DIVISION 8	**DOORS AND WINDOWS**
08 11 00	Steel Doors and Frames
08 14 00	Wood Doors and Frames
08 34 00	Access Doors
08 53 00	Vinyl Windows
08 71 00	Finish Hardware
08 80 00	Glass & Glazing

SECTION 08 11 00
STEEL DOORS AND FRAMES

PART 1 GENERAL

1.1 DESCRIPTION

A. Work in this Section includes metal doors and frames pressed into profiles required for openings for doors, casings, relites and sidelights. All frames shall bear the appropriate labels and certifications as required for their assembly and installation.

1.2 RELATED WORK SPECIFIED ELSEWHERE:

A.	Submittals	Section 01 33 00
B.	Wood Doors	Section 08 14 00
C.	Finish Hardware	Section 08 71 00
D.	Glass and Glazing	Section 08 80 00
E.	Painting	Section 09 90 00

1.3 STANDARDS

A. Comply with standards specified herein and as listed in Section 01 42 19.

B. Door and Frames: Comply with CS 242-62, PS PS4-66i and Steel Door Institute Standard SDI-100. Latest revisions of all.

C. Labeled Doors and Frames: Comply with all UL Procedures R-3791, R-5493 and R-3821.

D. Door and Frame Preparation for Hardware: Comply with ANSI A115, latest revision.

E. Door and Frame Performance Test: ANSI Standard Test Procedure and Acceptance Criteria for Physical Endurance for Standard Steel Doors and Frames.

1.4 SUBMITTALS

A. General: Comply with provisions of Section 01 33 00.

B. Product data:

1. Complete materials list of all items proposed to be furnished and installed under this Section.
2. Manufacturer's specifications and other data required to demonstrate compliance with specified requirements.
3. Shop Drawings and sufficient dimensional data to enable coordination of installation of finish hardware and for concealed support items.
4. Manufacturer's recommended installation procedures.

PART 2 PRODUCTS

2.1 MATERIALS

A. Materials used shall be prime grade, open hearth, cold rolled, full pickled, double annealed, stretcher leveled steel, free from scale, pits, warps or buckles. U.S. Standard Gages.

2.2 HOLLOW METAL - WELDED FRAMES

A. Minimum thickness commercial quality cold-rolled steel shall be 16 gauge for all interior frames and 14 gauge for all exterior frames.

B. Provide frames bearing a U.L. label, in the openings indicated.

C. See Drawings for frame profile and depth. All stops shall be 5/8" minimum projection unless otherwise indicated.

D. Exterior frames head and jamb members shall be mitered, set up, arc welded at miters and ground smooth. Provide temporary metal spreaders at bottom of frames to maintain rigidity during construction.

E. Interior frames mitered, set up and spot welded at miters.

F. Frame anchors shall be manufacturer's standard design for condition encountered. Provide minimum of three wall anchors per jamb along with a floor anchor at the bottom of each jamb.
G. All frame anchor fastenings shall be concealed.
H. Frames shall be chemically treated for optimum paint adherence and painted with one (1) uniform coat of rust-inhibiting quality primer, oven dried, complying with ASTM S 2247 and ASTM B 117, and ready for paint finish.
I. Frames shall be supplied with factory installed rubber bumpers (silencers), three (3) per jamb, one (1) per head.
J. Provide reinforcing: 16 ga. for strikes, 12 ga. for surface closers, 8 ga. for hinges.
K. Acceptable manufacturers: Curries, CECO, Fenestra, Steelcraft, Republic or approved equal.

2.3 METAL DOORS

A. Fabrication of Standard Exterior Doors:
1. Industry Standard: SDI 100, Grade III.
2. Face Sheets: 16 gage steel.
3. Edges: Seamless.
4. Core: Thermal insulation.
5. Minimum Stile and Rail Width: 5-1/2 inches.
6. Minimum Door Thickness: 1-3/4 inches.
7. Shop Finish: G60 galvanized, bonderized, and primed.
8. Flush Cap At Top of Door: 16 gage steel.

B. Insulated
1. Provide insulated core at all exterior doors accessing conditioned interior spaces, U-factor: 0.16.

C. Glass and Glazing Materials:
1. Provide clear, sealed insulation glazing material that complies with ASTM E-774-92 Class A, and required energy code thermal performance standard, and is at least 1" in overall thickness. Door shall be glazed by use of applied PVC glazing beads with EPDM glazing gaskets. The size of the bead shall accommodate the glass thickness.
2. Provide tempered safety glass on lites as designated on the Drawings or required by IBC Chapter 24.

D. Tempered Glass:
1. Industry Standard: ASTM C 1048, Type I (Transparent), Class I (Clear), Quality q3, Glazing Select.
2. Clear Tempered: 1/4 inch thick polished.

E. Door Light Stops:
1. Material: 18 gage steel.
2. Profile: Square.
3. Design: Recessed.
4. Finish: Baked prime coat.
5. Acceptable Square Light Stops: FGS 75 by Anemostat.

F. Hardware Preparation:
1. Prepare doors to receive hardware in compliance with ANSI A 115.
2. Provide manufacturer's standard reinforcing at hinge pockets, lockset and latchset openings, closers, pull bars, panic devices, flush bolts, and surface bolts, complying with ANSI SDI-100, Table V.
3. Prepare non-fire rated single interior door frames to receive three silencers on strike jambs.
4. Prepare non-fire rated double interior door frames to receive four silencers on head.

5. Prepare fire rated doors and frames to meet requirements of NFPA 252, with Underwriters Laboratories, Inc., Warnock-Hersey International, and ICC-ES evaluation report for fire rating indicated on Door Schedule.
6. Furnish frames with manufacturer's standard jamb and floor anchors.
7. Furnish hardware reinforcing to accommodate door hardware specified in Section 08 71 00, Door Hardware.

PART 3 EXECUTION

3.1 FABRICATION

A. Fabricate in strict accordance with the manufacturer's product data reviewed by the Architect.
B. All finished work must be strong, rigid and neat in appearance. Surfaces shall be smooth, free from defects, warps and buckles, miters well formed and in true alignment. All welds shall be neatly made and ground finish.
C. Furnish frames with all hardware per hardware schedule.
D. Doors shall be fitted with the specified hardware and shall operate perfectly without bind, sag or looseness. The clearances for doors shall be 3/32 inch at jambs, head and meeting stiles, sills 1/2 inch or as indicated on Drawings. 3/8 inch clearance maximum for U.L. Labeled doors at sills.
E. Manufacturer shall mortise, drill, and tap frames for surface mortise or unit type hardware in accordance with templates for the hardware furnished by the hardware supplier.

3.2 PREPARATION FOR INSTALLATION

A. Coordination: Properly coordinate with all other trades as required to ensure adequate provision for anchorage of the work of this Section and for proper interface with the work of all other trades.
B. Inspection: Examine the areas and conditions under which work of this Section will be installed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.3 INSTALLATION - EXTERIOR FRAMES

A. Install the work of this Section straight and plumb within a tolerance of one in 200 horizontally and one in 500 vertically, rigidly anchoring into position for long life under hard use. Perform all drilling and cutting required.
B. Doors and frames shall be installed by others-plumb and in true alignment.
C. Frames shall be rigid and securely anchored in place.
D. Adjust all fire labeled frames to tolerances required by NFPA 80, Section 2-5.4.
E. Doors shall be installed in a manner to achieve the intended functional operation and appearance.
F. Install labeled doors in compliance with Underwriter's Laboratories requirements for the indicated rating.
G. Doors with dents or other defects not repairable will be rejected.
H. At sound retardant doors, tightly pack frames and rough openings with rockwool insulation or grout solid. Provide extra bracing as required to support heavier doors.
I. Frames shall be insulated with rock wool insulation, unless required to be grouted solid by fire rating.
J. When required by fire rating, frames against concrete or masonry to be grouted solid. Grout shall be mixed to provide a 4" maximum slump and shall be hand troweled in to place. Pumped grout shall not be used.

3.4 INSTALLATION - INTERIOR FRAMES

A. Coordinate installation with other trades to avoid conflict.
B. Use (pre-fit template door) (actual door) in opening to assure proper alignment and clearances.
C. Anchor frame with one drywall screw adjacent to each casing clip.
D. Align all parts with proper clearance to assure proper fit, tight miters, and desired performance.
E. Provide instruction sheets for all frames, sidelites, and borrowed lites for field use.

3.5 AIR SEALING MEASURES

A. Install air-sealing measures as required to create an air barrier system. The following items are general guidance to achieving an air barrier system.
   1. Following installation of exterior door frames, apply an air-sealing bead of sealant around door frame inside and outside.
   2. See Drawings for additional air-sealing measures.

3.6 INSTALLATION OF DOORS:

A. Install door hardware and doors after shop and field finishing door and frame assemblies.
B. Install fire rated assemblies to meet NFPA Standard No. 80.
C. For installation of other doors in metal frames, see Section 08 14 00.

3.7 ADJUSTING AND CLEANING:

A. Adjust clearances and hardware placement for smooth door operation.
B. Replace damaged and defective door and frame assemblies.
C. Touch up scratched door and frame prime finish paint to match adjacent shop primed surfaces.
D. Clean door, hardware, and frame surfaces prior to Substantial Completion.

END OF SECTION

SECTION 08 14 00
WOOD DOORS AND FRAMES

PART 1 GENERAL

1.1 DESCRIPTION

A. Work in this Section includes doors and frames of wood and wood product construction with facing materials of wood veneers, wood products and metal and plastic laminate. All doors shall bear the appropriate labels and certifications from their respective testing agencies, for the assembly in which it is installed.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A.	Special Requirements	Section 01 61 16
B.	Submittals	Section 01 33 00
C.	Steel Doors and Frames	Section 08 11 00
D.	Finish Hardware	Section 08 71 00
E.	Glass & Glazing	Section 08 80 00
F.	Painting	Section 09 90 00

1.3 QUALITY ASSURANCE

A. Comply with the standard specified herein and listed in Section 01 42 19.

B. Doors shall comply with applicable provisions of the Architectural Woodwork Standards (AWI) quality standards for Wood Doors or the Window and Door Manufacturers Association.

C. Fire-rated doors shall comply with NFPA-80 requirements according to building code standards. Fire-rated doors shall be manufactured to U.L. standards and carry either U.L. or ITS/Warnock-Hersey label.

D. Doors shall be fabricated to the standards of the Door Hardware Institute.

1.4 SUBMITTALS

A. General: Comply with provisions of Section 01 33 00.

B. Product data:

1. Complete materials list of all items proposed to be furnished and installed under this Section.
2. Manufacturer's specifications and other data required to demonstrate compliance with specified requirements.
3. Shop Drawings and sufficient dimensional data to enable coordination of installation of concealed items of support.
4. Architectural Woodwork Standards (AWI) quality standards recommended installation procedures.
5. Test Results to assure conformance with applicable standards.

1.5 ALLOWABLE TOLERANCES

A. A maximum allowable warp or twist of doors shall be 1/4" using the WDMA testing method. Doors not meeting this requirement are subject to rejection.

B. The allowable gap at jambs, head and meeting stiles shall be 3/32". Edges of both stiles shall be beveled 1/8" in 2".

C. Size tolerances:

1. Thickness: +/-1/16 inch
2. Length: +/-1/16 inch
3. Widths: +/-1/16 inch
4. Prefit widths: +/-1/32 inch

D. Squareness Tolerance: diagonal measurement difference shall not exceed 1/8 inch.

E. Factory Hardware Preparation Tolerances:

1. Hinges: +/-1/32 inch
2. Lock cut outs: 0 - 1/32 inch

F. Stile, rail and core telegraphing not acceptable.

G. The sill undercut shall be 1/2" or as indicated on Drawings. 3/8" maximum clearance undercut for U.L. label doors.

1.6 WARRANTY

A. Furnish a manufacturer's written warranty stating that all doors will be of good materials and workmanship and that doors will be warranted against excessive warpage as follows:
   1. Solid Core & Stile & Rail:
      a. Interior installation - lifetime
      b. Exterior installation - two (2) years

B. Manufacturer's written warranty shall include rehanging and refinishing of doors.

1.7 COORDINATION

A. Coordinate door preparation work with finish hardware and hollow metal frame supplier for items to be installed in doors so proper allowances can be made.

PART 2 PRODUCTS

2.1 GENERAL

A. Wood doors shall be of the sizes, types and designs as shown on the Drawings.

B. All doors shall be urea-formaldehyde free per Earth Advantage requirements. See Section 01 61 19 for additional information.

2.2 DOORS

A. Flush interior doors, solid core (Transparent finished):

1.	Grade:	AWI Custom
2.	Thickness:	1-3/4"; 5 or 7-ply
3.	Glue:	Type I, waterproof
4.	Core:	
	a. Non fire-rated:	Particle board, no added urea-formaldehyde, bonded.
	b. Fire-rated:	Mineral fiber, bonded.
5.	Face skin:	AWI, Grade A hardwood wood veneer. Match existing species and cut.
6.	Edge Strips:	1-1/8" min. T&B, 1-3/8" Vert. Birch
7.	Glazing:	Factory glaze per Section 08 80 00.
8.	Fire Rating:	Per Drawings.
9.	Finish:	Finish per Section 09 90 00.

2.3 FRAME ASSEMBLIES

A. Interior Wood (Transparent finished):

1.	Specie:	Match existing species and cut.
2.	Profile:	As indicated on Drawings
3.	Grade:	AWI Custom
4.	Fire Rating:	Per Drawings
5.	Finish:	Finish per Section 09 90 00.

B. See Section 08 11 00 for metal frames.

2.4 FIRE RATING

A. Prepare fire rated doors and frames to meet requirements of NFPA 252 and NFPA 80, with Underwriters Laboratories, Inc., Warnock-Hersey International, and ICC evaluation report for fire rating indicated on Door Schedule.

B. All fire rated doors and frames to bear permanently affixed label stating fire rating, meeting provisions of ICC/OSSC Section 715.3.5 and include "S" rating suffix signifying compliance as a smoke and draft requirements of UL 1784.

PART 3 EXECUTION

3.1 FABRICATION

A. Fabricate in strict accordance with the manufacturer's product data and as reviewed by the Architect.

B. Manufacturer shall machine doors for specified hardware, with the exception of through-bolts, pilot holes for screws, and other similar drilling operations, in accordance with current recommendation and standards of the WDMA and the Door Hardware Institute.

C. The utility or structural strength of the door must not be impaired in the fitting of the door, the application of hardware, or cutting and altering the doors for lights, louvers or other special details.

3.2 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Deliver, store, protect and handle doors under provisions of WDMA and manufacturer's instructions.

B. Do not store wood products in areas subject to direct sunlight.

C. HVAC systems shall be operating prior to the delivery and storage of doors. Maintain relative humidity of not less than 25% nor greater than 55%.

D. Store all doors and frames in horizontal flat position prior to installation.

3.3 INSTALLATION

A. Initial Inspection of Doors: Prior to start of installation of each door, carefully inspect the door and verify:

1. That the door furnished is the proper door for the opening, as described on the Door Schedule in the Drawings.
2. That the door is in sound condition, unblemished, without warp, twist, bow or other attributes causing it to be rejected upon installation.

B. Handling: Carry wood doors, do not drag them. Use extreme care in handling.

C. Fitting: Trim all wood doors as necessary to provide a uniform clearance of between 1/8" and 3/16" at jambs and head, and a uniform clearance at the threshold or floor to properly clear the floor covering described on the Finish Schedule in the Drawings.

D. Installing: For each door, verify the hardware type as described on the Door Schedule in the Drawings and verify that hardware actually supplied is the hardware specified. Using only the specified hinges or butts, and the proper equipment for the purpose, install the door into the opening with the following hinge or butt locations throughout the Work:

1. Top hinge or butt: The center of the hinge or butt not more than 11" below the top of the door.
2. Bottom hinge or butt: The center of the hinge or butt not more than

13" above the finish floor.

3. Intermediate hinge: Equidistant between the top and bottom hinge, butt, or pivot.

3.4 FINISH PREPARATION

A. Finish Preparation of Wood Doors: With fine sandpaper, working only in the direction of the grain of the wood, remove all rough edges resulting from door trimming and leave the installed door in condition to receive its final finish.

3.5 ADJUSTING AND CLEANING

A. Adjust door hardware for smooth operation and compliance with Americans with Disabilities Act accessibility provisions.

B. Clean all doors, frames and hardware.

END OF SECTION

SECTION 08 34 00
ACCESS DOORS

PART 1 GENERAL

1.1 DESCRIPTION
- A. At locations shown on Drawings or as required by access needs, provide wall or ceiling access doors.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A.	Submittals	Section 01 33 00
B.	Painting	Section 09 90 00

1.3 QUALITY ASSURANCE
- A. Comply with standards specified herein and as listed in Section 01 42 19.

1.4 SUBMITTAL
- A. General: Comply with provisions of Section 01 33 00.
- B. Product data:
  1. Complete materials list of all items proposed to be furnished and installed under this Section.
  2. Manufacturer's specifications and other data required to demonstrate compliance with specified requirements.
  3. Shop Drawings and sufficient dimensional data to enable coordination of installation of concealed items of support.
  4. Manufacturer's recommended installation procedures.
  5. UL listing certification where required to be fire rated.

PART 2 PRODUCTS

2.1 MATERIALS

A.	Manufacturer:	Acudor Products, Inc., or approved equal.
B.	Model:	
1.	Standard flush frame:	UF-5000 / DW-5040 (drywall) / PS - 5030 (plaster)
2.	Recessed frameless:	AT-5020 / DW-5015 (drywall) / AP-5010 (Plaster)
3.	Fire rated:	FB-5060 / FB-5060-DW (Drywall)
C.	Size:	As required for application. 22" x 30" min. for full body access.
D.	Door:	Flush steel panel - minimum 16 gauge.
E.	Frame:	One piece outer steel flange welded to mounting frame.
F.	Hinge:	Continuous, concealed.
G.	Lock:	Cylinder key lock - master keyed.
H.	Finish:	Five (5) stage iron phosphate preparation with prime coat of white baked enamel.

PART 3 EXECUTION

SECTION 08 34 00
ACCESS DOORS

3.1 APPLICATION

A. Provide access door type as appropriate for condition of installation and final appearance based on following general criteria:

1. General service access in non-public areas: Standard flush.
2. Public areas: Recessed frameless.
3. Fire rated assemblies: Fire rated.

3.2 INSTALLATION

A. Install neat and square and in strict conformance with manufacturer's printed instructions.

B. In all recessed frameless doors provide infill material to match adjacent surfaces.

C. Provide two keys per door and five master keys.

END OF SECTION

SECTION 08 53 00
VINYL WINDOWS

PART 1 GENERAL

1.1 DESCRIPTION

A. The work described in this Section includes engineering and fabrication of tubular extruded PVC (poly vinyl chloride) windows for proper installation at locations shown on Drawings.

B. Provide all vinyl windows and accessories, as shown on the Drawings, specified herein, or needed for a complete and proper installation.

C. Provide factory glazing of all new windows unless otherwise coordinated with General Contractor.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A.	Submittals	Section 01 33 00
B.	Weather Resistive Barriers	Section 07 25 00
C.	Flashing and Sheet Metal	Section 07 60 00
D.	Sealants	Section 07 90 00

1.3 QUALITY ASSURANCE

A. Standards: Comply with standards specified in this Section and as listed in Section 01 42 19.

B. Comply with General Requirements of AAMA Industry Standard 101/1.5.2-97 (American Architectural Manufacturer's Association). Except to extent more stringent requirements are indicated.

C. Windows to meet performance standards for:

1. ASTM E 283 - 91 Test method for infiltration rate of air leakage through exterior windows, curtain walls, and doors under specified pressure differences across the specimen.
2. ASTM E 330 - 90 Test method for structural performance of exterior windows, and doors by uniform static air pressure difference.
3. ASTM E 547 - 93 Test method for water penetration of exterior windows, curtain walls, and doors by cyclic static air pressure difference.

D. National Fenestration Rating Council (NFRC) U-value determination per 100-97 with amendment Jan. 1, 1999.

E. Manufacturer's Published Data.

1.4 PERFORMANCE REQUIREMENTS

A. Structural: Windows must meet the minimum Gateway Performance Requirements as established by AAMA/WDMA/CSA 101/I.S.2/A440-08 for the performance class listed.

1.	Minimum Performance Class:	**C**
2.	Minimum Performance Grade:	**PG-70**

B. Thermal performance: (per NFRC)

1.	Maximum U-Value:	.27 or lower
2.	Maximum Shading Coefficient:	.45 or lower
3.	Maximum SHGC:	.34 or lower

1.5 SUBMITTALS

A. General: Comply with provisions of Section 01 33 00.

B. Submit Manufacturer's Product Data and Shop Drawings showing all window types indicated on Drawings or required after field review.

C. Sustainable Documentation:

1. For all appliances furnished under this Section, provide completed green program documentation per Section 01 61 19 – Special Requirements – Green Programs.

1.6 DELIVERY, STORAGE AND HANDLING

A. Provide strippable wrapping or coating to protect surfaces.

1.7 WARRANTY

A. Manufacturers 10 year commercial warranty written for this specific commercial facility.

PART 2 PRODUCTS

2.1 MATERIALS

A. PVC:

1. Windows shall be extruded, high impact resistant, rigid polyvinyl chloride (PVC). Windows shall be constructed in a neat workmanlike manner. All corners of the frame and sash shall be mitered and fusion welded. All welds are to be dressed and finished to match the surrounding frame area.

B. Finish:

1. Color applications are to be a painted finish specifically formulated for use on PVC window applications.
2. Color: Match existing.

C. Glass and Glazing Materials:

1. Provide the manufacturer's clear, sealed insulation glazing material that complies with ASTM E-774-92 Class A, and required energy code thermal performance standard, and is at least 3/4" in overall thickness. Under no circumstances will a double glazing system incorporating a removable storm sash be allowed. Sash shall be factory glazed by use of applied PVC glazing beads with EPDM glazing gaskets. The size of the bead shall accommodate the glass thickness.
2. Provide tempered safety glass on lites as designated on the Drawings or required by IBC Chapter 24.

D. Weatherstripping:

1. All operating sash members shall be weather stripped as follows:
   a. Double weatherstripped with extruded EPDM; or
   b. Fin-pile weather strips and polyethylene-clad urethane foam compression seals.
2. Weatherstripping shall be replaceable without the use of special tools or skills.

E. Hardware:

1. Provide the manufacturer's standard hardware fabricated from epoxy painted cast aluminum or other non-corrosive material and of sufficient strength to perform its intended function. For application of hardware, use fasteners that match the finish of the hardware being fastened.
2. Provide waterproof seals at all operating hardware assemblies penetrating frame.

F. Glazing Stops:

1. Provide screw applied or snap-on glazing stops (beads) coordinated with glass section indicated. Finish glazing stops to match exterior window finish.

G. Insect Screens:
1. Provide removable insect screen panel black for each operable sash, with replaceable mesh and vinyl retainer spline.
2. Provide sliding screen door panel for each operable door, with replaceable mesh and vinyl retainer spline.

2.2 ACCESSORIES
A. Provide all weatherstripping, glazing and mounting accessories as needed to provide a complete installation in intended application.
B. All metal fasteners, hardware, etc. shall be stainless steel or approved equal.

PART 3 EXECUTION

3.1 FABRICATION
A. General
1. Fabricate window units to comply with indicated standards. Units shall be reglazable without dismantling sash framing.
B. Pre-glazed Fabrication:
1. Pre-glaze units at the factory for applications indicated.
C. Factory Mulled:
1. Provide factory engineered and fabricated mullions between multiple lights as required for configurations shown on Drawings.

3.2 INSTALLATION
A. Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, accessories, and other window components.
B. Window shall be factory sized to fit in each framed (rough) opening allowing for 3/8"-1/2" clearance on all jams and heads (tolerance +/- 1/16") and ¼" clearance on all sills (tolerance +/- 1/16"). Any manufacturer's installation instructions differing from this shall be followed.
C. Opening panels must be closed and locked during installation. All windows must be installed level, plumb, and square with 1/4" clearance on all sides with weep holes at bottom.
D. Headers must not be nailed. Nail through fin into framing along sides and base. At the head, nails may be placed above fin per manufacturer's written instructions and bent down over fin to allow for header deflection. Full support is required along entire length of sill.
E. Adjust operating sash and hardware to provide tight fit at contact points and weatherstripping. Lubricate hardware and moving parts.

3.3 CLEANING
A. Remove protective material from pre-finished surfaces.
B. Wash down surfaces with solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
C. Do not use petroleum distillates.

3.4 AIR SEALING MEASURES
A. Install air-sealing measures as required to create an air barrier system. The following items are general guidance to achieving an air barrier system.
1. Following installation of exterior door frames and/or windows, apply an air-

sealing bead of sealant around frame at the inside face.

2. See Drawings for additional air-sealing measures.

END OF SECTION

SECTION 08 71 00
FINISH HARDWARE

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Work in this Section includes all hardware required for proper function, fastening and locking of movable parts shown on Drawings and whether or not listed in the hardware schedule.

B. Provide the services of an AHC (Architectural Hardware Consultant) with technical experience necessary to correctly and efficiently service this hardware contract. Said consultant shall be a member of DHI and shall be available to the Owner or his representative for consultation at all times and shall direct application and final adjustment of all door hardware.

C. Work in this Section includes bidder designed and engineered components.
   1. Bidder designed and engineered components include: all components.
   2. Manufacturer shall provide all engineering required; for final sizing to meet specifications, and code requirements of permit jurisdiction, and that system components are appropriate for intended application.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A.	Submittals	Section 01 33 00
B.	Steel Doors and Frames	Section 08 11 00
C.	Wood Doors and Frames	Section 08 14 00

1.3 REFERENCE STANDARDS

A All standards specified herein and listed in Section 01 42 00.

B. NFPA 80 Standard for Fire Doors and other Opening Protective; 2010.

C. NFPA 101 Code for Safety to Life from Fire in Buildings and Structures; NFPA 2009.

D. All Door hardware shall meet the Security and Fire Life standards of the local jurisdiction.

E. ANSI/ICC A117.1-American National Standards for Accessible and Usable Buildings and Facilities; International Code Council; 2004.

F. Hardware Mounting: install hardware at Manufacturer recommended locations or per American National Standards Institute (ANSI) A117.1.

1.4 QUALITY CONTROL

A. The types listed are to be used as a guide for quality and operation and not to be construed as a complete list. Detail hardware requirements for each individual situation to suit job conditions.

B. The detailing of the hardware requirements shall be the responsibility of the hardware supplier.

C. Workmanship and finish of hardware shall be free from blemishes and defects. Each item shall be properly wrapped in a separate package distinctly labeled and numbered for each and every opening for which it is intended and in accordance with the Hardware Schedule.

D. No later than two (2) weeks after approval of hardware schedule make available to door and frame manufacturers a complete set of required hardware templates and schedules.

E. Finish hardware shall be furnished with all necessary screws, bolts, or other fastenings of suitable size and type to anchor the hardware in position for heavy use and long life, and shall harmonize with the hardware as to material and finish. These fastenings shall be furnished where necessary with expansion shield, sex

bolts, toggle bolts, security screws, or other approved anchors according to the material to which it is applied as recommended by the manufacturer.

F. Furnish all items of hardware not definitely specified or listed but required for completion and proper installation of the work; provide type and quality suitable for service required and comparable to the kind specified for similar use.

1.5 SUBMITTALS

A. For all submittals comply with provisions of Section 01 33 00.

B. Product data:

1. Complete hardware schedule of all items proposed to be furnished and installed under this Section. List hardware for each opening separately in number order, listing quantity, material, finish and manufacturer.
2. Manufacturer's catalog information and other data required to demonstrate compliance with specification.
3. Sufficient dimensional data to enable coordination of installation of concealed hardware items.
4. Manufacturer's recommended installation procedures.

1.6 WARRANTY

A. All hardware shall be factory warranted, free from defects in workmanship and material for a period of one year after acceptance of the building except:

1. Hydraulic door closers shall carry a factory ten year warranty. Electrified and automatic door operators shall carry a factory two year warranty.
2. Exit devices shall carry a factory three year warranty.
3. Locksets shall carry a factory seven year warranty.
4. Electro mag locks shall carry a factory five year warranty.

PART 2 PRODUCTS

2.1 MATERIALS

A. Hardware types and sizes shall be as listed on drawings or as specified herein.

B. Closers: All closers sized to an in conformance with factory recommendations. Door closers shall in no case restrict swing of doors, but shall allow door to open as far as conditions permit. List and verify degree of opening for all closers.

C. Locksets and Latchsets: Strikes to have extended lip where required to protect trim from being marred by latch bolt. All lock and latch sets to be furnished with box type strikes. Furnish reinforcing units for all metal doors.

D. Stops and Holders: Check Drawings for suitability and method of anchorage. Provide door stops or overhead stops wherever a door or an item of hardware on a door might contact a wall or other type of the building construction, or other types as specified.

E. Door Silencers: All doors shall receive silencers, except labeled fire doors and exterior doors, three (3) per single door and four (4) per double door.

F. Gasket: Fire rated doors are to receive appropriate rated gasketing as required, or specified herein. For rated wood doors, an intumescent type fire gasket is to be field applied, except for category A wood doors it is furnished concealed behind the door edging by the door manufacturer.

G. Butts Hinges: 1-1/2 pair, 4-1/2 x 4-1/2 inch. per door leaf, unless otherwise noted.

H. See Section 06 20 00, Finish Carpentry and Section 06 41 00, Custom Cabinetry for additional hardware.

I. Any substitution in hardware from that specified must be submitted in advance,

per Section 01 25 00.

2.2 FINISH

A. General finish of all exposed hardware: **626 Satin Chrome**

2.3 ACCEPTABLE MANUFACTURERS

A.	Butts:	Ives, Stanley, Hager, Bommer, McKinney
B.	Locksets, Latchsets, Cylinders:	Schlage, Stanley Commercial, Best
C.	Push / Pull Plates:	Ives, Trimco
D.	Kick Plates, Flush Bolts:	Ives, Trimco
E.	Closers, Operators:	LCN, Stanley, Dorma, Norton
F.	Stops, Kick Plates, Silencers:	Ives, Trimco
G.	Overhead Stops:	Glynn Johnson, ABH, Rixon
H.	Thresholds, Door Bottoms:	National Guard, Pemko
I.	Seals & Weatherstrip:	National Guard, Pemko
J.	Exit Devices:	Stanley Commercial, Von Duprin, phi Precision

2.4 KEYS AND KEYING

A. Provide Schlage facility standard keyway as confirmed by Owner. Provide 1-bitted permanent cylinder cores. Keying and installation of permanent cylinder cores by Owner. Provide 3 keys per cylinder core and one control key.

B. Provide factory keyed temporary construction cores pre-installed for the construction period. Provide ten construction keys. Return construction cores to hardware supplier after installation of permanent cylinder cores. Supplier may charge for unreturned construction cores and construction keys.

PART 3 EXECUTION

3.1 PREPARATION FOR INSTALLATION

A. Coordination: Properly coordinate with all other trades as required to ensure adequate provision for anchorage of the work of this Section and for proper interface with the work of all other trades.

B. Inspection: Examine the areas and conditions under which work of this Section will be installed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

C. Deliver to the job site all finished hardware for storage in a dry and secure environment, except that which is to be delivered to other Subcontractors as directed. A complete finish hardware schedule in DHI format and installation instructions shall accompany the delivery. Deliver hardware items complete with necessary parts for fitting, installing, and as required for proper perfect operation. Door numbers to be marked on hardware items.

3.2 INSTALLATION

A. Locations: Using only the specified finish hardware, and the proper equipment for the purpose, install finish hardware in the following locations throughout the Work:

1. Combination push-and-pulls: Centered 40-1/4" above the finish floor.

2. Door-closing devices: Install and adjust in strict accordance with the templates and printed instructions supplied by the manufacturer of the devices. Insofar as practicable, doors opening to or from halls or corridors shall have the closer mounted on the room side of the door.
3. Kick plates: Push side of doors UNO.
4. Mortise deadlock: Center 60" above finish floor (48" at ADA accessible)
5. Lever handle locks: Center lever 38" above finished floor
6. Panic devices: Install per manufacturers template instructions.
7. Push bars, single: Centered 42" above the finish floor
8. Push plates & pull plates: Centered 48" above the finish floor
9. Other hardware items, not described above: Install as directed by manufacturer.

3.3 CLEAN AND ADJUST

A. Remove all protective materials and wipe all surfaces clean. Adjust all operative hardware for proper and smooth action. Align all gasket weather stripping for proper fit and use. Make final adjustments to door closers maintaining ADA requirements.

3.4 HARDWARE SETS

A. Bidder Designed. See Drawings for door functions.

END OF SECTION

SECTION 08 80 00
GLASS AND GLAZING

PART 1 GENERAL

1.1 SCOPE OF WORK

A. Work Included: Provide all glass and glazing, complete and in place, as shown on the Drawings, specified herein, or needed for a complete and proper installation.

B. Glazing thickness for exterior applications considered bidder designed and engineered.

1. Manufacturer shall provide all engineering required; for final sizing to meet specifications, and code requirements of permit jurisdiction, and that system components are appropriate for intended application.

1.2 RELATED WORK SPECIFIED ELSEWHERE

A.	Special Requirements	Section 01 61 16
B.	Submittals	Section 01 33 00
C.	Steel Doors and Frames	Section 08 11 00
D.	Wood Doors and Frames	Section 08 14 00

1.3 PERFORMANCE REQUIREMENTS

A. Glass design:

1. Provide glazing materials capable of withstanding normal thermal, wind, and impact loads without failure.
2. Manufacturer to engineer glass thickness complying with ASTM E 1300 according to design wind load applicable to Project according to ASCE 7, "Minimum Design Loads for Buildings and Other Structures".

1.4 SUBMITTALS

A. General: Comply with provisions of Section 01 33 00.

B. Product data: Submit the following information:

1. Complete materials list of all items proposed to be furnished and installed under this Section.
2. Sufficient data required to demonstrate compliance with all specified requirements.
3. Shop Drawings of the entire installation.
4. Glazing details, methods, and sealant requirements.
5. Material samples showing final installation system including sealants and gaskets.

1.5 QUALITY ASSURANCE

A. Comply with standards specified in this Section and as listed in Section 01 42 19.

B. Deliver glass with manufacturer's labels intact.

C. Do not remove labels until glass has been installed.

D. Comply with applicable recommendations contained in Glass Association of North America (GANA), unless more stringent requirements are indicated.

1. Glazing Manual.
2. Laminated Glass Design Guide.

E. Insulating Glass Certification: Permanently mark on each unit with appropriate certification label of the Insulating Glass Certification Council (IGCC).

F. Tempered Glass: Comply with U.S. Consumer Product Safety Commission Standard 16 CFR 12-1 and ANSI Z97.1.

G. Glazing accessories: American Architectural Manufacturer's Association (AAMA).

H. All vision glass to be produced by one manufacturer and to have the identical exterior appearance.

1.6 REGULATORY REQUIREMENTS
A. Comply with State Building Code Section 2406.
B. Fire-Rated Door and Window assemblies: Provide glazing materials complying with NFPA 80 that are listed and labeled, for ratings indicated, and tested in accordance with NFPA 252 (doors) and NFPA 257 (windows).

1.7 FIELD MEASUREMENTS
A. Field verify dimensions prior to fabrication. Notify architect of any significant variation from Contract Documents.

1.8 WARRANTY
A. Installer: Provide a written warranty against failure of glazing products due to defective materials or installation, including water leakage or air infiltration in excess of specified standard, for a period of 2 years after date of Substantial Completion.
B. Manufacturer: Provide the following manufacturer warranties:
1. Insulating Glass: 10 year labor and materials to warrant units against failure of hermetic seal.
2. Coated Glass: 10 year labor and materials to replace unit deterioration including peeling, cracking and other indications of deterioration in metallic coatings.
3. Laminated Glass: 5 year labor and materials to replace unit deterioration including defects in edge separation, de-lamination or obstruction of vision through glass, and blemishes exceeding those allowed in referenced standard.

PART 2 PRODUCTS

2.1 GLASS
A. Products: Subject to compliance with the following requirements, provide products indicated in Glass Schedule at the end of Part 3.
B. Acceptable Manufacturer's of primary glass products:
1. Guardian Industries
2. PPG Industries, Inc.
3. Cardinal
C. Coordinate all glazing materials meet the requirements of manufacturer's of supporting components.
D. Glass types:
1. Float Glass: ASTM C-1036, Type I, (transparent glass, flat), Quality q3 (glazing select), class as indicated in the Glass Schedule.
2. Tempered: ASTM C1048, Type I, (transparent glass, flat) Quality q3 (glazing select), class, kind and condition as indicated in the Glass Schedule.
3. Coated Float Glass: ASTM 1376, coated glass complying with requirements indicated in the Glass Schedule and the following:
a. Provide Kind HS (heat strengthened) coated float glass where needed to resist thermal stresses produced by differential shading

of lites.
b. Provide Kind FT(fully tempered) coated float glass where safety glass is indicated or required by Building Code.
c. Pyrolytic Coated (Low E) Float Glass: Glass with solar reflective metallic oxide coating applied by pyrolytic deposition process.

4. Wired Glass: ASTM C 1036, Type II (patterned and wired glass, flat), Class 1 (clear), Quality q8 (glazing), Form 1 (wired, polished both sides), Mesh m2 (square), 6.4 mm thick.
5. Laminated Glass: ASTM C 1172, interlayer of clear polyvinyl butyral sheet, as type as indicated in Glass Schedule.
6. Insulating Glass: ASTM E 774, Class A units, complying with requirements in the Glass Schedule and the following:
   a. Seal: Dual Seal, isobutyl primary with polysulfide secondary.
   b. Provide Kind HS (heat strengthened) coated float glass where needed to resist thermal stresses produced by differential shading of lites.
   c. Provide Kind FT(fully tempered) coated float glass where safety glass is indicated or required by Building Code.
7. Mirror Glass: ASTM C1036, Type 1 transparent flat, Class I clear, quality q2 mirror, 1/4" thick, silver coated and hermetically sealed with uniform .0002" coating of electrolytic copper.
8. Fire Rated Glazing: Technical Glass Products (TGP) Firelite Plus, fire rated glazing. Each lite shall bear permanent, non-removable label of UL certifying it for use in tested and rated fire protective assemblies.
   a. Fire Protective Glazing Products for Door Assemblies: Products identical to those tested per ASTM E2074-00 and UL 10B, labeled and listed by UL.

E. All sealant products applied under this Section shall comply with VOC limits as required in Section 01 61 16.

2.3 GLAZING COMPOUNDS AND SEALANTS

A. Use glazing compounds and preformed glazing sealants approved for the application by the glass manufacturer and, except as otherwise specified, conforming to the Glazing Materials portion of the GANA/FGMA Glazing Manual.
   1. Sealants: ASTM C 920, Type S, Class 25, Grade NS.

2.4 GLAZING ACCESSORIES

A. Provide all glazing accessories required to supplement those accessories which accompany the items to be glazed, and as needed to provide a complete installation, including glazing points, clips, shims, angles, beads, settling blocks, and spacer strips.
   1. Glazing Tape: ASTM C 1241 and AAMA 800.
   2. Cylindrical Glazing Sealant Backer: ASTM C 1330, type O.
   3. Setting blocks: ASTM C864, EPDM or neoprene rubber unless otherwise required for compatibility with sealer and glazing compounds.
   4. Mirror Molding: ASTM A167, type 304 stainless steel, 22 gage. No. 4 finish.

PART 3 EXECUTION

3.1 FABRICATION

A. Fabricate in strict conformance with referenced standard to sizes required for glazed opening.
   1. Provide edge and face clearances, edge and surface conditions, and bite complying with referenced standards and requirements of glass and support component manufacturer.
   2. Grind smooth and polish exposed glass edges.

3.2 INSPECTION
A. Examine the areas and conditions under which work of this Section will be installed. Correct conditions detrimental to the proper and timely completion of the Work. Do not proceed until unsatisfactory conditions have been corrected.

3.3 INSTALLATION
A. General
   1. Selection of Glass: Where plate glass is indicated, float glass may be used.
   2. Distortion: Cut and install glass with the visible lines or waves running with the horizontal direction.
   3. Fix moveable items securely, or in a closed and locked position, until glazing compound has thoroughly set.
   4. Perform glazing when ambient temperature is above 40° F.
   5. Perform glazing on dry surfaces only.

B. Glass setting
   1. Items to be glazed shall be shop-glazed or field-glazed with glass of the quality and thickness specified.
   2. Prepare surrounds and glass, unless otherwise directed, in conformance with the details and general conditions governing glazing in the Flat Glass Marketing Association (FGMA) Glazing Manual.
   3. Use beads or stops furnished with the items to be glazed to secure the glass in place.
   4. All glass to be set with the FGMA recommended clearance and isolation from frame or sash using appropriate setting blocks, spacers, tapes, beads, sealants or compounds.
   5. Glass shall be set "flat" with no visible twist, torque, bending or other detrimental induced stress.
   6. Provide final sealing of all glazed openings against the penetration of air or water.
   7. All wire glass to be set with wire grid running horizontal and vertical.

C. Mirrors
   1. Unless shown otherwise on the Drawings, provide necessary backing and/or concealed fasteners for surface mounting at locations shown on Drawings.
   2. Provide s/s edge trim on all mirrors unless shown otherwise on Drawings.

3.4 CLEANING
A. In addition to the requirements of Section 01 74 00 of these Specifications, and prior to acceptance of the work, thoroughly clean all glass and remove all labels, paint spots, putty and other defacements.

3.5 GLASS SCHEDULE
A. Glass Type GL-1: (INTERIOR SINGLE VISION – Clear - Interior Doors & Relites)

1.	Thickness:	1/4" minimum single sheet.
2.	Type:	Class 1, clear float glass
3.	Tempered:	Where required by code or condition

B. Glass Type GL-2: (MIRRORS)

1.	Thickness:	1/4" minimum.
2.	Type:	Clear per specified standard.

END OF SECTION