

DIVISION 8 – DOORS AND WINDOWS

SECTION 08111

STANDARD STEEL DOORS AND FRAMES

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. This Section includes the following products manufactured in accordance with SDI Recommended Standards:
 - 1. Frames: Pressed steel frames for exterior steel door openings of following type:
 - a. Welded unit type.
 - 2. Frames: Pressed steel frames for interior wood door openings of the following type:
 - a. Welded unit type.
 - 2. Provide factory primed doors and frames for exterior steel doors and interior steel frames.

1.03 SUBMITTALS

- A. General: Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. Product data for each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, sound ratings, profiles and finishes.
- C. Shop drawings showing fabrication and installation of standard steel doors and frames. Include details of each frame type, elevations of door design types, conditions at openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
 - 1. Provide schedule of doors and frames using same reference numbers for details and openings as those on contract drawings.
 - 2. Indicate coordinate of glazing frames and stops with glass and glazing requirements.

1.04 QUALITY ASSURANCE

- A. Provide doors and frames complying with steel door Institute “Recommended Specifications Standard Steel Doors and Frames” ANSI/SSDI-100 and as herein specified.
- B. Fire-Rated Door Assemblies (If applicable): Units that comply with NFPA 80 are as identical to door and frame assemblies whose fire resistance characteristics have been determined per ASTM E 152 and which are labeled and listed by UL, Factory Mutual, Warnock Hersey or other testing and Inspecting organization acceptable to authorities having jurisdiction.

1.05 DELIVERY, STORAGE AND HANDLING

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage. Provide additional protection to prevent damage to finish of factory-finished doors and frames.
- B. Inspect doors and frames upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to Architect; otherwise, remove and replace damaged items as directed.

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

PART 2 PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering standard steel doors and frames which may be incorporated in the work include; but are not limited to, the following:
 - 1. Amweld Building Products, Inc.
 - 2. Ceco Corp.
 - 3. Copco Door Co.
 - 4. Curries Company
 - 5. Deansteel Manufacturing Co.
 - 6. Fenestra Corp.
 - 7. Kawanee Corp.
 - 8. Mesker Door Co.
 - 9. Pioneer Industries.
 - 10. Premier Products, Inc. (formerly Dittco).
 - 11. Replulic Builders Products.
 - 12. Steelcraft Manufacturing Co.
- B. Hardware (If Applicable): 4 1/2" or 5" heavy weight all in accordance with ANSI A156.7. Lock edge to have standard bevel (1:16) prepared for Gov. series 86, 160/161, or 90 locks in accordance with A NSI A115.
- C. Door Core (If Applicable): Cardboard honeycomb, polyurethane, polystyrene foam, mineral fiberboard, steel channel grid, vertical steel stiffeners as required for exterior application.
- D. End Closure (If Applicable): Channel 0.047 inch thick, flush or as required for a Steel door.

2.02 ACCESSORIES

- A. Louvers: Steel material, primed finish.
- B. Silencers: Except on weather stripped frames, drill stops to receive 3 silencers on strike jambs of single-door frames and 2 silencers on heads of double-door frames.
- C. Removable Stops: Steel channel shape.

2.03 FABRICATION – DOORS (If Applicable)

- A. Fabricate doors with hardware reinforcement welded in place.
- B. Attach appropriate label to each fire rated door.
- C. Configure exterior doors with special profile to receive recessed weather stripping.

2.04 FABRICATION - FRAMES

- A. Fabricate frames as welded unit.
- B. Fabricate frames with hardware reinforcement plates welded in place. Provide mortar guard boxes.

- C. Reinforce frames wider than 48 inches with roll formed steel channels fitted tightly into frame head, flush with top.
- D. Prepare frame for silencers and install.
- E. Attach appropriate label to each fire rated frame.
- F. Fabricate frames to suit wall openings and head member.
- G. Fabricate frames in the profile and sizes indicated on the drawings.

2.05 FINISH

- A. Factory Primed Finish.
- B. Factory Finish: Factory Primed.
- C. Coat inside of frame profile with bituminous coating if required.
- D. Color: Final Color to be painted in the field to be selected by Architect.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install frames in accordance with SDI-100.
- B. Coordinate installation of doors and frames with installation of hardware specified in Section 08710.
- C. Coordinate with stud wall construction for frame anchor placement.
- D. Install roll formed steel reinforcement channels between two abutting frames. Anchor to structure and floor.
- E. Install door louvers plumb and level.
- F. Coordinate installation of glass and glazing (if applicable).

3.02 TOLERANCES

- A. Maximum Diagonal Distortion: 1/16 inch measured with straight edge, corner to corner.

3.03 ADJUST AND CLEAN

- A. Prime Coat Touch-up: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air drying primer.
- B. Final Adjustments: Check and readjust operating hardware items, leaving steel doors and frames undamaged and in complete and proper operating condition.

END OF SECTION - 08111

DIVISION 8 – DOORS AND WINDOWS

SECTION 08211

FLUSH WOOD DOORS

PART 1 GENERAL

1.10 RELATED DOCUMENTS

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

1.20 SUMMARY

- A. Provide all new flush wood door as indicated on drawings and in schedules.
 - 1. New interior wood doors are required.
- B. Types of doors required include the following:
 - 1. Rated and non-rated solid core architectural flush wood doors with wood veneer faces.

1.30 SUBMITTALS

- A. Product Data: Door Manufacturer's technical data for each type of door, including details of core and edge construction, trim for openings and louvers and factory-finishing specifications.
- B. Shop Drawings: Submit shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for factory finishing and other pertinent data.
 - 1. For factory-premachined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light and louver openings.
- C. Samples: Submit samples, 1-0" square or as indicated, for the following:
 - 1. Doors for Transparent Finish: Door faces with solid wood edging representing typical range of color and grain for each species of veneer and solid lumber required.

1.40 QUALITY ASSURANCE

- A. Quality Standards: Comply with the following standards:
 - 1. NWWDA Quality Standard: I.S.1 "Industry Standard for Wood Flush Doors", of National Wood Window and Door Association (NWWDA).
 - 2. AWI Quality Standard: "Architectural Woodwork Quality Standard"; Including Section 1300 "Architectural Flush Doors", of Architectural Woodwork Institute (AWI) for grade of door, core construction, finish and other requirements exceeding those of NWWDA quality standard.

1.50 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Protect doors during transit, storage and handling to prevent damage, soiling and deterioration. Comply with requirements of referenced standards and recommendations of NWWDA pamphlet "How to Store, Handle, Finish, Install and Maintain Wood Doors", as well as with manufacturer's instructions.
- B. Identify each door with individual opening numbers which correlate with designation system used on shop drawings for door, frames and hardware, using temporary, removable or concealed markings.

1.60 PROJECT CONDITIONS:

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

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

1.70 WARRANTY:

- A. General: Warranties shall be in addition, and not a limitation of, other rights the Owner may have under the Contract Documents.
- B. Door Manufacturer's Warranty: Submit written agreement in door manufacturer's standard form signed by Manufacturer, Installer and Contractor, agreeing to repair or replace defective doors that have warped (bow, cup or twist) or that show telegraphing of core construction in face veneers, or do not conform to tolerance limitations of referenced quality standards.
 1. Warranty shall also include reinstallation that may be required due to repair or replacement of defective doors where defect was not apparent prior to hanging.
 2. Warranty shall be in effect during following period of time after date of substantial completion.
 3. Solid Core Interior Doors:
 - a. Life of Installation.
- C. Contractor's Responsibilities: Replace or refinish doors where contractor's work contributed to rejection or to voiding of manufacturer's warranty.

PART 2 – PRODUCTS

2.10 INTERIOR FLUSH WOOD DOORS:

- A. Solid Core Doors for Transparent Finish: Comply with the following requirements:
 1. Faces: To be Premium Grade Rift Sawn Red Oak wood doors.
 2. AWI Grade: Premium unless otherwise noted.
 3. Construction: PC-5 Veneer, Bonded Particle Core,
 4. Top and Bottom Edge: 1-1/8" minimum wood prior to field fitting, one piece or laminated without voids or show-through (telegraphing) (SCL recommended for interior use only).
 5. Vertical Edge: 1-3/8" minimum hardwood; solid, laminated or veneered, prior to field fitting. SCL allowed under hardwood in lamination.
 6. Core: Particleboard, ANSI A208.1, grade LD-1 or LD-2.
 7. Bonding: Stiles and rails securely bonded to core, then entire unit abrasive planed before veneering.
 8. Crossband: Edge glued or one-piece wood product, without voids or show-through (telegraphing).
- B. Solid Core Doors for Opaque Finish: Comply with the following requirements (if applicable):
 1. Faces: Medium density overlay over standard thickness hardwood face veneers.
 2. Faces: Any closed-grain hardwood or mill option.
 3. AWI Grade: Standard.
 4. Construction: PC-5 Veneer, Bonded Particle Core.
- C. Faces and AWI Grade: Premium Grade Rift Sawn Red Oak.
 1. Construction: Manufacturer's standard core construction as required providing fire-resistance rating indicated.
 2. Edge Construction: Provide manufacturer's standard laminated edge construction for improved screw-holding capability and split resistance as compared to edges composed of a single layer of treated lumber.

2.40 DOOR FRAMES:

- A. All new interior doorframes as shown on the plans.

2.50 FABRICATION:

- A. Fabricate flush wood doors to produce doors complying with following requirements.
 1. In sizes indicated. Factory prepared for hardware. Factory pre-fit to standard clearances. See Division 8.
- B. Hardware Prep: All doors are to have factory hardware prep. Coordinate specified hardware with hardware supplier for each specific door and door condition prior to fabrication and preparation.

PART 3 – EXECUTION

3.10 EXAMINATION OF DOORS AND FRAMES:

- A. Examine installed door frames prior to hanging door:
 - 1. 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. Reject doors with defects.
- B. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.20 INSTALLATION OF DOORS:

- A. Hardware: For installation see Division-8 "Finish Hardware" section of these specifications.
- B. Manufacturer's Instructions: Install wood doors to comply with manufacturer's instructions and have referenced AWI standard and as indicated.
- C. Job-fit doors: Align and fit salvaged doors in frames with uniform clearances and bevels as indicated below; do not trim stiles and rails in excess of limits set by manufacturer or permitted with fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
 - 1. Fitting clearances for Non-Rated Doors: Provide 1/8" at jambs and heads; 1/16" per leaf at meeting stiles for pairs of doors; and 1/8" from bottom of door to top of decorative floor finish or covering. Where threshold is shown or scheduled, provide 1/4" clearance from bottom of door to top of threshold.
 - 2. Bevel non-rated doors 1/8" in 2" at lock and hinge edges.
- D. Prefit Doors: Fit to frames for uniform clearance at each edge.
- E. Field-Finished Doors: Refer to the following for finishing requirements:
 - 1. Division-9 section "Painting".

3.30 ADJUSTING AND PROTECTION:

- A. Operation: Hang doors to swing or operate freely.
- B. Finished Doors: Refinish doors damaged during installation.
- C. Protect doors as recommended by door manufacturer to ensure that wood doors will be without damage or deterioration at time of Substantial Completion.

END OF SECTION - 08211

DIVISION 8 – DOORS AND WINDOWS

SECTION 08360

ROLLING COUNTER SHUTTERS (NON RATED AND RATED)

PART 1 GENERAL

1.01 RELATED DOCUMENTS:

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.
- B. Related Sections:
 - 1. Division 1 – Section 01001 Basic Requirements
 - 2. Division 6 – Section 06100 Rough Carpentry
 - 3. Division 6 – Section 06200 Finish Carpentry

1.02 SECTION INCLUDES:

- A. Furnish and Install One (1) Non Rated Rolling Aluminum Counter Shutter including accessories as shown on the drawings and herein specified from Hall to Kitchen.
- B. Furnish and Install One (1) Rated Rolling Fire Shutter from Multi-Purpose Room to Kitchen in 1 hr. rated wall..
- C. Opening preparation, structural metal work, access panels, finish or field painting, are in the scope of the work of other divisions or trades.

1.03 SUBMITTALS:

- A. Shop drawings and schedule indicating profile, size, connection attachment, reinforcing, anchorage, finishes and operating portions.

1.04 DELIVERY, STORAGE AND HANDLING:

- A. Deliver rolling aluminum counter shutter door to job site in original, unopened package and store it in a fully enclosed space where it will be protected against damage from moisture, direct sunlight, surface contamination or other causes.
- B. Before installing unit, make sure that all operating parts function as they should and there are no dents, scratches or other blemishes.

PART 2 PRODUCT

2.01 MANUFACTURERS

- A. Approved Manufacturers
 - 1. Raynor Garage Doors
 - 2. Windsor
 - 3. Overhead Door
 - 4. Cookson

2.02 FOR NON RATED DOOR:

- A. For Non Rated Curtain Door: The door curtain shall be constructed of interconnected .050 extruded aluminum N0.8 (1-5/16" high by 3/8" deep slats as designated by the Cookson Company. The curtain shall receive a CLEAR Anodized Aluminum Finish.

2.03 BOTTOM BAR

- A. The bottom bar shall be constructed of tubular extruded aluminum measuring 1-5/16" deep by 2 1/4" high with a double vinyl astragal on the bottom edge. The bottom bar shall receive a 204-R1 dark bronze anodized finish.

2.04 GUIDES

- A. The guides shall be constructed of extruded aluminum and measures 1 3/4" square. Each side of the channel portion capturing the curtain shall contain wool pile weatherstripping. The guides shall receive a Clear Anodized Aluminum.

2.05 BRACKETS

- A. The brackets shall be constructed of 3/16" thick die cast aluminum.

2.06 BARREL/COUNTERBALANCE

- A. The barrel shall be steel tubing of not less than 4" in diameter. Oil tempered torsion springs shall be capable of correctly counter balancing the weight of the curtain. The barrel shall be designed to limit the maximum deflection to .03" per foot of opening width. The barrel shall received one (1) coat of bronze rust-inhibiting prime paint.

2.07 HOOD

- A. The hood shall be fabricated from .040 aluminum and shall be formed to fit the square brackets. The hood shall receive a Clear anodized aluminum finish.

2.08 OPERATION

- A. Push-up operated doors shall open and close with a maximum of 30 pounds of effort utilizing finger lifts in the bottom bar. This type of operation should not be used for doors over 12 feet wide.

2.09 LOCKING MECHANISMS

- A. The push-up doors shall be secured by means of a concealed sliding bolt deadlock in the bottom bar operated by a thumbturn.

2.09 FINISH

- A. Clear Anodized Aluminum Finish to match building door hardware.

2.10 WARRANTY

- A. Rolling Steel Counter Shutter and it's components shall be free from defects in material and workmanship for a period of one year from the date of delivery to the original purchaser.

2.11 FOR FIRE RATED SHUTTER DOOR (ALTERNATE #2)

Provide one (1) electric operated automatic dlosing rolling counter fire door with SmokeShield UL leakage rated assembly label.

2.12 PERFORMANCE REQUIREMENTS.

- A. Provide doors with Underwriters' Laboratories, Inc. label for the fire rating classification, 1 hour.
- B. Provide doors with UL label for "Leakage Rated Assembly or "S" label UL 1784. And comply with NFPA 105 air leakage requirements.

2.13 WARRANTY

- A. Standard Warranty: Two years form date of shipment against defects in material or workmanship.

2.14 ACCEPTABLE MANUFACTURERS:

- A. Cornell
- B. Cookson
- C. Clopay

2.15 MATERIALS

- A. Curtain:
 - 1. Slat configuration: Galvanized Steel with SpectraShield Coating System. ASTM A 653 galvanized base coating treated with dual process rinsing agents in preparation for chemical bonding, gray baked on base coat and dray baked on polyester finish coat.
- B. Endlocks: Fabricate continuous interlocking slat sections with high strength galvanized steel endlocks riveted to slats per UL requirements.
- C. Guides: Steel, minimum 12 gauge formed shapes. Finish with SpectraShield Coating System.
- D. Counterbalance shaft Assembly:
 - 1. Barrel: Steel pipe capable of supporting curtain load with maximum deflection of 0.03 inches per foot of width.
 - 2. Spring Balance: Oil-tempered, heat-treated steel helical torsion spring assembly designed for proper balance of door to ensure that maximum effort to operate will not excee 25 lbs.
- E. Brackets: Fabricate from reinforced steel plate with permanently lubricated ball or roller bearings at rotating support points to support counterbalance shaft assembly and form end closures. SpectraShield Coating System to be used.
- F. Hood and Mechanism Covers: 24 gauge galvanized steel with reinforced top and bottom edges. SpectraShield Coating System to be used.
- G. Smoke Seals & UL Smoke Label: Bottom Bar, Combination smoke seal/sensing edge. Guides and Head, Replaceable, UL listed, brush seals sealing against fascia side of curtain.

2.16 OPERATION

- A. AlarmGard Advanced Tube Motor Operation. UL, cUL listed NEMA 1 enclosure, 115v/60Hz/ single phase service. Provide a totally enclosed non ventilated motor, removable without affecting the setting of limit switches, thermal overload protection, planetary gear reduction, adjustable rotary limit switch mechanism and a transformer with 24v secondary output. All internal electrical components are to be rewired to terminal blocks. 3548. Provide the following:
 - a. Failsafe tubular motor operated fire shutter assembly.
 - b. Provide an internal electrical failsafe release device.
 - c. Provide an internal solenoid brake mechanism.
 - d. Provide automatic closure speed with an internal variable rate oscilation governing device.
 - e. Electrically activate door system.
 - f. Maintain automatic closure speed not more than 12" per second
 - g. Enable safety edge function .
 - h. With loss of electrical power, reset internal failsafe release device.
 - i. Drop test and reset door system twice by all means.
- B. CONTROL STATION
Fail-safe, UL325-2010 compliant entrapment protection for motor operation: SmartSync Wireless Edge Kit

PART 3 EXECUTION

3.01 INSTALLATION

- A. All Rolling Steel Counter Shutter Door shall be installed by an authorized door distributor.

3.02 PROTECTION AND CLEANING

- A. After completion of rolling steel counter shutter installation, unit shall be inspected, put into working order and left clean, free of labels, dirt, etc. Protection from this point shall be the responsibility of the General Contractor.

3.03 SCHEDULE:

- A. Serving Room #117 Door 18: One (1) rolling aluminum counter shutter shall be installed in the Serving Room and shall fit the prescribed opening designated which is approximately 6 feet wide by 4 feet 2 inches high.
- B. Door #19 from Multi-Purpose Room to Kitchen in 1 hr. rated wall: One (1) Rolling Fire Shutter.

END OF SECTION 08360

DIVISION 8 – DOORS AND WINDOWS

SECTION 08411

ALUMINUM ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.01 SUMMARY

- A. Related Documents: Conditions of the Contract, Division 1 - General Requirements, and Drawings apply to Work of this Section.
- B. Section Includes:
 - 1. Entrance and storefront systems, complete with reinforcing, fasteners, anchors and attachment devices.
 - 2. Aluminum doors complete with hardware.
 - 3. Accessories necessary to complete work.
- C. Related Sections:
 - 1. Section 01001 - Basic Requirements.
 - 2. Section 05500 - Metal Fabrications.
 - 3. Section 06100 - Rough Carpentry.
 - 4. Section 07920 - Joint Sealants.
 - 5. Section 08710 - Door Hardware.
 - 6. Section 08800 - Glass & Glazing.

1.02 REFERENCES

- A. Aluminum Association (AA):
 - 1. DAF-45 Designation System for Aluminum Finishes.
- B. American Architectural Manufacturers Association (AAMA):
 - 1. 503.1 Test Method for Condensation Resistance of Windows, Doors and Glazed Wall Systems.
 - 2. 605.2-92 Voluntary Specification for High Performance Organic Coatings on Architectural Extrusions and Panels.
 - 3. 607.1 Specifications and Inspection Methods for Clear Anodic Finishes for Architectural Aluminum.
 - 4. 608.1 Specification and Inspection Methods for Electrolytically Deposited Color Anodic Finishes for Architectural Aluminum.
 - 5. 701.2 Specifications for Pile Weatherstripping.
 - 6. Manual #10 Care and Handling of Architectural Aluminum From Shop to Site.
 - 7. SFM-1 Aluminum Storefront and Entrance Manual.
- C. American National Standards Institute (ANSI):
 - 1. A117.1 Safety Standards for the Handicapped.
- D. American Society for Testing and Materials (ASTM):
 - 1. A36 Structural Steel.
 - 2. B209 Aluminum and Aluminum - Alloy Sheet and Plate.
 - 3. B221 Aluminum-Alloy Extruded Bars, Rods, Wire, Shapes and Tubes.
 - 4. B308 Aluminum-Alloy 6061-T6 Standard Structural Shapes, Rolled or Extruded.
 - 5. C509 Cellular Elastomeric Pre-formed Gasket and Sealing Material.
 - 6. C864 Dense Elastomeric Compression Seal Gaskets, Setting Blocks and Spacers.
 - 7. E283 Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.
 - 8. E330 Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
 - 9. E331 Test Method for Water Penetration of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.
- E. Federal Specifications (FS):
 - 1. TT-P-645A Primer, Paint, Zinc Chromate, Alkyd Type.

- F. Steel Structures Painting Council (SSPC):
 - 1. Paint 12 Cold-Applied Asphalt Mastic (Extra Thick Film).

1.03 SYSTEM REQUIREMENTS

- A. Design Requirements:
 - 1. Drawings are diagrammatic and do not purport to identify nor solve problems of thermal or structural movement, glazing, anchorage or moisture disposal.
 - 2. Requirements shown by details are intended to establish basic dimension of units, sight lines and profiles of members.
 - 3. Provide concealed fastening.
 - 4. Provide entrance and storefront systems, including necessary modifications, to meet specified requirements and maintaining visual design concepts.
 - 5. Attachment considerations are to take into account site peculiarities and expansion and contraction movements so there is no possibility of loosening, weakening or fracturing connection between units and building structure or between units themselves.
 - 6. Anchors, fasteners and braces shall be structurally stressed not more than 50% of allowable stress when maximum loads are applied.
 - 7. Provide for expansion and contraction without detriment to appearance or performance.
 - 8. Assemblies shall be free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.
 - 9. Not Permitted: Vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system.
- B. Performance Requirements:
 - 1. Air infiltration: Air leakage through fixed light areas of storefront shall not exceed 0.06 cfm per square foot (0.0003 m³/sm²) of surface area when tested in accordance with ASTM E283 at differential static pressure of 6.24 psf (300 Pa).
 - 2. Water infiltration: No uncontrolled water penetration when tested in accordance with ASTM E 331 at test pressure of 8.0 psf 380 Pa.
- C. Thermal Requirements:
 - 1. Framing systems shall accommodate expansion and contraction movement due to surface temperature differentials of 180 degrees Fahrenheit (82 degrees Celsius) without causing buckling, stress on glass, failure of joint seals, excessive stress on structural elements, reduction of performance, or other detrimental effects.
 - 2. Ensure doors function normally within limits of specified temperature range.
- D. Structural Requirements, as measured in accordance with ANSI/ASTM E330:
 - 1. Wind loads for exterior assemblies:
 - a. Basic loading:
 - 1) Use minimum Design Loads according to applicable codes for project site psf acting inward.
 - 2) Use minimum Design Loads according to applicable codes for project site psf acting outward.
 - 2. Deflection: Maximum calculated deflection of any framing member in direction normal to plane of wall when subjected to specified design pressures shall not exceed 1/175 of its clear span.
- E. Testing Requirements: Provide components that have been previously tested by an independent testing laboratory.

1.04 SUBMITTALS

- A. General: Submit in accordance with Section 01001.
- B. Product Data:
 - 1. Submit manufacturer's descriptive literature and product specifications.
 - 2. Include information for factory finishes, hardware, accessories and other required components.
 - 3. Include color charts for finish indicating manufacturer's standard colors available for selection.

- C. Shop Drawings:
1. Submit shop drawings covering fabrication, installation and finish of specified systems.
 2. Include following:
 - a. Fully dimensioned plans and elevations with detail coordination keys.
 - b. Locations of exposed fasteners and joints.
 3. Provide detailed drawings of:
 - a. Composite members.
 - b. Joint connections for framing systems and for entrance doors.
 - c. Anchorage.
 - d. System reinforcements.
 1. The extent and placement of structural steel reinforcements/stiffeners in window horizontal and vertical mullions shall be determined by the manufacturer at the time of submittal of shop drawings and shall be based on the requirements of the manufacturer's system used determined by window opening size and material used and wind load requirements for the project site for basic exterior assemblies.
 - e. Expansion and contraction provisions.
 - f. Hardware, including locations, mounting heights, reinforcements and special installation provisions.
 - g. Glazing methods and accessories.
 - h. Internal sealant requirements as recommended by sealant manufacturer.
 4. Schedule of finishes.
- D. Samples:
1. Submit samples indicating quality of finish, in required colors, on alloys used for work, in sizes as standard with manufacturer.
 2. Where normal texture or color variations are expected, include additional samples illustrating range of variation.
- E. Test Reports:
1. Standard Systems: Submit certified copies of previous test reports substantiating performance of system in lieu of re-testing. Include other supportive data as necessary.
- F. Certificates:
1. Submit manufacturer's certification stating that systems are in compliance with specified requirements.
- G. Qualification Data:
1. Submit installer qualifications verifying years of experience.
 2. Include list of projects having similar scope of work identified by name, location, date, reference name and phone number.
- H. Manufacturer's Instructions: Submit manufacturer's printed installation instructions.

1.05 QUALITY ASSURANCE

- A. Single Source Responsibility:
1. To ensure quality of appearance and performance, obtain materials for each system from either a single manufacturer or from manufacturer approved by each system manufacturer.
- B. Installer Qualifications: Certified in writing by Contractor as qualified for installation of specified systems.
- C. Perform Work in accordance with AAMA SFM-1 and manufacturer's written instructions.
- D. Conform to requirements of ANSI A117.1 and local amendments.

1.06 MOCK-UPS (Not required)

- A. Visual Mock-up: Provide mock-up to demonstrate visual features and workmanship; refer to Section 01400 for requirements.
- B. Test Mock-up: Provide mock-up for laboratory testing; refer to Section 01001 for requirements. Visual mock-up must be approved by Architect prior to construction of test mock-up.

1.07 DELIVERY, STORAGE AND HANDLING

- A. Comply with requirements of Section 01001.
- B. Protect finished surfaces as necessary to prevent damage.
- C. Do not use adhesive papers or sprayed coatings that become firmly bonded when exposed to sun.
- D. Do not leave coating residue on any surfaces.
- E. Replace damaged units.

1.08 WARRANTY

- A. Provide warranties in accordance with Section 01001.
- B. Provide written manufacturer's warranty, executed by company official, warranting against defects in materials and products for 2 years from date of Substantial Completion. Warrant door corner construction for the life of the project.
- C. Provide written installer's warranty, warranting work to be watertight, free from defective materials, defective workmanship, glass breakage due to defective design, and agreeing to replace components which fail within 2 years from date of Substantial Completion.
 - 1. Warranty shall cover following:
 - a. Complete watertight and airtight system installation within specified tolerances.
 - b. Completed installation will remain free from rattles, wind whistles and noise due to thermal and structural movement and wind pressure.
 - c. System is structurally sound and free from distortion.
 - d. Glass and glazing gaskets will not break or "pop" from frames due to design wind, expansion or contraction movement.
 - e. Glazing sealants and gaskets will remain free from abnormal deterioration or dislocation due to sunlight, weather or oxidation.

PART 2 - PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

- A. For the purposes of these specifications products manufactured by Kawneer Co., Inc. are being used. The following manufacturers are acceptable:
 - 1. Kawneer Co., Inc.
 - 2. Vistawall
 - 3. EFCO
 - 4. CRL US Aluminum
 - 5. YKK AP America, Inc.
 - 6. MANKO Window Systems.
- B. Substitutions: Submit under provisions of Section 01001, a minimum of 14 days prior to bid date.
- C. Acceptable Entrance Doors:
 - 1. Standard Duty Doors: Series 500 with Paneline Mid-Panel panic device system if not called out in Door Hardware Section 08710. Use 5 inch Wide stile, 5 inch top rail, with 10 -inch ADA bottom rail and 0.125 inch wall thickness.
 - 2. Semicircular Door Pulls for all Aluminum Entrance Exterior and Interior Conditions: RM4422 x Clear Aluminum Mill Finish to match system finish.
- D. Acceptable Storefront Framing Systems:

1. For Center Glaze Double Glaze windows. Use system equal to Kawneer Trifab 451VG, 2-inch face and 4 ½ inch section.

2.02 FRAMING MATERIALS AND ACCESSORIES

- A. Aluminum:
 1. ASTM B221, alloy 6063-T5 for extrusions; ASTM B209, alloy 5005-H34 for sheets; or other alloys and temper recommended by manufacturer appropriate for specified finish.
- B. Internal Reinforcing:
 1. ASTM A36 for carbon steel; or ASTM B308 for structural aluminum.
 2. Shapes and sizes to suit installation.
 3. Shop coat steel components after fabrication with alkyd type zinc chromate primer complying with FS TT-P-645.
- C. Anchorage Devices:
 1. Manufacturer's standard formed or fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.
- D. Fasteners:
 1. Aluminum, non-magnetic stainless steel or other materials warranted by manufacturer to be non-corrosive and compatible with components being fastened.
 2. Do not use exposed fasteners, except where unavoidable for application of hardware.
 3. For exposed locations, provide countersunk Phillips head screws with finish matching items fastened.
 4. For concealed locations, provide manufacturer's standard fasteners.
 5. Provide nuts or washers of a design having means to prevent disengagement; deforming of fastener threads is unacceptable.
- E. Expansion Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt anchors.
- F. Protective Coatings: Cold-applied asphalt mastic complying with SSPC-Paint 12, compounded for 30 mil (0.77 mm) thickness for each coat; or alkyd type zinc chromate primer complying with FS TT-P-645.
- G. Glazing Gaskets:
 1. Compression type design, replaceable, molded or extruded, of neoprene, or ethylene propylene diene monomer (EPDM).
 2. Conform to ASTM C509 or C864.
 3. Profile and hardness as required to maintain uniform pressure for watertight seal.
 4. Provide in manufacturer's standard black color.
- H. Weather-stripping:
 1. Wool pile conforming to AAMA 701.2; or extruded EPDM elastomeric conforming to ASTM C509 or C864.
 2. Provide EPDM or vinyl-blade gasket weather-stripping in bottom door rail, adjustable for contact with threshold.
- I. Internal Sealants: Types recommended by sealant manufacturer.
- J. "Anti-Walk" Edge Blocking: "W" shaped EPDM blocks for use in keeping glazing material stationary under vibration or seismic loading.
- K. Baffles (at weep holes): Type as recommended by system manufacturer and shown in published installation instructions.

2.03 GLASS AND GLAZING ACCESSORIES

- A. Refer to Section 08800.

2.04 DOOR HARDWARE

- A. Hardware Items:

1. Pivot hinges: Manufacturer's standard.
2. Coordinators: Top and Bottom, provide int @ doors over 7'-6".
3. Thresholds: Manufacturer's standard for each condition to meet all ADA requirements.
4. Weather-stripping: Manufacturer's standard.
5. Meeting Stile: Manufacturer's standard, including adjustable BTM Rail Sweep.
6. Semicircular Door Pulls: RM4422 Clear Anodic Finish.

- B. Hardware Supplier to provide all other door items listed in Door Hardware Section 08710 if not called out in this section.

2.05 FABRICATION

A. Coordination of Fabrication:

1. Check actual frame or door openings required in construction work by accurate field measurements before fabrication.
2. Fabricate units to withstand loads that will be applied when system is in place.

B. General:

1. Conceal fasteners wherever possible.
2. Reinforce work as necessary for performance requirements and for support to structure.
3. Separate dissimilar metals and aluminum in contact with concrete utilizing protective coating or pre-formed separators that will prevent contact and corrosion.
4. Comply with Section 08810 for glazing requirements.

C. Aluminum Framing:

1. Provide members of size, shape and profile indicated, designed to provide for glazing from exterior or interior.
2. Fabricate frame assemblies with joints straight and tight fitting.
3. Reinforce internally with structural members as necessary to support design loads.
4. Maintain accurate relation of planes and angles, with hairline fit of contacting members.
5. Seal horizontals and direct moisture accumulation to exterior.
6. Provide flashings and other materials used internally or externally that are corrosive resistant, non-staining, non-bleeding and compatible with adjoining materials.
7. Provide manufacturer's extrusions and accessories to accommodate expansion and contraction due to temperature changes without being detrimental to appearance or performance.
8. Make provisions in framing for minimum edge clearance, nominal edge cover and nominal pocket width for thickness and type of glazing or infill used in accordance with recommendations of manufacturer and FGMA Glazing Manual.
9. Provide tight fitting, injection molded plastic water deflectors at all intermediate horizontals.

D. Entrance Doors:

1. Fabricate with mechanical joints using internal reinforcing plates and shear blocks attached with fasteners and by welding.
2. Provide extruded aluminum glazing stops of square (for single glazing only) design, permanently anchored on the security side and removable on opposite side.

E. Hardware:

1. Receive hardware supplied in accordance with Section 08710 and install in accordance with requirements of this Section if not called out in this section.
2. Cut, reinforce, drill and tap frames and doors as required to receive hardware.
3. Comply with hardware manufacturer's templates and instructions.
4. Use concealed fasteners wherever possible.

F. Welding:

1. Comply with recommendations of the American Welding Society.
2. Use recommended electrodes and methods to avoid distortion and discoloration.
3. Grind exposed welds smooth and flush with adjacent surfaces; restore mechanical finish.

- G. Flashings: Form from sheet aluminum with same finish as extruded sections. Apply finish after fabrication. Material thickness as required to suit condition without deflection or "oil-canning".

2.06 FINISH

- A. Terra Cotta Permadized:
 - 1. Conforming to AAM12C22A44.
 - 2. Architectural Class I, etched, medium matte, Anodic coating, 0.7 mil (0.010 mm) minimum thickness.

PART 3 - EXECUTION

3.01 EXAMINATION

- A. Examine conditions and proceed with Work in accordance with Section 01001.
- B. Verify dimensions, tolerances and method of attachment with other Work.

3.02 INSTALLATION

- A. Erection Tolerances:
 - 1. Limit variations from plumb and level:
 - a. 1/8 inch (3 mm) in 10 feet (3 M) vertically.
 - b. 1/8 inch (3 mm) in 20 feet (6 M) horizontally.
 - 2. Limit variations from theoretical locations: 1/4 inch (6 mm) for any member at any location.
 - 3. Limit offsets in theoretical end-to-end and edge-to-edge alignment: 1/16 inch (2 mm) from flush surfaces not more than 2 inches (51 mm) apart or out-of-flush by more than 1/4 inch (6 mm).
- B. Install doors and hardware in accordance with manufacturer's printed instructions.
- C. Set units plumb, level and true to line, without warp or rack of frame.
- D. Anchor securely in place, allowing for required movement, including expansion and contraction.
- E. Separate dissimilar materials at contact points, including metal in contact with masonry or concrete surfaces, with bituminous paint or pre-formed separators to prevent contact and corrosion.
- F. Seal perimeter members as shown on manufacturer's installation instructions or as required for unique job conditions. Set other members with internal sealants and baffles as called for in manufacturer's installation instructions. Use sealants as recommended by sealant manufacturer.
- G. Coordinate installation of perimeter sealant and backing materials between assemblies and adjacent construction in accordance with requirements of Section 07920.
- H. Glazing: Refer to requirements of Section 08810. Utilize "anti-walk" edge blocking on all vertical edges of glazing.

3.03 ADJUSTING

- A. Test door operating functions. Adjust closing and latching speeds and other hardware in accordance with manufacturer's instructions to ensure smooth operation.

3.04 CLEANING

- A. Clean surfaces in compliance with manufacturer's recommendations; remove excess mastic, mastic smears, foreign materials and other unsightly marks.
- B. Clean metal surfaces exercising care to avoid damage.

END OF SECTION 08411

DIVISION 8 – DOORS AND WINDOWS

SECTION 08710

FINISH HARDWARE

Part 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Door Hardware, including electric hardware.
2. Cylinders for doors fabricated with locking hardware.

B. Related Sections:

1. Section 06200 - Finish Carpentry: Finish Hardware Installation.
2. Section 08100 - Metal Doors and Frames.
3. Section 08200 - Wood and Plastic Doors.
4. Section 08300 - Special Doors.
5. Section 08400 - Entrances and Storefronts.

1.2 REFERENCES:

- A. Use date of standard in effect as of Bid date.
- B. American National Standards Institute – ANSI 156.18 – Materials and Finishes.
- C. ICC/ANSI A117.1 - 1998 – Specifications for making buildings and facilities usable by physically handicapped people.
- D. ADA – Americans with Disabilities Act of 1990
- E. BHMA – Builders Hardware Manufacturers Association
- F. DHI – Door and Hardware Institute
- G. NFPA – National Fire Protection Association
 1. NFPA 80 – Fire Doors and Windows
 2. NFPA 101 – Life Safety Code
 3. NFPA 105 – Smoke and Draft Control Door Assemblies
 4. NFPA 252 – Fire Tests of Door Assemblies
- H. UL – Underwriters Laboratories
 1. UL10B – Fire Tests of Door Assemblies as amended to incorporate positive pressure testing.
 2. UL 305 – Panic Hardware
- I. Local applicable codes
- J. SDI – Steel Door Institute
- K. AWI – Architectural Woodwork Institute

1.3

SUBMITTALS & SUBSTITUTIONS

- A. SUBMITTALS: Submit six copies of schedule per Division 1. Organize vertically formatted schedule into "Hardware Sets" with index of doors and headings, indicating complete designations of every item required for each door or opening. Include following information:
1. Type, style, function, size, quantity and finish of hardware items.
Use BHMA Finish codes per ANSI A156.18.
 2. Name, part number and manufacturer of each item.
 3. Fastenings and other pertinent information.
 4. Location of hardware set coordinated with floor plans and door schedule.
 5. Explanation of abbreviations, symbols, and codes contained in schedule.
 6. Mounting locations for hardware.
 7. Door and frame sizes, materials and degrees of swing.
 8. List of manufacturers used and their nearest representative with address and phone number.
 9. Catalog cuts.
 10. Manufacturer's technical data and installation instructions for electronic hardware.
 11. Date of jobsite visit.
- B. Bid and submit manufacturer's updated/improved item if scheduled item is discontinued.
- C. Make substitution requests in accordance with Division 1. Include product data and indicate benefit to the Project. Furnish operating samples on request.
- D. Furnish as-built/as-installed schedule with closeout documents, including keying schedule, wiring/riser diagrams, manufacturers' installation, adjustment and maintenance information, and supplier's final inspection report.

1.4

QUALITY ASSURANCE:

- A. Qualifications:
1. Hardware supplier: direct factory contract supplier who employs a certified architectural hardware consultant (AHC), available at reasonable times during course Work for project hardware consultation to Owner, Architect and Contractor.
 - (1) Responsible for detailing, scheduling and ordering of finish hardware.
- B. Hardware: New, free of defects, blemishes and excessive play. Obtain each kind of hardware (latch and locksets, exit devices, hinges and closers) from one manufacturer.
- C. Exit Doors: Operable from inside with single motion without the use of a key or special knowledge or effort.
- D. Fire-Rated Openings: NFPA 80 compliant. Hardware UL10C / UBC Standard 7-2 (positive pressure) compliant for given type/size opening and degree of label. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, and resilient seals. Coordinate with wood door section for required intumescent seals. Furnish openings complete.
1. Note: scheduled resilient seals may exceed selected door manufacturer's requirements.
 2. See 2.6.E for added information regarding resilient and intumescent seals.
- E. Furnish hardware items required to complete the work in accordance with specified performance level and design intent, complying with manufacturers' instructions.
1. Where scheduled item is now obsolete, bid and furnish manufacturer's updated item at no additional cost to the project.
- F. Pre-Installation Meetings: Initiate and conduct with supplier, installer and related trades, coordinate materials and techniques, and sequence complex hardware items and systems installation. Include manufacturers'

representatives of locks, panic hardware and door closers in the meetings. Convene at least one week prior to commencement of related work.

1.5 DELIVERY, STORAGE AND HANDLING:

- A. Delivery: coordinate delivery to appropriate locations (shop or field).
 - 1. Permanent keys and cores: secured delivery direct to Owner's representative.
- B. Acceptance at Site: Items individually packaged in manufacturers' original containers, complete with proper fasteners and related pieces. Clearly mark packages to indicate contents, locations in hardware schedule and door numbers.
- C. Storage: Provide securely locked storage area for hardware, protect from moisture, sunlight, paint, chemicals, dust, excessive heat and cold, etc.

1.6 PROJECT CONDITIONS:

- A. Where exact types of hardware specified are not adaptable to finished shape or size of members requiring hardware, provide suitable types having as nearly as practical as the same operation and quality as type specified, subject to Architect's approval.

1.7 SEQUENCING AND COORDINATION:

- A. Coordinate with concrete.
- B. Reinforce walls for wall-mounted hardware, including wall stops and stainless steel guard rails.
- C. Coordinate finish floor materials and floor-mounted hardware.
- D. Conduit and raceways as needed for electrical, electronic and electro-pneumatic hardware items. Fire/life-safety system interfacing. Point-to-point wiring diagrams plus riser diagrams to related trades.
- E. Furnish manufacturer templates to door and frame fabricators.
 - 1. Ensure proper blocking in wood doors to support wood screws for panic hardware and door closers.
 - 2. Ensure proper reinforcement in metal doors and frames to support machine screws for panic hardware and door closers.
- F. Use hardware consultant to check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.
 - 1. Confirm that wood door manufacturers furnish necessary UBC Standard 7-2 compliant seal packages.

1.8 WARRANTY:

- A. Part of respective manufacturers' regular terms of sale. Provide manufacturers' warranties:
 - 1. Locksets: Three years.
 - 2. Exit Devices: Three years mechanical, one year electrical.
 - 3. Closers: Ten years mechanical, two years electrical.
 - 4. Hinges: Life of Building.
 - 5. Other Hardware: Two years.

1.9 COMMISSIONING:

- A. Conduct these tests three weeks prior to request for certificate of substantial completion
- B. Test door hardware operation with climate control system and stairwell pressurization system both at rest and while in full operation.

- C. Test electrical, electronic and electro-pneumatic hardware systems for satisfactory operation.
- D. Test hardware interfaced with fire/life-safety system for proper operation and release.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Listed acceptable alternate manufacturers: submit for review products with equivalent function and features of scheduled products.
 - 1. See list at the end of this hardware schedule.

2.2 HINGING METHODS:

- A. Note: drawings typically depict doors at 90 degrees, doors will actually swing to maximum allowable. Use wide-throw conventional or continuous hinges as needed up to 8 inches in width to allow door to stand parallel to wall for true 180-degree opening. Advise architect if 8-inch width is insufficient.
- B. Conventional Hinges: Steel or stainless steel pins and concealed bearings. Hinge open widths minimum, but of sufficient throw to permit maximum door swing.
 - 1. Three hinges per leaf to 7 foot, 6 inch height. Add one for each additional 30 inches in height, or any fraction thereof.
 - 2. Outswinging exterior doors: non-ferrous with non-removable (NRP) pins.
 - 3. Non-ferrous material exteriors and at doors subject to corrosive atmospheric conditions.
 - 4. Provide shims and shimming instructions for proper door adjustment.

2.3 LOCKSETS, LATCHSETS, DEADBOLTS:

- A. Standard Duty Cylindrical Locks and Latches: as scheduled.
 - 1. Chassis: cylindrical design, corrosion-resistant plated cold-rolled steel, through-bolted.
 - 2. Locking Spindle: stainless steel, interlocking design.
 - 3. Latch Retractors: forged steel. Balance of inner parts: corrosion-resistant plated steel or stainless steel.
 - 4. Backset: 2-3/4" typically, more or less as needed to accommodate frame, door or other hardware.
 - 5. Lever Trim: accessible design, independent operation, spring-cage supported, minimum 2" clearance from lever mid-point to face of door.
 - 6. Lock Series and Design: Schlage AL series, "Saturn" design.
 - 7. Certifications:
 - a. ANSI A156.2, 1994, Series 4000, Grade 2
 - b. UL listed for A label and lesser class single doors up to 4ft x 8ft.

2.4

EXIT DEVICES / PANIC HARDWARE

A. General features:

1. Independent lab-tested 1,000,000 cycles.
2. Push-through push-pad design. No exposed push-pad fasteners, no exposed cavities when operated. Return stroke fluid dampeners and rubber bottoming dampeners, plus anti-rattle devices.
3. 0.75-inch throw deadlocking latchbolts.
4. End caps: impact-resistant, flush-mounted. No raised edges or lips to catch carts or other equipment.
5. No exposed screws to show through glass doors.
6. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
7. Releasable in normal operation with 15-lb. maximum operating force and with 32 lb. maximum pressure under 250-lb. load to the door.
8. Flush end cap design as opposed to typical "bottle-cap" design end cap.

B. Specific features:

1. Non-Fire Rated Devices: cylinder dogging.
2. Lever Trim: Breakaway type, forged brass or bronze escutcheon min .130" thickness, compression spring drive, match lockset lever design.

2.5

CLOSERS

A. Surface Closers:

1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
2. ISO 2000 certified. Units stamped with date-of-manufacture code.
3. Independent lab-tested 10,000,000 cycles.
4. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
6. Opening pressure: Exterior doors 8.5 lb., interior doors 5 lb., labeled fire doors 15 lb
7. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
8. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.
9. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.
10. Exterior doors do not require seasonal adjustments in temperatures from 120 degrees F to -30 degrees F, furnish data on request.
11. Non-flaming fluid, will not fuel door or floor covering fires.
12. Pressure Relief Valves (PRV): unsafe, not permitted.

2.6

OTHER HARDWARE

A. Door Stops: Provide stops to protect walls, casework or other hardware.

1. Unless otherwise noted in Hardware Sets, provide floor type with appropriate fasteners. Where floor type cannot be used, provide wall type. If neither can be used, provide overhead type.
 2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90deg stop / 95deg deadstop. Note degree of opening in submittal.
-
1. Fire-rated Doors, Intumescent Seals: Furnished by selected door manufacturer. Furnish fire-labeled opening assembly complete and in full compliance with UL10C / UBC Standard 7-2. Where required, intumescent seals vary in requirement by door type and door manufacture -- careful coordination required.

F Automatic door bottoms: low operating force units. Doors with automatic door bottoms plus head and jamb seals cannot require more than two pounds operating force to open when closer is disconnected.

- G. Thresholds: As scheduled and per details. Substitute products: certify that the products equal or exceed specified material's thickness. Proposed substitutions: submit for approval.
1. Exteriors: Seal perimeter to exclude water and vermin. Use butyl-rubber or polyisobutylene sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
 2. Fire-rated openings, 90min or less duration: use thresholds to interrupt floor covering material under the door where that material has a critical radiant flux value less than 0.22 watts per square centimeter, per NFPA 253. Use threshold unit as scheduled. If none scheduled, request direction from Architect.
 3. Fire-rated openings, 3hour duration: Thresholds, where scheduled, to extend full jamb depth.
 3. Acoustic openings: Set units in full bed of Division-7-compliant butyl-rubber or polyisobutylene sealant, leave no air space between threshold and substrate.
 4. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.
- J. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.
- K. Wall- & Floor-mounted electromagnetic door holders: LCN's SEM series or approved equivalent. Incorporate into U.L.-listed fire&life-safety system, doors release to allow closure and latching when door's zone is in alarm state. Use minimum projection required to allow door to open as widely as allowed by wall conditions and projection of door hardware.

2.7 FINISH:

- A. Generally BHMA 626 Satin Chromium
1. Areas using BHMA 626 to have push-plates, pulls and protection plates of BHMA 630, Satin Stainless Steel, unless otherwise noted.
- B. Door closers: factory powder coated to match other hardware, unless otherwise noted.
- C. Aluminum items: match predominant adjacent material. Seals to coordinate with frame color.

2.8 KEYING REQUIREMENTS:

- A. Key System: Schlage Everest utility-patented keyway, conventional cylinders. Utility patent protection to extend at least until 2029. Key blanks available only from factory-direct sources, not available from after-market key blank manufacturers. Furnish Owner's written approval of the system.
1. New factory registered master key system.
- B. Key Cylinders: furnish utility patented, 6-pin solid brass construction.
- C. Cylinders/Cylinder cores: furnish keyed at factory of lock manufacturer where permanent records are maintained. Locks and cylinders same manufacturer.

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS:

- A. Experienced craftsperson with a resume of successful projects. Can readily differentiate between number 2 and number 3 phillips-drive screws and screwdrivers. Can readily differentiate between #10-24 machine screws and drywall screws, and can explain correct usages of these items.

3.2

PREPARATION:

- A. Ensure that walls and frames are square and plumb before hardware installation.
- B. Locate hardware per SDI-100 and applicable building, fire, life-safety, accessibility, and security codes.
 - 1. Notify Architect of any code conflicts before ordering material.
 - 2. Locate levers, key cylinders, t-turn pieces, touchbars and other operable portions of latching hardware between 30 inches to 44 inches above the finished floor
 - 3. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.
- C. Overhead stops: before installing, determine proposed locations of furniture items, fixtures, and other items to be protected by the overhead stop's action.
- D. Existing frames and doors scheduled to receive new hardware: carefully remove existing hardware, tag and bag, and turn over to Owner.
 - 1. Patch and fill wood frames and doors with solid wood dutchments before cutting for new hardware. Do not reuse existing screw holes - - fill with dowel plugs and re-pilot.
 - 2. Metal doors/frames: Weld or fasten with screws: filler pieces in existing hardware cut-outs and mortises not scheduled for re-use by new hardware. Leave surfaces smooth - - no applied patches.
 - 3. Remove unused existing floor closers, fill empty floor closer cavities with concrete.

3.3

INSTALLATION

- A. Install hardware per manufacturer's instructions and recommendations. Do not install surface-mounted items until finishes have been completed on substrate. Set units level, plumb and true to line and location. Adjust and reinforce attachment substrate for proper installation and operation. Remove and reinstall or replace work deemed defective by Architect.
 - 1. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc; fasten hardware over and through these seals. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps.
 - 2. When hardware is to be attached to existing metal surface and insufficient reinforcement exists, use RivNuts, NutSerts or similar anchoring device for screws.
 - 3. Use manufacturers' fasteners furnished with hardware items, or submit Request for Substitution with Architect.
 - 4. Replace fasteners damaged by power-driven tools.
- B. Locate floor stops no more that 4 inches from walls and not within paths of travel. See paragraph 2.2 regarding hinge widths, door should be well clear of point of wall reveal. Point of door contact no closer to the hinge edge than half the door width. Where situation is questionable or difficult, contact Architect for direction.
- C. Locate overhead stops for minimum 90 degrees and maximum allowable degree of swing.
- D. Drill pilot holes for fasteners in wood doors and/or frames.
- E. Lubricate and adjust existing hardware scheduled to remain. Carefully remove and give to Owner items not scheduled for reuse.

- 3.4 ADJUSTING
- A. Adjust and check for proper operation and function. Replace units, which cannot be adjusted to operate freely and smoothly.
1. Hardware damaged by improper installation or adjustment methods to be repaired or replaced to Owner's satisfaction.
 2. Adjust doors to fully latch with no more than 1 pound of pressure.
 3. Adjust delayed-action closers on fire-rated doors to fully close from fully-opened position in no more than 10 seconds.
- B. Inspection: Use hardware supplier. Include supplier's report with closeout documents.
- C. Follow-up inspection: Installer to provide letter of agreement to Owner that approximately 6 months after substantial completion, installer will visit Project with representatives of the manufacturers of the locking devices and door closers to accomplish following:
1. Re-adjust hardware.
 2. Evaluate maintenance procedures and recommend changes or additions, and instruct Owner's personnel.
 3. Identify items that have deteriorated or failed.
 4. Submit written report identifying problems and likely future problems.
- 3.5 DEMONSTRATION:
- A. Demonstrate electrical, electronic and pneumatic hardware systems, including adjustment and maintenance procedures.
- 3.6 PROTECTION/CLEANING:
- A. Cover installed hardware, protect from paint, cleaning agents, weathering, carts/barrows, etc. Remove covering materials and clean hardware just prior to substantial completion.
- B. Clean adjacent wall, frame and door surfaces soiled from installation/reinstallation process.
- 3.7 SCHEDULE OF FINISH HARDWARE

HW SET: 01

DOOR NUMBER:

1 2 3

EACH TO HAVE:

CYLINDERS AS MAY BE REQUIRED

BALANCE OF HARDWARE BY DOOR / FRAME SUPPLIER

HW SET: 02

DOOR NUMBER:

22

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5 NRP	630	IVE
1	EA	STOREROOM LOCK	AL80PD SAT	626	SCH
1	SET	SEALS	160V	CL	NGP
1	EA	DOOR BOTTOM	5V	CL	NGP

A New FFA Conference Center

Coco & Company

Project # 0225

3.31.26

1	EA	THRESHOLD	896		AL	NGP
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HW SET: 03
DOOR NUMBER:
6

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	MULLION	KR9954	689	VON
1	EA	PANIC HARDWARE	98L-F-996L	626	VON
1	EA	MORTISE CYLINDER	AS REQUIRED	626	SCH
2	EA	RIM CYLINDER	AS REQUIRED	626	SCH
2	EA	SURFACE CLOSER	4040XP RW/PA	689	LCN
2	EA	SEALS	5050_		NGP
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 04
DOOR NUMBER:

7 8

EACH TO HAVE:

6	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
2	EA	MANUAL FLUSH BOLT	FB358	626	IVE
1	EA	STOREROOM LOCK	AL80PD SAT	626	SCH
2	EA	OVERHEAD STOP	450S	630	GLY
2	EA	SILENCER	SR64	GRY	IVE

HW SET: 05
DOOR NUMBER:

9 10

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	AL70PD SAT	626	SCH
1	EA	SURFACE CLOSER	4040XP REG	689	LCN
1	EA	OVERHEAD STOP	450S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 06
DOOR NUMBER:

11 13

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	STOREROOM LOCK	AL80PD SAT	626	SCH
1	EA	SURFACE CLOSER	4040XP CUSH	689	LCN
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 07

DOOR NUMBER:

12

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	CLASSROOM LOCK	AL70PD SAT	626	SCH
1	EA	OVERHEAD STOP	450S	630	GLY
3	EA	SILENCER	SR64	GRY	IVE

HW SET: 08

DOOR NUMBER:

14 15

EACH TO HAVE:

3	EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1	EA	PUSH PLATE	8200 4" X 16"	630	IVE
1	EA	PULL PLATE	8303-8 4" X 16"	630	IVE
1	EA	SURFACE CLOSER	4040XP RW/PA	689	LCN
1	EA	DOME STOP	FS436	626	IVE
3	EA	SILENCER	SR64	GRY	IVE

	<u>MANUFACTURERS:</u>	<u>ALTERNATE MANUFACTURERS</u>
HINGES:	IVES	HAGER, MCKINNEY
EXITS:	VON DUPRIN	FALCON, SARGENT
LOCKSETS/CYLINDERS	SCHLAGE	FALCON, SARGENT
CLOSERS:	LCN	FALCON, SARGENT
OVERHEAD STOPS:	GLYNN JOHNSON	ABH, ROCKWOOD
AUXILLARY:	IVES	TRIMCO, ROCKWOOD
THRESHOLDS/SEALS:	NATIONAL GUARD	HAGER, PEMKO

DIVISION 8 – DOORS AND WINDOWS

SECTION 08800

GLAZING

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specifications Sections, apply to this Section.
- B. Related Sections:
 - 1. Section 01 00 00 - Basic Requirements
 - 2. Section 06 20 00 – Finish Carpentry
 - 3. Section 08 11 00 - Standard Steel Doors and Frames
 - 4. Section 08 14 00 – Wood Stile and Rail Doors
 - 5. Section 08 41 00 – Aluminum entrances and Storefronts

1.02 SUMMARY

- A. Insulated and non-insulated glass and glazing for Aluminum Storefront windows and Doors and products and installation.
- B. Tempered glass and Safety Glass.
- C. Glass Color for the exterior storefront units and exterior windows, transoms, sidelights and doors are to be ¼ inch tempered, safety, insulated or regular Grey Tinted glass as required for specific conditions.
- D. Interior Doors with glass panels are to have ¼ inch clear regular, tempered or safety glass as required for specific conditions.

1.03 SYSTEM DESCRIPTION

- A. Glass and glazing materials of this section shall provide continuity of building enclosure air barrier and vapor retarder.
- B. Size glass to withstand dead loads and positive and negative live loads acting normal to plane of glass and shall conform to the consistency and make-up of the existing historic glass as much as possible and feasible.

1.04 SUBMITTALS

- A. Product Data on Glass Types Specified: Provide physical and environmental characteristics, size limitations, and special installation requirements.
- B. Product Data on Glazing Compounds: Provide chemical characteristics, limitations, and special application requirements. Identify available colors.
- C. Samples: Submit two samples 12 inch x 12 inch in size, illustrating glass to be used in windows, exterior doors, interior doors, mirrors, coloration and design.

1.05 QUALITY ASSURANCE

- A. Perform Work in accordance with FGMA Glazing Manual, FGMA Sealant Manual, SIGMA, and Laminators Safety Glass Association - Standards Manual, for glazing installation methods.

PART 2 PRODUCTS

2.01 FLAT GLASS MATERIALS

- A. Float Glass (Type FG): Glass for the exterior storefront units, windows, transom, sidelight and doors are to be ¼ inch or double insulated, tempered, safety, or regular Low-E Grey Tinted glass as required for specific conditions. Glass for interior glass used in storefront units, bay windows, transoms, sidelights, doors are to be ¼" clear tempered, safety or regular glass as required for specific conditions. Annealed float glass shall comply with ASTM C1038, Type 1, Class 1 (clear) and Class 2 (Tinted).
- B. Safety Glass (Type FG): Heat strengthened or fully tempered; conforming to ANSI Z97.1; in required thickness for application. Glass for the exterior storefront units and exterior windows, transoms, sidelights and doors are to be ¼ inch or double insulated, tempered, safety, or regular Low-E Grey Tinted glass as required for specific conditions. Glass for interior glass used in storefront units, bay windows, transoms, sidelights, doors are to be ¼" clear tempered, safety or regular glass as required for specific conditions. Shall comply with heat-strengthened float glass ASTM C1048, Type 1, Class 1 (clear) and Class 2 (tinted).
- C. Mirror Glass (Type FG): Clear float type with copper and silver coating, organic overcoating, raised edges, ¼ inch thick, in widths and heights as indicated on drawings.
- D. Insulated Glass:
 - 1. Exterior Lite: ¼ inch Low-E Grey Tinted Float Glass
 - 2. Interior Lite: ¼ inch Clear Float Glass
 - 3. Cavity: 1/2 inch Air Filled.
 - 4. Performance Characteristics:
 - a. Shading Coefficient: 0.57
 - b. Solar Heat Gain Coefiecient: 0.40
 - c. Tvis: 69%
 - d. Rvis (out): 12%
 - e. Uwinter: 0.47
- G. Tempered Float Glass: Comply with ASTM C1048, Type 1, Class 1 (clear) and Class 2 (tinted).
- H. Laminated Glass: Comply with ASTM C1172.

2.02 GLAZING COMPOUNDS

- A. Modified Oil Type GC): ASTM C669, non-hardening, knife grade consistency; Gray color.
- C. Butyl Sealant (Type GC): ASTM C920, (Grade, Class, Use as required for application); single Component; Shore a hardness of 10 to 20 black color; non-skinning.
- D. Acrylic Sealant (Type GC): ASTM C920, Type S, Grade NS, (Class & Use as required for application) single component, solvent curing, non-bleeding; cured Shore A hardness of 15 to 25 color as selected.
- E. Polysulfide Sealant (Type GC): ASTM C920, Type M, Grade NS, Class & Use as required for application; two component; chemical curing, non-sagging type; cured Shore A hardness of 15 to 25 color as selected.
- F. Polyurethane Sealant (Type GC-E): ASTM C920, Type S, Grade NS, (Class and Use as required for application); single component, chemical curing, non-staining, non-bleeding, Shore A Hardness Range 20 to 35 color as selected.
- G. Silicone Sealant (Type GC): ASTM C920, Type S, Grade NS, (Class & Use as required for application); single component; chemical curing; capable of water immersion without loss of properties; non-bleeding, non-staining, cured Shore A hardness of 15 to 25 color as selected.

2.03 GLAZING ACCESSORIES

- A. Setting Blocks: Neoprene; 80 to 90 Shore A Durometer hardness.
- B. Spacer Shims: Neoprene; 50 to 60 Shore A durometer hardness, self-adhesive on one face.
- C. Glazing Tape: Preformed butyl compound with integral resilient tube spacing device. Closed cell polyvinyl chloride foam, maximum water absorption by volume of 2 percent, designed for compression of 25 percent to affect an air and vapor seal.
- D. Glazing Spline: Resilient polyvinyl chloride extruded shape to suit glazing channel-retaining slot; color as selected.
- E. Glazing Clips: Manufacturer's standard type.
- F. Mirror Attachment Accessories: Stainless steel clips. Mirror adhesive, chemically compatible with mirror coating and wall substrate.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

- A. Verify that openings for glazing are correctly sized, within tolerance, and glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.
- B. Seal porous glazing channels or recesses with substrate compatible primer or sealer.

3.02 INSTALLATION - EXTERIOR DRY METHOD (PREFORMED GLAZING)

- A. Cut glazing tape or spline to length; install on glazing pane. Seal corners with butyl sealant.
- B. Place setting blocks at 1/4 point.
- C. Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.
- D. Install removable stops without displacing glazing spline. Exert pressure for full continuous contact.
- E. Trim protruding tape edge.

3.03 INSTALLATION-EXTERIOR WET/DRY METHOD (PREFORMED TAPE AND SEALANT)

- A. Cut glazing tape to length and set against permanent stops. Seal corners with butyl sealant.
- B. Apply heel bead of butyl sealant along intersection of permanent stop with frame ensuring full perimeter seal between glass and frame to complete the continuity of the air and vapor seal.
- C. Place setting blocks at 1/4 point.
- D. Rest glazing on setting blocks and push against tape and heel bead of sealant to attain full contact at perimeter of pane or glass unit.
- E. Install removable stops, with spacer strips inserted between glazing and applied stops, 1/4 inch below sight line. Place glazing tape on glazing pane or unit with tape flush with 1/4-inch sight line.

- F. Fill gap between glazing and stop with applicable sealant to depth equal to bite of frame on glazing, but not more than 3/8 inch below sight line.
- G. Apply cap bead of applicable type sealant along void between the stop and the glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.04 INSTALLATION - EXTERIOR WET METHOD (SEALANT AND SEALANT)

- A. Place setting blocks at 1/4 points and install glazing pane or unit.
- B. Install removable stops with glazing centered in space by inserting spacer shims both sides at 24-inch intervals, 1/4 inch below sight line.
- C. Fill gaps between glazing and stops with applicable type sealant to depth of bite on glazing, but not more than 3/8 inch below sight line to ensure full contact with glazing and continue the air and vapor seal.
- D. Apply sealant to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.05 INSTALLATION - INTERIOR DRY METHOD (TAPE AND TAPE)

- A. Cut glazing tape to length and set against permanent stops, projecting 1/16 inch above sight line.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
- C. Rest glazing on setting blocks and push against tape for full contact at perimeter of pane or unit.
- D. Place glazing tape on free perimeter of glazing in same manner described above.
- E. Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.
- F. Knife trim protruding tape.

3.06 INSTALLATION - INTERIOR WET/DRY METHOD (TAPE AND SEALANT)

- A. Cut glazing tape to length and install against permanent stops, projecting 1/16 inch above sight line.
- B. Place setting blocks at 1/4 points with edge block no more than 6 inches from corners.
- C. Rest glazing on setting blocks and push against tape to ensure full contact at perimeter of pane or unit.
- D. Install removable stops; spacer shims inserted between glazing and applied stops at 24-inch intervals, 1/4 inch below sight line.
- E. Fill gaps between pane and applied stop with applicable type sealant to depth equal to bite on glazing, to uniform and level line.
- F. Trim protruding tape edge.

3.07 INSTALLATION - INTERIOR WET METHOD (COMPOUND AND COMPOUND)

- A. Install glazing resting on setting blocks. Install applied stop and center pane by use of spacer shims at 24-inch centers, kept 1/4 inch below sight line.
- B. Locate and secure glazing pane using spring wire clips or glazers' clips.

- C. Fill gaps between glazing and stops with glazing compound until flush with sight line. Tool surface to straight line.

3.08 INSTALLATION - MIRRORS

- A. Set mirrors with adhesive, applied in accordance with adhesive manufacturer's instructions.

OR

- B. Set mirrors with clips. Anchor rigidly to wall construction.
- C. Place plumb and level without visible distortion.

3.09 CLEANING

- A. Remove glazing materials from finish surfaces.
- B. Remove labels after Work is complete.
- C. Clean glass, mirrors and adjacent surfaces.

END OF SECTION – 08800