

SECTION 08 7100 - DOOR HARDWARE

PART 1 GENERAL

1.01 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplemental Conditions and Division 01 Specification Sections, apply to this Section.

1.02 SUMMARY

- A. Section Includes:
 - 1. Provision of door hardware for swinging doors and other doors to the extent indicated.
 - 2. Cylinders and keying for doors to the extent indicated.
 - 3. Exclusions: Unless specifically listed in hardware sets, hardware not specified in this section for:
 - a. Hardware for casework, cabinets, or windows.
 - 4. Related Sections
 - a. Section 08 1213 - Hollow Metal Frames.
 - b. Section 08 1416 - Flush Wood Doors.
 - c. Section 08 4313 - Aluminum-Framed Storefronts.

1.03 REFERENCED STANDARDS

- A. American National Standards Institute (ANSI):
 - 1. International Code Council (ICC), ANSI/ICC A117.1 - Accessible and Usable Buildings and Facilities, edition as adopted by local Authority Having Jurisdiction (AHJ).
 - 2. Builders Hardware Manufacturer's Association (BHMA):
 - a. ANSI/BHMA A156.1 - Butts & Hinges; 2013 edition.
 - b. ANSI/BHMA A156.2 - Bored and Preassembled Locks and Latches; 2011 edition.
 - c. ANSI/BHMA A156.3 - Exit Devices; 2014 edition.
 - d. ANSI/BHMA A156.4 - Door Controls - Closers; 2013 edition.
 - e. ANSI/BHMA A156.6 - Architectural Door Trim; 2010 edition.
 - f. ANSI/BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2010 edition.
 - g. ANSI/BHMA A156.13 - Mortise Locks & Latches, Series 1000; 2012 edition.
 - h. ANSI/BHMA A156.18 - Materials and Finishes; 2012 edition.
 - i. ANSI/BHMA A156.21 - Thresholds; 2014 edition.
 - j. ANSI/BHMA A156.22 - Door Gasketing and Edge Seal Systems; 2012 edition.
 - k. ANSI/BHMA A156.26 - Continuous Hinges; 2012 edition.
 - l. ANSI/BHMA A156.36 - Auxiliary Locks; 2010 edition.
 - 3. Door and Hardware Institute (DHI):
 - a. Keying Systems and Nomenclature, 2003 edition.
 - b. Sequence and Format for the Hardware Schedule, 2001 edition.

1.04 SUBMITTALS

- A. General:
 - 1. Provide submittals in accordance with Section 01 3300 - Administrative Requirements: Submittal Procedures.
 - 2. Highlight, circle, or otherwise specifically identify deviations from Contract Documents, issues of incompatibility, or other issues which may detrimentally affect the work.
 - 3. Product Data: Submit manufacturer's technical product data for each item of door hardware. Highlight relevant product information such as model, function, trim, finish, options, electrical requirements, and accessories.
 - 4. Hardware Schedule: Submit hardware schedule detailing fabrication and assembly of door hardware as well as procedures and diagrams. Coordinate the final door hardware sets with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
 - a. Format schedule complying with the vertical format in DHI's "Sequence and Format for the Hardware Schedule" publication.

- 1) Use same door numbers as found in contract documents and group doors with like hardware under a single heading.
 - 2) Identify each heading with the submitted heading number and Architect's specified hardware set number.
 - 3) Each heading shall include a list of applicable openings with information as follows: Architect's specified door number, to/from location, maximum door swing, handing information, door and frame sizes and materials, applicable ratings, and other information that may impact the door hardware.
 - 4) Each heading shall also include complete designations of every hardware item including: quantity per opening, manufacturer, description of item, and complete model number designating type, style, function, size, finish, fasteners, and other options required for the provision of hardware. Indicate non-standard installation requirements or mounting heights, and list related door devices specified in other sections.
5. Keying Schedule: After final approval of hardware scheduled, submit keying schedule detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations complying with DHI's "Keying Systems and Nomenclature" publication.
 - a. Include schematic keying diagram and index each key to unique door designations.
 - b. Index keying schedule by door number, keyset, hardware heading number. Include cross-keying instructions and special key stamping instructions.
 - c. Provide one complete bitting list of key cuts and key system schematic illustrating system usage and expansion.
 6. Manufacturer's Templates: After final approval of the hardware schedule, provide templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware.
 7. Operations and Maintenance Data: Provide in accordance with Section 01 7800 - Closeout Submittals.
 - a. Complete information on care, maintenance, and adjustment; data on repair and replacement parts, and information on preservation of finishes.
 - b. Catalog pages for each product.
 - c. Name, address, and phone number of local representative for each manufacturer.
 - d. Parts list for each product.
 - e. Final approved hardware schedule edited to reflect conditions as-installed.
 - f. Final key schedule including bitting lists and schematic diagram.
 - g. Copies of floor plans with keying nomenclature.
 - h. Copy of manufacturer special warranty certificates stating period and conditions. Accompany with copies of each order confirmation or original packing slip containing manufacturer's original order number, date of manufacture, and shipment date.
 - i. Special Warranty Certificates including:
 - 1) Warranty certificates from manufacturer stating warranty period and conditions, complying with warranty requirements specified herein.
 - 2) Copy of manufacturer's order confirmation or original packing slip with manufacturer's original order #, date of manufacture, and ship date.

1.05 QUALITY ASSURANCE

- A. Product Substitutions: Comply with product requirements stated in Section 01 6000 - Product Requirements.
 1. Manufacturers and products indicated as approved for provision are subject to compliance with specified requirements and "Single Source Responsibility" requirements stated herein.
 2. Where specific manufacturer's product(s) are named and accompanied by "No Substitute", including make or model number or other designation, provide product specified (Note: certain products have been selected for their unique characteristics and particular project suitability).

- a. Where no additional products or manufacturer's are listed in product category, requirements for "No Substitute" govern product selection.
3. Supplier Qualifications: Recognized architectural hardware supplier with record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this project.
 - a. Supplier shall submit documentation certifying compliance with the following requirements.
 - 1) Supplier shall have warehousing facilities within project's vicinity.
 - 2) Supplier shall be a factory-direct authorized dealer for the hardware being furnished and is able to provide ongoing sales, service, and technical support for furnished products.
 - b. Supplier is to make available an architectural hardware consultant meeting requirements herein during work for consultation with Owner, Architect, and Contractor.
 - 1) Supplier's Architectural Hardware Consultant shall be responsible for coordinating door/frame templating for hardware installations.
 - 2) Supplier's Architectural Hardware Consultant shall be responsible for final inspection and approval of installation for mechanical hardware supplied under this section. Warranty issues or product defects due to improper installations that are not corrected as part of final inspection and installation approval process shall be covered under supplier's warranty service.
4. Installer Qualifications: Installer shall be qualified tradesman with documented minimum experience of 3 years in the installation of door hardware similar in quantity, type, and quality to that indicated for this project. Installer shall hold any licenses required by authority having jurisdiction or any certifications recommended by hardware manufacturer(s) prior to installing hardware.
 - a. Installer shall submit documentation certifying past experience and holding of appropriate licenses and certifications.
5. Architectural Hardware Consultant Qualifications: Architectural Hardware Consultant shall be experienced in providing consulting services for door hardware installations comparable in material, design, and extent to that indicated for this Project.
6. Single Source Responsibility: Obtain each type of door hardware from a single manufacturer, even though several may be indicated as acceptable for inclusion into the work.
 - a. Provide hardware as ordered directly from original manufacturer, hardware components that are modified outside of original manufacturer's assembly process, except where specifically indicated within this section, are not acceptable.
7. Means of Egress Doors: Except where specifically allowed by applicable building codes and the authorities having jurisdiction, latches shall not require more than 15 lbf to release latch, locks shall not require use of key, tool, or special knowledge to allow egress. Doors shall unlatch/unlock to allow egress in a single motion.
8. Accessible Doors: Provide hardware for accessible openings that complies with ANSI/ICC A117.1 requirements in addition to the accessibility requirements of the applicable building codes and as required by authorities having jurisdiction. Except as otherwise allowed by these standards, provide hardware that meets the following:
 - a. Operating devices shall not require tight grasping, pinching, or turning of wrist.
 - b. Maximum Opening Force requirements:
 - 1) Interior, Non-Fire Rated Swing Doors: 5 lbs applied perpendicular to door at latch.
 - c. Thresholds & Sills: Provide thresholds and sills with rises exceeding 1/4 inch to have beveled slopes of not more than 1:2. Thresholds shall not exceed 1/2 inch in height.
9. Keying Conference: Prior to ordering hardware, conduct conference at project site to coordinate.
 - a. Required Attendees: Owner's Security Representative, Architect, Contractor, and Door Hardware Supplier's Architectural Hardware Consultant.

- b. Incorporate decisions made into final keying schedule after reviewing door hardware keying system including:
 - 1) Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 - 2) Preliminary key system schematic design diagram and layout.
 - 3) Quantities required for cut keys, extra cylinders/cores, pinning kits and tools, and key cutting tools.
 - 4) Requirements for key control system.
 - 5) Delivery requirements of permanent cylinders/cores, keys, and bitting lists.
- 10. Pre-Installation Conference: Conduct conference at project site to comply with requirements of Section 01 3000 - Administrative Requirements.
 - a. Required Attendees: Architect, Owner's Security Consultant, Contractor, Supplier's Architectural Hardware Consultant, and Door Hardware Installer.
 - b. After meeting, provide letter of compliance to Architect indicating when meeting was held, who was in attendance, and that the following items were discussed.
 - 1) Review and finalize construction schedule and verify availability of materials, installer's personnel, equipment, and facilities needs to avoid delays.
 - 2) Inspect and discuss preparatory work performed by other trades.
 - 3) Review required testing, inspecting, and certifying procedures.
 - 4) Review questions or concerns about proper installation and adjustment of door hardware.

1.06 DELIVERY, STORAGE, AND HANDLING

- A. Marking and Packaging: Package hardware items manufacturer's standard packaging. Tag each item or package separately with identification coordinated with final door hardware schedule. Include installation instructions, templates, and necessary fasteners with each item or package.
- B. Delivery and Acceptance: Except where specifically approved by Contractor, direct shipments from factory to place of installation are not permitted. Coordinate with construction schedule and deliver packaged hardware items to place of installation (e.g. project site, fabrication shop). Upon delivery, inspect and inventory door hardware. Any hardware items damaged or missing during shipment shall be replaced promptly.
 - 1. Deliver/ship permanent cylinders/cores, keys, and key control system as directed by Owner's Security Consultant during keying meeting.
 - 2. Storage: Maintain manufacturer-recommended environmental conditions throughout storage and installation periods. Provide secure lock-up area for door hardware delivered to the project site, but not yet installed. Store items on shelves or pallets to prevent damage.
 - 3. Handling: Control handling and installation of hardware items that are not immediately replaceable so that completion of work will not be delayed by hardware losses both before and after installation.
 - a. Handle hardware in manner to avoid damage, marring, or scratching. Correct, replace, or repair products damaged during Work.
 - b. Protect products against malfunction due to paint, solvent, cleanser, or any chemical agent.

1.07 COORDINATION

- A. Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified in Division 03.
- B. Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

1.08 WARRANTY

- A. General Warranty: Warrant door hardware against defects in material and workmanship as set forth in Section 01 7800: "Closeout Submittals".
- B. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: Years from date of Substantial Completion, for durations indicated.
 - a. Continuous Hinges: Lifetime of Building.
 - b. Locks & Latches:
 - 1) Mechanical Grade 1 Cylindrical: 10 Years.
 - 2) Exit Devices:
 - (a) Mechanical: 5 Years.
 - 3) Closers:
 - (a) Mechanical, Heavy Duty: 30 Years.

1.09 MAINTENANCE

- A. Maintenance Material Submittals: Furnish a complete set of specialized tools and maintenance instructions needed for owner's continued adjustment, maintenance, removal, and replacement of door hardware.

PART 2 PRODUCTS

2.01 MANUFACTURERS

- A. Approval of products from manufacturers indicated as acceptable in the individual article for the product category is contingent upon those products providing all functions, features, and meeting all requirements of the scheduled manufacturer's product.
- B. Approval of manufacturers and/or products other than those listed as acceptable in the individual article for the product category shall be in accordance with the QUALITY ASSURANCE article, herein.
- C. Where specified hardware is not adaptable to finished shape or size of members requiring hardware, furnish suitable types having same operation and quality as type specified, subject to Architect's approval.

2.02 MATERIALS

- A. Fasteners: Provide fasteners for each hardware item and application as recommended by the hardware manufacturer. Finish of fasteners shall match adjacent hardware and shall be concealed wherever possible. Where sets indicate hardware is to be supplied with security screws, provide manufacturer's recommended fastener with a torx-drive head.
- B. Miscellaneous Hardware Items: Where hardware items are scheduled, but are not included in the requirements of the specification, provide item as scheduled or a product similar in appearance, quality, performance, and function. Where possible, provide product to comply with the requirements of the applicable ANSI/BHMA A156 standard.
- C. Door Operation: Drawings show direction of slide or swing and hand of each door leaf. Furnish each hardware item for proper installation and operation of door movement as shown to maximum degree of opening as allowed by adjacent wall conditions, columns, casework, or other permanent fixtures. Where scheduled hardware does not allow maximum degree of swing and alternative solution exists, provide alternative hardware that allows maximum degree of swing, subject to Architect's approval.

2.03 HINGES

- A. General: Provide a minimum of 2 hinges per door leaf. For door leafs exceeding 60 inches in height, provide a minimum of 1 hinge for every 30 inches or portion thereof.
- B. Architectural Hinges: Provide hinges for exterior doors to be constructed of either stainless steel or brass with stainless steel pins. Hinges for interior doors shall be constructed of either

steel or stainless steel. Provide hinge with grade, number of knuckles, and type (e.g. full mortise) as scheduled. Provide hinges with non-rising pins with flat button tips. Where scheduled on reverse handed doors also scheduled with locking hardware, provide hinges with non-removable pins (NRP). Provide minimal hinge width required to allow hinge barrel to clear jamb and trim and allow door to swing 180 degrees. Provide minimum hinge height and ANSI/BHMA A156.1 grade as follows:

1. Doors 1-3/4 inches thick, up to 36 inches wide: 4-1/2 inch hinge, Grade 2
2. Doors 1-3/4 inches thick, 36 to 48 inches wide: 5 inch hinge, Grade 1
3. Doors 2 inches thick, up to 42 inches wide: 5 inch hinge, Grade 1
4. Doors 2 inches thick, 42 to 48 inches wide: 6 inch hinge, Grade 1
5. Acceptable Products:
 - a. Grade 1: Ives 5BB1HW, McKinney TB3786, Hager BB1168, No Substitution.
 - b. Grade 2: Ives 5BB1, McKinney TB2714, Hager BB1279, No Substitution.

2.04 CONTINUOUS HINGES

- A. General: Continuous hinges shall be provided with length equal to door height less 1 inch.
- B. Aluminum Geared Continuous Hinges: Provide full surface continuous hinge constructed of extruded aluminum consisting of two individual geared leafs held together with a full length cover channel. Hinge shall have a series of anti-friction bearings installed in a center-focused design. Hinge shall have lateral and vertical adjustability while the door is still hanging.
- C. Acceptable Products:
 1. Ives 157XY, No Substitution.

2.05 SECURING DEVICES FOR PAIRS OF DOORS

- A. Flush Bolts: Provide flush-mounted door bolts of the type scheduled. Provide model recommended by hardware manufacturer for the door material for each opening. Where possible, provide length as required for top bolt to mount no higher than 72 inches above finished floor to center of bolt release mechanism and bottom bolt to mount no lower than 12 inches above finished floor to center of bolt release mechanism. Where opening is scheduled to receive a bottom bolt, provide a dust proof strike.
- B. Acceptable Products:
 1. Manual Flush Bolts: Ives FB450/FB350 Series, Rockwood 550 Series, Trimco 3910 Series, or approved equal.

2.06 MECHANICAL LOCKS AND LATCHES

- A. Cylindrical Locks: Provide cylindrical lock meeting ANSI A156.2 Series 4000, Grade 1. Lock shall have chassis constructed of chrome or zinc-dichromate plated steel. Provide lock with minimum of 1/2 inch stainless steel latchbolt. Latchbolt shall deadlatch at locking functions. Provide lockset with cylinder preps as necessary for compatibility with the specified cylinders/cores. Lock shall utilize two (2) compression springs for each lever, locks utilizing torsion or tension type springs are not acceptable. Lever return springs shall be accessible without dismantling lock chassis. Lock shall be convertible to all other standard lock functions without replacing the lock chassis. Provide locksets with clutching lever that freely rotates when locked.
- B. Trim: Provide trim with levers constructed of pressure cast or forged brass, bronze, zinc, or stainless steel. Levers shall be solid, not having any voids or fillers. Provide cast or wrought rose escutcheons and levers with design as scheduled.
- C. Strikes: Provide locks with standard 4-7/8 inch ANSI strike plate. On single openings, strike shall have curved lip with dimension necessary to extend 1/8 inch beyond trim. On paired openings, strike shall have flat lip with dimension necessary to extend flush to face of door leaf.
- D. Acceptable Products:
 1. Cylindrical Locks: Schlage ND Series, No Substitution.

2.07 PANIC HARDWARE AND ACCESSORIES

- A. Panic Hardware: Provide conventional push pad type exit device complying with ANSI A156.3 Grade 1. Device shall be constructed of a stamped steel base plate inside of an extruded aluminum mechanism case. Push pad shall be constructed of aluminum extrusion with stainless steel cover. Mechanism case and push pad shall conceal rivets and fasteners. End cap shall be constructed of cast steel and designed for flush transition from mechanism case. Device shall utilize compression springs for push pad actuation, latchbolt return, and lever return springs. Device shall have deadlocking pullman type latchbolt constructed of stainless steel.
- B. Removable Mullions: Provide panic hardware manufacturer's standard steel mullion. Where scheduled, mullion shall be removable by key otherwise provide mullion to be removable by hex key. Provide mullions at exterior openings with stabilizer fins.
- C. Acceptable Products:
 - 1. Panic Hardware: Von Duprin 99 Series, No Substitution.
 - 2. Removable Mullions: Von Duprin 4594/9954 Series, No Substitution.

2.08 CYLINDERS, KEY SYSTEMS, AND KEY CONTROL

- A. Key System: Provide new cylinders to integrate into existing key system. Owner will provide bitting lists as required.
- B. Cylinders and Keys: Cylinders shall be compatible with manufacturer's standard interchangeable core. Provide cylinders with type (e.g. mortise, rim, etc), length, and cam/tailpiece as required for compatibility with adjacent locking hardware.
 - 1. Provide each cylinder with keyed alike temporary cores for the duration of the construction period. Cut temporary keys shall be provided in sufficient quantity as required by construction needs. Temporary cores shall remain property of the contractor/supplier and shall be returned upon installation of permanent cores at substantial completion.
 - 2. Provide factory pinned permanent cores that bear concealed markings indicating applicable key symbol. Upon substantial completion, owner will accompany contractor during installation of permanent cores.
 - 3. Permanent Keys: Provide manufacturer's standard brass or nickel silver keys with a minimum quantity of 2 keys for each permanent core provided. Finalize quantity of keys to be cut to each key symbol during keying meeting – remaining keys shall be left blank for owner's future key cutting needs. Engrave each cut key with keyway and key symbol marking and engrave cut master keys with key system registry number.
 - 4. Bitting Lists: Provide one copy of the key system bitting list directly from key system manufacturer.
 - 5. Acceptable Products:
 - a. Key System: Schlage, Full Size Interchangeable Core, Match Existing Keyway.

2.09 OPERATING DOOR TRIM

- A. Push And Pull Plates: Provide plates constructed of .050 inch thick stainless steel or brass material. Plates shall have four beveled edges and countersunk screws. Provide plates of size as scheduled. Where required, provide plates to be cut for cylinder. Provide 1 inch pulls with center to center length of 10 inches. Pulls shall be mounted to pull plate using concealed fasteners.
- B. Acceptable Products:
 - 1. Push Plates: Ives 8200, Rockwood 70, Trimco 1001, or approved equivalent.
 - 2. Pull Plates: Ives 8303, Rockwood 111 x 70, Trimco 1018, or approved equivalent.

2.10 MECHANICAL DOOR CLOSERS

- A. Provide closers certified to ANSI A156.4 grade 1, with handed body constructed of cast iron. Closers shall have 1-1/2 inch piston, 3/4 inch journals, double heat treated pinions, and springs sized 1-6. Closers shall have independent valves for backcheck, main speed, and latch speed. Pressure Relief Valves (PRVs) are prohibited. Closer shall be able to meet ADA opening force

requirements. Provide arms as scheduled, where multiple configurations are scheduled provide the closer/arm configuration for mounting on the least public side of door. Provide closers with universal screw packs complete with through-bolts, wood screws, and template machine screws.

B. Acceptable Products:

1. LCN 4040XP Series, No Substitution.

2.11 DOOR PROTECTION

A. Protection Plates: Provide protection plates constructed of .050 inch thick brass or stainless steel. Provide plates with 4 beveled edges and countersunk screws. At stile and rail or full-lite doors, provide plates with height 1 inch less bottom rail height. Otherwise, provide plates with heights as scheduled in the hardware sets. Provide widths equal to either 1 inch less door width (LDW) or 2 inch LDW as scheduled in the hardware sets. Where plates are provided with height greater than 16 inches on fire rated doors, provide UL listed plate with a permanent and visible marking indicating said listing.

B. Acceptable Products:

1. Ives 8400 Series or approved equivalent.

2.12 DOOR STOPS

A. General: Provide stops as scheduled in the hardware sets. Where more than one door stop is scheduled, provide one door stop per door leaf according to the following requirements.

1. Wall Stops: Provide indicated wall stop at locations where door edge swings against a masonry or gypsum board wall that has the proper blocking installed.
2. Floor Stops: Provide indicated floor stop only in areas where wall stop is not appropriate, where floor surface is carpet, wood, or laminate, and where stop may be mounted near a wall, structural member, casework, furniture/equipment, etc. such that a tripping hazard is not created to cross-directional traffic.
3. Overhead Stops: Provide indicated overhead stop where wall and/or floor stop are not appropriate. Where overhead stops are required on interior doors with parallel arm closers, overhead stop may be omitted in lieu of a spring stop type closer arm.
4. Where none of the indicated stops are appropriate for use, notify architect immediately with recommendations to stop the door in an appropriate manner for the condition.
5. Interior Wall Stops & Holders: Provide interior wall stops to meet ANSI/BHMA 156.16 Type L22251. Provide interior wall holders to meet ANSI/BHMA 156.16 Type L11291.
6. Exterior Floor Stops: Provide exterior floor stops constructed of threaded rod encased in black rubber to be grouted into flooring.
7. Interior Floor Stops: Provide interior floor stops constructed of cast zinc or stainless steel with base height of 1/4 inch and a pad height of 1-1/8 inch for universal application.
8. Surface Overhead Stops & Holders: Provide heavy duty surface mounted overhead stops and holders to meet ANSI/BHMA 156.4 Type C025*1 (asterisk indicates number that changes based on scheduled option). Provide standard duty surface mounted overhead stops and holders to meet ANSI/BHMA 156.4 Type C055*1 (asterisk indicates number that changes based on scheduled option).
9. Concealed Overhead Stops & Holders: Provide concealed overhead stops and holders to meet ANSI/BHMA 156.4 Type C015*1 (asterisk indicates number that changes based on scheduled option). Provide stop with adjustable arm bracket.
10. Acceptable Products:
 - a. Interior Wall Stop: Ives WS406/407CCV or any BHMA equivalent product.
 - b. Interior Wall Holder: Ives WS45 or any BHMA equivalent product.
 - c. Exterior Floor Stop: Ives FS18S or any BHMA equivalent product.
 - d. Interior Floor Stop: Ives FS439 or any BHMA equivalent product.
 - e. Heavy Duty Surface Overhead Stop/Holder: Glynn Johnson 90 Series or any BHMA equivalent product.

2.13 THRESHOLDS & SADDLES

- A. General: Provide saddle with continuous length equal to opening width from frame rabbet to frame rabbet. Notch threshold as required to fit frame profile, miter and weld any exposed corners. Where scheduled, provide threshold with composite filled body and/or slip resistant options.
- B. Exterior Saddle Thresholds: Provide saddle threshold 1/2 inch in height with profile to meet accessibility requirements. Provide saddle with width as scheduled. Provide threshold with stainless steel machine screws and lead expansion anchors.
- C. Acceptable Products:
 - 1. Saddle Thresholds: National Guard Products 425HD or any BHMA equivalent product.

2.14 WEATHER STRIP & GASKET

- A. Exterior Perimeter Weatherstripping: See Section 08 4313 - Aluminum Framed Storefronts.
- B. Interior Perimeter Gasketing: Provide interior doors with perimeter gasketing made of sponge-neoprene in the shape as scheduled. Provide continuous length roll of gasketing equal to frame perimeter. Attach gasketing using 3M adhesive backing. Where an opening is scheduled to receive 2 sets of gasketing, apply one set to the frame rabbet and one set to the frame stop in the configuration recommended by the gasket manufacturer.
- C. Meeting Stile Gasketing: Provide meeting stiles as scheduled with a length equal to door leaf height less undercut dimension. For surface-mounted meeting stiles, provide one meeting stile for each door leaf and mount on secure face of door.
- D. Overlapping Astragals: Provide overlapping astragals as scheduled for mounting on the secure side of the opening. If opening is reverse handed, astragal shall be provided to mount on pull side of active leaf. If opening is regular handed, astragal shall be provided to mount on push side of inactive leaf. Provide astragal with length equal to door height less 1 inch. Secure astragal to door using through-bolts.
- E. Door Bottom and Door Sweeps: See Section 08 4313 - Aluminum Framed Storefronts.
- F. Acceptable Products:
 - 1. Scheduled products by National Guard Products or any BHMA equivalent products.

2.15 MISCELLANEOUS MECHANICAL HARDWARE

- A. Silencers: Provide 3 silencers where indicated for single leaf door openings and 2 silencers where indicated for paired leaf door openings. Provide silencers with the mounting type (press-in, nail-in, or self adhesive) required by the frame manufacturer. Coordinate with Section 08 1213 - Hollow Metal Frames.
- B. Acceptable Products
 - 1. Ives SR60 Series or any BHMA equivalent product.

2.16 FINISHES

- A. Provide finishes to match the scheduled ANSI/BHMA A156.18 finish code indicated for each hardware item.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify conditions of walls, flooring, doors, frames, and hardware are satisfactory for installation of hardware. Conditions that do not allow proper installation of hardware shall be corrected before proceeding.

3.02 INSTALLATION

- A. General
 - 1. Install door hardware as detailed in the approved hardware schedule using only approved fasteners and in accordance with manufacturer's recommended procedures and methods.

2. Maximum Gap Clearance: Install doors and frames such that gap clearances do not exceed the measurements listed below for any application. These clearances comply with NFPA requirements for smoke and fire rated openings:
 - a. Between Door and Frame Head and Jambs: 1/8 inch for wood doors, 3/16 inch for metallic doors.
 - b. Between Paired Door Meeting Stiles: 1/8 inch.
 - c. Door Undercut: 3/4 inch.
3. Hardware Mounting Heights: Mount door hardware units at hollow metal door frame manufacturer's standard heights.
4. Surface Mounted Door Closers: Install surface mounted door closers on room side of openings, except where prohibited by scheduled hardware. Use appropriate arms, spacers, brackets, and accessories to properly install surface mounted door closers. Adjust spring power to the appropriate setting to ensure the doors reliably close under normal operating conditions. Utilize the following installation methods to install closers:
 - a. Metallic doors: Drill and tap holes and install closers using template machine screws. Self drilling and tapping screws are prohibited.
 - b. Reinforced wood doors and wood frames: Drill pilot holes and install closers using threaded to the head wood screws. Self-piloting screws are prohibited.
 - c. Non-Reinforced wood doors: Drill holes and install closers using through bolt fasteners.
5. Wall Mounted Door Stops And Holders
 - a. Locate wall mounted door stops at the appropriate height and location to properly contact protruding door trim.
 - b. Where indicated in the HW Sets, mount floor stops at exterior doors as a wall stop.
6. Gasketing: Install gasketing to provide a continuous seal around the perimeter of the opening. Install soffit mounted hardware using the proper brackets, spacers, and accessories to allow proper installation without cutting or notching gasketing material or mounting channels.
7. Overlapping Astragals:
 - a. Where overlapping astragals are scheduled on out-swinging doors, provide for mounting on the pull-side of the active leaf. Otherwise, provide for mounting on the push-side of the inactive leaf.
 - b. Notching astragal is not acceptable. Where strike lip conflicts with astragal, provide strike as specified in "Locks and Latches" article of this section.
8. Thresholds and Saddles: Trim, cut, and notch thresholds and saddles neatly to minimally fit the profile of the door frame. Thresholds and saddles shall be set in full bed of butyl rubber sealant.

3.03 FIELD QUALITY CONTROL

- A. Architectural Hardware Consultant: Architect will engage a qualified Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
- B. Architectural Hardware Consultant will inspect door hardware and state in each report whether installed work complies with or deviates from requirements, including whether door hardware is properly installed and adjusted.

3.04 ADJUSTING

- A. After building HVAC system is balanced and adjusted, conduct final adjustment of door closers. Verify spring power of the surface mounted door closer is properly adjusted to close and latch the door and to comply with the opening force requirements of ANSI A117.1 as follows:
 1. Doors with Closers shall take five (5) seconds to close from 90 degrees to 12 degrees.
 2. Interior, non-fire rated swinging doors shall open with a maximum of 5 lbs of pressure.
 3. Exterior doors shall open with the minimum amount of pressure required to positively close and latch the door.

3.05 CLEANING AND PROTECTION

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

3.06 SCHEDULE

- A. General: See Section 08 7100 Door Hardware Schedule
 - 1. The schedule of hardware sets shall be considered a guide and the supplier is cautioned to refer to general conditions, special conditions, and the full requirements of this section. It shall be the hardware supplier's responsibility to furnish all required hardware.
 - 2. Where items of hardware are not definitely or correctly specified and are required for completion of the Work, a written statement of such omission, error, conflict, or other discrepancy shall be sent to the Architect, prior to date specified for receipt of bids, for clarification by addendum.

END OF SECTION

SECTION 08 7100A – DOOR HARDWARE SCHEDULE

HW SET # 01

<u>QTY</u>	<u>DESCRIPTION</u>	<u>CATALOG NUMBER</u>	<u>FIN</u>	<u>MFR</u>
3 EA	HINGE	5BB1 4.5 X 4.5	652	IVE
1 EA	OFFICE LOCK	ND50TD RHO	626	SCH
1 EA	FSIC CORE	23-030 (MATCH EXISTING KWY)	626	SCH
1 EA	WALL STOP	WS406/407CCV	630	IVE
3 EA	SILENCER	SR64	GY	IVE

HW SET # 02

<u>QTY</u>	<u>DESCRIPTION</u>	<u>CATALOG NUMBER</u>	<u>FIN</u>	<u>MFR</u>
6 EA	HINGE	5BB1 4.5 X 4.5 NRP	652	IVE
2 EA	MANUAL FLUSH BOLT	FB458	626	IVE
1 EA	DUST PROOF STRIKE	DP2	626	IVE
1 EA	CLASSROOM LOCK	ND70TD RHO	626	SCH
1 EA	FSIC CORE	23-030 (MATCH EXISTING KWY)	626	SCH
2 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
2 EA	WALL STOP	WS406/407CCV	630	IVE
1 EA	ASTRAGAL	139A	628	NGP
2 EA	SILENCER	SR64	GY	IVE

HW SET # 03

<u>QTY</u>	<u>DESCRIPTION</u>	<u>CATALOG NUMBER</u>	<u>FIN</u>	<u>MFR</u>
6 EA	HW HINGE	5BB1HW 4.5 X 4.5 NRP	652	IVE
1 EA	PANIC HARDWARE	CD-9947-L-DT-LBR-06	626	VON
1 EA	PANIC HARDWARE	CD-9947-L-LBR-06	626	VON
1 EA	TRIM CYLINDER	20-057-ICX	626	SCH
2 EA	DOGGING CYLINDER	20-061-ICX-948	626	SCH
3 EA	FSIC CORE	23-030 (MATCH EXISTING KWY)	626	SCH
2 EA	SURFACE CLOSER	4040XP SHCUSH	689	LCN
2 EA	KICK PLATE	8400 10" X 2" LDW B-CS	630	IVE
1 SET	SEALS	5050B	BRN	NGP
1 SET	MEETING STILES	9605A	CL	NGP

HW SET # AL-01

<u>QTY</u>	<u>DESCRIPTION</u>	<u>CATALOG NUMBER</u>	<u>FIN</u>	<u>MFR</u>
1 EA	CONT. HINGE	157XY	628	IVE
1 EA	PANIC HARDWARE	CD-99-NL-OP-110MD	626	VON
1 EA	TRIM CYLINDER	20-057-ICX	626	SCH
1 EA	DOGGING CYLINDER	20-061-ICX-948	626	SCH
2 EA	FSIC CORE	23-030 (MATCH EXISTING KWY)	626	SCH
1 EA	90 DEG OFFSET PULL	8190HD 10" O	630	IVE
1 EA	OH STOP & HOLDER	100H	630	GLY
1 EA	SURFACE CLOSER	4040XP EDA	689	LCN
1 EA	CLOSER BRACKET(S)	AS REQUIRED FOR CLOSER INSTALLATION	689	LCN
1 EA	DOOR SWEEP	BY DOOR/FRAME MANUFACTURER	TBD	B/O
1 SET	GASKET	BY DOOR/FRAME MANUFACTURER	TBD	B/O
1 EA	THRESHOLD	425HD	AL	NGP

HW SET # AL-02

<u>QTY</u>	<u>DESCRIPTION</u>	<u>CATALOG NUMBER</u>	<u>FIN</u>	<u>MFR</u>
2 EA	CONT. HINGE	157XY	628	IVE
1 EA	KEYED REMOVABLE MULLION	KR4954-STAB	689	VON
1 EA	PANIC HARDWARE	CD-99-EO	626	VON
1 EA	PANIC HARDWARE	CD-99-NL-OP-110MD	626	VON
1 EA	TRIM CYLINDER	20-057-ICX	626	SCH
1 EA	MULLION CYLINDER	20-061-ICX	626	SCH
2 EA	DOGGING CYLINDER	20-061-ICX-948	626	SCH
4 EA	FSIC CORE	23-030 (MATCH EXISTING KWY)	626	SCH
2 EA	90 DEG OFFSET PULL	8190HD 10" O	630	IVE
2 EA	OH STOP & HOLDER	100H ADJ	630	GLY
2 EA	SURFACE CLOSER	4040XP EDA	689	LCN
2 EA	CLOSER BRACKET(S)	AS REQUIRED FOR CLOSER INSTALLATION	689	LCN
1 EA	MULLION SEAL	5100	BLK	NGP
2 EA	DOOR SWEEP	BY DOOR/FRAME MANUFACTURER	TBD	B/O
1 SET	GASKET	BY DOOR/FRAME MANUFACTURER	TBD	B/O
1 EA	THRESHOLD	425HD	AL	NGP

HW SET # EXST-01

SALVAGED DOOR/FRAME/HARDWARE TO BE RE-USED

- A) CONTRACTOR/SUPPLIER IS RESPONSIBLE FOR FIELD VERIFYING EXISTING CONDITIONS. IF SALVAGED DOOR/FRAME/HARDWARE IS NOT COMPATIBLE OR CANNOT BE RE-USED, NOTIFY ARCHITECT IMMEDIATELY.