

SECTION 08 11 13 – HOLLOW METAL DOORS AND FRAMES

PART 1: GENERAL

1.01: General

- A. Conform to the provisions of the contract, general and supplementary conditions to the contract, Division One of this specification as well as the drawings and this specification section.
- B. Should conflict arise between the Drawings and the provisions of the Specifications, the Specifications shall govern.
- C. The Contractor shall furnish all labor, materials, tools, equipment, and perform all Work and services necessary for, or incidental to, the furnishing and installation, complete, of all metal doors and frames as shown on the drawings and as specified. Work shall be done in accordance with the Provisions of the Contract Documents, and completely coordinated with Work of all other trades.
- D. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to, and necessary for, a sound, secure, and complete installation.
- E. Verify and coordinate requirements of any fire and/or smoke rated doors and non-rated doors and required hardware. Unless otherwise noted, provide frames to match rating required of doors.

1.02: Scope of Work

- A. General:
 - 1. Refer to the drawings for the extent of work to be done.
 - 2. Inspect existing conditions and the work of other trades for proper conditions before the work of this section begins.
 - 3. Coordinate the work of this section with the work of other trades.
 - 4. Protect people, property, and the work of this section and other trades.
 - 5. Clean up work site and dispose of waste and debris on a daily basis.
- B. Scope: Provide all materials, accessories, labor, tools, and equipment for the fabrication and installation of all hollow metal doors and frames, shown on the drawings and directed by this specification, including but not limited to the following:
 - 1. Fabrication and installation of hollow metal doors and frames, both rated and non-rated.
 - 2. Preparation of doors to receive door hardware.
 - 3. Shop priming of doors and frames.

1.03: Related Work Specified Elsewhere

- A. Section 08 71 00, Door Hardware
- B. Section 08 81 00, Glass and Glazing
- C. Section 09 22 16 Non-Structural Metal Framing
- D. Section 09 29 00, Gypsum Wallboard and Sheathing

- E. Section 07 62 00, Sheet Metal Flashing and Trim
- F. Section 07 92 00, Joint Sealants
- G. Section 09 90 00, Painting.

1.04: Regulatory Codes and Agencies

- A. Refer to Division 1.

1.05: Standard Industry Specifications

- A. SDI-100, Recommended Specifications for Standard Steel Doors and Frames.
- B. Hollow Metal Manufacturers Association.
- C. National Association of Architectural Metal Manufacturers Standard CHM-1-169.

1.06: References

- A. Publications listed herein are part of this specification to the extent referenced. The criteria established within these specifications shall take precedence over the standards referenced herein.
- B. American Society for Testing and Materials (ASTM) Guides for Materials and Testing:
 - 1. ASTM C-270, Grout for hollow metal frames.
 - 2. ASTM A-366, Standard Specification for Steel, Sheet, Carbon, Cold Rolled, Commercial Quality.
 - 3. ASTM A-591, Standard Specification for Steel sheet, Electrolytic Zinc-Coated, for light Coating Mass Applications.
 - 4. ASTM E-152, Fire Tests of Door Assemblies.
 - 5. ASTM E-84, Test for surface burning characteristics of building materials.
 - 6. ASTM E-283, Test for rate of Air Leakage through Window.
- C. Hollow Metal Manufacturers Association (HMMA).
 - 1. HM MA 861, Guide Specification for Commercial Hollow Metal Doors.
- D. American National Standards Institute (ANSI)
 - 1. ANSI A151: Guide for cycle testing for Hollow metal doors.
 - 2. ANSI A224.1: Test Procedure and Acceptance Criteria for Prime Painted Steel Surfaces for Steel Doors and Frames.
- E. National Fire Protection Association (NFPA)
 - 1. Meet the guidelines of NFPA 105, Guide for Smoke Control Doors.

1.07: Submittals

- A. Make all submittals required in accordance with provisions of Division 1.

- B. Product Data:
 - 1. Submit manufacturer's published literature for specified products and accessories as applicable, including manufacturer's specifications, physical characteristics and performance data, clearly marked and described fully.
 - 2. Submit, as a supplement, manufacturer's instructions and directions for application if not included in manufacturer's published literature.
- C. Shop Drawings: Submit shop drawings for approval and show the following:
 - 1. All door types and sizes.
 - 2. Provisions and locations for hardware.
 - 3. Opening locations and glazing type.
 - 4. Reinforcing.
 - 5. Joints, welds and anchors.
 - 6. Other Related items.
- D. Samples:
 - 1. Submit samples of metal members for hollow metal doors and full size frames section by 24" length showing profiles and finishes.
- E. Certificate: Furnish letter from manufacturer stating that doors and frames delivered to the project conform with the Contract Document requirements.

1.08: Quality Control

- A. Obtain all materials of each type from a single source unless prior approval is received from the Architect.
- B. Fabricator qualifications:
 - 1. Fabricator shall have a minimum of 10 years experience in the fabrication of hollow metal doors and frames of the highest quality.
 - 2. Fabricator shall have plant, facilities and personnel adequate for the production of doors and frames as required by this Section and within the construction schedule.
 - 3. Fabricators shall, upon request, submit a list of installed work similar in scope to those shown on the drawings.
- C. Installer qualifications:
 - 1. Workers shall be completely familiar with the manufacturer's current recommended methods of installation as well as the requirements of this work.
 - 2. Use only personnel who are thoroughly trained and have a minimum of two (2) years' experience in the installation of metal doors and frames.
 - 3. Supervisor: Provide at least one (1) person who meets the above requirements and has at least two (2) years experience directing installation of metal doors and frames and whose sole responsibility will be directing and supervising the work of this section.

1.09: Delivery, Storage, and Handling

- A. Delivery:
 - 1. Deliver materials to the site without defects, damage or deterioration.
 - 2. Deliver all materials in the original unopened packages, containers, or bundles with manufacturer original label intact and legible. Do not remove labels.
 - 3. Do not deliver to the site more than one week prior to installation. Coordinate with the General Contractor for proper delivery time.
 - 4. Do not deliver to the building until the building is enclosed, dry and heated to a minimum temperature of 60 degrees Fahrenheit. Relative humidity shall be within 15% of the mechanical engineer's design relative humidity.
 - 5. Provide packaging such as cardboard or other containers, separators, banding, spreaders, and paper wrappings as required to completely protect all metal doors and frames during transportation and storage.
- B. Handling
 - 1. Handle all materials so as to prevent damage, discoloration or disfiguring.
 - 2. Do not use any tools that may damage doors or frames or impair their function as required by these specifications or manufacture's product literature or installation guidelines.
 - 3. Do not apply any damaged doors, frames, accessories or materials.
 - 4. Until final acceptance is received, replace any and all work of this section at no cost to the owner.
- C. Storage:
 - 1. Store doors upright, in a protected dry area, at least three (3) inches off of the ground and with at least 1/4-inch air space between individual pieces.
 - 2. Fully support all products and materials to prevent sagging in any dimension or damage to the edges, ends, and surfaces.
 - 3. Protect all prefinished and hardware surfaces as required.
 - 4. Keep all materials dry by storing inside the building under roof.
 - 5. Where products and/or materials have been approved for storage outside, store off the ground, properly supported on a level platform, and protected from direct exposure to rain, snow, sunlight, and other extreme weather conditions. Provide adequate ventilation to prevent condensation.
 - 6. Do not store in or near patient, staff, pedestrian or vehicular traffic areas.

1.10: Protection

- A. Take all precautions necessary to protect the work of other trades, persons and adjacent property and structures.
- B. The Contractor or Subcontractor shall repair or replace, as directed by the Architect, all property damaged by the Contractor or Subcontractor at no additional cost to the Owner.

1.11: Guarantees and Warranties

- A. Submittal: In accordance with Division 1, submit guarantee in writing.
- B. Upon completion of work and after the manufacturer's representative has signed an acceptance of work statement, the manufacturer shall issue a written guarantee against defective materials and workmanship for five (5) years commencing on date of Substantial Completion.

PART 2: PRODUCTS

2.01: General

- A. Galvanic Insulation: Take all precautions to protect hollow metal doors and supporting materials from galvanic action with dissimilar materials.

2.02: Hollow Metal Doors

- A. General
 - 1. Refer to the Door Schedule and the Door Types located in the drawing set for the following specific information on each door:
 - a. Door size
 - b. Door type
 - c. Door finish
 - d. Door dimensions
 - e. Location and dimensions of any openings in doors
 - f. Material located in any openings
 - g. Fire rating, if any.
 - h. Specific information suited to each individual door, if any.
 - 2. All doors shall be strong, rigid and neat in appearance, free from warpage or buckle. Corner bends shall be true and straight and of minimum radius for the gauge of metal used. Reinforced with not less than 22 gauge stiffener channels at tops and bottoms, welded to side plates. Reinforce edges at tops and sides; finish flush. Fill voids within door completely full of insulating material.
- B. Materials:
 - 1. All door panel faces shall be constructed from a single panel of sheet steel.
 - a. Commercial quality, level, cold rolled steel conforming to ASTM Designation A366-66T and free of scale, pitting or other surface defects. Inorganic noncombustible batt-type insulation standard with manufacturer.
 - b. Interior Doors: Eighteen gauge (18 Ga.) steel for interior doors.

- c. Exterior Doors:
 - i. Sixteen gauge (16 ga.) steel for exterior doors.
 - ii. All exterior doors shall be hot dipped galvanized.
- C. Hardware Reinforcing: All doors to be properly reinforced for the finish hardware described in Section 08 71 00 of these specifications.
- D. Edges: Close top and bottom edges of doors with steel channel, minimum sixteen gauge (16 ga.) extending full width of door, spot welded to both faces at minimum of twelve inches on center and at each end.
- E. Reinforcing:
 - 1. Twenty gauge (20 ga.) minimum vertical stiffeners, welded to face material and completely fill core with mineral sound-deadening material.
 - 2. Welds within the door panels proper shall be welded at six feet (6'- 0") o.c and within nine inches (9") of each side or edge of door or openings within doors.
 - 3. Reinforcing in the door for closers shall be of full width of door and location, where closers are indicated.
 - 4. Reinforcement for other items shall be of size, thickness and location as appropriate. Spot weld.
- F. Insulation:
 - 1. Thermal: All exterior hollow metal doors shall be fully insulated.
 - 2. Sound: Where indicated on drawings, door panels shall be fully insulated for sound.
 - 3. Material: Polystyrene rigid sound insulation core to match the door panel thickness. See Section 07 20 00.
- G. Frame Sizes and Profiles
 - 1. Refer to the door schedule, Frame types and details located in the drawing set for frame sizes and profiles.
 - 2. Bevel vertical edges of single acting hinge doors one-eighth of an inch (1/8") in two (2) lines.
- H. Clearances:
 - 1. Head and Jambs: Provide one-eighth of an inch (1/8") clearance at head and each jamb.
 - 2. Floor: Provide three-quarters of an inch (3/4") clearance from finish floor.
 - 3. Thresholds: Provide three-sixteenth of an inch (3/16") clearance above top of threshold subject to job condition.
 - 4. Between pairs of doors: Provide clearance between pairs of doors as appropriate.
- I. Factory Prime Painting:
 - 1. Pre-clean and shop prime each door for finish painting which will be performed at job site under Section 09 90 00 of the specifications.
 - 2. Exposed surfaces of all doors and frames to be cleaned, bonderized and prime painted in accordance with standard specifications. Concealed surfaces of frames to be cleaned and painted with one coat of approved rust resisting paint.

2.03: Hollow Metal Frames

A. General

1. Refer to the Door Schedule and the Door Types located in the drawing set for the following specific information on each frame:
 - a. Frame type.
 - b. Frame size.
 - c. Frame finish.
 - d. Frame dimensions.
 - e. Location and dimensions of any openings in frames
 - f. Material located in any openings.
 - g. Frame rating, if any.
 - h. Specific information suited to each individual frames, if any.
2. Accurately fabricate all hollow metal frames to match the doors to be installed in them.
3. Metal frames to be full welded unit type with mitered, welded, and smooth ground corners.
4. Drill frames for rubber silencers and provide removable spreader at bottom.
5. All finished work shall be strong and rigid, neat in appearance, square, true and free of defects, warp or buckle. Moulded members shall be clean cut, straight and of uniform profile throughout their lengths.
6. Jamb depths, trim, profile and backbends shall be as scheduled by the Architect and as shown on approved shop drawings. Corner joints shall have all contact edges mitered.
7. The use of gussets will not be permitted. Minimum depth of stops shall be 5/8 inches.
8. When shipping limitations so dictate, frames for large openings shall be fabricated in sections designed for splicing in the field.
9. Frames for multiple or special openings shall have mullion and/or rail members which are closed tubular shapes having no visible seams or joints. All joints between faces of abutting members shall be securely welded and finished smooth.
10. Custom fabricate frames to profiles shown on drawings.

B. Materials:

1. Exterior frames:
 - a. Fourteen gauge (14 ga) steel.
 - b. Hot dipped galvanized.
2. Interior Frames:
 - a. Interior doors not larger than three feet (3'- 0") wide and seven feet six inches (7'- 6") high may be sixteen gauge (16 ga.) steel.
 - b. All other interior door frames and exterior door frames shall be fourteen gauge (14 ga.) steel.

- C. Anchors:
1. Provide head and jamb anchors as required by wall conditions providing not less than a minimum of three (3) galvanized metal anchors per jamb, spacing not to exceed two feet (2'- 0") o.c. and within nine inches (9") of the top and bottom.
 2. Provide galvanized metal angle clips welded to frame for floor anchors with provision for 2 anchor bolts into floor at each clip.
 3. Anchors at masonry conditions:
 - a. Type: As suited for each condition.
 - b. Thickness: Fourteen gauge (14 ga.)
 - c. Provide galvanic insulation as required at masonry and grout conditions.
 4. Anchors at stud and steel column conditions:
 - a. Type: "T" shape as suited to each condition.
 - b. Thickness: Sixteen gauge (16 ga.).
 - c. Attachment: Screws.
- D. Mullion and transom bars:
1. All mullions and transom bars shall be tubular construction with members butt-welded to head and jambs and ground smooth.
 2. Mullions and transoms bars shall match the material thickness of the frames to which they are connecting.
 3. Exterior mullions and transoms shall be hot dipped galvanized.
- E. Grout:
1. Type: ASTM C270 Type S.
 2. Locations:
 - a. Grout all Exterior hollow metal frames solid.
 - b. Grout all hollow metal doors occurring at non-structural steel stud walls.
 - c. Provide metal covers to protect hardware preparation where frames are grouted.

2.04: Provisions for Hardware

- A. Doors and frames shall be mortised, reinforced, drilled and tapped at factory for fully templated hardware in accordance with the approved hardware schedule and templates provided by the hardware contract.
- B. Work to template furnished by hardware supplier as specified in Specification section 08 71 00
- C. Drill for door silencers as required.
- D. Where surface mounted hardware is to be applied, doors and frames shall have reinforcing plates only, and drilling and tapping shall be done in field. Hardware reinforcing plates shall be 7 gauge for hinge and pivot reinforcements, 12 gauge for lock face, strike, flush bolts, concealed holders, concealed or surface mounted closures, frame reinforcements for surface mounted hardware and 16 gauge for all other surface mounted hardware.

2.05: Provisions for Glazing

- A. Where specified or scheduled, doors and frames shall be provided with hollow metal moldings or integral rebates to secure glazing by others in accordance with glass opening sizes shown on approved shop drawings.
- B. Fixed moldings shall be securely welded to the door on the security side. Loose stops shall be not less than 20-gauge steel with mitered corner joints, secured to the framed opening by cadmium or zinc coated countersunk screws.
- C. Snap-on attachments will not be permitted.

2.06: Fabrication

- A. Fabricate to sizes, thickness, profiles, and shapes as described in the drawings, this specification and Industry standards.
- B. Doors: All door edges shall be welded for full length and width and ground smooth with exterior doors to have flush filler tops.
- C. Frames: All Frames edges shall be welded for full length and width and ground smooth with doors.
- D. Provisions for Hardware:
 - 1. Mortise, reinforce and tap frames at factory for hardware.
 - 2. Work to template furnished by hardware supplier as specified elsewhere
 - 3. Drill for door silencers as required.
 - 4. Provide plaster guards at strike pockets and door silencer locations.

2.07: Fire Labels

- A. Provide Underwriters' Laboratories labels on doors and frames where, and of class, indicated. Modify Architect's details as required to secure labels; show modifications on shop drawings.

2.08: Shop Finishing

- A. Pre-clean and shop prime each door and frame for finish painting, which will be performed at the job site under Section 09900 of the Specification.
- B. After fabrication, all tool marks and surface imperfections shall be dressed, filled and sanded as required to make all faces and vertical edges smooth, level and free of all irregularities.
- C. Doors and frames shall then be chemically treated to insure maximum paint adhesion and shall be coated on all exposed surfaces, with a rust-inhibitive primer which is fully cured before shipment.
- D. Shop-finish inside of frames to be grouted with 1 coat of water-resistant bituminous paint. Shop-apply one (1) prime coat layer to exposed surfaces; conform to Section 09900 for materials and applications.

2.09: Manufacturers

- A. Member of the National Association of Architectural Metal Manufacturers, or approved.
 - 1. Security Metal Products
 - 2. Steelcraft.
 - 3. Curries.
 - 4. Republic Doors and Frames.
 - 5. Ceco Door Products
 - 6. Amweld

PART 3: EXECUTION

3.01: General

- A. Install all metal doors, frames, and hardware in strict accordance with all pertinent codes and regulations; the approved shop drawings and the manufacturer's recommendations, anchoring all components firmly in position for long life under hard use.

3.02: Inspection

- A. Inspect the work of other trades to ascertain if conditions are suitable for the work of this section.
- B. In the event of any unsuitable conditions, do not proceed until those conditions have been corrected. Proceeding with work indicates acceptance of underlying conditions.

3.03: Coordination

- A. Coordinate all work involving material, labor and equipment of other trades penetrating or attaching to the work of this section so that each trade's work can be installed, erected or fabricated as required and that the work space be maintained and left clean and safe.

3.04: Tolerances

- A. Squareness of door:
 - 1. One thirty-second of an inch (1/32") over the height of the door.
 - 2. One sixty-fourth of an inch (1/64") over the width of the door.
- B. Door thickness: Zero tolerance, maintain listed uniform thickness throughout door panel.
- C. 1/8" between door and frame at head and jambs
- D. 1/8" between meeting pairs of doors
- E. 1/4" maximum between door and threshold
- F. 3/8" maximum between door and floor finish except as otherwise noted or detailed.

3.05: Installation

- A. Grout frames to be installed in masonry walls prior to installation with fast setting plaster mix, taping compound, or mortar as appropriate to type of installation.
- B. Erect doors and frames plumb and in a straight and even plane with adjacent surfaces.
- C. For masonry walls, set frames in place, provide anchors as directed above, and lay masonry to the frame.
- D. Set frames in position, plumb, align and brace securely until permanent anchors are set; anchor bottom of frames to floors with expansion bolts or with power fasteners; and build wall anchors into walls or secure to adjoining construction as indicated, specified, or required.
- E. Anchor frames requiring ceiling struts, special reinforcement, or structural overhead bracing securely to ceilings or structural frame above as indicated, specified or required.
- F. Install doors neatly in designated locations after walls are finished with fixed units securely fastened in place and operative units adjusted to work smoothly and silently.
- G. Install all finish hardware in accordance with the manufacturer's recommendations, eliminating all hinge bound conditions and making all items smoothly operating and firmly anchored into positions.
- H. Install all fire rated units in accordance with NFPA Standards.

3.06: Adjustment and Clean Up

- A. Rehang or replace doors that do not swing or operate freely as directed by the Architect at no additional cost to the Owner.
- B. Replace doors and/or frames damaged during installation as directed by the Architect, at no additional cost to the Owner.
- C. Take all protective measures as recommended and accepted by the door manufacturer to assure that the hollow metal doors and frames will remain undamaged through the time of substantial completion. Products that are damaged prior to substantial completion shall be replaced or repaired as directed by the Architect at no additional cost to the Owner.
- D. At the end of each day's work and at final completion, the site shall be free of all waste materials and equipment used by the Contractor. Remove all waste materials and debris and dispose of in a legal and safe manner.
- E. The Contractor shall be responsible for maintaining a clean work place and shall pay for all costs, at no additional cost to the Owner, should outside labor and equipment be used to clean up the work site.
- F. Prevent waste materials from entering and accumulating in the storm sewer system and adjacent property.

*****End of Section 08 11 13*****

SECTION 08 14 00 – WOOD DOORS AND FRAMES

PART 1: GENERAL

1.01: General

- A. Conform to the provisions of the contract, general and supplementary conditions to the contract, Division One of this specification, the drawings, and this specification section.
- B. Should conflict arise between the Drawings and the provisions of the Specifications, the Specifications shall govern.
- C. The Contractor shall furnish all labor, materials, tools, equipment, and perform all Work and services necessary for, or incidental to, the furnishing and installation, complete, of all wood and plastic doors and frames as shown on the drawings and as specified. Work shall be done in accordance with the Provisions of the Contract Documents, and completely coordinated with Work of all other trades.
- D. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to, and necessary for, a sound, secure, and complete installation.
- E. Verify and coordinate requirements of any fire and/or smoke rated doors and nonrated doors and required hardware. Unless otherwise noted, provide frames to match rating required of doors.

1.02: Scope of Work

- A. Refer to the drawings and door schedule for the extent and location of each type of door.
- B. Inspect work of other trades for existence of proper installation conditions.
- C. Provide all material, labor and equipment for the fabrication and installation of all solid core flush wood doors.
- D. Clean up work site and dispose of waste and debris on a daily basis.

1.03: Related Work Specified Elsewhere

- A. Section 06 20 00, Finish Carpentry and Millwork
- B. Section 07 20 00, Thermal Insulation
- C. Section 08 13 00, Hollow Metal Doors and Frames
- D. Section 08 71 00, Door Hardware
- E. Section 08 81 00, Glass Glazing
- F. Section 09 22 16, Non-Structural Metal Framing
- G. Section 09 90 00, Painting

1.04: Regulatory Agencies

- A. See Division 1

1.05: Submittals

- A. Make all submittals required in this section in accordance with provisions of Division 1.
- B. Product Data:
 - 1. Submit door manufacturer's product data for each type of wood door, including details of core and edge construction, trim for openings and finishing specifications for doors to receive factory finish.
 - 2. Submit, as a supplement, manufacturer's instructions and directions for application if not included in manufacturer's published literature.
 - 3. Submit complete shop drawings for approval, including, but not limited to, the following:
 - a. Elevation for each door type.
 - b. Door size.
 - c. Door thickness.
 - d. Complete door materials.
 - e. Openings in doors, showing relite and vent locations, opening size and distances from edge.
 - f. Details for glazing stops and edge conditions.
 - 4. Samples: Submit three samples each of wood door and frame samples, submit 3 samples each. Samples shall demonstrate the following:
 - a. Edge condition.
 - b. Core construction
 - c. Stile and Rail construction
 - d. Face material with selected color and finish.
- C. Test Data: Submit test data demonstrating compliance with applicable codes.
- D. Warranty: Upon completion of the portion of the work, and as a condition of its acceptance, furnish written warranty as required below.

1.06: Quality Assurance

- A. Manufacturer: Obtain all wood doors from a single manufacturer unless prior approval is received from the Architect.
- B. Quality Standards: Provide wood flush doors complying with the following standards:
 - 1. AWI Quality Standards: Section 01300 "Architectural Flush Doors" of "Architectural Woodwork Quality Standards" published by Architectural Woodwork Institute (AWI). Designations for grade and door construction under types of doors refer to this standard.
 - 2. NWMA Quality Marking: Mark each wood door with NWMA Wood Flush Door Certification Hallmark certifying compliance with applicable requirements of ANSI / NWMA I.S. 1 Series. For manufacturers not participating in NWMA Hallmark Program, a certification of compliance may be substituted for marking of individual doors.
 - 3. Conform to industry standard FHDA 5-75 for wood and plastic doors.

- D. Fire-Rated Wood Doors:
 - 1. Provide wood doors which are identical in material and construction to units tested in door and frame assemblies per ASTM E152 and which are labeled and listed for ratings indicated by UL, Warnock Hersey or other independent testing and inspection agency acceptable to the Architect.
 - 2. Fire rated doors to comply with NFPA 80, Standard for Fire Doors and Windows (ANSI A2.7-73) and shall pass NFPA 252, Standard Methods of Fire Tests of Door Assemblies. Approved testing agencies for required labels; Underwriter's Laboratories, Inc. (U.L.), or Warnock Hersey International (W.H.).
- E. Sound-Rated Wood Doors
 - 1. "The Sound Transmission Class specified shall be certified by the manufacturer to be based on tests conducted at an independent testing agency in accordance with ASTM E90-90".
 - 2. "Doors tested as ASTM E90-87 must be rated one STC higher and doors tested as ASTM E90-80 must be rated two STC higher, early tests must be three STC higher than the STC specified for this job. These differentials account for the variances in obsolete methods."

1.07: Color

- A. Colors of stains for prefinished doors shall be custom as selected by the Architect. See drawings.
- B. Submit color and finish samples for approval.

1.08: Delivery, Storage, and Handling

- A. Delivery:
 - 1. Deliver materials to the site without defects, damage or deterioration.
 - 2. Provide packaging such as cardboard or other containers, separators, banding, spreaders, and paper wrappings as required to completely protect all wood doors and frames during transportation and storage.
 - 3. Deliver all materials in the original unopened packages, containers, or bundles with manufacturer original label intact and legible. Do not remove labels.
 - 4. Do not deliver to the site more than one week prior to installation. Coordinate with the General Contractor for proper delivery time.
 - 5. Do not deliver to the building until the building is enclosed, dry and heated to a minimum temperature of sixty (60) degrees Fahrenheit. Relative humidity shall be within 15% of the mechanical engineer's design relative humidity.
- B. Handling
 - 1. Handle all materials so as to prevent damage.
 - 2. Do not install any damaged doors or accessories.
 - 3. Until final acceptance is received, replace any and all damaged doors or accessory materials at no cost to the owner.

- C. Storage:
 - 1. Store doors upright (leaning doors against each other is not permitted), in a protected dry area. Doors shall be at least three inch (3") off the ground and with at least 1/4-inch (1/4") air space between individual pieces; protect all prefinished and hardware surfaces as required.
 - 2. All materials shall be fully supported to prevent sagging in any dimension or damage to the edges, ends, and surfaces.
 - 3. Store all doors and accessories a minimum of six inches (6") above the floor.
 - 4. Do not store outside or in an unheated, non-air conditioned space.
 - 5. Do not store in or near patient, staff, pedestrian or vehicular traffic areas.

1.09: Protection

- A. Take all precautions necessary to protect the work of other trades, persons and adjacent property and structures.
- B. The Contractor or Subcontractor shall repair or replace, as directed by the Architect, all property or injuries damaged by the Contractor or Subcontractor at no additional cost to the Owner.

1.10: Specified Product Warranty

- A. 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 which show telegraphing of core construction in face veneers, or do not conform to tolerance limitations of NWMA and AWI.

PART 2: PRODUCTS

2.01. General:

- A. Provide doors in sizes, thicknesses, materials, and configurations shown in the drawings.
- B. Doors with panels or other openings (glazed, louvered, etc.) may be of flush door style except that opening sizes and configurations that exceed limits of manufacturer's guarantee (including fire rating limitations) shall be provided in stile and rail door style. Fire rated stile and rail type doors shall carry U.L. or W.H. label or be of construction as approved in writing by the Fire Marshal prior to fabrication and required submittals.

2.02: Solid Core Flush Wood Doors

- A. Door Type: Solid core construction, hardwood veneer faces, fire rated as indicated; 1-3/4 inch thick, except 1-3/8 inch thick at interior pocket doors.
- B. Core Assembly:
 - 1. Conform to AWI SLC, glued block, solid core or AWI PC, particleboard core for non-rated door.
 - 2. Conform to AWI F for rated doors.

- C. Edge Construction: Provide manufacturer's standard laminated edge construction for improved screw holding capability and split resistance. Edges of single layer treated lumber shall not be permitted. For exposed edges, use solid hardwood of compatible species to face veneers except that fire rated doors need not have matching edge veneer.
- D. Door Construction:
 - 1. Solid-Core Non-Rated Interior Door: PC-5, particleboard core (AWI Section 1300-G-3).
 - 2. Solid-Core Non-Rated Exterior Door: SLC-5, staved lumber core (AWI Section 1300-G-3).
 - 3. Solid Core Fire-Rated Interior Door: FD 1-1/2, FD 1, FD 3/4, and FD 1/3 as indicated (AWI Section 1300-G-4).
 - 4. Solid-Core Special Function Door: SR, sound retardant (acoustical) and LL, lead lined as indicated (AWI Section 1300-G-5).
- E. Frame Construction
 - 1. Top rail: Seven inches (7") minimum
 - 2. Bottom rail: Twelve inches (12") minimum
 - 3. Sides: Six inches (6") minimum.
 - 4. Stile, rail, and core show-through (telegraphing) shall not exceed 0.010 inch in any three inch span.
- F. Openings:
 - 1. Where openings are shown, factory cut, block and trim for solid construction.
 - 2. Comply with applicable requirements of referenced standards for kinds of door required.
 - 3. Trim openings for non-fire rated doors with solid wood moldings of the same grade and species as the face veneers.
 - 4. Frames for light openings in fire rated doors: Provide manufacturer's standard eighteen gauge (18 ga.) cold-rolled steel, factory-primed and approved for use for fire-rated wood doors.
- G. Face Species:
 - 1. Provide same material for both faces of individual doors.
 - 2. Quality: AWI Custom Grade, except use Premium Grade at pairs of doors (AWI Section 1300-S-1). Face quality to conform to ANSI/HPMA HP 1983 "A" Face.
 - 3. Transparent finished doors:
 - a. Species and finish as specified on drawings
 - 3. Painted finish doors:
 - a. Rotary veneer cut white birch, premium grade.
- H. Adhesives:
 - 1. ANSI/NWMA 1.S.-1 Series; Type I for faces and crossbands, Type II or better for cores (when glued).
 - 2. Exterior doors to have additional factory applied water repellent treatment, and outswinging doors to have factory applied flashing at top edge.

- I. Approved Manufacturers
 - 1. Craftmaster
 - 2. VT Industries
 - 3. Oshkosh
 - 4. Champion Products
 - 5. Vancouver Door
 - 6. Weyerhaeuser
 - 7. Sauder
 - 8. Algoma
 - 9. Cenco
 - 10. Eggers
 - 11. Graham
 - 12. approved equal.

2.03: Stile and Rail Doors

- A. Door Type: Solid construction, solid wood or veneered staved wood core, fire rated as indicated; 1-3/4 inch thick, except that 1-3/8 inch thick allowed for interior pocket doors.
- B. Edges: Same species of wood as faces for doors with transparent finishes.
- C. Door Construction:
 - 1. For transparent finishes: AWI Premium Grade
 - 2. For opaque finishes: AWI Custom Grade.
- D. Materials:
 - 1. Lumber: Grade I plus compatibility of grain and color for Premium Grade, Grade II for Custom Grade.
 - 2. Panels: Exterior doors to have Veneer Core, Type I glue and interior doors to have Veneer Particleboard, Type II glue.
 - 3. Relites: Factory installed in 1/4 inch tempered float glass (tinted as noted) at interior doors, except wired glass set in continuous steel hidden channel at fire rated doors. Provide 3/4-inch double insulated tempered glass (tinted as noted) at exterior doors.
 - 4. Thicknesses:
 - a. Stiles, rails and mullions, 1-3/8 inch minimum;
 - b. Raised panels, 1-1/8 inch minimum;
 - c. Flat panels, 3/8 inch minimum for 3 sq. ft. or less, 1/2 inch minimum over 3 sq. ft.;
 - d. Veneer for stiles and rails, 1/10 inch before sanding; panel veneer to industry standards.

- E. Assembly:
 - 1. Joinery: Subject to design considerations, connecting joints between stiles, rails and mullions shall be mortised and tenoned, or doweled and glued under pressure using Type I glue (both grades).
 - 2. Stiles, Rails and Mullions: Veneered construction using edge glued core material with face veneer, except Custom Grade not indicated for hardwood surface other than mahogany may be solid lumber (members exceeding 7-1/4 inch to be glued up).
 - 3. Raised Panels: Mitered rim tongue & grooved into edge of flush panel (miters reinforced), or better construction. Custom Grade may have solid lumber except panels over 10 inches wide shall have 3-ply panel with face laminations of sufficient thickness for depth of raise.
 - 4. Profiles: Moulded profiles (sticking) shall be at the option of the woodworker unless otherwise shown, submit to Architect for approval. All profiles capable of being coped.
- F. Exterior Doors: provide with factory applied water repellent preservative treatment compatible with transparent finishes. In addition provide flashing cap on top edge of all outswinging doors.
- G. Workmanship (as manufactured per AWI Section 1400-T):
 - 1. Surfaces sanded (per AWI Section 1400-T-1) to no coarser than 120 grit with no cross scratches allowed, except up to 1/4 inch allowed on Custom Grade units.
 - 2. Joint Tightness (per AWI Section 1400-T-2):
 - 3. Maximum gap allowed in joints is 0.007 inch by 3 inches not to exceed 15% of joint, except 0.015 inch by 5 inches not to exceed 20% of joint allowed on Custom Grade.
 - 4. No flushness variation allowed, except 0.007 inch on mouldings, beads, rims, etc. (0.015 inch for Custom Grade units).
 - 5. Warp (per AWI Section 1400-T-3) shall not exceed 1/4 inch when measured diagonally with a straight edge on any concave face or 3'-6" x 7'-0" section of any face.
- H. Acceptable Manufacturers:
 - 1. Minton Co.,
 - 2. Karona, Inc.,
 - 3. Michael Maiman Co.,
 - 4. Sun-Dor-Co.,
 - 5. Eggers
 - 6. Maiman
 - 7. Morgan
 - 8. Simpson
 - 9. Approved equal.

2.04: Wood Door Frames

- A. Wood frames to be of similar wood species, grade and color as doors, unless otherwise noted, and of similar quality and workmanship as practical.

- B. Provide fire rating labels for frames for rated doors or, in lieu of label, provide frames of construction of written approval by Fire Marshal.

2.05: Fabrication

- A. Tolerances:
 - 1. Thickness: plus or minus one sixteenth of an inch (1/16").
 - 2. Warping or Bowing: No warping or bowing is allowed in any direction.
 - 3. Squareness: All four corners square to within one eighth of an inch (1/8") when measured on a diagonal from opposite corners in accordance with Standard Specifications.

2.06: Prefitting

- A. Prefit and bevel doors.
 - 1. One eighth of an inch (1/8") clearance at top.
 - 2. Three eighths of an inch (3/8") at bottom, unless noted otherwise on drawings for "undercuts" or other deviations in fit.
 - 3. Pre-fitting tolerances: Doors to scheduled sizes and specified clearances within plus or minus one thirty-secondths of an inch (+/- 1/32").
- B. Preparation for Hardware: Factory prepare doors to receive finish hardware as specified in Section 08700; accurately drill, mortise, bevel or otherwise work doors to template for specified hardware.
- C. Cutouts: Make all cutouts for glazing and louvers where indicated; provide all required moldings.
- D. Prehanging: Doors may be prehung at Contractor's option.

2.07: Finish

- A. See Division 9.

PART 3: EXECUTION

3.01: Inspection

- A. Examine door frames after their installation and doors prior to hanging for the following:
 - 1. To verify that frames comply with indicated requirements for type, size, location and swing characteristics and have been installed with plumb jambs and level heads.
 - 2. To verify that doors are free of defects that could cause their rejection.
- B. Inspect the work of other trades to ascertain if the proper conditions exist for the work of this section.
- C. In the event of any discrepancies or unsuitable conditions, do not proceed until those conditions have been resolved. Proceeding with work indicates acceptance of underlying conditions.

3.02: Coordination

- A. Coordinate all work involving material, labor and equipment of other trades penetrating or attaching to the work of this section so that each trade's work can be installed, erected or fabricated as required and that the work space is maintained and left clean and safe.

3.03: Tolerances

- A. Provide edge clearances as follows:
 - 1. Between hollow wood doors and frames, at heads and jambs, one sixteenth of an inch (1/16").
 - 2. Sill where no threshold is used, one quarter of an inch (1/4") maximum.
 - 3. Meeting edges of pairs of doors: three thirty-secondths of an inch (3/32") clearance at meeting edges.
- B. Align and fit doors in frames with uniform clearances and bevels as indicated below:
 - 1. Do not trim stiles and rails in excess of limits set by manufacturer or permitted with fire rated doors, if any.
 - 2. Seal cut or trimmed surfaces with varnish or sealer to match face veneer finish.
 - 3. Fitting clearances:
 - a. For non-rated doors, provide clearances of one eighth of an inch (1/8") at jambs and heads.
 - b. Meeting stiles for pairs of doors: One sixteenth of an inch (1/16") per leaf.
 - c. From bottom of door to top of decorative floor finish or covering: One eighth of an inch (1/8").
 - d. Where threshold is shown or scheduled: Provide one quarter of an inch (1/4") clearance from bottom of door to top of threshold.
- C. Door Bevels:
 - 1. Bevel non-rated doors one eighth of an inch (1/8") in two inches (2") at lock and hinge edges.
 - 2. Bevel fire rated doors one eighth of an inch (1/8") in two inches (2") at lock edge, trim stiles and rails only to the extent permitted by labeling agency.

3.04: Installation

- A. Condition doors to the average prevailing humidity in installation area prior to hanging.
- B. Install fire rated doors in corresponding fire rated frames in accordance with the requirements of NFPA 80, 80A and 101 and in strict conformance with the manufacturer's printed instructions.
- C. Fasteners: Screws, nails or nail sets shall not be driven into the edges of the doors. Pilot holes shall first be drilled and screws of recommended size and type shall be used.
- D. Labels on doors shall remain intact where installed. Do not trim the door on the label edge.
- E. In order to maintain the fire rating assigned to the door, lockstile edge shall not be trimmed more than recommended by the manufacturer. Top edges shall not be trimmed and bottom edges shall be trimmed only to the extent recommended by the manufacturer.

- F. Attach all hardware. See Section 8700.
- G. Undercut doors as required for floor covering clearance or threshold conditions. Do not undercut doors at exit corridors. Coordinate undercuts with any ventilation requirement of mechanical system and verify against any requirements for acoustical privacy of adjacent rooms.
- H. Coordinate installation and finishing of door frames with wall material (GWB or other), and casings (Section 06200), including any special conditions of fire rated frames. Unless otherwise noted, door frames and casings to be of similar wood species, grade, color, and grain patterns as practical and matching finish.
- I. Install wood doors to comply with the manufacturer's instructions, referenced AWI Standards and as indicated.

3.05: Adjust and Clean

- A. Demonstration: Upon completion of hanging, demonstrate that doors operate freely without binding, and when closed with moderate force will latch properly.
- B. Rehang or replace doors that do not swing or operate freely until acceptance is received from Architect.
- C. Replace doors and/or frames damaged during installation as directed by the Architect, at no additional cost to the Owner.
- D. Take all protective measures as recommended and accepted by the door manufacturer to assure that the wood doors will be without damage or deterioration at the time of substantial completion. Doors that are damaged prior to substantial completion shall be replaced or repaired as directed by the Architect at no additional cost to the Owner.
- E. At the end of each day's work and at final completion, the site shall be free of all waste materials and equipment used by the Contractor. Remove all waste materials and debris and dispose of in a legal and safe manner.
- F. The Contractor shall be responsible for maintaining a clean work place and shall pay for all costs, at no additional cost to the Owner, should outside labor and equipment be used to clean up the work site.
- G. Prevent waste materials from entering and accumulating in the storm sewer system and on adjacent property.

*****End of Section 08 14 00*****

SECTION 08 31 13 – ACCESS DOORS AND FRAMES

PART 1: GENERAL

1.01: General Requirements

- A. Conform to the general provisions of the Contract, General and Supplementary Conditions to the contract, Division One of this Specification, the Drawings and this Specification Section.
- B. Should conflict arise between the Drawings and the provisions of the Specifications, the Specifications shall govern.
- C. The Contractor shall furnish all labor, materials, tools, equipment, and perform all Work and services necessary for, or incidental to, the furnishing and installation, complete, of all access doors and frames as shown on the drawings and as specified, in accordance with the Provisions of the Contract Documents, and completely coordinated with Work of all other trades.
- D. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to, and necessary for, a sound, secure, and complete installation.
- E. Verify and coordinate requirements of any fire and/or smoke rated doors and nonrated doors and required hardware. Unless otherwise noted provide frames to match rating required of doors.

1.02: Scope of Work

- A. Refer to the drawings for the extent of work to be done.
- B. Not all access doors listed may actually be used on this project.
- C. Inspect existing conditions and the work of other trades to ascertain that conditions are suitable for the work of this section. If underlying conditions are not satisfactory, do not begin work until unsatisfactory conditions have been corrected. Beginning work indicates acceptance of underlying conditions.
- D. Coordinate the work of this section with the work of other trades.
- E. Products, Materials and / or work included: Provide all materials, accessories, labor, tools and equipment required for the installation of all access doors as shown on the drawings and directed by this specification, including but not limited to the following:
 - 1. Non-Rated Wall and Ceiling access panels.
 - 2. Fire Rated Wall and Ceiling access panels for installation in fire rated walls and ceilings. Ratings are to be as shown on drawings.

1.03: Related Work Specified in Other Sections

- A. Section 07 92 00: Joint Sealants
- B. Section 09 22 16: Non-Structural Metal Framing
- C. Section 09 29 00: Gypsum Wallboard and Sheathing

1.04: Applicable Codes

- A. Refer to Divisions 0 and 1

1.05: Reference Standards

- A. American Society for Testing and Materials (ASTM): ASTM A 36-93a: Standard Specification for Structural Steel.
- B. Underwriters Laboratory (U.L.): U.L. File No. R6402 (for one and one-half hour (1 ½ hr) fire rated access door).
- C. Warnock Hersey International:
 - 1. Test Report No. WH1495-PSH-0119 (One hour rated floor/ceiling assembly).
 - 2. Test Report No. WH1495-PSH-0191 (One and one-half hour (1 ½ hr) rated vertical wall assembly.)
 - 3. Test Report No. WH1495-PSH-0182 (Two hour (2-hr.) rated vertical wall assembly).
 - 4. Test Report No. WH1495-PSH-0192 (Three hour (3-hr.) rated floor/ceiling assembly)

1.06: Submittals

- A. Make all submittals in accordance with Section 01300, Submittals.
- B. Product Data:
 - 1. Submit manufacturer's published literature for specified products and accessories as applicable, including manufacturer's specifications, physical characteristics and performance data, clearly marked and described fully.
 - 2. Submit manufacturer's instructions and directions for application if not included in manufacturer's published literature.
- C. Submit shop drawings for approval, including, but not limited to, the following:
 - 1. Indicate dimensioned opening locations and size.
 - 2. Indicate welded connections using standard AWS welding symbols. Indicate net weld lengths.
 - 3. Provide details for construction.
 - 4. Include details of adjoining work.
- D. Proof of Compliance: Upon completion of this portion of the work, and as a condition of its acceptance, deliver to the Architect/Engineer a letter signed by an official of the access panel manufacturer and installing firm or firms certifying that all access panels were furnished and installed in complete accordance with this Specification section.

1.07: Quality Control

- A. Obtain all materials from a single source and manufacturer unless given prior approval in writing by the Architect.
- B. Fabricator qualifications:
 - 1. Fabricator shall have a minimum of 10 years experience in the fabrication of the work of this section of the highest quality.

2. Fabricator shall have plant, facilities and personnel adequate for the production required for this project as specified by this Section and within the construction schedule.
 3. Fabricators shall, upon request, submit a list of installed work similar in scope to those shown on the drawings.
- C. Installer qualifications:
1. Workers shall be thoroughly trained in the skills required for the installation of rated and non-rated access doors.
 2. Workers shall be completely familiar with all specified or approved manufacturers' most current published literature and recommendations.
 3. Workers shall have a minimum of two (2) years' experience on projects of similar size and construction type to this project.
- D. Fire Rated door assemblies that comply with current applicable codes and are labeled by Underwriters Laboratories, Intertek/Warnock Hersey, Factory Mutual or other recognized testing facilities acceptable to authorities having jurisdiction.
- E. Obtain design professional's approval of sizes that may vary slightly from those indicated when they are not in accordance with manufacturer's standards.
- F. Labels:
1. Insulated fire rated units for walls shall bear labels complying with standards of "D" above for one and one half-hour (1-1/2 hr.) "B" label with 250-temperature rise.
 2. Uninsulated fire rated units for walls only shall bear the labels in compliance with "D" above for one and one half hour (1-1/2 hr.) "B" label with No temperature rise.
 3. Fire rated units for ceilings shall bear the labels for ratings as noted on the drawings in compliance with "D" above.

1.08: Delivery, Handling, and Storage

- A. Delivery:
1. Deliver materials to the site without defects, damage or deterioration.
 2. Deliver all materials in the original packages, containers, or bundles with manufacturer original label intact and legible. Do not remove labels.
 3. Do not deliver to the site more than one week prior to installation. Coordinate with the General Contractor for proper delivery time.
 4. Do not deliver to the building until the building is enclosed, dry and heated to a minimum temperature of sixty (60) degrees Fahrenheit. Relative humidity shall be within fifteen percent (15%) of the mechanical engineer's design relative humidity. Request design relative humidity from Architect.
- B. Storage:
1. Neatly stack access panel and/or shipping containers flat fully supported to prevent sagging in any dimension or damage to the edges, ends, and surfaces.
 2. Store all access panels, containers and accessories a minimum of twelve inches (12") above the floor.
 3. Do not store long lengths on top of short lengths.

1.09: Protection

- A. Protect persons from injury and adjacent property and structures and the work of other trades from damage.
- B. The Contractor or Subcontractor shall repair or replace, as directed by the architect all injuries, work or property damaged by the work of this section at no additional cost to the owner.
- C. Protect the installed access panels from damage, deterioration and defects until final acceptance is given by the Architect or Owner.

1.10: Guarantees and Warranties

- A. Submittal: As part of Project Closeout, submit guarantee in writing.
- B. Upon completion of work and after the manufacturer's representative has signed an acceptance of work statement, the manufacturer shall issue a written guarantee against defective materials and workmanship for five (5) years commencing on the date of Substantial Completion.

PART 2: PRODUCTS

2.01: General

- A. See Division 1 for substitution requirements.
- B. Manufacturer's names and product designations may appear in the specifications. Where no manufacturer or specific product is named, provide products from a single source wherever possible.

2.02: Approved Manufacturers

- A. Nystrom Building Products
- B. The Bilco Company
- C. J. L. Industries, Incorporated
- D. Larsen's Manufacturing Company
- E. Precision Star

2.03: Materials

- A. Commercial quality, cold steel sheet with baked on rust inhibitive gray primer.
- B. Galvanized bonderized steel with baked on rust inhibitive gray primer.
- C. Type #304 stainless steel with #4 satin polish finish.

2.04: Access Panels

- A. Specification is based on products from Nystrom Building Products.
- B. Refer to drawings for size and type of access panels.
- C. Furnish as necessary each panel complete with all accessories needed for installation.

2.05: Fabrication

- A. Manufacture each access panel assembly as an integral unit ready for installation.
- B. Welded construction: Furnish with a sufficient quantity of one-quarter of an inch (1/4") mounting holes to secure access panels to types of supports indicated.
- C. Recessed panel: Form face of panel to provide specified recess for application of finish material. Reinforce panel as required to prevent buckling.
- D. Furnish number of latches required to hold door in flush smooth pane when closed.

PART 3: EXECUTION

3.01: Inspection of Underlying Conditions

- A. Inspect underlying conditions and the work of other trades to ensure that conditions are suitable for the work of this section.
- B. If unsuitable conditions are present, do not proceed until unsuitable conditions have been corrected. Beginning work indicates acceptance of underlying conditions.

3.02: Coordination

- A. Coordinate all work involving material, labor and equipment of other trades penetrating or attaching to the work of this section so that each trade's work can be installed, erected or fabricated as designed and required in the drawings and that the work space be maintained and left clean and safe.
- B. Advise installers of work relating to access panel installation including rough opening dimensions, locations of supports, and anchoring methods. Coordinate delivery with other work to avoid delay.

3.03: Tolerances

- A. Fabricate all doors and frames with square ninety degree corners.
- B. Install all doors and frames level, plumb and aligned with wall face.
- C. Install all doors' and frames' top and bottom edges parallel to floor.

3.04: Installation

- A. Follow manufacturer's instructions for installing access panels.
- B. Set frames to proper alignment with the wall or ceiling.
- C. Position panels for proper access to concealed equipment.

3.05: Adjust and Clean

- A. Adjust panel after installation for proper operation.
- B. Should doors not operate as per manufacturer's specifications, remove and reinstall door and frame at no cost to the owner.
- C. Remove and replace panels or frames that are warped, bowed, or damaged at no cost to the owner.

3.06: Clean Up

- A. At the end of each day's work and at final completion, the site shall be free of all waste materials and equipment used by the Contractor. Remove all waste materials and debris and dispose of in a legal and safe manner.
- B. The Contractor shall be responsible for maintaining a clean workplace and shall pay for all costs, at no additional expense to the Owner, should outside labor and equipment be used to clean up the work site.
- C. Prevent waste materials from entering and accumulating in the storm drainage system and on adjacent property.

*****End of Section 08 31 13*****

SECTION 08 43 13 – ALUMINUM ENTRANCE AND STOREFRONT

PART 1: GENERAL

1.01 Summary

- A. Section Includes: Kawneer Architectural Aluminum Storefront Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of storefront units.
 - 1. Types of Kawneer Aluminum Storefronts include:
 - a. Trifab® VG 451T Framing System – 2" x 4-1/2" nominal dimension; Thermal; Center Glazed (Type B); Shear Block Fabrication.
- B. Related Sections:
 - 1. Section 08 51 13, Aluminum Windows
 - 2. Section 08 81 00, Glass Glazing
 - 3. Section 09 22 16, Non-Structural Metal Framing

1.02: References (Industry Standards)

- A. ASTM
- B. AAMA
- C. ASHRAE

1.03: System Description

- A. Storefront System Performance Requirements:
 - 1. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft² at a static air pressure differential of 6.24 psf.
 - 2. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 8 psf as defined in AAMA 501.
 - 3. Uniform Load: A static air design load of 20 psf shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5 times the specified design load, no glass breakage or permanent set in the framing members in excess of 0.2% of their clear spans shall occur.
 - 4. Thermal Transmittance (U-value): When tested to AAMA Specification 1503, the thermal transmittance (U-value) shall not be more than:
 - a. Glass to Exterior – 0.61 (clear glass)
 - b. Glass to Center – 0.61 (clear glass)
 - c. Glass to Interior – 0.56 (clear glass)
 - 5. Condensation Resistance (CRF): When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than:

- a. Glass to Exterior – 69_{frame} and 58_{glass} (clear glass).
 - b. Glass to Center – 60_{frame} and 58_{glass} (clear glass).
 - c. Glass to Interior – 54_{frame} and 58_{glass} (clear).
6. Sound Transmission Class (STC): When tested to AAMA Specification 1801 and in accordance with ASTM E 1425, the STC Rating shall not be less than:
- a. Glass to Exterior – 38
 - b. Glass to Center – 37
 - c. Glass to Interior – 38

1.04: Submittals

- A. General: Prepare, review, approve, and submit specified submittals in accordance with Division 1.
- B. Quality Assurance/Control Submittals:
 1. Test Reports: Submit certified test reports showing compliance with specified performance characteristics.

1.05: Warranty

- A. Project Warranty: Refer to Division 1 for project warranty provisions.
- B. Manufacturer's Product Warranty: Submit, for Owner's acceptance, manufacturer's warranty for entrance system as follows:
 1. Warranty Period: Two (2) years from Date of Substantial Completion of the project provided however that the Limited Warranty shall begin in no event later than six months from date of shipment by Kawneer.

1.06: Quality Assurance

- A. Qualifications:
 1. Installer Qualifications: Installer experienced (as determined by contractor) to perform work of this section who has specialized in the installation of work similar to that required for this project and who is acceptable to product manufacturer.
 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.
- B. Pre-Installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions, and manufacturer's warranty requirements.

1.07: Delivery, Storage, and Handling

- A. Ordering: Comply with manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Packing, Shipping, Handling, and Unloading: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

- C. Storage and Protection: Store materials protected from exposure to harmful weather conditions. Handle storefront material and components to avoid damage. Protect storefront against damage from elements, construction activities, and other hazards before, during and after entrance installation.

PART 2: PRODUCTS

2.01: Manufacturers (Acceptable Manufacturers/Products)

- A. Acceptable Manufacturers: Kawneer Company, Inc.
555 Guthridge Court
Technology Park Atlanta
Norcross, GA 30092
Telephone: 770 449 5555
Fax: 770 734 1560
- B. Proprietary Product(s)/System(s): Kawneer Aluminum Storefront System
 - 1. Series: Trifab® VG 451T Framing System
 - 2. Framing Member Profile: 2" x 4₁₂"; Front, Center, Back, Multi-Plane Structural Silicone or Weatherseal (Type B) Glazed
 - 3. Finish/Color: (See 2.06 Finishes)
- C. Specifications based on Kawneer. Subject to compliance in full with the requirements of these specifications, products of the following manufacturers are also acceptable.
 - 1. Efco
 - 2. U.S. Aluminum
 - 3. Vistawall

2.02: Materials

- A. Aluminum (Storefront and Components):
 - 1. Material Standard: Extruded Aluminum, ASTM B 221; 6063-T5 alloy and temper.
 - 2. Member Wall Thickness: Each framing member shall provide structural strength to meet specified performance requirements.
 - 3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of storefront members are nominal and in compliance with AA Aluminum Standards and Data.

2.03: Accessories

- A. Fasteners: Where exposed, shall be Stainless Steel.
- B. Gaskets: Glazing gaskets shall be extruded EPDM rubber.
- C. Perimeter Anchors: Aluminum. When steel anchors are used, provide insulation between steel material and aluminum material to prevent galvanic action.

- D. Thermal Barrier:
 - 1. Kawneer IsoLock® Thermal Break with a 1/4" separation consisting of a two part chemically curing, high-density polyurethane which is mechanically and adhesively joined to aluminum storefront sections.
 - a. Thermal Break shall be designed in accordance with AAMA TIR-A8 and tested in accordance with AAMA 505.

2.04: Fabrication

- A. General:
 - 1. Fabricate components per manufacturer's installation instructions and with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.
 - 2. Accurately fit and secure joints and corners. Make joints flush, hairline and weatherproof.
 - 3. Prepare components to receive anchor devices. Fabricate anchors.
 - 4. Arrange fasteners and attachments to conceal from view.

2.05: Finishes

- A. Factory Finishing:
 - 1. Kawneer Permanodic® AA-M12C22A44, AAMA 611, Architectural Class I Color Anodic Coating, Color: As selected by Architect from manufacturer's standard range of colors. Coordinate with 08461: Swinging Entrance Doors for Use with Automatic Operators.

2.06: Source Quality Control

- A. Source Quality: Provide aluminum storefronts specified herein from a single source.
 - 1. Building Enclosure System: When aluminum storefronts are part of a building enclosure system, including entrances, entrance hardware, windows, curtain wall system and related products, provide building enclosure system products from a single source manufacturer.

PART 3: EXECUTION

3.01: Examination

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions. Verify openings are sized to receive storefront system and sill plate is level in accordance with manufacturer's acceptable tolerances.
 - 1. 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.

3.01: Installation

- A. General: Install storefront systems plumb, level, and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
 - 1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
 - 2. Weathertight Construction: Install sill members and other members in a bed of sealant or with joint filler or gaskets, to provide weathertight construction. Coordinate installation with wall flashings and other components of construction.
 - a. Refer to Division 7 Joint Treatments (Sealants) for installation requirements.
- B. Related Products Installation Requirements:
 - 1. Sealants (Perimeter): Refer to Section 7 Joint Treatment (Sealants).
 - 2. Glass: Refer to Section 8 Glass and Glazing.
 - a. Reference: ANSI Z97.1, CPSC 16 CFR 1201 and GANA Glazing Manual.

3.03: Field Quality Control

- A. Field Tests: Architect shall select storefront units to be tested as soon as a representative portion of the project has been installed, glazed, perimeter caulked and cured. Conduct tests for air infiltration and water penetration with manufacturer's representative present. Tests not meeting specified performance requirements and units having deficiencies shall be corrected at no additional cost to the Owner.
 - 1. Testing: Testing shall be performed by a qualified independent testing agency. Refer to Division 1 Testing Section for payment of testing and testing requirements. Testing Standard per AAMA 503, including reference to ASTM E 783 for Air Infiltration Test and ASTM E 1105 Water Infiltration Test.
 - a. Air Infiltration Tests: Conduct tests in accordance with ASTM E 783. Allowable air infiltration shall not exceed 1.5 times the amount indicated in the performance requirements or 0.09 cfm/ft, which ever is greater.
 - b. Water Infiltration Tests: Conduct tests in accordance with ASTM E 1105. No uncontrolled water leakage is permitted when tested at a static test pressure of two-thirds the specified water penetration pressure but not less than 6.24 psf.
- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visit for inspection of product installation in accordance with manufacturer's instructions.

3.04: Protection and Cleaning

- A. Protection: Protect installed product's finish surfaces from damage during construction. Protect aluminum storefront system from damage from grinding and polishing compounds, plaster, lime, acid, cement, or other harmful contaminants.
- B. Cleaning: 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.

*****End of Section 08 43 13*****

SECTION 08 53 13 VINYL (PVC) WINDOWS

PART 1: GENERAL

1.01 SECTION INCLUDES

- A. All windows of the types and sizes called for in this specification shall be furnished with necessary hardware and miscellaneous equipment as specified herein and shall be manufactured by Silver Line Building Products, LLC.

1.02 RELATED SECTIONS

- A. Section 061000 – Rough Carpentry.

1.03 REFERENCES

- A. American Society of Testing Materials (ASTM)
1. ASTM F 588- Standard Test Methods for Measuring the Forced Entry Resistance of Window Assemblies, Excluding Glazing Impact, 2007.
 2. ASTM B 633 - Specification for Electrodeposited Coatings of Zinc on Iron and Steel, 2011.
 3. ASTM B 766 - Specification for Electrodeposited Coatings of Cadmium, 2008.
 4. ASTM D 638 - Test Method for Tensile Properties of Plastics, 2010.
 5. ASTM D 4216 - Specification for Rigid Poly (Vinyl Chloride) (PVC) and Related PVC and Chlorinated Poly (Vinyl Chloride) (CPVC) Building Products Compounds, 2006.
 6. ASTM D 4726 - Standard Specification for Rigid Poly (Vinyl Chloride) (PVC) Exterior-Profile Extrusions Used for Assembled Windows and Doors, 2009.
 7. ASTM E 1300 - Standard Practice for Determining Load Resistance of Glass in Buildings, 2009.
 8. ASTM E 2190 - Standard Specification for Insulating Glass Unit Performance and Evaluation, 2010.
- B. American Architectural Manufacturers Association (AAMA)
1. AAMA 901 Voluntary Specification for Rotary Operators in Window Applications, 2010.
 2. AAMA 904 Voluntary Specification for Multi-Bar Hinges in Window Applications, 2009.
- C. IGCC/IGMA – Insulated Glass Certification Program
- D. Window and Door Manufacturers Association (WDMA)
1. AAMA/WDMA/CSA 101/1.S.2/A440-08 - Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors, 2008.
- E. National Fenestration Rating Council (NFRC)
1. NRFC 100- Procedure for Determining Fenestration Product U Factors, 2010.
 2. NRFC 200- Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence, 2010.
 3. NRFC 500- Procedure for Determining Fenestration Product Condensation Resistance Values, 2010.

1.04 SYSTEM PERFORMANCE DESCRIPTION

- A. Single, Twin, Triple and Quad Unit Air Infiltration shall not exceed 0.30 CFM/SqFt when tested in accordance with:
AAMA/WDMA/CSA 101/1.S.2/A440-08
1. For specific product air infiltration performance, contact Silver Line Engineering Department.
- B. Unit Water Penetration Resistance Pressure vs. size when tested in accordance with:
AAMA/WDMA/CSA 101/1.S.2/A440-08
1. 12.11 PSF for single unit sizes up to 36" x 72"
 2. 12.11 PSF for twin unit sizes up to 72" x 72"

3. 12.11 PSF for triple unit sizes up to 108" x 72"
4. 12.11 PSF for quad unit sizes up to 108" x 72"
- C. Unit Structural Performance ratings vs. size when tested in accordance with:
AAMA/WDMA/CSA 101/1.S.2/A440-08
 1. Class R-PG30 for single unit sizes up to 36" x 72"
 2. Class R-PG30 for twin units up to 72" x 72"
 3. Class R-PG30 for triple units up to 108" x 72"
 4. Class R-PG30 for quad units up to 108" x 72"
- D. Where needed, supplemental reinforcements and glass packages shall be available to increase performance Design Pressures.
 1. Class CW-PG50 for single units up to size 36" x 72."
 2. Class R-PG50 for twin units up to size 52" x 50"
 3. Class R-PG50 for triples units up to size 78" x 50"
- E. Unit Thermal Performance ratings vs. size when tested in accordance with: NFRC 100, 200 and 500
 1. Window shall achieve NFRC thermal u-value rating of 0.29 BTU/hr/SqFt/F° and a Solar Heat Gain Coefficient of 0.24 using Low-E and no argon gas fill.
- F. Window units shall be labeled and certified through the WDMA/Hallmark Program.

1.05 SUBMITTALS

- A. See Section 013300 – Administrative Requirements for submittal procedures.
- B. Product Data: Provide manufacturer's standard details and catalog data demonstrating compliance with referenced standards. Include Installation Instructions.
- C. Provide third-party certification that window meets or exceeds AAMA/WDMA/CSA 101/1.S.2/A440-08 Structural ratings per section 1.04.A.
- D. Shop Drawings; Submit the following:
 1. Elevation for each style window specified; indicate sizes, glazing types, muntin pattern and designs.
 2. Schedule: Indicate each window in project; reference each unit to specific elevation detail.
 3. Details: Head, jamb and sill details for each project condition.
- E. Quality Assurance Submittals: Evidence of certifications of window units required in Quality Assurance Article of this section.

1.06 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Minimum five (5) years of documented experience producing products of the type Specified in this section.
- B. Certifications:
 1. Provide window units rated for air infiltration, water penetration and structural performance per AAMA/WDMA/CSA 101/1.S.2/A440-08 and certified by independent third-party agent.
 2. Provide window units rated and certified for thermal performance by NFRC, and for seal integrity of insulating glass seal.
 3. Provide glass units that comply with IGMA TM4000 Quality Assurance Systems.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Protect products from moisture, construction traffic, and damage in according with manufacturer's printed instructions.
- B. Do not use non-vented plastic or canvas shelters; open plastic wrapper immediately upon delivery to provide ventilation.

1.08 WARRANTY

- A. See Section 017800 – Closeout Submittals, for additional warranty requirements.
- B. Manufacturer's Warranty: Furnish manufacturer's Limited Lifetime Warranty on window products.

PART 2 PRODUCTS

2.01 MANUFACTURERS: Acceptable Manufacturer

- A. Silver Line Building Products, 70 Series New Construction Casement including Single, Twin, Triple, and Quad units.

2.02 COMPONENTS

- A. Vinyl Extrusions: Multi-chamber extrusions of impact-resistant exterior-grade rigid polyvinyl chloride (PVC) complying with ASTM D 4726, ASTM D 4216 and ASTM D 638 standards.
- B. Insulating Glass Unit: Unit thickness 3/4 inch:
 - 1. Insulating Glass products shall be permanently marked with warranty certification label of IGCC®/IGMA® Certification Program.
 - 2. Insulating Glass shall comply with the ASTM E 2190 standard.
 - 3. Insulating Glass type selection shall comply with the ASTM E 1300 standard.
 - 4. Air Chamber: Hermetically sealed space between panes.
 - 5. Clear Glass is standard. Low-E, Low-E SmartSun™, Low-E PassiveSun®, Low-E PassiveSun® with HeatLock® technology, Low-E Sun, as well as argon gas filling options available.
 - 6. Low conductance spacer.
- C. Screens: Installable from interior side, providing only ventilation and reasonable insect control when operable sash is in open position: re-screenable using fiberglass mesh, 16 x 18 gauge, secured in channel of aluminum box frame with continuous vinyl spline; frame color matching frame and sash color.
- D. Operating Hardware: Types for specified operable-sash casement windows; sight-exposed hardware of UV-stabilized, engineered plastic; color matched to vinyl extrusions for uniform appearance.
- E. Fasteners: All screws and other miscellaneous fastening devices incorporated shall be of aluminum, stainless steel, or other non-corrosive material compatible with vinyl extrusions. Cadmium or zinc plated steel, where used, shall be in accordance with ASTM B 766 or ASTM B 633. Nickel or chrome plated steel, where used, shall be in accordance with ASTM B 456.
- F. Weatherstripping: Types for specified operable casement sash windows.
- G. Integral Muntins: Aluminum pre-finished to match window frame, factory-mounted between panes of insulating glass unit before sealing glass unit.

2.03 CASEMENT WINDOWS

- A. Configurations:
 - 1. Windows must be a true Casement unit with crank operable sash.
 - 2. Windows must be available as individual Casement units and as Integral Twin, Triple and Quad units with two, three or four pair of operational sash respectively in one continuous unit frame.
- B. Operable-Sash Windows:
 - 1. Frame and sash: Vinyl extrusions, nominal extrusion wall thickness 0.075 inch. Mitered and fusion-welded corners: integral 1-3/4 inch pre-punched nailing fin four sides
 - 2. Factory Glazing: 3/4 inch Insulating Glass Unit.
 - 3. Operating Hardware:
 - a. Locks: multi-point type locking system with single handle actuator, shall be capable of meeting ASTM F 588 forced entry resistance, engineered to compress sash weather seals for minimum air infiltration.
 - b. Crank Hardware: positive-action rotary-crank and hinge operator system, with handle, shall be in accordance with AAMA 901, AAMA 904 and capable of meeting the requirements of the Distributed Load Test per section 5.3.6.6.2 of AAMA 101/1.S.2/A440-08
 - 4. Weatherstripping: Compressible Foam Bulb-Seal.
 - 5. Screens: Frame color matching window frame and sash color.
 - a. Full size: Integral rails.

- 6. Muntins: Integral, patterns to suit window sizes.
- 7. Color: White standard.
- C. Styles and Sizes: As indicated on drawings.

2.04 ACCESSORIES

- A. Mullion Posts: Extruded aluminum, color matching adjacent window frame.
 - 1. Exterior and interior mullion trim accessories including wood build out, dry wall receiver and vinyl dry wall return.
- B. Exterior and interior trim accessories including wood build out, dry wall receiver and vinyl dry wall return.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Installer to verify that project conditions are acceptable before beginning installation of products; verify that rough openings are as indicated, and are correct sizes for clearance spaces specified in manufacturer's instructions.
- B. Correct any unacceptable conditions before proceeding with installation.

3.02 INSTALLATION

- A. Install products in accordance with manufacturer's printed installation instructions and approved shop drawings.
- B. Install products plumb and in true alignment; fasten to achieve maximum operational effectiveness and best appearance of units.

3.03 ADJUSTING AND CLEANING

- A. Ensure that windows operate correctly, free from binding or other defects.
- B. Clean and restore soled surfaces; remove scraps and debris, and leave site in clean condition.

*****End of Section 08 53 13*****

SECTION 08 71 00 – DOOR HARDWARE

PART 1 – GENERAL:

1.01 SUMMARY:

- A. Section includes the supply and installation of the Finish Hardware.
- B. Related Sections
 - 1. Openings – Division 8 / Division 8
 - 2. Fire Alarm – Division 13/ Division 28
 - 3. Electrical – Division 16 / Division 26
 - 4. Security – Division 16 / Division 28

1.02 REFERENCES:

- A. Documents and Institutes that shall be used in estimating, detailing and installing the items specified.
 - 1. International Building Code – Current/Adopted Edition
 - 2. ICC/ANSI A117.1 – Accessible and Usable Building and Facilities -
Current/Adopted Edition
 - 3. NFPA80 –Standards For Fire Doors and Fire Windows – Current/Adopted Edition
 - 4. NFPA101 – Life Safety Code – Current/Adopted Edition
 - 5. NFPA105 – Installation of Smoke-Control Door Assemblies – Current/Adopted Edition.
 - 6. ANSI - American National Standards Institute
 - 7. BHMA – Builders Hardware Manufacturers Association
 - 8. UL – Underwriters Laboratory
 - 9. Texas Accessibility Standards – Current Adopted Edition
 - 10. Local Building Codes

1.03 SUBMITTALS

- A. Comply with pertinent provisions of Section 01300.
- B. Finish Hardware Schedule to be in vertical format to include:
 - 1. Heading #/Hardware Set
 - 2. Door #, Location, Hand, Degree of Opening, Door Size and Type, Frame Size and Type, Fire Rating
 - 3. Quantity, type, style, function, product, product number, size, fasteners, finish and manufacturer of each hardware item.
 - 4. Location of hardware set cross-referenced to indications on Drawings both on floor plans and in door and frame schedule.
 - 5. Keying schedule
 - 6. Title Sheet, Index, Abbreviations, Manufacturers List, Template List and Templates.
 - 7. Mounting locations for hardware.
 - 8. Explanation of abbreviations, symbols, and codes contained in schedule.
 - 9. Date of the Finish Hardware Specification and Drawing / Door Schedule used in completing the Finish Hardware Schedule.
- C. LEED Submittals:

1. Credit MR4.1 and Credit MR4.3: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.
 2. Credit MR 5.1 and 5.2: List proposed regional materials. Identify each regional material along with the location of its manufacture, processing and raw material source, and cost.
- D. Product Data: Provide product data in the form of a binder, manufacturer's technical product fact sheets for each item of hardware. Include whatever information may be necessary to show compliance with requirements, including instructions for installation and for maintenance of operating parts and finish.
- E. Wiring Diagrams: Provide Riser/Elevation and Point to Point Wiring Diagrams for all openings with electrified hardware. Include all information that is necessary for coordination with other trades.
- F. Samples: Provide samples as requested by owner or architect with Heading # and Door# marked on boxes. All samples will be returned to the contractor and used on doors for which they were marked.
- G. Templates: Provide templates of finish hardware items to each fabricator of doors, frames and other work to be factory or shop prepared for the installation of hardware.
- H. Keying Schedule: After meeting with the Owner, a keying schedule shall be submitted using keyset symbols referenced in DHI manual "Keying Systems and Nomenclature." The keying schedule shall be indexed by door number, keyset, hardware heading number, cross keying instructions and special key stamping instructions.
- I. Operations and maintenance data: At the completion of the job, provide to the owner two copies of an Owner's operation and maintenance manual. The manual shall consist of a labeled hardcover three ring binder with the following technical information:
1. Title page containing: Project name, address and phone numbers. Supplier's name, address and phone numbers.
 2. Table of Contents.
 3. Copy of final Finish Hardware Schedule and Keying Schedule
 4. Maintenance instruction for each item of hardware.
 5. Catalog pages for each product.
 6. Installation Instructions and Parts List for all Locks, Exit Devices and Door Closers.

1.04 QUALITY ASSURANCES

- A. Substitutions: Request for substitutions shall not be accepted within this project. Architect, owner and Hardware Consultant have selected one (1) specified and two (2) equals listed hereinafter in the Hardware Schedule. By this selection process they have established three (3) equal products for competitive pricing, while insuring no unnecessary delays by a substitution process. If any specified product is listed as a "No Substitution" product, this product will be supplied as specified, with no alteration or request of substitution. The reason for this is to comply with the uniformity established at this project. Parts and supplies are inventoried for these particular products for ease and standardization of replacement.
- B. Supplier Qualifications: Supplier shall be recognized architectural finish hardware supplier, with warehousing facilities, who have been furnishing hardware in the project

vicinity for a period of not less than 2 year and who is or employs a DHI Certified AHC or person with a minimum of 10 years of experience as a hardware supplier. This person shall be available at reasonable times during the course of the work for consultation about products hardware requirements, to the owner, architect and contractor.

- C. Installer Qualifications (Mechanical Hardware): All finish hardware shall be installed by the finish hardware installer with a minimum of at least two (2) years documented experience. Installer shall attend a pre-installation meeting between the contractor, finish hardware supplier, hardware manufacturers representative for locks, closers and exit devices, all door / frame suppliers. The finish hardware installer shall be responsible for the proper installation and function of all doors and hardware.
- D. Installer Qualifications (Electrified Hardware): All electrified finish hardware (power, load, switch, conductor and monitoring device) shall be installed by a Electronic Access Control installer licensed by the Texas Department of Public Safety. The electrified finish hardware installer shall have a minimum of at least two (2) years of documented experience. Installer shall attend a pre-installation meeting between the contractor, finish hardware supplier, electrical contractor, fire alarm contractor, security contractor, hardware manufacturers representative for locks, closers and exit devices, all door / frame suppliers. The electrified finish hardware installer shall be responsible for the proper installation and function of all doors and hardware. Installation shall include wiring all electrified products (including the required wire to the power supply and/or junction box).

1.05 DELIVERY, STORAGE AND HANDLING

- A. Marking and packaging: Mark each item or package separately, with identification related to hardware set number, door number and keyset symbol.
- B. Delivery:
 - 1. Deliver individually packaged and properly marked finish hardware at the proper time and location to avoid any delays in construction or installation.
 - 2. At time of delivery, inventory hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- C. Storage: Store hardware in enclosed, dry and locked area.

1.06 WARRANTY

- A. All finish hardware products shall be covered by a 1 year factory warranty from the date of substantial completion of the project. Exit Devices shall carry a 3-year warranty, Mechanical Door Closers shall carry a 10-year warranty.
- B. Supply warranty verification to the owner for all products that provide factory warranty.

1.07 MAINTENANCE:

- A. Maintenance Service
 - 1. None
- B. Extra Materials:
 - 1. All extra screws, fasteners, and all special installation tools furnished with the hardware shall be turned over to the owner at the completion of the job.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Screws and Fasteners:

1. All closers and exit devices provided for exterior doors, hollow metal doors, and all other required shall be provided with thru-bolts.
2. All finish hardware shall be installed to manufacturer’s recommendations, using screws, attachments and installation tools provided with the hardware. No other screws or attachments are acceptable.
3. All other products to meet door and frame conditions.

B. Hinges:

1. Template: Provide templated units only.
2. Exterior: All exterior hinges shall be stainless steel base and finish.
3. Interior: All interior hinges steel based, satin chrome finish.
4. Interior corrosive: All interior hinges at corrosive areas shall be stainless steel base and finish.
5. Exit devices: All hinges on doors with exit devices shall be heavy weight.
6. Electric Hinge : Provide 8 wire.
7. Provide non-removable pins for outswinging doors that are locked or are lockable.
8. All hinges on doors with door closers shall be ball bearing.
9. All hinges shall be five knuckle.
10. All hinges shall be full mortise.
11. Size: Provide 4 ½ x 4 ½ hinges on doors up to 3’0” in width. Provide 5 x 4 ½ hinges on door from 3’2” to 4’0” in width. Reference manufacturers catalog for all other sizes.
12. Number of Hinges: Provide number of hinges indicated but not less than 3 hinges for door leaf for doors 90” or less in height and one additional hinge for each 30” of additional height.
13. The width of hinge shall be sufficient to clear all trim.
14. Supply from the following list of manufacturers:

Ives	IVE	www.ives.ingersollrand.com
Hager	HAG	www.hagerhinge.com
Bommer	BOM	www.bommer.com

C. Continuous Hinges

1. Continuous hinges to be manufactured of 6063-T6 aluminum alloy with anodized finish.
2. Continuous hinge to be cut in the field for power transfer.
3. Continuous hinge shall be certified to ANSI 156.25, Grade 2
4. Continuous hinge should be tested an approved UL10C.
5. Supply from the following list of manufacturers:

Ives	IVE	www.ives.ingersollrand.com
Select	SEL	www.select-hinges.com
Zero	ZER	www.zerointernational.com

D. Flush Bolts (Fully Automatic)

1. Provide automatic flush bolts that remains latched until the active leaf door is opened in all door in the means of egress, whether or not required for egress width
2. Inactive door is latched when active door closes, bolts retract when active door is opened. Top bolt has no spring tension. Low actuating force.
3. Fits standard ANSI A115.4 door frame preparations.
4. Non – handed.
5. Provide UL listed for fire doors as required.

- 6. Models with Auxiliary Fire Latch eliminates the bottom bolt and is UL listed for fire doors.
- 7. Finished cover plates permit finish changes in stock or at job site.
- 8. Bolts have 3/4" throw with a 7/8" vertical adjustment.
- 9. Standard rod length is 12", which is measure from the center of the flush bolt body to the bolt tip. Provide optional rod lengths for top bolt for non-fire rated openings.
- 10. Meets ANSI A156.3 Type 25.
- 11. Provide all necessary strikes, shims and guides to insure proper installation.
- 12. Supply from the following list of manufacturers:

Ives	IVE	www.ives.ingersollrand.com
Trimco	TRI	www.trimcobbw.com
Rockwood	ROC	www.rockwoodmfg.com

E. Flush Bolts (Constant Latching)

- 1. Provide constant latching flush bolts that remains latched until the active leaf door is opened and releasing device where allowed by code.
- 2. Inactive door remains latched until the active door is opened, releasing the automatic bottom bolt and then the top bolt can be manually released. Inactive door will relatches automatically when closed. Low actuation forces.
- 3. Fits standard ANSI A115.4 door frame preparations.
- 4. Non – handed.
- 5. UL listed for fire doors.
- 6. Models with Auxiliary Fire Latch eliminates the bottom bolt and is UL listed for fire doors.
- 7. Finished cover plates permit finish changes in stock or at job site.
- 8. Bolts have 3/4" throw with a 7/8" vertical adjustment.
- 9. Standard rod length is 12", which is measure from the center of the flush bolt body to the bolt tip. Provide optional rod lengths available for top bolt for non-fire rated openings.
- 10. Meets ANSI A156.3 Type 27.
- 11. Provide all necessary strikes, shims and guides to insure proper installation.
- 12. Supply from the following list of manufacturers:

Ives	IVE	www.ives.ingersollrand.com
Trimco	TRI	www.trimcobbw.com
Rockwood	ROC	www.rockwoodmfg.com

F. Flush Bolts (Manual)

- 13. Provide manual latching flush bolts that remains latched until the active leaf door is opened and releasing device where allowed by code.
- 14. Inactive door remains latched until the active door is opened, releasing the bolts can be done manually.
- 15. Non – handed.
- 16. UL listed for fire doors.
- 17. Bolts have 3/4" throw with a bolt backset of 3/4".
- 18. Standard rod length is 12", which is measure from the center of the flush bolt body to the bolt tip. Provide optional rod lengths available for top bolt for non-fire rated openings.
- 19. Meets ANSI A156.16, L04251.
- 20. Provide all necessary strikes, shims and guides to insure proper installation.
- 21. Supply from the following list of manufacturers:

Ives	IVE	www.ives.ingersollrand.com
Trimco	TRI	www.trimcobbw.com
Rockwood	ROC	www.rockwoodmfg.com

G. Coordinator

1. Provide coordinator that is a bar type.
2. UL listed for fire doors.
3. Provide filler bar as required for door width.
4. Provide all mounting brackets as required for installation of door closer, strikes, etc.
5. Meets ANSI/BHMA A156.3, Type 21A
6. Supply from the following manufacturer:

Ives	IVE	www.ives.ingersollrand.com
Trimco	TRI	www.trimcobbw.com
Rockwood	ROC	www.rockwoodmfg.com

H. Roller Latches

1. Provide roller latches that meet ANSI/BHMA A156.16, E19101.
2. Provide roller latch that easily adjusted by turning knurled knob on the back of latch.
3. Provide roller latch with maximum projection of the roller is 1/3" allowing for variance in the door clearance.
4. Provide roller latch that fits heavy duty cylindrical lock cutout.
5. Provide proper strike for application.
6. Supply from the following manufacturer:

Ives	IVE	www.ives.ingersollrand.com
Trimco	TRI	www.trimcobbw.com
Rockwood	ROC	www.rockwoodmfg.com

I. Cylindrical Locks/Latches

1. Provide cylindrical locksets that comply with ANSI A156.2, Series 4000, Grade 1 and Grade 2. Functions as listed in Hardware Sets.
2. Provide cylindrical locksets that meet ANSI A117.1, Accessibility Code.
3. Provide cylindrical locksets that meet UL A label; to have a minimum listing for single doors 4' x 8'
4. Provide cylindrical locksets that comply with California Fire Safety Code; lever return to within 1/2" of the door where applicable.
5. Levers are to be solid. Manufacturers utilizing fillers of any kind are not acceptable.
6. Levers are to be plated to match BHMA finishes.
7. Levers to have grooved tactile warnings on back side of lever where shown in hardware sets. Manufactures that insert devices and/or apply materials for warning are not acceptable.
8. Latchbolt to be steel with minimum 1/2" throw deadlatch on keyed and exterior functions; 3/4" throw anti-friction latchbolt on pairs of doors.
9. Strike to be ANSI curved lip, 1 1/4" x 4 7/8", 16 gauge, with 1" deep box construction.
10. Supply from the following list of manufacturers:

Schlage	SCH	www.schlage.com	ND, AL, F Series
Falcon	FAL	www.falconlock.com	T, B, J Series
Sargent	SAR	www.sargnetlock.com	10, 6500 Line

J. Exit Devices

1. All exit device types on this project should be manufactured by the same manufacturer.
2. Exit devices are to be architectural grade touch bar type. Mechanism case to be smooth.
3. Exit devices shall meet ANSI A156.3, 1994, Grade 1. All exit devices are UL listed for Accident Hazard or Fire Exit Hardware.
4. All lever trim to match lock trim in design and finish.

5. Dogging: All non-rated devices are to be provided with dogging. Cylinder dogging as shown in hardware sets.
6. Exit devices are to be supplied and installed with thru-bolts for exterior, hollow metal doors, or as required for application.
7. Mullion shall be removable. Keyed removable as shown in hardware sets.
8. Provide proper power supply for exit devices as required.
9. For all interior application on hollow metal and wood doors the delayed egress should be built into the exit device.
10. Push pads shall be metal, no plastic inserts allowed.
11. Exit devices shall have a flush end cap.
12. Exit devices shall be ordered with the correct strike for application.
13. Exit devices shall be order in the proper length to meet door width.
14. Exit devices shall have deadlatching.
15. Install exit devices with fasteners supplied by exit device manufacturer.
16. Provide glass bead kits as required.
17. Provide proper concealed vertical rods for wood or hollow metal doors as required.
18. Supply from the following list of manufacturers:

Von Duprin	VON	www.vonduprin.com	35/98 Series
Monarch/Falcon 2	FAL	www.falconlock.com	24/25 Series
Detex	DET	www.detex.com	Advantex

K. Pull Plates

1. Pull Plates to meet ANSI 156.6 for .050" thickness. Plate size to 4" x 16" with 1" round on pull plate.
2. Supply from the following list of manufacturers

Ives	IVE	www.ives.ingersollrand.com
Trimco	TRI	www.trimcobbw.com
Rockwood	ROC	www.rockwoodmfg.com

L. Push Plates

1. Push Plates to meet ANSI 156.6 for .050" thickness. Plate size to be 4" x 16".
2. Supply from the following list of manufacturers

Ives	IVE	www.ives.ingersollrand.com
Trimco	TRI	www.trimcobbw.com
Rockwood	ROC	www.rockwoodmfg.com

M. Door Closers

1. All door closers on this project should be manufactured by the same manufacturer.
2. Door closers shall meet the minimum requirements of the 1990 ADA act, in lieu of ANSI Standard A156.4 and ANSI, Grade 1 on interior fire rated openings.
3. Door closers shall be furnished with standard cover. Provide full cover as shown in hardware sets.
4. Size in accordance with the manufacturers recommendations for door size and condition.
5. Door closers shall be furnished with backcheck, delayed action, hold-open and advanced backcheck as listed in the Hardware Sets.
6. Door closers shall be mounted out of the line of sight wherever possible (i.e., room side of corridor doors, etc.) with parallel arm mounting on out swinging doors.
7. Provide and mount closer top jamb or on brackets and/or drop plates, where special conditions call for it.
8. All closer installation shall include thru bolts on exterior, hollow metal doors or where required for application.

- 9. Provide special template where required by application (i.e., coordinator installation).
- 10. Supply from the following list of manufacturers

LCN	LCN	www.lcnclosers.com
Doromatic/Falcon	DOR/FAL	www.falconlock.com
Norton	NOR	www.nortondoorcontrols.com

N. Door Protection Plates

- 1. Protective plates shall meet ANSI A156.6 requirements for .050 thickness.
- 2. Protection plates should be fabricated from stainless steel.
- 3. Kickplates shall be 10" by 2" less than door width on single door and 1" less than door width on pair of doors or as indicated in hardware sets. Beveled 3 edges.
- 4. Provide kickplate on all wood doors with closers, unless not required for aesthetic reasons.
- 5. Supply from the following list of manufacturers:

Ives	IVE	www.ives.ingersollrand.com
Rockwood	ROC	www.rockwoodmfg.com
Trimco	TRI	www.trimcobbw.com

O. Lock Guards

- 1. At outswinging exterior doors with mortise locks or mortise panic device, provide lock guard.
- 2. Lock guard should be 13 guard stainless steel.
- 3. Lock guard should be through bolted with carriage bolts and nuts.
- 4. Supply from the following list of manufacturers:

Ives (LG)	IVE	www.ives.ingersollrand.com
Rockwood	ROC	www.rockwoodmfg.com
Trimco	TRI	www.trimcobbw.com

P. Door Stops and Holders:

- 1. Wall and Floor Stops: Supply wall stops where needed to protect doors or door hardware. When wall conditions do not permit use of wall stop provide floor stops with risers as needed to adjust for floor conditions.
- 2. Where Wall Stops are used, install so lock does not lock unintentionally.
- 3. Overhead Stops: Where wall or floors stops are not applicable provide concealed or surface overhead stops. Provide concealed in public, jury or judges area. Provide surface in all others.
- 4. Exterior Stops: Provide security floor stop.
- 5. Supply from the following list of manufacturers:

Ives	IVE	www.ives.ingersollrand.com
Glynn Johnson	GLY	www.glynn-johnson.com
Trimco	TRI	www.trimcobbw.com

Q. Silencers

- 1. Provide silencers on all doors without seal. 3 for single doors and 2 for pairs.
- 2. Provide silencers as required for frame conditions. SR64 for hollow metal frames. SR65 for wood frames.
- 3. Supply from the following list of manufacturer's

Ives	IVE	www.ives.ingersollrand.com
Rockwood	ROC	www.rockwoodmfg.com
Trimco	TRI	www.trimcobbw.com

R. Thresholds/Weatherstripping

- 1. All thresholds shall conform to state and local handicap codes.
- 2. Smoke seal shall be teardrop design bulb seal.

3. Exterior seal/thresholds shall be silicone or brush as shown in hardware sets.
4. Sound seal shall be silicone.
5. Drip strips shall protrude 2 ½" and be 4" wider than opening..
6. Provide door sweeps.
7. Provide UL meeting stile gasketing for fire rated doors.
8. Supply from the following list of manufacturer's
National Guard NGP www.ngpinc.com
Hager Hinge Company HAG www.hagerhinge.com
Pemko PEM www.pemko.com

2.03 KEYING:

- A. General: Finish Hardware Supplier shall meet in person with owner to finalize keying requirements and match existing or start a new Restricted and Patented Master Key System for the project.
- B. Cylinders: All cylinder/cores on this project should be manufactured and providing in the same keyway.
- C. Cylinders: Provide the correct and quantity of cylinders for all applications.
- D. Keys: Provide nickel silver keys only. Furnish 2 change keys for each lock: 5 control keys: 5 master keys for each master system and 5 grandmaster keys for each grandmaster key system. Deliver all keys to owners' representative.
- E. Cores and keys shall be provided with identification stamping.
- F. Provide construction keying / construction cores for this project with constructions keys.

2.04 KEY CONTROL:

- A. Key Management: Key control shall be provided, by supplying a complete key storage and management system. Each key shall be fully cut, indexed, tagged and installed on cabinet hooks by the lock supplier and shipped with the locks. Key cabinet provided shall be wall-mounted type with capacity plus 50%.

PART 3 – EXECUTION:

3.01 EXAMINATION:

- A. Examine doors, frames and related items for conditions that would prevent the proper application of any finish hardware items. Do not proceed with installation until all defects are corrected.

3.02 INSTALLATION:

- A. Follow Door and Hardware Institute Publication for:
Recommended Location for Architectural Hardware for Standard Steel Doors and Frames
Recommended Location for Builder's Hardware for Custom Steel Doors and Frames
Recommended Locations for Architectural Hardware for Wood Flush Door
- B. Follow ANSI A117.1-1998 Accessible and Usable Building and Facilities
- C. Review mounting locations with Architect.
- D. Pre Installation meeting required with attendees to include Architect, Contractor, Mechanical Hardware and Electrified Hardware Installer, Finish Hardware Supplier and

Manufacturer's Representative for Exit Device, Locks and Closers before installation begins.

3.03 FIELD QUALITY CONTROL:

- A. After installation has been completed, obtain the services of an Architectural Hardware Consultant to check for proper installation of finish hardware, according to the finish hardware schedule and keying schedule. In addition, check all hardware for adjustments and proper operation.

3.04 ADJUST AND CLEAN:

- A. Adjust, clean and inspect all hardware, to ensure proper operation and function of every opening. Replace items, which cannot be adjusted to operate freely and smoothly as intended for the application made.

3.05 PROTECTION:

- A. The general contractor shall use all means at his disposal to protect all finish hardware items from abuse, corrosion and other damage until the owner accepts the project as complete.

3.07 TRAINING

- A. After installation has been completed, provide training to the Owner on the operation of finish hardware and programming of any access control items.

3.06 HARDWARE SCHEDULE

- A. These hardware set shown below are for use as a guideline. Provide hardware as required to meet the requirements of the openings, security, and code requirements.

HARDWARE GROUP NO. 01.01

FOR USE ON MARK/DOOR #(S):
700A

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	CONT. HINGE	112HD	US28	IVE
1	EA	PANIC HARDWARE	25-R-NL-OP	628	FAL
1	EA	RIM CYLINDER	951	626	FAL
1	EA	90 DEG OFFSET PULL	8190HD 10" O	630	IVE
1	EA	SURF. AUTO OPERATOR	4642	689	LCN
2	EA	JAMB MOUNT PUSHPLATE	8310-818T	689	FAL
1	EA	FLOOR STOP	FS18L	BLK	IVE
1	EA	DRIP CAP	16	AL	NGP
1	EA	DOOR SWEEP	200SA	CL	NGP
1	EA	THRESHOLD	425	AL	NGP

SEAL PROVIDED BY DOOR/FRAME MANUFACTURER. 110VAC REQUIRED AT THIS OPENING.
PROVIDE MOUNTING ACCESSORIES FOR ACTUATOR BASED ON MOUNTING LOCATION.

HARDWARE GROUP NO. 01.02

FOR USE ON MARK/DOOR #(S):
700B

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	US28	IVE
2	EA	POWER TRANSFER	EPT10	689	FAL
1	EA	ELEC PANIC HARDWARE	EL-25-C-C-718	628	FAL
1	EA	ELEC PANIC HARDWARE	EL-25-C-EO	628	FAL
1	EA	MORTISE CYLINDER	987	626	FAL
2	EA	90 DEG OFFSET PULL	8190HD 10" O	630	IVE
1	EA	SURFACE CLOSER	SC71 SS	689	FAL
1	EA	SURF. AUTO OPERATOR	4631	689	LCN
2	EA	JAMB MOUNT PUSHPLATE	8310-818T	689	FAL
1	EA	POWER SUPPLY	PS914 900-2RS	LGR	VON

SEAL PROVIDED BY DOOR/FRAME MANUFACTURER. 110VAC REQUIRED AT THIS OPENING.
PROVIDE MOUNTING ACCESSORIES FOR ACTUATOR BASED ON MOUNTING LOCATION.
AUTOMATIC OPERATOR INSTALLED ON RHR LEAF.

HARDWARE GROUP NO. 01.03

FOR USE ON MARK/DOOR #(S):

715X 729X 850X 852X 856X 858X

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	LD-25-R-NL-512	628	FAL
1	EA	MORTISE CYLINDER	987	626	FAL
1	EA	SURFACE CLOSER	SC71 SS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	FLOOR STOP	FS18L	BLK	IVE
1	EA	DRIP CAP	16A	CL	NGP
1	SET	SEALS	162S	AL	NGP
1	EA	DOOR SWEEP	200SA	CL	NGP
1	EA	THRESHOLD	425	AL	NGP

HARDWARE GROUP NO. 01.04

FOR USE ON MARK/DOOR #(S):

717X 739X 743X

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	25-R-L-QUA	628	FAL
1	EA	MORTISE CYLINDER	987	626	FAL
1	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	FLOOR STOP	FS444	626	IVE
1	EA	DRIP CAP	16A	CL	NGP
1	SET	SEALS	162S	AL	NGP
1	EA	DOOR SWEEP	200SA	CL	NGP
1	EA	THRESHOLD	425	AL	NGP

HARDWARE GROUP NO. 01.05

FOR USE ON MARK/DOOR #(S):

729 736 919 933

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5	652	IVE
1	EA	FIRE EXIT HARDWARE	F-25-R-L-BE-QUA	628	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE

1 SET SEALS 5050B BRN NGP

HARDWARE GROUP NO. 01.06

FOR USE ON MARK/DOOR #(S):
736X

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	FIRE EXIT HARDWARE	F-25-R-NL-512	628	FAL
1	EA	MORTISE CYLINDER	987	626	FAL
1	EA	SURFACE CLOSER	SC71 SS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	FLOOR STOP	FS18L	BLK	IVE
1	EA	DRIP CAP	16A	CL	NGP
1	SET	SEALS	162S	AL	NGP
1	EA	DOOR SWEEP	200SA	CL	NGP
1	EA	THRESHOLD	425	AL	NGP

HARDWARE GROUP NO. 01.07

FOR USE ON MARK/DOOR #(S):
934X

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	PANIC HARDWARE	25-C-L-QUA	628	FAL
2	EA	MORTISE CYLINDER	987	626	FAL
2	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
2	EA	FLOOR STOP	FS444	626	IVE
1	EA	DRIP CAP	16	AL	NGP
1	SET	SEALS	162S	AL	NGP
1	SET	ASTRAGAL	9600A	CL	NGP
2	EA	DOOR SWEEP	200SA	CL	NGP
1	EA	THRESHOLD	425	AL	NGP

HARDWARE GROUP NO. 01.08

FOR USE ON MARK/DOOR #(S):
747 749A 752A 935 938

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
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2	EA	CONT. HINGE	112HD	US28	IVE
2	EA	FIRE EXIT HARDWARE	F-25-C-EO-LBR	628	FAL
2	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
2	EA	WALL STOP	WS406/407CCV	630	IVE
2	EA	FIRE/LIFE WALL MAG	SEM7800 AS REQUIRED	689	LCN
1	SET	SEALS	5050B	BRN	NGP
1	SET	ASTRAGAL	9600A	CL	NGP

FIRE ALARM WITH VOLTAGE REQUIRED AT THIS OPENING.

PROVIDE MAGNETIC HOLD OPEN AS REQUIRED FOR DIMENSION BETWEEN DOOR AND WALL WHEN OPEN AT 90 DEGREES.

OPERATION DESCRIPTION: DOOR NORMALLY HELD OPEN. DOOR CLOSED AND LATCHED UPON FIRE ALARM.

HARDWARE GROUP NO. 01.09

FOR USE ON MARK/DOOR #(S):
940

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	US28	IVE
2	EA	PANIC HARDWARE	LD-25-C-EO-LBR	628	FAL
2	EA	SURFACE CLOSER	SC81 HW/PA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	SET	ASTRAGAL	9600A	CL	NGP

HARDWARE GROUP NO. 01.10

FOR USE ON MARK/DOOR #(S):
816X 821X

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	PANIC HARDWARE	25-C-L-QUA	628	FAL
2	EA	MORTISE CYLINDER	987	626	FAL
2	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
2	EA	FLOOR STOP	FS444	626	IVE
1	EA	DRIP CAP	16	AL	NGP
1	SET	SEALS	162S	AL	NGP
1	SET	ASTRAGAL	9600A	CL	NGP
2	EA	DOOR SWEEP	200SA	CL	NGP
1	EA	THRESHOLD	425	AL	NGP

HARDWARE GROUP NO. 01.11

FOR USE ON MARK/DOOR #(S):

818

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	US28	IVE
2	EA	FIRE EXIT HARDWARE	F-25-C-EO-LBR	628	FAL
1	EA	MAGNETIC LOCK	M490	628	SCE
1	EA	DELAYED EGRESS MAG	M490DE	628	SCE
2	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
2	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	SET	ASTRAGAL	9600A	CL	NGP

FIRE ALARM WITH VOLTAGE REQUIRED AT THIS OPENING.

PROVIDE MAGNETIC HOLD OPEN AS REQUIRED FOR DIMENSION BETWEEN DOOR AND WALL WHEN OPEN AT 90 DEGREES.

OPERATION DESCRIPTION: DOOR NORMALLY HELD OPEN. DOOR CLOSED AND LATCHED UPON FIRE ALARM.

HARDWARE GROUP NO. 01.12

FOR USE ON MARK/DOOR #(S):

821

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	US28	IVE
2	EA	FIRE EXIT HARDWARE	F-25-C-EO-LBR	628	FAL
2	EA	MAGNETIC LOCK	M490	628	SCE
2	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
2	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	SET	ASTRAGAL	9600A	CL	NGP

HARDWARE GROUP NO. 01.13

FOR USE ON MARK/DOOR #(S):

850 852

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1	EA	FIRE EXIT HARDWARE	F-25-R-L-BE-QUA	628	FAL
1	EA	DELAYED EGRESS MAG	M490DE	628	SCE
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 01.14

FOR USE ON MARK/DOOR #(S):

851X 854X

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
1	EA	PANIC HARDWARE	25-R-L-QUA	628	FAL
1	EA	MORTISE CYLINDER	987	626	FAL
1	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	FLOOR STOP	FS444	626	IVE
1	EA	DRIP CAP	16A	CL	NGP
1	SET	SEALS	162S	AL	NGP
1	EA	DOOR SWEEP	200SA	CL	NGP
1	EA	THRESHOLD	425	AL	NGP

HARDWARE GROUP NO. 01.15

FOR USE ON MARK/DOOR #(S):

713A 713B 715B 909A 912

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	PANIC HARDWARE	LD-25-C-L-QUA	628	FAL
2	EA	MORTISE CYLINDER	987	626	FAL
2	EA	SURFACE CLOSER	SC81 HW/PA	689	FAL
2	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	SET	ASTRAGAL	9600A	CL	NGP

HARDWARE GROUP NO. 01.16

FOR USE ON MARK/DOOR #(S):

809 827 835A

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	US28	IVE
2	EA	PANIC HARDWARE	LD-25-C-EO-LBR	628	FAL
1	EA	MAGNETIC LOCK	M490	628	SCE
2	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	SET	ASTRAGAL	9600A	CL	NGP

HARDWARE GROUP NO. 01.17

FOR USE ON MARK/DOOR #(S):

856

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
2	EA	CONT. HINGE	112HD	US28	IVE
2	EA	FIRE EXIT HARDWARE	F-25-C-EO-LBR	628	FAL
1	EA	DELAYED EGRESS MAG	M490DE	628	SCE
2	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
2	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	SET	ASTRAGAL	9600A	CL	NGP

FIRE ALARM WITH VOLTAGE REQUIRED AT THIS OPENING.

HARDWARE GROUP NO. 01.18

FOR USE ON MARK/DOOR #(S):

745X

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	630	IVE
2	EA	PANIC HARDWARE	25-C-L-QUA	628	FAL
2	EA	MORTISE CYLINDER	987	626	FAL
2	EA	SURFACE CLOSER	SC71 RW/PA	689	FAL
2	EA	SURF. AUTO OPERATOR	4631	689	LCN
1	EA	JAMB MOUNT PUSHPLATE	8310-818T	689	FAL
2	EA	FLOOR STOP	FS444	626	IVE
1	EA	DRIP CAP	16	AL	NGP
1	SET	SEALS	162S	AL	NGP

1	SET	ASTRAGAL	9600A	CL	NGP
2	EA	DOOR SWEEP	200SA	CL	NGP
1	EA	THRESHOLD	425	AL	NGP

110VAC REQUIRED AT THIS OPENING. PROVIDE MOUNTING ACCESSORIES FOR ACTUATOR BASED ON MOUNTING LOCATION.

HARDWARE GROUP NO. 02.01

FOR USE ON MARK/DOOR #(S):

711	727	733	807	916	917
918	921	931			

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	B581P QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 02.02

FOR USE ON MARK/DOOR #(S):

716	833
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EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	B581P QUA	626	FAL
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 02.03

FOR USE ON MARK/DOOR #(S):

718	728	734	840	843	903
922	932				

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	B581P QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL

1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 02.04

FOR USE ON MARK/DOOR #(S):

737X 849X

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	B581P QUA	626	FAL
1	EA	LOCK GUARD	LG1	630	IVE
1	EA	SURFACE CLOSER	SC71 SS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	FLOOR STOP	FS18L	BLK	IVE
1	EA	DRIP CAP	16A	CL	NGP
1	SET	SEALS	162S	AL	NGP
1	EA	DOOR SWEEP	200SA	CL	NGP
1	EA	THRESHOLD	425	AL	NGP

HARDWARE GROUP NO. 02.05

FOR USE ON MARK/DOOR #(S):

806 830 831

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB61P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	B581P QUA	626	FAL
1	EA	COORDINATOR	COR X FL	628	IVE
2	EA	SURFACE CLOSER	SC81 SS	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	ASTRAGAL	139A	600	NGP

PROVIDE 7/8" LIP STRIKE. MOUNT SEAL ON FRAME AND ASTRAGAL. PROVIDE MOUNTING ACCESSORIES FOR COORDINATOR.

HARDWARE GROUP NO. 02.06

FOR USE ON MARK/DOOR #(S):

808 829

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5PB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB61P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	B581P QUA	626	FAL
2	EA	OH STOP	90S	689	GLY
1	SET	SEALS	5050B	BRN	NGP
1	EA	ASTRAGAL	139A	600	NGP

PROVIDE 7/8" LIP STRIKE. MOUNT SEAL ON FRAME AND ASTRAGAL.

HARDWARE GROUP NO. 02.07

FOR USE ON MARK/DOOR #(S):

AT01 AT02 M1

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	STOREROOM LOCK	B581P QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 SS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 02.08

FOR USE ON MARK/DOOR #(S):

725 726 823 915 929 930

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	B581P QUA	626	FAL
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 02.09

FOR USE ON MARK/DOOR #(S):

735 920

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5PB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB61P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	STOREROOM LOCK	B581P QUA	626	FAL
2	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	ASTRAGAL	139A	600	NGP

PROVIDE 7/8" LIP STRIKE. MOUNT SEAL ON FRAME AND ASTRAGAL.

HARDWARE GROUP NO. 03.01

FOR USE ON MARK/DOOR #(S):

705 803 836 914

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	ENTRY / OFFICE LOCK	B511P QUA	626	FAL
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 03.02

FOR USE ON MARK/DOOR #(S):

706 707

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ENTRY / OFFICE LOCK	B511P QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	FIRE/LIFE WALL MAG	SEM7800 AS REQUIRED	689	LCN
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 04.01

FOR USE ON MARK/DOOR #(S):

703 800 810 826 901A 901C
 902A 902B 905A

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5PB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB61P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	CLASSROOM LOCK	B561P QUA	626	FAL
2	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	ASTRAGAL	139A	600	NGP

PROVIDE 7/8" LIP STRIKE. MOUNT SEAL ON FRAME AND ASTRAGAL.

HARDWARE GROUP NO. 04.02

FOR USE ON MARK/DOOR #(S):

704 708 721 804 926

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	B561P QUA	626	FAL
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 04.03

FOR USE ON MARK/DOOR #(S):

901B 908

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5 NRP	652	IVE
1	EA	CLASSROOM LOCK	B561P QUA	626	FAL
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 04.04

FOR USE ON MARK/DOOR #(S):

730	731	732	805	832	847
913	923	924	925		

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	B561P QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 04.05

FOR USE ON MARK/DOOR #(S):

857

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 5 X 4.5	652	IVE
1	EA	PASSAGE SET	B101S QUA	626	FAL
1	EA	CLASSROOM LOCK	B561P QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 DEL HW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 04.06

FOR USE ON MARK/DOOR #(S):

738B

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	B561P QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 04.07

FOR USE ON MARK/DOOR #(S):

805A 805B 846

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	CLASSROOM LOCK	B561P QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 04.08

FOR USE ON MARK/DOOR #(S):

812A 812B

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	CLASSROOM LOCK	B561P QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	EA	FIRE/LIFE WALL MAG	SEM7800 AS REQUIRED	689	LCN
1	SET	SEALS	5050B	BRN	NGP

PROVIDE MAGNETIC HOLD OPEN AS REQUIRED TO HOLD OPEN AT 90 DEGREE.

HARDWARE GROUP NO. 04.09

FOR USE ON MARK/DOOR #(S):

842 845 848

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	B561P QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 SS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 04.10

FOR USE ON MARK/DOOR #(S):

828A 828B

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5 NRP	652	IVE
1	EA	CLASSROOM LOCK	B561P QUA	626	FAL
1	EA	OH STOP	90S	689	GLY
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 05.01

FOR USE ON MARK/DOOR #(S):

719 720 801 802 811 825

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	B301S QUA	626	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 05.02

FOR USE ON MARK/DOOR #(S):

841

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
4	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PRIVACY LOCK	B301S QUA	626	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 06.01

FOR USE ON MARK/DOOR #(S):

710 834A

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	B101S QUA	626	FAL
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 06.02

FOR USE ON MARK/DOOR #(S):
814

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PASSAGE SET	B101S QUA	626	FAL
1	EA	MAGNETIC LOCK	M490	628	SCE
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 07.01

FOR USE ON MARK/DOOR #(S):
706A 707A

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	BIFOLD TRACK/HARDWAR	HF2/100	AL	HEN
1	EA	DOOR PULL, 1" ROUND	8103EZHD 10" O	630	IVE

HARDWARE GROUP NO. 07.02

FOR USE ON MARK/DOOR #(S):
709 911B 911C

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5BB1 4.5 X 4.5	630	IVE
2	EA	PUSH PLATE	8200 4" X 16"	630	IVE
2	EA	PULL PLATE	8303 10" 4" X 16"	630	IVE
2	EA	SURFACE CLOSER	SC81 HW/PA	689	FAL
2	EA	KICK PLATE	8400 10" X 1" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE

1	SET	SEALS	5050B	BRN	NGP
1	SET	ASTRAGAL	9600A	CL	NGP

HARDWARE GROUP NO. 07.03

FOR USE ON MARK/DOOR #(S):

740 741 906 907

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	630	IVE
1	EA	PUSH PLATE	8200 4" X 16"	630	IVE
1	EA	PULL PLATE	8303 10" 4" X 16"	630	IVE
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HARDWARE GROUP NO. 07.04

FOR USE ON MARK/DOOR #(S):

909B 911A

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	POCKET DOOR KIT	PFK	AL	HEN
2	SET	DECORATIVE PULL	PR 8700 18" J	630	IVE

CONFIRM TRACK WILL SUPPORT WEIGHT OF DOOR. PROVIDE TRACK AS REQUIRED FOR WEIGHT OF DOOR.

HARDWARE GROUP NO. 08.01

FOR USE ON MARK/DOOR #(S):

722 927

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-SPA-LD	626	SCE
1	EA	CYLINDER	AS REQUIRED	626	FAL
1	EA	SURFACE CLOSER	SC81 SS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	SET	SEALS	5050B	BRN	NGP

OPERATION DESCRIPTION: DOOR NORMALLY CLOSED AND LOCKED. DOOR RELEASED ON ACCESS SIDE BY VALID CODE AT KEYPAD. FREE EGRESS.

HARDWARE GROUP NO. 08.02

FOR USE ON MARK/DOOR #(S):
724

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-SPA-LD	626	SCE
1	EA	CYLINDER	AS REQUIRED	626	FAL
1	EA	SURFACE CLOSER	SC81 HW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

OPERATION DESCRIPTION: DOOR NORMALLY CLOSED AND LOCKED. DOOR RELEASED ON ACCESS SIDE BY VALID CODE AT KEYPAD. FREE EGRESS.

HARDWARE GROUP NO. 08.03

FOR USE ON MARK/DOOR #(S):
815

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-SPA-LD	626	SCE
1	EA	CYLINDER	AS REQUIRED	626	FAL
1	EA	SURFACE CLOSER	SC81 SS	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	SET	SEALS	5050B	BRN	NGP

OPERATION DESCRIPTION: DOOR NORMALLY CLOSED AND LOCKED. DOOR RELEASED ON ACCESS SIDE BY VALID CODE AT KEYPAD. FREE EGRESS.

HARDWARE GROUP NO. 08.04

FOR USE ON MARK/DOOR #(S):
834B 834C

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
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3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	ELEC CLASSROOM LOCK	CO-100-CY-70-KP-SPA-LD	626	SCE
1	EA	CYLINDER	AS REQUIRED	626	FAL
1	EA	SURFACE CLOSER	SC81 RW/PA	689	FAL
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP

OPERATION DESCRIPTION: DOOR NORMALLY CLOSED AND LOCKED. DOOR RELEASED ON ACCESS SIDE BY VALID CODE AT KEYPAD. FREE EGRESS.

HARDWARE GROUP NO. 09.01

FOR USE ON MARK/DOOR #(S):
715A

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
6	EA	HINGE	5PB1 4.5 X 4.5 NRP	652	IVE
1	SET	CONST LATCHING BOLT	FB61P	630	IVE
1	EA	DUST PROOF STRIKE	DP2	626	IVE
1	EA	DBL CYL DEADBOLT	D131P6	626	FAL
2	EA	WALL STOP	WS406/407CCV	630	IVE
1	SET	SEALS	5050B	BRN	NGP
1	EA	ASTRAGAL	139A	600	NGP

MOUNT SEAL ON FRAME AND ASTRAGAL.

HARDWARE GROUP NO. 10.01

FOR USE ON MARK/DOOR #(S):
R1

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	PASSAGE SET	J10 DOV	630	DEX
1	EA	KICK PLATE	8400 10" X 2" LDW B4E	630	IVE
1	SET	SEALS	5050B	BRN	NGP

HINGE BY DOOR/FRAME MANUFACTURER. PROVIDE BASE OR HINGE PIN DOOR STOP AS REQUIRED FOR LOCATION AND TRIM.

HARDWARE GROUP NO. 10.02

FOR USE ON MARK/DOOR #(S):

R2 R6

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	PASSAGE SET	J10 DOV	630	DEX
3	EA	SILENCER	SR66	GRY	IVE

HINGE BY DOOR/FRAME MANUFACTURER. PROVIDE BASE OR HINGE PIN DOOR STOP AS REQUIRED FOR LOCATION AND TRIM.

HARDWARE GROUP NO. 10.03

FOR USE ON MARK/DOOR #(S):

R3 R4

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	POCKET DOOR KIT	PFK	AL	HEN
1	EA	PULL PLATE	1069L WIDTH OF WALL/TRIM +4"	630	TRI

HARDWARE GROUP NO. 10.04

FOR USE ON MARK/DOOR #(S):

R5 R7

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
1	EA	ENTRANCE LOCK	J54 DOV	630	SCH
3	EA	SILENCER	SR66	GRY	IVE

HINGE BY DOOR/FRAME MANUFACTURER. PROVIDE BASE OR HINGE PIN DOOR STOP AS REQUIRED FOR LOCATION AND TRIM.

HARDWARE GROUP NO. 10.05

FOR USE ON MARK/DOOR #(S):

RX

EACH TO HAVE:

QTY		DESCRIPTION	CATALOG NUMBER	FINISH	MFR
3	EA	HINGE	5PB1 4.5 X 4.5	630	IVE
1	EA	PASSAGE SET	J10 DOV	630	DEX

1	EA	DBL CYL DEADBOLT	D131P6	626	FAL
1	SET	SEALS	162S	AL	NGP
1	EA	DOOR SWEEP	200SA	CL	NGP
1	EA	THRESHOLD	425	AL	NGP

HARDWARE SET IS A GUIDLINE, PROVIDE FUNCTION SHOWN BASED ON DOOR, FRAME AND COMPATIBLE HARDWARE.

*****END OF SECTION*****

SECTION 08 81 00 – GLASS GLAZING

PART 1: GENERAL

1.01: General

- A. Conform to the general provisions of the contract, General and Supplementary Conditions of the contract, Division One of this Specification, the Drawings and this Specification Section.
- B. Should conflict arise between the Drawings and the provisions of the Specifications, the Specifications shall govern.
- C. This Section covers furnishing of all labor, materials, tools, equipment, and performance of all work and services for all glass and glazing as shown on drawings and as specified. All work to be done in accordance with the Provisions of the Contract Documents, and completely coordinated with the work of all other trades.
- D. Although such work is not specifically indicated, furnish and install all supplementary or miscellaneous items, appurtenances and devices incidental to, or necessary for, a sound, and complete installation.
- E. Where glass is indicated to be furnished and/or installed by other Sections, quality standards and installation methods and materials indicated herein pertain to such work.

1.02: Scope of Work

- A. General:
 - 1. Refer to the drawings for the extent of work to be done.
 - 2. Inspect existing conditions and the work of other trades for proper conditions before the work of this section begins.
 - 3. Coordinate the work of this section with the work of other trades.
 - 4. Protect people, property, and the work of this section, surrounding materials and the work of other trades.
 - 5. Clean up work site and dispose of waste and debris on a daily basis.
- B. Scope: Provide all materials, tools, labor and equipment necessary for the installation of glass and glazing, including but not necessarily limited to the following.
 - 1. All exterior and interior glass.
 - 2. Door and wall relites.
 - 3. Glass mirrors for toilet rooms, kitchens and staff areas.
 - 4. Glazing in storefronts.

1.03: Related Work Specified Elsewhere

- A. Section 08 11 13: Hollow Metal Doors and Frames
- B. Section 08 14 00: Wood Doors and Frames
- C. Section 08 43 13: Aluminum Entrances and Storefronts.
- D. Section 08 42 29.33: Swinging Automatic Entrance Doors

- E. Section 08 51 13: Aluminum Windows.

1.04: Regulatory Codes and Agencies

- A. See Divisions 0 and 1

1.05: Standard Industry Specification

- A. Conform with requirements in Glazing Manual of the Flat Glass Marketing Association, hereinafter called FGMA, as applicable.
- B. Federal Specifications: (Inc. CPSC 16 CFR 1201) DD-G-451C (4) Glass, Plate, Sheet, Figured (Float, Flat, for Glazing, Corrugated, Mirrors, and Other Uses) DD-G-1043B (1) Glass, Plate (Float), Sheet Figured, and Spandrel (Heat-strengthened and Fully Tempered)
- C. NFPA No. 80 Standard for Fire Doors and Windows.
- D. PPG Technical Services Reports.

1.06: Reference Guides

- A. Publications listed herein are part of this specification to the extent referenced. The criteria established within these specifications shall take precedence over the standards referenced herein.
 - 1. American Society for Testing and Materials (ASTM):
 - a. ASTM D898.

1.07: Submittals

- A. Make all submittals in accordance with Division 1.
- B. Product Data:
 - 1. Submit manufacturer's published literature for specified products and accessories as applicable, including manufacturer's specifications, physical characteristics and performance data.
 - 2. Submit, as a supplement, manufacturer's instructions and directions for application if not included in manufacturer's published literature.
 - 3. Submit shop drawings for approval, including, but not limited to, the following:
 - a. Show sizes and thickness of lights, proposed "bites" in frames, blocks, and clips,
 - b. Installation of stops, edge treatment of glass; note quality, type, and strength of each light.
- C. Proof of Compliance: Upon completion of this portion of the work, and as a condition of its acceptance, deliver to the Architect/Engineer a letter signed by an official of the glass and glazing manufacturing company and installing firm or firms certifying that all glass and/or glazing was furnished and installed in complete accordance with this section of these Specifications.
- D. Samples:
 - 1. Submit one (1) 12"x 12" sample for each type of glass indicated except clear single pane units.
 - 2. Submit 3" long strips by actual thickness of all types and colors of sealants and tapes used.
 - 3. Obtain approval before proceeding with fabrication.

4. Completely identified samples of glazing compound, tape, setting blocks and other glazing materials.

1.08: Quality Control

- A. Single Source Responsibility:
 1. Obtain all glass and glazing for each type of product from a single source whenever possible.
 2. When using more than one source for a specific product, obtain approval from the Architect before ordering.
 3. Prior to approval, submit samples from each source along with manufacturer's literature and test results.
- B. Qualifications of Installers:
 1. Installers must have a minimum of 3 years experience installing glass and glazing on projects of similar size and construction. Installers must be completely familiar with the manufacturer's current recommended methods of installation as well as the requirements of this work.
 2. Provide at least one person who shall be thoroughly trained and experienced in the skills required, who shall be completely familiar with the referenced standards and the requirements of this work and who shall personally direct all installation performed under this section of these specifications.
- C. Materials: Maintain original label of each piece of glass, except where cutting makes requirements impossible; show manufacturer, strength, and quality of glass on labels until approved by Architect or Inspector.

1.09: Delivery, Storage, and Handling

- A. Deliver glass and glazing to the site without defects, deterioration and damage. Deliver all glazing materials in original manufacturer's containers with labels intact and legible. Do not remove labels until glazing is installed and approved by the Architect.
- B. Shipping and Storage: Pack glass, brace, and insulate to prevent breakage, cracking, scratching, or marring of the surface. Damaged glass will not be accepted for the project.
- C. Store all glazing in a manner so as to prevent damage and deterioration.

1.10: Protection

- A. Protect people from injury. Protect the work of other trades, adjacent property, and structures from damage.
- B. The Contractor shall repair or replace, as directed by the Architect, all work or property damaged by the Contractor at no additional cost to the Owner.
- C. Protect the installed glazing from damage, deterioration, and defects until final acceptance is given by the Architect.
- D. Protection: Do not mark glass surfaces with crayon or other marking pencils. Where warnings are required, provide tapes or banners fastened to head framing. Provide masking or other shielding for glass when performing welding or other construction adjacent to glazed openings; replace glass damaged by any construction method or technique at no additional cost to Owner. Protect edges at

all times to preserve edge strength; no striking, stoning, nipping, seaming, or grinding will be allowed. Protect edges against abrasions, pressure, and impact.

- E. All glass, glazing and related materials which have deteriorated or been damaged due to improper fabrication, delivery, storage, handling or installation shall be replaced at no additional cost to the Owner.

1.11: Guarantee

- A. Submit guarantees to the Owner after approval of glass and glazing and as part of the provisions of Division 1.
 - 1. Guarantee:
 - a. Glazing of all exterior openings shall be guaranteed for 2 years.
 - b. Insulating glass units shall be guaranteed not to develop material obstruction to vision as a result of dust or film formation on the inner glass surfaces caused by failure of the hermetic seal, other than through glass breakage, within a 5 year period following installation. Any units failing to comply with terms of this guarantee shall be replaced at no additional cost to the Owner.

PART 2: PRODUCTS

2.01: General

- A. Sizes and thickness of glass as shown on drawings or specified are nominal only. Thickness is subject to normal commercial tolerances. Obtain exact sizes required at site or from fabricator of framing construction.

2.02: Approved Manufacturers:

- A. Glass products of the following manufacturers are approved for use on the project.
 - 1. American St. Gobain - ASG.
 - 2. Ford Glass - FG.
 - 3. Libbey-Owens-Ford Glass - LOF.
 - 4. Mississippi Glass - MSG.
 - 5. Pittsburg Plate Glass - PPG.
 - 6. Spectrum Glass Products - SGP.
 - 7. Combustion Engineering, Inc.
 - 8. Safelite Industries
 - 9. Kokomo Opalescent Glass Co.
 - 10. Blenko Glass Co.
 - 11. Guardian Industries
 - 12. Viracon, Inc.
- B. Plastic products of the following manufacturers are approved for use on this project.
 - 1. DuPont Company, (DP)
 - 2. General Electric, (GE)

3. Rohm and Haas Co., (RH)

2.03: Glass Materials

- A. Note: not all types of glass listed below may be specified on this project
- B. Minimum U-value at double pane insulated glazing: 0.34.
- C. Float Glass
 1. Glazing quality clear float glass: 1/4" thick, unless otherwise specified or indicated. Clean cut and seamed edges for butt joints.
 2. Tempered: Heat-treated clear.
 3. Insulating Manufacturer's standard preassembled units, consisting of two pieces of glass separated by dehydrated air space. Edges shall be sealed, with a metal spacer with flexible hermetic sealer, and stainless steel or aluminum channel all around.
 - a. 1/4" clear transparent glass panes. Low emissivity coating or film on interior panes with 1/2" dehydrated air space, 1" total thickness. Use at all exterior aluminum windows.
 - b. 1/4" clear tempered glass panes. Low emissivity on exterior pane, with 1/2" dehydrated air space, 1" total thickness. Use at all aluminum storefronts.
 4. Mirrors: A quality silvering; 1/4" thickness; polished and/or pencil edges where exposed as indicated on drawings.
 5. No "tong" marks are permitted.
- D. Wire Glass:
 1. Clear polished float glass, 1/4" thick, horizontal square, (diamond pattern not permitted), uniformly spaced, parallel and straight, parallel and perpendicular with framing members as appropriate. Use at locations indicated on drawings.
 - a. Light Transmittance: 100%.
- E. Frosted Glass:
 1. Opaque float glass, 1/4" thick, horizontal, square, Clean cut and seamed edges for butt joints. Use at locations indicated on drawings.
 2. Visible Light Transmittance: Fifty to fifty-five percent (50 - 55%)
- F. Mirror Glass: float glass: 1/4" thick, Clean cut and seamed edges for butt joints.
 1. Visible Light Transmittance: Thirty-three percent (33 %)
 2. Reflectance: Thirty-two percent (32%).
- G. Fire Rated glass:
 1. Glazing and assembly shall be rated as indicated on the drawings.

2.04: Other Materials

- A. Blocks and Shims: Provide neoprene or other resilient type as approved 90 durometer for setting blocks and 40 to 50 durometer for shims.
- B. Clips: Provide non-corrosive metal types with rounded edges designed for contacting resilient blocks or shims, not glass.
- C. Glazing Tape: Provide glazing tape in accordance with NAAMM SS-1b, Class A, reinforced; 98% solid content in accordance with ASTM D898.

- D. Sealant: Dow-Corning 732 Silicone, or approved substitute. Refer to sub-paragraph 2.01 of this section concerning substitution approval.
- E. Glazing Compounds: Non-sag, non-stain type, pigmented to match frame units, not requiring painting, compatible with surfaces.
 - 1. For use in setting glass: One or two-part polyurethane or silicone sealant.
 - 2. Sealant Type: Preformed butyl rubber sealant tape or ribbon having a continuous neoprene, extruded, flexible, of profile and hardness required to receive glass and provide a watertight installation.
- F. Glazing Gaskets: Extruded neoprene glazing gaskets. Other materials as indicated on drawings and as recommended by the glass manufacturer.
- G. Other materials as indicated on drawings and as recommended by the glass manufacturer.

PART 3: EXECUTION

3.01: General

- A. Install all glass and glazing and related material in strict accordance with all pertinent codes and regulations, the approved shop drawings, and the manufacturer's recommendations. Anchor all components firmly in position for long life under hard use.

3.02: Inspection

- A. Examine frames after their installation and glazing prior to installation for the following:
 - 1. Verify that frames and glazing comply with indicated requirements for type, size and location characteristics.
 - 2. Verify that frames have been installed plumb and level.
 - 3. Verify that glazing is free from defects and deterioration that could cause their rejection.
- B. Do not proceed with work if any conditions detrimental to the installation of glass exist.

3.03: Coordination

- A. Coordinate all work involving material, labor, and equipment of other trades penetrating or attaching to the work of this section so that each trade's work can be installed, erected or fabricated as required and that the work space be maintained and left clean and safe.

3.04: Installation

- A. Precautions: Do no glazing when ambient temperature is below 40 degrees F. or when dust or insects are present. Do no glazing in wet weather, except under cover.
- B. Glazing: Install glass in openings as indicted on drawings and in accordance with Standard Specifications, except as may be supplemented and modified hereinafter.
- C. Preparation for Glazing: Check frames to receive glass for squareness and trueness, see that perimeter clearances are sufficient to prevent "point loading", that surfaces are dry, clean, and ready to receive glass and glazing materials, and that protective coatings on framing surfaces have been removed.

- D. Setting Blocks and Shims: Place setting blocks in frames at quarter points at 6" from corners; install shims continuous allowing for minimum of 1/8" bite on glass.
- E. Inspection of Edges: Inspect edges for conformance with specifications.
- F. Glazing:
 - 1. Glaze in accordance with Standard Specifications.
 - 2. Interior Locations: Glaze with glazing tape, unless otherwise indicated or specified.
 - 3. Exterior Locations: Glaze with glazing tape and sealant.
 - 4. Insulating Glass: Glaze in accordance with glass unit manufacturer's recommendations.
- G. Watertight and airtight installation is required. Installation must withstand normal temperature changes, wind and impact loading without failure, including loss or breakage of glass, failure of sealants, gaskets, or glazing materials.
- H. Do not install glass with edge damage.
- I. Glazing channel dimensions are intended to provide for necessary minimum bite on glass, minimum edge clearance and adequate sealant, with reasonable tolerances. Contractor is responsible for correct glass size for each opening, within tolerances and dimensions established.
- J. Comply with combined recommendations of material manufacturers except where more stringent requirements are indicated.
- K. Cut and install tinted glass as recommended in "Technical Services Report No. 104" by PPG.
- L. Do not attempt to cut tempered, heat-strengthened, or coated glass.
- M. Clean channel or framing members to receive glass. Remove coatings that are not firmly bonded to substrate. Remove lacquer from metal surfaces where sealants are used.
- N. Use primer when recommended by Sealant Manufacturer.
- O. Install sealants as recommended by Sealant Manufacturer.
- P. Install setting blocks of proper size in adhesive at quarter points, unless otherwise required by manufacturer.
- Q. Provide spacers inside and out, of proper size and spacing, for all glass sizes larger than 50 united inches, except where gaskets are used for glazing; provide 1/8 inch minimum bite of spacers on glass. Use thickness equal to sealant width. Use pre-shimmed tape.
- R. Prevent sealant exudation from channel by leaving void at heel or by installing compressible filler rod at jambs and head. Do not leave void (or install filler rod) at sill. Leave void (or install filler rod) for insulating glass which is more than 1/2 inch thick; for colored, heat-absorbing, coated or laminated glass sizes larger than 75 united inches; and for other glass more than 9/32 inch thick or larger than 125 united inches.
- S. Force sealants into channel to eliminate voids and to ensure complete bond of sealant to glass and channel surfaces.
- T. Tool exposed surface of glazing compounds to provide wash away from glass, and eliminate dirt and moisture pockets.
- U. Remove excess glazing materials promptly after installation. Clean off stains and discoloration.
- V. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant to gasket on opposite side, provide adequate anchorage to ensure that gasket will not walk out when subjected to dynamic movement. Anchor with ribs, or adhesives.

- W. Miter cut and bond gasket ends together at corners so gaskets will not pull away from corners leaving voids or leaks in glazing system.
- X. Immediately after installation, attach cross streamers to window framing and held away from glass. Do not apply anything to surfaces of glass.
- Y. Remove, and replace broken, chipped, cracked, or damaged glass.

3.05: Glazing Schedule

- A. Refer to the window schedule and drawings for glazing types and locations, but generally follow as below unless noted otherwise. Should a conflict arise between the drawings and the following schedule, immediately notify architect. Do not proceed with glass installation until conflict has been resolved in writing by the architect.
 - 1. Relites in non-rated partitions: Tempered clear glass.
 - 2. Fire rated doors and partitions: Wire glass.
 - 3. Non-rated interior doors Tempered clear glass.
 - 4. Exterior Doors: Insulated tempered clear glass.
 - 5. Aluminum Storefront Glass: Provide insulated tempered glass at exterior where indicated on drawings and required by code. Provide tempered glass at interior aluminum storefront as required by code. All other locations shall be insulating glass.
 - 6. Exterior aluminum windows: Insulating glass.

3.06: Clean Up

- A. Maintain glass reasonably clean during construction, so that it will not be damaged by corrosive action and will not contribute to deterioration of other materials.
- B. Wash and polish glass on both faces not more than four (4) days prior to owners acceptance of the work in each area. Comply with glass manufacturer's recommendations.
- C. Upon completion, remove any excess materials, including sealant.
- D. At the end of each day's work and at final completion, the site shall be free of all waste materials and equipment used by the Contractor. Remove all waste materials and debris and dispose of in a legal and safe manner.
- E. The Contractor shall be responsible for maintaining a clean work place and shall pay for all costs, at no additional cost to the Owner, should outside labor and equipment be used to clean up the work site.
- F. Prevent waste materials from entering and accumulating in the storm sewer system and on adjacent property.

*****End of Section 08 81 00*****