable.

Shop Applied Paint:

Primer: Rust-inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

STANDARD STEEL DOORS:

Provide metal doors of types and styles indicated on drawings or schedules.

Interior Doors: ANSI/SDI-100, Grade II, heavy-duty, Model 3 or 4, minimum 18-gage cold-rolled sheet steel faces.

Exterior Doors: ANSI/SDI-100, Grade III, rigid foam insulated, extra heavy-duty, Model 2, minimum 16-gage galvanized steel faces.

STANDARD STEEL FRAMES:

Provide metal frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on drawings and schedules. Conceal fastenings, unless otherwise indicated. Fabricate frames of minimum 16-gage cold-rolled furniture steel.

Fabricate frames with mitered corners, **WELDED construction for exterior and interior applications typical unless noted otherwise.**

Removable mullions: Provide double rabbet removable mullion assembly (with UL rating same as frame where indicated) complete with fittings as required for field attachment.

Door Silencers: Except on weather-stripped frames, drill stops to receive 3 silencers on strike jambs of single-swing frames and 2 silencers on heads of double-swing frames.

Plaster Guards: Provide 26-gage steel plaster guards or mortar boxes, welded to frame, at back of finish hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.

FABRICATION, GENERAL:

Fabricate steel door and frame units to be rigid, neat in appearance and free from defects, warp or buckle. Wherever practicable, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory- assembled before shipment, to assure proper assembly at project site. Comply with SDI-100 requirements as follows:

Internal Construction: Manufacturer's standard honeycomb, polyurethane, polystyrene, unitized steel grid, vertical steel stiffeners, or rigid mineral fiber core with internal sound deadener on inside of face sheets where appropriate in accordance with SDI standards.

Clearances: Not more than 1/8 inch at jambs and heads except between non-fire-rated pairs of doors not more than 1/4 inch. Not more than 3/4 inch at bottom.

Fabricate exposed faces of doors and panels, including stiles and rails of nonflush units, from only cold-rolled steel.

Fabricate frames, concealed stiffeners, reinforcement, edge channels, louvers and moldings from either cold-rolled or hot-rolled steel (at fabricator's option).

Fabricate exterior doors, panels, and frames from galvanized sheet in accordance with SDI-112. Close top and bottom edges of exterior doors as integral part of door construction or by addition of minimum 16-gage inverted steel channels.

Exposed Fasteners: Unless otherwise indicated, provide countersunk flat Phillips heads for exposed screws and bolts.

Thermal-Rated (Insulating) Assemblies: At exterior locations and elsewhere as shown or scheduled, provide doors fabricated as thermal insulating door and frame assemblies and tested in accordance with ASTM C 236 or ASTM C 976 on fully operable door assemblies.

Unless otherwise indicated, provide thermal-rated assemblies with U factor of 0.157 Btu/(hr x sq ft x deg F.) or R value of 6.37 or better.

Finish Hardware Preparation: Prepare doors and frames to receive finish hardware in accordance with final Finish Hardware Schedule and templated provided by hardware supplier. Comply with applicable requirements of ANSI A115 series specifications for door and frame preparation for hardware.

Reinforce doors and frames to receive surface-applied hardware.

Locate finish hardware as indicated on final shop drawings or, if not shown, in accordance with "Recommended Locations for Builder's Hardware," published by Door and Hardware Institute.

Shop Painting:

Clean steel surfaces of mill scale, rust, oil, grease, dirt, and other foreign materials before application of paint.

Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive finish paint.

Glazing Stops: Minimum 20 gage steel .

Provide non-removable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.

Provide screw applied removable glazing beads on inside of glass, louvers, and other panels in doors.

PART 3 - EXECUTION

INSTALLATION:

General: Install standard steel doors, frames, and accessories in accordance with final shop drawings, manufacturer's data, and as herein specified.

Placing Frames: Comply with provisions of SDI-105 "Recommended Erection Instructions for Steel Frames", unless otherwise indicated.

Except for frames located at in-place concrete or masonry and at drywall installations, place frames prior to construction at enclosing walls and ceilings. 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.

In masonry construction, locate 3 wall anchors per jamb at hinge and strike levels.

At in-place concrete or masonry construction, set frames and secure to adjacent construction with machine screws and masonry anchorage devices.

Install fire-rated frames in accordance with NFPA Std. No. 80.

Door Installation:

Fit hollow metal doors accurately in frames, within clearances specified in SDI-100.

Place fire-rated doors with clearances as specified in NFPA Standard No. 80.

ADJUST AND CLEAN:

Prime Coat Touch-up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer.

Protection Removal: Immediately prior to final inspection, remove protective plastic wrappings from prefinished doors.

Final Adjustments: Check and readjust operating finish hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION 08110

SECTION 08211 - FLUSH WOOD DOORS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to of this section.

SUMMARY:

Extent and location of each type of flush wood door is indicated on drawings and in schedules.

Types of doors required include the following:

Solid core flush wood doors with wood veneer faces.

SUBMITTALS:

Product Data: Door manufacturer's technical data for each type of door, including details of core and edge construction, trim for openings and louvers, and factory-finishing specifications.

Shop Drawings: Submit shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.

QUALITY ASSURANCE:

Quality Standards: Comply with the following standards:

NWWDA Quality Standard: I.S.1 "Industry Standard for Wood Flush Doors", of National Wood Window and Door Association (NWWDA).

AWI Quality Standards: "Architectural Woodwork Quality Standards", including Section 1300 "Architectural Flush Doors", of Architectural Woodwork Institute (AWI) for grade of door, core construction, finish and other requirements exceeding those of NWWDS quality standard.

NWWDA Quality Marking: Mark each wood door with NWWDA Wood Flush Door Certification Hallmark certifying compliance with applicable requirements of NWWDA I.S. 1 Series.

Fire-Rated Wood Doors: Provide wood doors that are identical in materials and construction to units tested in door and frame assemblies per ASTM E 152 and which are labeled and listed for ratings indicated by UL or other inspection agency acceptable to authorities having jurisdiction.

Manufacturer: Obtain doors from a single manufacturer to insure uniformity in quality of appearance and construction, unless otherwise indicated.

PRODUCT DELIVERY, STORAGE, AND HANDLING:

Protect doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with requirements of referenced standards and recommendations of NWWDA pamphlet "How to Store, Handle, Finish, Install, and Maintain Wood Doors", as well as with manufacturer's instructions.

Identify each door with individual opening numbers which correlate with designation system used on shop drawings for door, frames and hardware, using temporary, removable or concealed markings.

PROJECT CONDITIONS:

Conditioning: Do not deliver or install doors until conditions for temperature and relative humidity have been stabilized and will be maintained in storage and installation areas during remainder of construction period to comply with the following requirements applicable to project's geographical location:

Referenced AWI quality standard including Section 100-S-3 "Moisture Content".

WARRANTY:

Door Manufacturer's Warranty: Submit written agreement on door manufacturer's standard form signed by Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors which have warped (bow, cup or twist) or that show telegraphing of core construction in face veneers, or do not conform to tolerance limitations of referenced quality standards.

Warranty shall also include reinstallation which may be required due to repair or replacement of defective doors where defect was not apparent to hanging.

Warranty shall be in effect during following period of time after date of Substantial Completion.

Solid Core Interior Doors:

Life of installation.

Contractor's Responsibilities: Replace or refinish doors where Contractor's work contributed to rejection or to voiding of manufacturer's warranty.

PART 2 - PRODUCTS

MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, manufacturers offering door which may be incorporated in the work include, but are not limited to, the following:

Solid Core Doors with Wood Veneer Faces (Field Finish or Factory Prefinished):

Algoma Hardwoods, Inc.
Cal-Wood Door Div., Timberland Industries, Inc.
Eggers Industries, Architectural Door Division.
Glen-Mar Door Mfg. Co.
Graham Manufacturing Corp.
Mohawk Doors
Weyerhaeuser Company.
VT Industries

INTERIOR FLUSH WOOD DOORS:

Solid Core Doors for Stained Finish: Comply with the following requirements:

Grade: Premium, with Grade AA faces.
Species: Select White Maple, plain sliced. (TYPICAL).

AWI Grade: Custom (for staining).
Core Construction: PC-5 or PC-7 (Particleboard core, 5- or 7- ply)

IF providing Factory finished doors – Coordinate range color selections with Architect.

Factory finish doors in accordance with AWI Quality Standards Section 1500. Factory finish to be water based stain and Class “A” Flame retardant ultraviolet (UV) cured polyurethane sealer to comply with EPA Title 5 guidelines for VOC emission limitations.

Fire-Rated Solid Core Doors: Comply with the following requirements:

Faces and AWI Grade: Provide faces and grade to match non-rated doors in same area of building, unless otherwise indicated.

Construction: Manufacturer's standard core construction as required to provide fire-resistance rating indicated.

Edge Construction: Provide manufacturer's standard laminated edge construction for improved screw-holding capability and split resistance as compared to edges composed of a single layer of treated lumber. Edge veneer to match wood species of door face veneer.

Pairs: Furnish formed steel edges and astragals for pairs of fire-rated doors, unless otherwise indicated.

Provide fire-rated pairs with fire-retardant stiles that are labeled and listed for kinds of applications indicated without formed steel edges and astragals.

LOUVERS AND LIGHT FRAMES:

Wood Louvers: Door's manufacturer's standard solid birch louvers, unless otherwise indicated, and of size indicated.

Wood Beads for Light Openings in Fire Doors: Manufacturer's standard fire-rated wood veneer beads matching veneer species of door faces. Standard square edge stops.

FABRICATION:

Fabricate flush wood doors to produce doors complying with following requirements:

In sizes indicated for job-site fitting.

Transom and Side Panels: Fabricate matching panels with same construction, exposed surfaces and finish as specified for associated doors.

Fixed and Sidelight Transom Panels: Fabricate fixed panels with solid lumber transom bottom rail and door top rail, both rabbeted as indicated, and factory-installed spring bolts for concealed attachment into jambs of metal door frames.

Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of doors required.

Light Openings: Trim openings with moldings of material and profile indicated.

Louvers: Factory install louvers in prepared openings.

PART 3 - EXECUTION

EXAMINATION:

Examine installed door frames prior to hanging door:

Verify that frames comply with indicated requirements for type, size, location, and swing characteristics and have been installed with plumb jambs and level heads.

Reject doors with defects.

Do not proceed with installation until unsatisfactory conditions have been corrected.

INSTALLATION:

Hardware: For installation see Division-8 "Finish Hardware" section of these specifications.

Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and of referenced AWI standard and as indicated.

Install fire-rated doors in corresponding fire-rated frames in accordance with requirements of NFPA No. 80.

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

Fitting Clearances for Non-Rated Doors: Provide 1/8" at jambs and heads; 1/16" per leaf at meeting stiles for pairs of doors; and 1/8" from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4" clearance from bottom of door to top of threshold.

Fitting Clearances for Fire-Rated Doors: Comply with NFPA 80.

Prefit Doors: Fit to frames for uniform clearance at each edge.

ADJUSTING AND PROTECTION:

Operation: Rehang or replace doors that do not swing or operate freely.

Finished Doors: Refinish or replace doors damaged during installation.

Protect doors as recommended by door manufacturer to assure that wood doors will be without damage or deterioration at time of Substantial Completion.

End of SECTION 08211

SECTION 08410 - ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

Finish Hardware Section 08710.

DESCRIPTION OF WORK:

Extent of aluminum entrances and storefronts is shown on drawings and schedules.

Types of aluminum entrances and storefronts required include the following:

Fixed aluminum window type.

Glazing: Refer to "Glass and Glazing" section of Division 8 for glazing requirements for aluminum entrances and storefronts.

Hardware: ~~Reference 08710 Door Hardware—Storefront Supplier To Coordinate With HW Supplier.~~

SYSTEM PERFORMANCES:

General: Provide exterior entrance and storefront assemblies that have been designed and fabricated to comply with requirements for system performance characteristics listed below as demonstrated by testing manufacturer's corresponding stock systems according to test methods designated.

Thermal Movement: Allow for expansion and contract resulting from ambient temperature range of 180 degrees F (100 degrees C) without buckling, failure of joint seals, undue stress on structural elements, damaging loads on fasteners, reduction of performance, stress on glass, or other detrimental effects.

Wind Loading: Provide aluminum entrance and storefront assemblies capable to withstand loading indicated below, tested per A23 STM E 330.

Uniform pressure of 25 pounds per square foot inward and 25 pounds per square foot outward, and to withstand 90 MPH wind design criteria for Rowan County, North Carolina.

Air infiltration: maximum 0.37 cfm per foot of crack length at 6.24 psf pressure differential when tested in accordance with ASTM E283.

Water resistance: No uncontrolled water leakage 8.00 psf pressure differential with water rate of 5 gallon/hr. when tested in accordance with ASTM E331.

QUALITY ASSURANCE:

Drawings are based on one manufacturer's standard aluminum entrance and storefront system. Another standard system of a similar and equivalent nature will be acceptable when differences do not materially detract from design concept or intended performances, as judged solely by Architect.

SUBMITTALS:

Product Data: Submit manufacturer's specifications, standard details, and installation recommendations for components of aluminum entrances and storefronts required for project, including test reports certifying that products have been tested and comply with performance requirements.

Shop Drawings: Submit shop drawings for fabrication and installation of aluminum entrances and storefronts, including elevations, detail sections of typical composite members, hardware mounting heights, anchorages, reinforcement, expansion provisions, and glazing.

Samples of Initial Color Selection: Submit pairs of samples of each specified color and finish on 12 inch long sections of extrusions or formed shapes. Where normal color variations are anticipated, include 2 or more units in each set of samples indicating extreme limits of color variations.

WARRANTY

Warranty: Submit a written warranty, executed by the manufacturer, agreeing to repair or replace units that fail in materials or workmanship within the specified warranty period. Failures include, but are not necessarily limited to:

- Structural failures including excessive deflection, excessive leakage or air infiltration.
- Faulty operation.
- Deterioration of metals, metal finishes and other materials beyond normal weathering.

Warranty Period: 3 years after the date of Substantial Completion.

The warranty shall not deprive the Owner of other rights or remedies the Owner may have under provisions of the Contract Documents, and is in addition to and runs concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products, which may be incorporated in the work, include, but are not limited to, the following:

- YKK America, Inc.
- Arch / Amarlite Architectural Products
- Efco Aluminum Series (Basis of Design)
- Kawneer Company, Inc.
- Vistawall Architectural Products.
- United States Aluminum Corp.

COMPONENTS:

Storefront Framing System: Provide storefront and entrance framing systems fabricated from extruded aluminum members of size and profile indicated. Include sub frames and other reinforcing members of the type indicated. Provide for flush glazing storefront from the exterior on all sides without projecting stops. Shop fabricate and preassemble frame components where possible. Provide storefront frame sections without exposed seams.

Mullion Configurations: Provide pockets at the inside glazing face to receive resilient elastomeric glazing. Mullions and horizontals shall be one piece. Make provisions to drain moisture accumulation to the exterior.

Storefront Framing 2" x 4-1/2" (for 1" exterior glass)

STILE AND RAIL TYPE ALUMINUM DOORS:

~~Frame:~~ Provide tubular frame members, fabricated with mechanical joints using heavy inserted reinforcing plates and concealed tie rods or j-bolts, or fabricate with structurally welded joints, at manufacturer's option.

~~Design:~~ Provide doors 1 3/4" thick and of design indicated on the drawings.

~~Wide stile: 5 1/2" nominal width.
Top Rail: 5 1/2" nominal height.
Top & Middle Rail: 10" nominal height.~~

~~Glazing:~~ Fabricate doors to facilitate replacement of glass or panels, without disassembly of door stiles and rails. Provide snap on extruded aluminum glazing stops, with exterior stops anchored for non-removal.

MATERIALS AND ACCESSORIES:

Aluminum Members: Alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish; ASTM B 221 for extrusions, ASTM B 209 for sheet/plate, and ASTM B 211 for aluminum bars, rods, and wire.

Carbon steel reinforcement of aluminum framing members shall comply with ASTM A 36 for structural shapes, plates and bars, ASTM A 611 for cold rolled sheet and strip, or ASTM A 570 for hot rolled sheet and strip.

Fasteners: Aluminum, non-magnetic stainless steel, or other materials warranted by manufacturer to be noncorrosive and compatible with aluminum components.

Do not use exposed fasteners except where unavoidable for application of hardware. Match finish of adjoining metal.

Provide Phillips flat-head machine screws for exposed fasteners.

Concealed Flashing: Dead-soft stainless steel, 26 gage minimum, or extruded aluminum, 0.026" minimum, of an alloy and type selected by manufacturer for compatibility with other components.

Brackets and Reinforcements: Manufacturer's high-strength aluminum units where feasible; otherwise, nonmagnetic stainless steel or hot-dip galvanized steel complying with ASTM A 123.

Concrete/Masonry Inserts: Cast iron, malleable iron, or hot-dip galvanized steel complying with ASTM A 123.

Bituminous Coatings: Cold-applied asphalt mastic complying with SSPC - PS 12, compounded for 30-mil thickness per coat.

Compression Weather-stripping: Manufacturer's standard replaceable stripping of either molded neoprene gaskets complying with ASTM D 2000 or molded PVC gaskets complying with ASTM D 2287.

Sliding Weather-stripping: Manufacturer's standard replaceable stripping of wool, polypropylene, or nylon woven pile, with nylon fabric or aluminum strip backing, complying with AAMA 701.2.

Glass and Glazing Materials: Provide glass and glazing materials which comply with requirements of "Glass and Glazing" section of these specifications.

~~STOREFRONT DOOR HARDWARE: SEE DOOR HARDWARE 08710~~

~~Provide any and all hardware (in addition to pieces specified in 08710 for each door if necessary) that is required to provide full complete functioning doors for the use they were intended.~~

FABRICATION:

General:

Sizes and Profiles: Required sizes for door and frame units, including profile requirements, are indicated on drawings. Any variable dimensions are indicated, together with maximum and minimum dimensions required to achieve design requirements and coordination with other work.

Prefabrication: To greatest extent possible, complete fabrication, assembly, finishing, hardware application, and other work before shipment to project site. Disassemble components only as necessary for shipment and installation.

Perform fabrication operations, including cutting, fitting, forming, drilling and grinding of metal work in manner which prevents damage to exposed finish surfaces. For hardware, perform these operations prior to application of finishes.

Sequence: Complete cutting, fitting, forming, drilling, and grinding of metal work prior to cleaning, finishing, surface treatment, and application of finishes. Remove arises from cut edges and ease edges and corners to radius of approximately 1/64".

Welding: Comply with AWS recommendations to avoid discoloration; grind exposed welds smooth and restore mechanical finish.

Reinforcing: Install reinforcing as necessary for performance requirements; separate dissimilar metals with bituminous paint or other separator, which will prevent corrosion.

Continuity: Maintain accurate relation of planes and angles, with hairline fit of contacting members.

Fasteners: Conceal fasteners wherever possible.

Weather-stripping: For all aluminum door applications at exterior and wet areas, provide compression weather-stripping against fixed stops; at other edges, provide sliding weather-stripping retained in adjustable strip mortised into door edge.

Provide EPDM/vinyl blade gasket weather-stripping in bottom door rail, adjustable for contact with threshold.

ALUMINUM FINISHES

General: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations relative to applying and designating finishes.

Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

Finish designations prefixed by AA conform to the system established by the Aluminum Association for designating aluminum finishes.

Class I, Color Anodic Finish: AA-M12C22A42/A44 (Mechanical Finish: nonspecular as fabricated; Chemical Finish: etched, medium matte; Anodic Coating: Architectural Class I, integrally colored or electrolytically deposited color coating 0.018 mm or thicker) complying with AAMA 606.1 or AAMA 608.1.

Color: Finish to be color "Dark Bronze". (coordinate with supplier to Match Existing)

PART 3 - EXECUTION

PREPARATION:

Field Measurement: Wherever possible, take field measurements prior to preparation of shop drawings and fabrication, to ensure proper fitting of work. However, proceed with fabrication and coordinate installation tolerances as necessary when field measurements might delay work.

INSTALLATION:

Comply with manufacturer's instructions and recommendations for installation of aluminum entrances and storefronts.

Set units plumb, level, and true to line, without warp or rack of framing members, doors, or panels. Anchor securely in place, separating aluminum and other corrodible metal surfaces from sources of corrosion or electrolytic action at points of contact with other materials.

Drill and tap frames and doors and apply surface-mounted hardware items, complying with hardware manufacturer's instructions and template requirements. Use concealed fasteners wherever possible.

Set sill members and other members in bed of sealant as indicated, or with joint fillers or gaskets as shown to provide weather tight construction. Comply with requirements of Division 7 for sealants, fillers, and gaskets.

Refer to "Glass and Glazing" section of Division 8 for installation of glass and other panels shown to be glazed into doors and framing, and not preglazed by manufacturer.

ADJUST AND CLEAN:

Adjust operating hardware to function properly, without binding, and to provide tight fit at contact points and weather-stripping.

Clean completed system, inside and out, promptly after erection and installation of glass and sealants. Remove excess glazing and joint sealants, dirt, and other substances from aluminum surfaces.

Remove protective coating when completion of construction activities no longer requires its retention.

Institute protective measures and other precautions required to assure that aluminum entrances and storefronts will be without damage or deterioration, other than normal weathering, at time of acceptance.

End of SECTION 08410

SECTION 08710 - FINISH HARDWARE

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to the work of this section.

~~Hardware listed here must be coordinated with Aluminum Storefront Manufacturer, reference Section 08410, Aluminum Storefront.~~

DESCRIPTION OF WORK:

Definition: "Finish Hardware" includes items known commercially as builder's hardware which are required for swing, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame. Types of items in this section include (but are not necessarily limited to):

- Hinges
- Lock cylinders and keys
- Lock and latch sets
- Bolts
- Push/pull units
- Closers
- Overhead holders
- Miscellaneous door control devices
- Door trim units
- Protection plates
- Weatherstripping
- Thresholds
- Door stops

Note: Hardware supplier to confer with Owner for keying and function preferences prior to keying doors.

QUALITY ASSURANCE:

Manufacturer: Obtain each kind of hardware (latch and lock sets, hinges, closers, etc.) from only one manufacturer, although several may be indicated as offering products complying with requirements.

Supplier: A recognized builders hardware supplier who has been furnishing hardware in the project's vicinity (within 100 miles of site) for a period of not less than 5 years, and who is, or employs an experienced hardware consultant who is available, at reasonable times during the course of the work, for consultation about project's hardware requirements, to Owner, Architect and Contractor.

Fire-Rated Openings: Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80. Provide only hardware which has been tested and listed by UL for types and sizes of doors required and complies with requirements of door and door frame labels.

All hardware supplied shall meet the requirements of the N.C. Accessibility Code for each unique door situation.

SUBMITTALS:

Product Data: Submit manufacturer's technical information for each item of hardware. Include whatever information may be necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finish. Transmit copy of applicable data to Installer.

Hardware Schedule: Submit final hardware schedule in manner indicated below. Hardware schedules are intended for coordination of work.

Final Hardware Schedule Content: Based on builders hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information:

Type, style, function, size and finish of each hardware item.

Name and manufacturer of each item.

Fastenings and other pertinent information.

Location of hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.

Explanation of all abbreviations, symbols, codes, etc. contained in schedule.

Mounting locations for hardware.

Door and frame sizes and materials.

Keying information.

Keying Schedule: Submit detailed schedule indicating clearly outlining Owner's instructions on keying of locks. **Locks must be Master and Grand Master Keyed in compliance with Owner's instructions.**

PRODUCT HANDLING:

Packaging of hardware, on a set by set basis, is the responsibility of the supplier. As material is received by the hardware supplier from the various manufacturers, sort and repackage in containers marked with the hardware set number.

JOB CONDITIONS:

Coordination: Coordinate hardware with other work. Tag each item or package separately, with identification related to the final hardware schedule, and include basic installation instructions in the package. Furnish hardware items of proper design for use on doors and frames of the thicknesses, profile, swing, security and similar requirements indicated, as necessary for proper installation and function. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.

Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Upon request, check the shop drawings of such other work, to confirm that adequate provisions are made for the proper installation of hardware.

PART 2 - PRODUCTS

Submittals: Provide required Product Data, Final Hardware Schedule, Keying Schedule, and samples as specified in Part 1 - General of this section, unless otherwise indicated.

Construction Schedule: Coordinate earliest dates to process submittals, to furnish templates, to deliver hardware, and to perform other work associated with furnishing Finish Hardware for purposes of including in construction progress schedule and then comply with this schedule.

Coordination and Templates: Coordinate hardware with other work in respect to both fabrication and installation. Furnish templates and deliver hardware to proper locations.

Product Handling: Package, identify, deliver, and inventory hardware as specified in Part 1 - General of this section.

Discrepancies: Based on requirements indicated in Contract Documents in effect at time of project bidding; furnish proper types, finishes, and quantities of builder's hardware, including fasteners, and Owner's maintenance tools; and furnish or replace any items of builder's hardware resulting from shortages and incorrect items, at no cost to the Owner.

Installation Information: The types and quantities of hardware required for this project are indicated at the end of this section.

Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this section. Products are identified by using hardware designation numbers of the following.

Manufacturer's product designations: One or more manufacturers are listed for each hardware type required. An asterisk (*) after a manufacturer's name indicates whose product designation is used in the "Hardware Schedule" for purposes of establishing minimum requirements. Provide either the product designated, or, where more than one manufacturer is listed, the comparable product of one of the other manufacturers which comply with requirements including those specified elsewhere in this section.

MATERIALS AND FABRICATION:

General:

Drawings show direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.

Manufacturer's Name Plate: Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable nameplates), except in conjunction with required UL labels and as otherwise acceptable to Architect.

Manufacturer's identification will be permitted on rim of lock cylinders only.

Base Metals: Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for the applicable hardware units.

Fasteners: Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.

Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.

Provide concealed fasteners for hardware units which are exposed when door is closed, except to extent no standard units of the type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on the opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each thru-bolt or use sex screw fasteners.

Tools and Maintenance Instructions for Maintenance: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware.

HINGES

Provide "Stanley" or McKinney - Five knuckle design anti-friction ball bearing hinges as specified, with NRP (non-removable pin) feature at ALL locking reverse bevel doors. Unless otherwise scheduled, the required weight, size and hinge type shall be as follows:

Butt hinges required per door leaf:
Doors up to 5'-0" in height 2 hinges
Doors over 5'-0" to 7'-6" in height 3 hinges

Size and weight requirements

Doors up to and including 36" in width

Exterior	FBB191 4½x4½NRP
Interior	FBB179 4½x4½NRP

Doors over 36" in width

Exterior	FBB191 5" x 4½"
Interior	FBB179 5" x 4½"

Finish: Except as otherwise indicated, provide all hinges with the following finish:

Exterior	US26D (626 Brass Base) Brushed Aluminum
Interior	US26D (652 Steel Base) Brushed Aluminum

Continuous Hinges where scheduled shall be equal to McKinney MCK-12-HD in length sufficient to extend full height of door. Continuous Hinge finish shall match Aluminum Storefront finish.

Approved Equals: Hager and McKinney

LOCK CYLINDERS AND KEYING

All cylinders for locks, exit devices and mullions shall be by the same manufacturer. Exterior cylinders shall meet the requirements of UL 437. Master-keys shall operate interior and exterior cylinders.

Consult with owner to determine keying and master keying requirements after receipt of approved hardware submittal. All cylinders shall be factory keyed.

Provide Construction master keyed cylinders to be voided by use of permanent keys. Furnish six (6) construction master keys for use during construction phase of project.

Construct cylinder parts from brass or bronze, stainless steel, or nickel silver. Cylinder cover shall match the finish of the device into which it is installed.

Provide key material of nickel silver only. Permanent keys shall be turned over directly to the owner at his request.

Key quantity: Provide key blanks in sufficient quantity for providing three (3) change keys per lock, six (6) master keys for each master set, and three (3) grand and/or great grand master keys for each system. Coordinate requirements with owner.

LOCKS, LATCHES AND BOLTS

Strikes: Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set.

Locksets to be similar in design to Corbin Russwin, Standard Duty Cylindrical Lever Locksets with Trim Style Armstrong (typical) and with Heavy Duty Cylindrical Lever Locksets on the Entry/Exit Doors Only.

Finish: US26D (626) Brushed Aluminum.

Provide dust-proof strikes for foot bolts, except where special threshold construction provides non-recessed strike for bolt.

Provide roller type strikes where recommended by manufacturer of the latch and lock units.

Lock Throw: Provide 5/8" minimum throw of latch and deadbolt used on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.

Provide 1/2" minimum throw on other latch and deadlock bolts.

PUSH/PULL UNITS:

Concealed Fasteners: Provide manufacturer's special concealed fastener system for installation; through-bolted for matched pairs, but not for single units.

CLOSERS AND CONTROL DEVICES:

Closers shall be Norton 8500 series units, parallel mount (UNO) with slimline standard cover. All closers shall be furnished with a pressure relief valve to protect the closer during both opening and closing cycles.

Provide regular or parallel arm type units as required to mount closers out of public view.

Provide closer/stop combination units where indicated in hardware sets.

Access-Free Manual Closers: Where manual closers are indicated for doors required to be accessible to the physically handicapped, provide adjustable units complying with ANSI A117.1 provisions for door opening force.

Finish: Standard powder coated finish, or as scheduled.

Approved Equals: LCN "4010" series; Norton "8500" series.

EXIT DEVICES

~~Furnish exit devices equal to Corbin Russwin ED5800 series touch bar design with chassis mounted construction. Functions as noted in the hardware sets. Provide lever outside trim to closely match that of Lockset trim. Pull trim shall be as specified in the hardware sets.~~

All exit devices (except fire exit hardware) shall be provided with "Cylinder Dogging" feature, keyed to the building system.

Provide sex nuts and bolts (SNB) at all mineral core fire doors

Provide strikes to work in coordination with specified exit devices.

Exit device finish; US26D (626) Brushed Aluminum unless otherwise scheduled. Mullion finish; USP (600) Primed.

Equals by Von Duprin.

DOOR TRIM UNITS:

Fasteners: Provide manufacturer's standard exposed fasteners for door trim units (kick plates, edge trim, viewers, knockers, mail drops and similar units); either machine screws or self tapping screw.

Fabricate protection plates (armor, kick or mop) not more than 2" less than door width on stop side and not more than 2" less than door width on pull side, x the height indicated.

Metal Plates: Stainless Steel, 0.050" (U.S. 18 ga.).

STOPS

Generally provide a door stop for each door leaf, equal to Ives and Glynn Johnson and Rockwood series as follows, unless otherwise specified:

Doors indicated on plans to strike a wall provide wall stops equal to Ives WS406CCV US26D (626).

Where wall stops are not practical provide overhead stops equal to Glynn Johnson 410S

Provide overhead stops equal to Glynn Johnson series, where called for in hardware sets, as follows:

Exterior Doors: GJ - 704H US26D (626) unless otherwise scheduled.
Interior Doors: GJ - 410S US26D (626) unless otherwise scheduled.

WEATHERSTRIPPING AND SEALS

Generally, unless otherwise scheduled, provide Weatherstripping at ALL exterior doors equal to Pemko S88, or as detailed on the drawings. Furnish Pemko 314_N astragal at each leaf where shown on schedule.

Provide smoke seals at all fire rated openings.

Approved Equals: National Guard, Reese.

THRESHOLDS

Generally, except as otherwise indicated, provide standard metal threshold units of type size, and profile as shown on the drawings or scheduled. Provide, at minimum, Pemko 158A threshold at offset slabs, Pemko 171A threshold at non-offset slabs, with 222AV sweep strip at all exterior doors, unless provided for otherwise.

Approved Equals: National Guard, Zero, Reese.

HARDWARE FINISHES:

Provide matching finishes for hardware units at each door or opening, to the greatest extent possible, and except as otherwise indicated. Reduce differences in color and textures as much as commercially possible where the base metal or metal forming process is different for individual units of hardware exposed at the same door or opening. In general, match items to the manufacturer's standard finish for the latch and lock set (or push-pull units if no latch-lock sets) for color and texture.

Provide quality of finish, including thickness of plating or coating (if any), composition, hardness and other qualities complying with manufacturer's standards, but in no case less than specified for the applicable units of hardware by referenced standards.

The designations used in schedules and elsewhere to indicate hardware finishes are those listed by manufacturers including coordination with the traditional U.S. Finishes shown.

Typical Finish: Brushed stainless US 626, 630

PART 3 - EXECUTION

INSTALLATION:

Mount hardware units at heights indicated in "Recommended Locations for Finish Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by Architect.

Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finishing work specified in the Division 9 sections. Do not install surface-mounted items until finishes have been completed on the substrate.

Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

ADJUST AND CLEAN:

Adjust and check each operating item of hardware and each door, to insure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made. Clean adjacent surfaces soiled by hardware installation.

Final Adjustment: Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

Instruct Owner's Personnel in proper adjustment and maintenance of hardware and hardware finishes, during the final adjustment of hardware.

FINISH HARDWARE MANUFACTURER DATA SHEET:

Acceptable Manufacturers:

Butts/Pivots - Hager, McKinney, Rixon-Firemark, Stanley.

Locksets/Latchsets/Dead Bolts/Cylinders - Corbin Russwin, Yale, Schlage

Bolts - Builders Brass Works, Glynn-Johnson, Rockwood.

Push/Pull Units - Baldwin, Brookline, Builders Brass Works, Hager, Ives, Rockwood.

Door Closers - Norton, LCN, Rixon-Firemark, CorbinRusswin, Yale.

Magnetic Holder – LCN, RX

Exit Devices: — ~~Corbin/Russwin, Von Duprin, Yale, Precision.~~

Silencers and Stops - Glynn-Johnson, Brookline, Hager, Ives, Rockwood, Stanley.

Kickplates/Crashplates - Hager, Baldwin, Brookline, Builders Brass Works, Rockwood.

FINISH HARDWARE SCHEDULE

HARDWARE SET #1

Doors 100: Hall to Exit

3	Hinge	TA2714 – 4 ½ - 4 ½	MK	626
1	Entrance	CL3551 Armstrong	Corbin Russwin	US26D
1	keyed Cylinder	as Required	Schlage	626
1	Key Pad Entry	CO-100	Schalge	626
		<i>battery op – stand-alone system (cylindrical)</i>		
		<i>Electrical junction box/conduit for Future Use</i>		
1	Surface Closer	CLP-8501	Norton	AL
1	Gasketing	429A (head/jamb)	Zero	AL
1	<u>Ramp</u> Threshold	237A+236A	Zero	AL
1	Door sweep	39A	Zero	AL
1	Rain Drip	142A	Zero	AL

HARDWARE SET #2

Doors 101, 101A, 102: Conference Room, Data Closet – **typical**

3	Hinge	TA2714 – 4 ½ - 4 ½	MK	626
1	Classroom	CL3855 Armstrong	Corbin Russwin	626
1	keyed Cylinder	as Required	Schlage	626
1	Wall Stop	409	Rockwood	630
3	Silencers	608	Rockwood	Gray

HARDWARE SET #3

Not used.

HARDWARE SET #4

Door 2: Flight Planning Room (*eliminated in Alternate #1 – See Set #7*)

Door 8: Pilot's Lounge

3	Hinge	TA2714 – 4 ½ - 4 ½	MK	626
1	Classroom	CL3855 Armstrong	Corbin Russwin	626
1	keyed Cylinder	as Required	Schlage	626
1	Surface Closer	CLP-8501	Norton	AL
1	Wall Stop	409	Rockwood	630
3	Silencers	608	Rockwood	Gray

HARDWARE SET #5

Doors 3: Toilet (Base Bid)

Door A2: Toilet (Alternate #1)

3	Hinge	TA2714 – 4 ½ - 4 ½	MK	626
1	Privacy	CL3820 Armstrong	Corbin Russwin	626
1	Surface Closer	CLP-8501	Norton	AL
1	Wall Stop	409	Rockwood	630
3	Silencers	608	Rockwood	Gray

HARDWARE SET #6

Doors 6: 3 Hour Rated Door - Access thru 4HR Wall – Hall to Ramp

3	Hinge	TA2714 – 4 ½ - 4 ½	MK	626
1	Entrance	CL3851 Armstrong	CR	US26D
1	keyed Cylinder	as Required	Schlage	626
1	Magnetic Holder	SEM7850	LC	AL
		<i>See Electrical</i>		
1	Surface Closer	CLP-8501	Norton	AL
1	Threshold	6570A	Zero	AL
1	Smoke Seal	S44 (head/jamb)	Pemko	

HARDWARE SET #7 **SEE ALTERNATE #1**

Door A1: Hall 1 to Hall 1A

3	Hinge	TA2714 – 4 ½ - 4 ½	MK	626
1	Passage Set	CL3810 Armstrong	Corbin Russwin	626
1	Alarm Kit	STI-6400WIR	STI	
		4 Channel Wireless Receiver		
		Magnet and reed switch with spacers		
		Warning “Door Alarmed” label		
1	Surface Closer	CLP-8501	Norton	AL
1	Wall Stop	409	Rockwood	630
3	Silencers	608	Rockwood	Gray

Provide any and all hardware (in addition to pieces specified here for each door if necessary) that is required to provide full complete functioning doors for the use they were intended.

Door numbers are as marked on Plan Sheets and as listed on the Door Schedule Sheet.

END OF SECTION 08710

SECTION 08800 - GLASS AND GLAZING

PART 1 - GENERAL

RELATED DOCUMENTS:

Drawings, General Conditions and Supplementary General Conditions and other Division-1 Specification Sections, apply to this Section.

DESCRIPTION OF WORK:

Definitions: "Glass" includes both primary and fabricated glass products as described in FMGA "Glazing Manual". "Glazing" includes glass installation and materials used to install glass.

Extent of glass and glazing work is indicated on drawings and schedule attached at end of this section.

Types of work in this section include glass, insulating glass and glazing for:

- Window units, not indicated as "preglazed". (*Note: Match Existing Glazing Tint*)
- Glazed interior hollow metal frames.
- Clear door glass panels.
- Entrances and other doors, not indicated as "preglazed".

PLEASE NOTE- All glazing shall be Category II, Safety Glazing.

SYSTEM PERFORMANCES:

Provide glass and glazing that has been produced, fabricated and installed to withstand normal temperature changes, wind loading, impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of glass and glazing materials, and other defects in the work.

Provide insulating glass and glazing that has been produced, fabricated and installed to withstand normal temperature changes, wind loading, impact loading (where applicable), without failure including loss or breakage of glass, failure of sealants or gaskets to remain watertight and airtight, deterioration of insulating glass and glazing materials, and other defects in the work. Deterioration of insulating glass is defined as failure of hermetic seal due to other causes than breakage which results in intrusion of dirt or moisture, internal condensation or fogging at temperatures above -20 degrees F (-28 degrees C), deterioration of protected internal glass coating, if any, resulting from seal failure, and other visual evidence of seal failure or performance.

SUBMITTALS:

Product Data: For each glass product and glazing material indicated.

Samples: For the following products, in the form of 12-inch-square samples for glass and of 12-inch-long samples for sealants. Install sealant samples between two strips of material representative in color of the adjoining framing system.

Samples: For the following products, in the form of 12-inch-square samples for glass.

- Each color of tinted glass.
- Insulating glass for each designation indicated.

QUALITY ASSURANCE:

Glazing Standards: Comply with recommendations of Flat Glass Marketing Association (FMGA) "Glazing Manual" and "Sealant Manual" except where more stringent requirements are indicated. Refer to those publications for definitions of glass and glazing terms not otherwise defined in this section or other referenced standards.

Safety Glazing Standard: Where safety glass is indicated or required by authorities having jurisdiction, provide type of products indicated which comply with ANSI Z97.1 and testing requirements of 16 CFR Part 1201 for category II materials.

Insulating Glass Certification Program: Subject to compliance with requirements, provide insulating glass units permanently marked either on spacers or on at least one component pane of units with appropriate certification label of inspecting and testing organization indicated below.

Insulating Glass Certification Council (IGCC).
Associated Laboratories, Inc. (ALI).

Single Source Responsibility: Provide materials obtained from one source for each type of glass and glazing product indicated.

DELIVERY, STORAGE, AND HANDLING:

Protect glass and glazing materials during delivery, storage and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.

PROJECT CONDITIONS:

Comply with manufacturer's instructions for shipping, storing and handling insulating glass units, including protection of edges.

Where substantial altitude changes will be made, comply with venting-and-sealing recommendations to avoid hermetic seal ruptures.

SPECIFIED PRODUCT WARRANTY:

Manufacturer's Warranty on Insulating Glass: Provide written warranty signed by manufacturer of laminated glass agreeing to furnish f.o.b. point of manufacture, freight allowed project site, within specified warranty period indicated below, insulating glass units which develop manufacturing defects. Manufacturing defects are defined as failure of hermetic seal of air space (beyond that due to glass breakage) as evidenced by intrusion of dirt or moisture, internal condensation or fogging at temperature above -20 degrees F (-29 degrees C), deterioration of protected internal glass coatings, if any, and other visual indications of seal failure or performance; provided the manufacturer's instructions for handling, installing, protecting and maintaining units have been complied with during the warranty period.

Warranty Period: Manufacturer's standard but not less than 10 years after date of substantial completion.

PART 2 - PRODUCTS

ACCEPTABLE MANUFACTURERS:

Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include; but are not limited to, the following:

Manufacturers of Clear Float and Tempered Glass:

AFG Industries, Inc.
Ford Motor Co., Glass Div.
Guardian Industries Corp.
Libby-Owens-Ford Co.
PPG Industries Inc.

Manufacturers of Insulating Glass Products (including Insulating Laminated Glass):

Advanced Coating Technology.
AFG Industries, Inc.
Ford Motor Co. Glass Div.
Hordis Brothers, Inc.
Libbey-Owens-Ford Co.
Oldcastle BuildingEnvelope
PPG Industries, Inc.
Guardian

Viracon

GLASS PRODUCTS, GENERAL:

Primary Glass Standard: Provide primary glass which complies with FS DD-G-451 requirements, including those indicated by reference to type, class, quality, and form.

Heat-Treated Glass Standard: Provide heat-treated glass which complies with FS DD-G-1403 requirements, including those indicated by reference to grade, style, type, quality, and class.

Sizes: Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

Insulating Glass Standard: Provide preassembled sealed insulating glass units which comply with ASTM E 774 requirements for classification designated below:

Class A.

PRIMARY GLASS PRODUCTS:

Clear Float Glass: Type I, class 1 (transparent), quality q3 (glazing select). See Schedule for "coated" / "tinted" glazing requirements.

Fire Rated Glazing: If any. See Section 08817.

HEAT-TREATED GLASS PRODUCTS:

Manufacturing Process: Manufacture heat-treated glass as follows:

Clear Tempered Float Glass: Grade B (fully tempered), style I (uncoated surfaces), type I (float), quality q3 (glazing quality), class 1 (transparent).

Clear Heat-Strengthened Float Glass: Grade A (heat strengthened), style I (uncoated surfaces), type I (float), quality q3 (glazing select), class 1 (transparent).

SEALED INSULATING GLASS UNITS:

General: Provide preassembled units consisting of organically sealed panes of glass enclosing a hermetically sealed dehydrated air space; comply with requirements indicated for glass characteristics, air space, sealing system, sealant, spacer material, corner design, and dessicant.

"Low-E" coating: Clear transparent float glass sputter coated on the #2 surface meeting the following requirements:

Provide & Coordinate Coatings with "tinting" as listed on Glazing Schedule.

Provide heat-treated panes of grade and at locations indicated or, if not indicated, provide heat-strengthened panes where recommended by manufacturer for application indicated and tempered where indicated or where safety glass is designated or required.

GLAZING SEALANTS:

General: Comply with recommendations of sealant and glass manufacturers for selection of glazing sealants which have performance characteristics suitable for applications indicated and conditions at time of installation.

Compatibility: Select sealants with proven compatibility with surfaces contacted in the installation and under service conditions indicated, as demonstrated by testing and field experience.

Colors: Provide color of exposed sealants indicated or, if not otherwise indicated, as selected by Architect from manufacturer's standard colors.

2-Part Polysulfide Glazing Sealant: Polysulfide elastomeric sealant complying with FS TT-S-00227, Class A, Type 2; and with ASTM C 920, Type M, Grade NS, Class 25, Use G and, as applicable to use indicated, Uses A and O.

Uses: Typical glazing unless noted otherwise.

Acrylic Glazing Sealant: Acrylic terpolymer or polypropenate solvent-based thermo-plastic 1-part sealant complying with FS TT-S-00230, Class B, Type II; and with ASTM C 920, Type S, Grade NS, Class 12-1/2, Use G and, as applicable to use indicated, Uses A and O.

Use: Interior glazing conditions only.

Available Products: Subject to compliance with requirements, products which may be incorporated in the work include, but are not limited to, the following:

2-Part Polysulfide Glazing Sealants:

Sonolastic Two-Part; Sonneborn Building Products Div., Rexnord Chemical Products, Inc.
Chem-Calk 100; Woodmont Products, Inc.

Acrylic Glazing Sealants:

60+; Pecora Corp.
Mono; Tremco.
Chem-Calk 800; Woodmont Products, Inc.

GLAZING GASKETS:

Lock-Strip Gaskets: Neoprene extrusions of size and shape indicated, fabricated into frames with molded corner units and zipper lock strips, complying with ASTM C 542; black.

Dense Elastomeric Compression Seal Gaskets: Molded or extruded neoprene or EPDM gaskets of profile and hardness required to maintain watertight seal; complying with ASTM C 864, Option 1.

MISCELLANEOUS GLAZING MATERIALS:

Compatibility: Provide materials with proven record of compatibility with surfaces contacted in installation.

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

Setting Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealants, 80 to 90 Shore A durometer hardness.

Spacers: Neoprene, EPDM or silicone blocks, or continuous extrusions, as required for compatibility with glazing sealant, of size, shape and hardness recommended by glass and sealant manufacturers for application indicated.

Edge Blocks: Neoprene, EPDM or silicone blocks as required for compatibility with glazing sealant, of size and hardness required to limit lateral movement (side-walking) of glass.

Compressible Filler Rods: Closed-cell or waterproof-jacketed rod stock of synthetic rubber or plastic foam, flexible and resilient, with 5-10 psi compression strength for 25% deflection.

PART 3 - EXECUTION

INSPECTION:

Require Glazier to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and functioning of weep system; for existence of minimum required face or edge clearances; and for effective sealing of joinery. Obtain Glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until unsatisfactory conditions have been corrected.

PREPARATION:

Clean glazing framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to substrates.

GLAZING, GENERAL:

Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.

Glazing channel dimensions as indicated in details are intended to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.

Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.

Apply primers to joint surfaces where required for adhesion of sealants, as determined by preconstruction sealant-substrate testing.

GLAZING:

Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but no closer than 6", unless otherwise required. Set blocks in thin course of sealant which is acceptable for heel bead use.

Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches, except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.

Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joints back surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.

Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

Tool exposed surfaces of sealants to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.

Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to movement.

Miter cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent pull away at corners; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

Lock-Strip Gasket Glazing: Comply with ASTM C 716 and gasket manufacturer's printed recommendations. Provide supplementary wet seal and weep system unless otherwise indicated.

PROTECTION AND CLEANING:

Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.

Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.

Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Wash glass by method recommended by glass manufacturer.

GLAZING SCHEDULE

EXTERIOR:

Typical Windows:

1" thick *SOLARBRONZE Insulated Units:
Exterior light 1/4" "TINT" Coated on 2nd surface
(category II, safety glazing, typical)
Air space 1/2" (Argon Gas-filled)
Interior light 1/4" "Clear Float"

Coating of *SOLARCOOL SOLARBRONZE MIRROR GLAZING to **Match Existing**
composed of SolarCool (2) SolarBronze + Solarban 60 (3) Clear
per **ppg tinted glazing** - (or equal) to produce
Transmittances of UV 2%, Visible 17% and Total Solar Energy 9%.

HM Door – Vision Panel: 1/4" min. single glazed, clear Category II, safety glazing.

INTERIOR:

Non Rated Interior Door, Side Light, and Interior Windows: –

1/4" min. single glazed, clear Category II, safety glazing.
(typical unless noted otherwise on drawings).

End of SECTION 08800