

SECTION 08120

HOLLOW METAL DOORS AND FRAMES

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. The work includes furnishing all labor, materials and equipment required to complete the Hollow Metal Door & Frame work as shown on the Drawings and as specified herein.

1.2 RELATED WORK:

- A. SECTION 07920 - Caulking & Sealants
- B. SECTION 08710 - Finish Hardware
- C. SECTION 08810 - Glass & Glazing
- D. SECTION 09900 - Painting

1.3 QUALITY ASSURANCE

- A. Provide hollow metal doors and frames manufactured by a firm with not less than five years' successful experience in the production of this type of work.
- B. Provide hollow metal doors and frames as herein specified.
- C. Inspection: Prior to installation of the hollow metal doors and frames, carefully examine the existing conditions and verify that the installation may properly commence. Do not install the work until all unsatisfactory conditions have been corrected. Commencement of the work shall constitute acceptance of the existing conditions.

1.4 SUBMITTALS

- A. Submit the following information in accordance with SECTION 01340:
 - 1. Manufacturer's Data: For information only, submit manufacturer's data for fabrication and installation instructions for Hollow Metal Doors and Frames.

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2. Shop Drawings - Hollow Metal Doors and Frames:
 - a. Submit shop drawings for the fabrication and installation of hollow metal doors and frames in accordance with SECTION 01340. Include details of each frame type, elevations of door design types, conditions at openings, tolerances, details of construction, location and installation requirements of finish hardware and reinforcements, glazing and details of joints and connections. Show anchorage and accessory items.
 - b. Provide shop drawings to hardware supplier. Coordinate fabrication of hollow metal doors and frames for backing and hardware reinforcing placement.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver hollow metal work cartoned or crated to provide protection during transit and job storage.
- B. Inspect hollow metal work upon delivery for damage. Minor damages may be repaired only upon acceptance by Owner. Remove and replace damaged items.
- C. Store doors and frames at the building site under cover. Place the units on at least 4" high wood sills or on the floors in a manner that will prevent rust and damage. Avoid the use of non-vented plastic or canvas shelters which could create a humidity chamber. If the cardboard wrapper on the door becomes wet, remove the carton immediately. Provide a 1/4" space between stacked doors to promote air circulation.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Hot-rolled Steel Sheets and Strip: Commercial quality carbon steel, pickled and oiled, comply with ASTM A 569 and ASTM A 568.
- B. Cold-rolled Steel Sheets: Commercial quality carbon steel, complying with ASTM A366 or ASTM A620 and ASTM A568.
- C. Shop-Applied Paint: For steel surfaces, use rust- inhibitive enamel or paint, either air-drying or baking, suitable as a base for specified finish paints.

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2.2 FABRICATION - GENERAL

- A. Fabricate hollow metal door and frame units to be rigid, neat in appearance, and free from defects, warp or buckle. Accurately form metal to required sizes and profiles. Wherever practicable, fit and assemble units in the manufacturer's plant. Clearly identify work not permanently factory-assembled before shipment, to assure proper assembly at the project site.
- B. Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units, from only cold-rolled steel.
- C. Fabricate frames, concealed stiffeners, reinforcement, edge channels, and moldings from hot-rolled steel.
- D. Fabricate exterior doors, panels and frames from cold-rolled sheet steel.
- E. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat patch head security screws. Heads shall be twisted off and ground flush.
- F. Finish Hardware Preparation
 - 1. Prepare hollow metal units to receive concealed finish hardware, including cutouts, reinforcing, drilling and tapping in accordance with final Finish Hardware Schedule and templates provided by hardware supplier.
 - 2. Reinforce hollow metal units to receive hardware items as required by hardware manufacturer. Reinforcing to be of 1/8", 3/16" and 3/8" plate steel. Drilling and tapping or surface applied finish hardware may be done at the project site.
 - 3. Locate finish hardware as shown on final shop drawings.
- G. Shop Painting
 - 1. Clean, treat, and paint exposed surfaces of fabricated hollow metal units, including galvanized surfaces.
 - 2. Clean steel surfaces of mill scale, rust, oil, grease, dirt and other foreign materials before the application of the shop coat of paint.
 - 3. Apply shop coat of prime paint of even consistency to provide a uniformly finished surface ready to receive field-applied paint.

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2.3 HOLLOW METAL DOORS

- A. Regular Hollow Metal Doors: Shall be S.D.I. Grade II, Heavy- Duty, “Imperial”, Full Flush - Composite Construction, with Polyurethane Core, UL Labeled as indicated, A60 galvanized as noted on door schedule, with closer reinforcement (if applicable), as manufactured by Ceco Corp., Curries Mfg., Inc., Overly Mfg. Co., Republic Builders Corp., Steelcraft, or approved equal, and shall conform to the following specifications:
1. Steel, in U.S. Standard gauges herein specified: Prime quality cold-rolled, pickled, annealed stretcher leveled steel; free from scale, pitting, rust, surface or internal defects.
 2. Foam core, full thickness of door to reduce metallic ring and serve as an insulator.
- B. Minimum gauges
1. 12 ga. Hardware reinforcement—unless noted otherwise
 2. 14 ga. Lock Reinforcement
 3. 7 ga. Hinge Reinforcement
 4. 18 ga. Face Sheets

2.4 HOLLOW METAL FRAMES

- A. Frames: Shall be welded, double rabbeted steel frames, UL Labeled as indicated, as manufactured by Ceco Corp., Curries Mfg., Inc., Overly Mfg. Co., Republic Builders Corp., Steelcraft, or approved equal.
1. Frames: Pressed steel frames, where required, shall be constructed of 16 gauge steel. Miters shall be welded their entire length, including rebars, stops and trim and cleaned and ground to present a smooth surface. Welding of trim face miters only is not acceptable. All joints shall be dressed to make them invisible and all fastenings shall be concealed.
 2. Anchors: Provide frames with a minimum of three anchors per jamb as required for adjoining wall construction.

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PART 3 EXECUTION

3.1 INSTALLATION

A. Fabrication & Installation

1. Use only skilled mechanics and best grade of modern shop and field practice. Seams and joints, including reinforcements shall be welded. Accurately fit and fabricate all parts with surfaces free from warp, wave, buckle or other defects. Corners shall be square, angles sharp, surfaces in proper alignment, and all edges shall be sharp and straight. Welded joints shall be welded full length of joint, tight, and ground smooth and flush with surface of base metal. Exposed joints shall be made invisible. Provide welded back plates at mitered joints.
2. Door shall be constructed from two full flush steel sheets, welded for flush pan assembly. Provide continuous reinforcing channels welded to face sheets at top and bottom of all doors. Close reinforcing channels with steel plates to form top and bottom edges.
3. Welding: Conform to applicable standards of American Welding Society for high grade hollow metal work, with exposed beads ground smooth.
4. Filling: Use mineral filler sparingly to conceal seams, not for concealing defects in workmanship.
5. Hardware Preparation: Provide concealed reinforcement of sheet or bar steel to receive hardware, etc., for all hardware form templates furnished by the hardware supplier. Drill and tap to template requirements for field installation of hardware.
6. Finish: After fabrication and thorough cleaning, bonderize and give all metal surfaces one shop coat of quality primer.
7. Frames: Deliver frames with temporary floor spreaders and do not remove until frames are secured in place. Reinforce, mortise, drill and tap frames at factory as required to receive hardware, provide metal boxes.

END OF SECTION

SECTION 08200

WOOD DOORS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. The work includes furnishing all labor, materials and equipment required to complete the Wood Door work as shown on the Drawings and as specified herein.

1.2 RELATED WORK

- A. Hollow Metal Doors & Frames, SECTION 08120;
- B. Finish Hardware, SECTION 08710;

1.3 QUALITY ASSURANCE

- A. Codes and Standards: Comply with the provisions of the following codes, specifications and standards, except as otherwise shown or specified:
 - 1. Architectural Woodwork Institute (AWI) "Architectural Woodwork Quality Standards.

1.4 SUBMITTALS

- A. Manufacturer's Data: Submit Door Manufacturer's specifications and installation instructions for each type of wood door required, including other data as may be required to show compliance with the specified requirements. Submit for information only in accordance with SECTION 01340.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect wood doors during transit, storage, and handling to prevent damage, soiling and deterioration. Comply with the "On-Site Care" Recommendations of NWMA pamphlet "Care and Finishing of Wood Doors", and with Manufacturer's Instructions.

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PART 2 PRODUCTS

2.1 MATERIALS

- A. General: Provide wood doors complying with the applicable requirements of AWI Standard 1300 for the kinds and types of doors indicated and as further specified.
- B. Exposed Surfaces: Provide the kind shown or scheduled and as further specified. Provide same exposed surface material on both faces of each door, unless otherwise indicated.
- C. Solid Core Wood Doors:
 - 1. Type II Water-Resistant Bond.
 - 2. Core Construction: Solid wood block, wood particle board, or mineral with wood lock blocks, as required by Door Manufacturer to comply with specified guarantee period.
 - 3. All wood doors shall have a 1" undercut.
 - 4. Face Panels: Manufacturer's Standard two-ply or three-ply face panels.
 - 5. Exposed surfaces for Transparent Finish: Provide Manufacturer's Standard thickness face veneers of the following quality:
 - a. Quality: Custom Grade, Plain Sliced Birch, Book Matched, complying with AWI Standard 1300. Sharp contrast not permitted at veneer joints. Provide exposed edges and other exposed solid wood components of any close-grain hardwood.
- D. Finish: Shall be AWI Standard Finish Grade. Wood doors shall be factory finished. Color to be as selected by Owner.

PART 3 EXECUTION

3.1 GENERAL

- A. Prefitting and Preparation for Hardware: Comply with the tolerance requirements of AWI for prefitting. Machine doors for hardware requiring cutting of doors. Comply with final hardware schedules and with hardware templates and other essential information required to insure proper fit of doors and hardware.

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- B. Inspection: Installer must examine door frames and verify that frames are of the correct type and have been installed as required for proper hanging of corresponding doors. Do not proceed with installation until unsatisfactory conditions have been corrected in a manner acceptable to the Installer.

3.2 INSTALLATION

- A. Condition doors to average prevailing humidity in installation area prior to hanging.
- B. Hardware: For installation see SECTION 08710 of these specifications.
- C. Manufacturer's Instructions: Install wood doors in accordance with Manufacturer's Instructions and as shown.
- D. Job Fit Doors: Fit doors to frame for proper fit and uniform clearance at each edge and machine for hardware. Seal cut surfaces after fitting and machining.
- E. Prefit doors: Fit to frames and machine for hardware to whatever extent not previously worked at factory as required for proper fit and uniform clearance at each edge.

3.3 ADJUST AND CLEAN

- A. Operation: Rehang or replace doors which do not swing or operate freely, as indicated by the Engineer.
- B. Job-Finished Doors: Refinish or replace doors damaged during installation, as indicated by the Engineer.
- C. Protection of Completed Work: Installer shall advise General Contractor of proper procedures required for protection of installed wood doors from damage or deterioration until acceptance of the work.

END OF SECTION

SECTION 08330
COILING DOORS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. The work includes furnishing all labor, materials and equipment required to complete the Coiling Door work as shown on the Drawings and as specified herein.

1.2 QUALITY ASSURANCE

- A. Provide each coiling door as a complete unit produced by one manufacturer, including frames, sections, brackets, guides, weather-stripping and installation accessories.
- B. Unless otherwise acceptable to Owner, furnish all coiling door units by one manufacturer for the entire project.

1.3 SUBMITTALS

- A. Submit the following in accordance with SECTION 01340.
 - 1. Manufacturer's Data: For information only, submit manufacture's data for fabrication and installation instructions.
 - 2. Submit shop drawings for review and acceptance. Submittal shall be made prior to manufacturer of coiling doors. Include details of door design, conditions at openings, tolerances and connections. Show anchorage and accessory items.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Coiling Doors: Shall be Type FCWI Chain Operated Insulated Service Doors with ColorCote finish, full weather-strip, face of wall mounted by The Cookson, or approved equal. Materials shall include all curtains, bottom bars, guides, brackets, hoods, weather-stripping, operating mechanisms and any special features required for complete and operational service door.

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1. Finish: Shall be factory applied thermo-setting polyester top coat over a corrosion inhibiting primer and a bonderized coating for prime coat adhesion. The base material shall be hot dipped galvanized G-90 coating consistent with ASTM A-525. Color shall be selected by Owner from manufacturer's standard colors.
2. Guides: Shall consist of 3 angles bolted together with 3/8" fasteners to form a channel for the curtain to travel and shall include an extruded vinyl snap-on weather-stripping continuously on the exterior leg of the guide. The wall angle portion shall be continuous and fastened to the surrounding structure with either minimum 1/2" fasteners or welds, both on 36" centers.
3. Brackets: Shall be constructed of steel not less than 1/4" thick and shall be bolted to the wall angle with minimum 1/2" fasteners.
4. Operation: Door shall open and close with a maximum of 30 pounds of effort utilizing an endless chain and cast iron reduction gears. The chain door shall be secured by means of a chain lock.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Manufacturer's Instructions: Install doors, tracks, guides, and accessories in accordance with Manufacturer's instructions and as shown on Drawings for fully operational door system. Installer shall be an authorized distributor of the Manufacturer.

END OF SECTION

SECTION 08410

ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. The work includes furnishing all labor, materials and equipment required to complete the Aluminum Entrances & Storefront work as shown on the Drawings and as specified herein.
- B. Work Included: The work of this Section shall include, but is not limited to the following:
 - 1. Storefront Framing;
 - 2. Entrance Doors;
 - 3. Windows.
- C. Related Work Specified Elsewhere:
 - 1. Glass and Glazing, SECTION 08810;
 - 2. Caulking & Sealants, SECTION 07920;
 - 3. Finish Hardware, SECTION 08710.

1.2 SUBMITTALS

- A. Submit the following in accordance with SECTION 01340.
 - 1. Manufacturer's Data: Submit manufacturer's literature for informational purposes
- B. Shop Drawings: Submit shop drawings for the fabrication and installation of aluminum entrances & storefront. Include details of door and window design, conditions at openings, tolerances, controls and connections. Show anchorage and accessory items.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Delivery: Load products in such a manner that they may be transported and unloaded without being damaged. Deliver products to project site cartoned or crated to provide protection during transit and project site storage. Materials shall be delivered in manufacturer's original, unopened, undamaged containers with identification labels intact.

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- B. Storage: Do not store products on or in the structure in a manner that might cause distortion or damage to the products or the supporting structures. Repair or replace damaged products or structures as directed.
- C. Markings: Insure that all glass products are tagged with markings, which show proper installation locations.
- D. Defective Products: Items found to be defective, either through manufacturing, transit damage, field installation, etc., shall be replaced within a three (3) week period. If necessary, special shipment and manufacturing arrangements shall be made to accomplish this requirement.

1.4 PROJECT CONDITIONS

- A. Field Measurements: Verify actual measurements/openings by field measurements before fabrication; show recorded measurements on shop drawings. Coordinate field measurements, fabrication schedule with construction progress to avoid construction delays.
- B. Job Conditions: Storefront Contractor must examine the conditions under which the storefront work is to be installed, and notify the General Contractor in writing of conditions detrimental to the work. Do not proceed with the installation until unsatisfactory conditions have been corrected in a manner acceptable to the Storefront Contractor.

1.5 WARRANTY

- A. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.

PART 2 PRODUCTS

2.1 MATERIALS

- A. Storefront Framing System and Windows: Shall be Tri-Fab 451 for 1" insulated glazing as manufactured by Kawneer, or approved equal. Finish shall be dark Bronze Anodized.
- B. Entrances: Shall be #350 Standard Aluminum Entrance Door as manufactured by Kawneer, or approved equal. Door shall have an optional infill for 1" insulated glazing. Finish shall be dark Bronze Anodized.

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- C. Finish Hardware: See Hardware Schedule in SECTION 08710 of these Specifications for all finish hardware for aluminum storefront doors.
- D. Accessories: Provide all sill flashing, plates, angles, stainless steel studs and all anchors and other accessories required for a complete application.

PART 3 EXECUTION

3.1 EXECUTION

- A. Manufacturer's Instructions: Install doors and storefront system and accessories in accordance with Manufacturer's instructions and as shown on Drawings for fully operational door systems.
- B. Installation shall be by authorized distributor or representative of the door manufacturer.

3.2 ADJUSTING AND CLEANING

- A. Adjusting: Doors shall be adjusted for proper and smooth operation in accordance with manufacturer's instructions. The door and hardware shall be adjusted to meet UBC and ADA requirements.
- B. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.
- C. Protection: Protect installed product's finish surfaces from damage during construction.

END OF SECTION

SECTION 08710

FINISH HARDWARE

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. The work includes furnishing all labor, materials and equipment required to complete the Finish Hardware work as shown on the Drawings and as specified herein.
 - 1. Provide all finish hardware and suitable fastenings for complete work in accordance with drawings and this section of the specifications.
 - 2. Items not specifically mentioned, but necessary to complete the work, shall be furnished to match the items specified for similar locations in quality and finish.

1.2 RELATED WORK

- 1. Hollow Metal Doors & Frames, SECTION 08120.

1.3 STANDARDS

- A. Conform with requirements of 2003 International Building Code as pertains to work specified hereunder.

1.4 KEYING

- A. Construction Keying System: Provide separate keying system during construction. Cores for final keying system shall installed at completion of construction.
- B. Final Keying System: Unless directed otherwise all locks shall be master-keyed. Furnish three keys to Owner at completion of work.

1.5 SUBMITTALS

- A. Hardware Schedule: Submit a full and complete schedule of hardware in compliance with the Specifications and Drawings in accordance with SECTION 01340.

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1. Schedules must be completely detailed in vertical form including all quantities, stock numbers, finishes, and sizes. List hardware for each opening separately.
 2. Approval of the finish hardware schedule shall not relieve the Contractor of the responsibility of errors or omissions.
 3. After the schedules have been approved, make any necessary corrections and send two revised copies to the Engineer for use during construction.
- B. Templates:
1. Hardware for application to metal shall be made to template.
 2. After receipt of the approved finish hardware schedule, provide hollow metal door and frame manufacturers with two revised copies of the finish hardware schedules and blueprint templates (or template numbers if the manufacturers have template catalogs.)
 3. Templates and hardware schedules shall be provided no later than 10 days after approval of hardware schedules.
 4. Furnish hardware templates to door and frame fabricators for factory preparation of doors and frames for installation of hardware.

1.5 HANDLING

- A. All hardware to be furnished with proper fastening devices to coordinate with conditions of the work.
- B. Packing and Marking:
 1. All hardware items to be packed in their original factory shipping cartons.
 2. The hardware supplier shall mark each item of hardware individually for each opening as to location of installation in accordance with accepted hardware schedule.

PART 2 PRODUCTS

2.1 MATERIALS

- A. General: Provide all screws, bolts and other accessories of suitable size and type necessary for complete installation of finish hardware. All fasteners shall be compatible in material and finish to match hardware associated with.

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- B. Hardware items shall be supplied in the finishes called out next to the specific items involved under the hardware groups.

2.2 SUBSTITUTIONS

- A. Manufacturers listed are intended to indicate a level of quality of hardware desired. Contractor may submit a request for substitution for manufacturer listed in accordance with Division 1 of these Specifications. The Engineer shall be the sole judge of the quality and acceptability of substituted items.

2.3 MANUFACTURERS

- A. Butts: Provide non-removable pins (NRP) for all exterior outswinging doors and on those doors specifically called for in the Hardware Schedule. Butts shall be manufactured by Stanley, or approved equal.
- B. Locksets & Latchsets: Shall be manufactured by Best, or approved equal.
 - 1. Cylinders shall be Best, as indicated in the hardware schedule.
 - 2. Locksets shall be furnished with sufficient strike lip to protect trim.
 - 3. All locks shall have wrought box strikes.
- C. Closers: Shall be as manufactured by Norton, or approved equal.
 - 1. Types:
 - a. All closers shall be sized as recommended by the manufacturer's catalog.
 - b. Any wind condition or mechanical ventilation systems should be taken into consideration, and the closer size should be increased accordingly.
 - c. If, after the closers are installed, a larger size closer is required, the hardware supplier shall furnish the larger size at no additional cost to the installing contractor.
 - d. Closers shall be guaranteed against mechanical defects for a period of five years.
- D. Floor & Wall; Stops: Shall be as manufactured by Glynn Johnson (GJ), or approved equal.
 - 1. Types:

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- a. Provide stops as listed in the hardware groups.
 - b. Contractor shall provide proper backing for all wall type stops. Stops applied to concrete shall be fastened with wood screw and rawl plug.
 - c. Where wall stops are specified, but cannot be used because of a construction detail, floor stops shall be furnished.
- E. Kickplates: Shall be as Stainless Steel as manufactured by Hagar, or approved equal.
- F. Weather-stripping and Threshold: Shall be as manufactured by Pemko Manufacturing Co., or approved equal.

Types: Weather-stripping and threshold shall conform to types and functions listed under specific the Hardware Schedule.

2.4 LOCATIONS

- A. As recommended by A.S.A.H.C., B.H.M.A., S.D.I., N.A.A.M.M., and A.D.A. All measurements are from floor, except top butt.
- 1. Butts:
 - top: 11 3/4" center of butt to top of door
 - intermediate: equal distance between top and bottom butts
 - bottom: 13" center of butt to bottom of door
 - 2. Lever Handles: Between 36" and 48" to center of lever.
 - 3. Door closers as per manufacturers instructions.

2.5 SCHEDULES

- A. Hardware Schedule:

HW-1: Butts
Lockset F05
Stop
Kickplate
Closer

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HW-2: Butts
Lockset F07
Stop
Kickplate
Closer

HW-3: Butts
Lockset F19
Stop
Kickplate
Closer

HW-4: Butts
Latchset F01
Stop
Kickplate
Closer

HW-5: Butts
Latchset F01
Stop
Closer

HW-6: Butts
2 Closers
2 Stops
Kickplate each door
Lockset each door F07
Weatherstripping
Threshold
Astragal

HW-7: Butts
Closer (each leaf)
Automatic flush bolts (inactive leaf)
Coordinator
Exit device 9847 LF BE
2 Stops
Kickplate (each leaf)
Astragal

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HW-8: Butts
Automatic flush bolts (inactive leaf)
Coordinator
Lockset F05
Closer (each leaf)
Automatic door bottom (each leaf)
2 Stops
Kickplate (each leaf)
Weatherstripping
Threshold
Astragal

HW-9: Butts
Closer
Lockset F13
Kickplate
Weatherstripping
Threshold

HW-10: Butts
Closer
Exit device 9875 L
Kickplate
Cylinder
Weatherstripping
Threshold

HW-11: Butts
Closer (each leaf)
Exit device (each leaf) 9847 L
Kickplate (each leaf)
2 Stops
Weatherstripping
Threshold
Astragal

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install all hardware in strict accordance with Manufacturer's requirements.
- B. Finish Hardware:

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1. The Contractor shall submit to the Engineer for approval, six (6) copies of a complete schedule of finish hardware required.
2. Schedules must be completely detailed in vertical form including all quantities, stock numbers, finishes, and sizes. List hardware for each opening separately.
3. Approval of the finish hardware schedule shall not relieve the Contractor of the responsibility of errors or omissions.
4. After the schedules have been approved, make any necessary corrections and send two revised copies to the Engineer for use during construction.

C. Templates:

1. Hardware for application to metal shall be made to template.
2. After receipt of the approved finish hardware schedule, provide hollow metal door and frame manufacturers with two revised copies of the finish hardware schedules and blueprint templates (or template numbers if the manufacturers have template catalogs.)
3. Templates and hardware schedules shall be provided no later than 10 days after approval of hardware schedules.

3.2 HANDLING

- A. All hardware to be furnished with proper fastening devices to coordinate with conditions of the work.
- B. Packing and Marking:
 1. All hardware items to be packed in their original factory shipping cartons.
 2. The hardware supplier shall mark each item of hardware individually for each opening as to location of installation in accordance with approved hardware schedule.

END OF SECTION

SECTION 08810
GLASS AND GLAZING

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

- A. The work includes furnishing all labor, materials, equipment and appliances required to complete the Glass and Glazing work as indicated on the Drawings and as specified herein.
- B. Work Included: The work of this Section shall include, but is not limited to the following:
 - 1. Glazing of hollow metal doors;
 - 2. Glazing of vinyl windows;
 - 3. Glazing of aluminum entrances and storefronts.

1.2 RELATED WORK

- A. SECTION 07920, Caulking and Sealants.
- B. SECTION 08120, Hollow Metal Doors & Frames.
- C. SECTION 08410, Aluminum Entrances and Storefronts.

1.3 SUBMITTALS

- A. Submit the following in accordance with SECTION 01340:
 - 1. Manufacturer's Data: For each specified glass type, submit six (6) copies of manufacturer's literature for information purposes only.
 - 2. Substitutions & Product Options: In order to be considered, other manufacturers must provide the following information with request:
 - a. Manufacturer's pertinent literature including comprehensive, detailed description of products, fabrication, test results, etc.

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- b. Certified copies of test reports indicating that glass types have undergone and passed all tests required of each as stated in PART 2 PRODUCTS requirements set forth in this specification section.
3. Acceptance: Engineer has the right to consider each request on merits of materials furnished or otherwise available to him, and to reject any or all requests.
4. Glazing Schedule: Contractor shall submit a Manufacturer's complete glazing schedule for acceptance prior to manufacture of any glass units . Schedule shall include the types of glass, glass system and dimensions required for each window or door.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Load products in such a manner that they may be transported and unloaded without being damaged. Deliver products to project site cartoned or crated to provide protection during transit and project site storage.
- B. Storage: Do not store products on or in the structure in a manner that might cause distortion or damage to the products or the supporting structures. Repair or replace damaged products or structures as directed.
- C. Markings: Insure that all glass products are tagged with markings which show proper installation locations.
- D. Defective Products: Items found to be defective, either through manufacturing, transit damage, field installation, etc., shall be replaced within a three (3) week period. If necessary, special shipment and manufacturing arrangements shall be made to accomplish this requirement.

1.5 QUALITY ASSURANCE

- A. References, Codes and Standards:
 1. "Glazing Manual," published in 1986 by the Flat Glass Marketing Association (FGMA).
 2. "Safety Standards for Architectural Glazing Materials, " 16CFR 1201.
 3. ASTM C 1036-91 (Formally DDG-451-D), "Standard Specification for Flat Glass".
 4. ASTM C 1048-91 (Formally DDG-1403-B), "Heat-Treated Flat Glass".

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5. ANSI Z97.1, Performance Specifications and Methods of Test for Transparent Safety Glazing Material Used in Buildings
 6. ASTM F1233-93, Class I and II.
 7. HPW-TP-0500.00, H.P. White Laboratories, Street, MD.
- B. Manufacturer's Technical Recommendations:
1. Perform glazing work in accordance with written recommendations from the glass manufacturer of glass fabricator and the "Glazing Manual" of the FGMA.
 2. Certify glass compatibility with glazing materials (i.e. insulating glass sealants, structural sealants and silicones, gaskets, setting blocks, etc.)

PART 2 PRODUCTS

2.1 GENERAL

- A. Manufacturer: Glass shall be manufactured by one of the following, or approved equal: ASG Industries, Inc.; C-E Glass Division; Libby-Owens-Ford Co.; PPG Industries.

2.2 MATERIALS:

- A. Glass Types:
1. Insulating Glass: Manufacturer's standard unit of two sheets of float glass (q3 quality, Glazing Select) in accordance with ASTM C 1036-91, with Clear Float Glass outer lite and inner lite equal to Libby-Owens-Ford's "Energy Advantage Low E Glass"; permanently and hermetically sealed together at edges with spacers and sealant; to provide a dehydrated air space with -60 degrees dew point; for completed unit thickness of 1", fabricated to the sizes and shapes indicated. Glass thickness as required for respective window sizes.
 2. Insulating Safety Glass: Manufacturer's standard units of two sheets of tempered safety glass (Federal Standard 16CFR, Part 1201); , Clear outer lite and inner lite equal to Libby-Owens-Ford's "Energy Advantage Low E Glass", permanently and hermetically sealed together at edges with spacers and sealant; to provide a dehydrated air space 1/2" thick with -60 degrees dew point; for completed unit thickness of 1"; fabricated to the sizes and shapes indicated. . Glass thickness as required for respective window sizes.

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3. Safety Glass (Hollow Metal Doors): Shall be 1/4" Tempered Safety Glass with square edges (Federal Specification DD-G-1403B and Federal Standard 16CFR 1201) as manufactured by ASG Industries, Inc., C-E Glass Div., Libby-Owens-Ford Co., PPG Industries, Inc. or approved equal.
4. Fire Rated Glass: Shall be minimum 1/4" thick wire glass, ASTM C1036, Type II, Class I, Quality q8, mesh m1, pattern p2.

C. Glazing Materials:

1. Setting Blocks: Shall be .25" high 85 durometer neoprene, or approved equal.
2. Glazing Tape: Shall be Tremco 440 pre-shimmed glazing tape, or approved equal.
3. Glazing Gaskets: Shall be extruded, flexible PVC gaskets of the profiles shown, or as required for watertight construction; comply with ASTM D2287.
4. Sealant: Shall be silicone construction sealant, General Electric series 1200, Dow Corning series 781, or approved equal.

PART 3 EXECUTION

3.1 EXECUTION

A. Standards and Performance:

1. Watertight and airtight installation of each piece of glass is required. Each installation must withstand normal temperature changes, wind loading, impact loading without failure of any kind including loss or breakage of glass, failure of sealants or gaskets to remain watertight and air-tight, deterioration of glazing materials and other defects in the work.
2. Protect glass from edge damage at all times during handling, installation and operation of the building.
3. Glazing channel dimensions are intended to provide for necessary minimum bite on the glass, minimum edge clearance and adequate sealant thicknesses, with reasonable tolerances. The Glazier is responsible for field measuring and correct glass size for each opening, within the tolerances and necessary dimensions established.

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4. Comply with combined recommendations of glass manufacturer and manufacturer of sealants and other materials used glazing, except where more stringent are shown or specified, and except where manufacturer's technical representatives direct otherwise.
 5. Inspect each piece of glass immediately before installation, and eliminate any which have observable edge damage or face imperfections.
 6. Inspect each piece of glass immediately before installation, and eliminate any which have observable edge damage or face imperfections.
- B. Preparation for Glazing:
1. Clean the glazing channel, or other framing members to receive glass, immediately before glazing. Remove coatings which are not firmly bonded to the substrate. Remove lacquer from metal surfaces wherever elastomeric sealants are used.
 2. Apply primer or sealer to joint surfaces wherever recommended by sealant manufacturer.
- C. Glazing:
1. Install setting blocks of proper size at quarter points of sill rabbet.
 2. Install glazing tape continuously around all edges of glass on both sides of glass, except where glazing gaskets are used.
 3. Sealant: Apply sealant at all inside corners.
- D. Cure, Protection and Cleaning:
1. Cure glazing sealants and compounds in compliance with manufacturer's instructions and recommendations, to obtain high early bond strength, internal cohesive strength and surface durability.
 2. Protect exterior glass from breakage immediately upon installation, by attachment of crossed streamers to framing held away from glass. Do not apply markers of any type to surface of glass.
- E. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during the construction period, including natural causes, accidents, vandalism and theft.

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- F. Maintain glass in a reasonably clean condition during construction, so that it will not be damaged by corrosive action and will not contribute (by wash-off) to the deterioration of glazing materials and other work.
- G. Wash and polish glass on both faces not more than four (4) days prior to Engineer's acceptance of the work in each area.

END OF SECTION