

PART 1 – GENERAL**1.01 SUMMARY**

- A. Section includes furnishing, installation and commissioning of door hardware for doors specified in “Hardware Sets” and required by actual conditions: including screws, bolts, expansion shields, electrified door hardware, and other devices for proper application of hardware.
- B. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- C. Related Divisions:
 - 1. Division 07 Joint Sealants
 - 2. Division 08 Openings
 - 3. Division 09 Finishes

1.02 REFERENCES

- A. American National Standards Institute/Builders Hardware Manufacturers Association (ANSI):
 - 1. ANSI/BHMA A156.1 Butts & Hinges (2016)
 - 2. ANSI/BHMA A156.2 Bored & Preassembled Locks & Latches (2011)
 - 3. ANSI/BHMA A156.3 Exit Devices (2014)
 - 4. ANSI/BHMA A156.4 Door Controls – Closers (2013)
 - 5. ANSI/BHMA A156.6 Architectural Door Trim (2015)
 - 6. ANSI/BHMA A156.7 Template Hinge Dimensions (2016)
 - 7. ANSI/BHMA A156.8 Door Controls – Overhead Stops and Holders (2015)
 - 8. ANSI/BHMA A156.16 Auxiliary Hardware (2013)
 - 9. ANSI/BHMA A156.18 Materials & Finishes (2016)
 - 10. ANSI/BHMA A156.21 Thresholds (2014)
 - 11. ANSI/BHMA A156.22 Door Gasketing Systems (2012)
 - 12. ANSI/BHMA A156.28 Keying Systems (2013)
- B. International Code Council/American National Standards Institute (ICC/ANSI)/ADA:
 - 1. ICC/ANSI A117.1 Standards for Accessible and Usable Buildings and Facilities 2006
- C. Underwriters Laboratories, Inc. (UL):
 - 1. UL 10C Positive Pressure Fire Test of Door Assemblies.
 - 2. UL 1784 Air Leakage Test of Door Assemblies.
 - 3. UL 294 Access Control System Units
- D. Door and Hardware Institute (DHI):
 - 1. DHI Publications – Keying Systems and Nomenclature (1989).
 - 2. DHI Publication – Abbreviations and Symbols.
 - 3. DHI Publication – Installation Guide for Doors and Hardware.
 - 4. DHI Publication – Sequence and Format of Hardware Schedule (1996).

- E. National Fire Protection Agency (NFPA):
 - 1. NFPA 70 National Electrical Code 2008
 - 2. NFPA 80 Standard for Fire Doors and Other Opening Protectives 2007
 - 3. NFPA 101 Life Safety Code 2006
 - 4. NFPA 105 Standard for the Installation of Smoke Door Assemblies 2007

1.03 SUBMITTALS

- A. Submit in accordance with Conditions of the Contract and Division 1 Administrative Requirements and Submittal Procedures Section.
- B. Shop Drawings:
 - 1. Organize hardware schedule in vertical format as illustrated in DHI Publications Sequence and Formatting for the Hardware Schedule. Include abbreviations and symbols page according to DHI Publications Abbreviations and Symbols. Complete nomenclature of items required for each door opening as indicated.
 - 2. Coordinate final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of hardware.
 - 3. Architectural Hardware Consultant (AHC), as certified by DHI, who will affix seal attesting to completeness and correctness, including the review of the hardware schedule prior to submittal.
- C. Submit manufacturer's catalog sheet on design, grade, and function of items listed in hardware schedule. Identify specific hardware item per sheet, provide an index, and cover sheet.
- D. Templates:
 - 1. Upon final approval of the architectural hardware schedules, submit one set of complete templates for each hardware item to the door manufacturers, frame manufacturers, and the installers. Date and index these 8-1/2 inch x 11 inch papers in a three ring binder, including detailed lists of the hardware location requirements for mortised and surface applied hardware within fourteen days of receiving approved door hardware submittals.
- E. Closeout Submittals: Submit to Owner in a three-ring binder or CD if requested.
 - 1. Warranties.
 - 2. Maintenance and operating manual.
 - 3. Maintenance service agreement.
 - 4. Record documents.
 - 5. Copy of approved hardware schedule.
 - 6. Copy of approved keying schedule with bitting list.
 - 7. Door hardware supplier name, phone number, and fax number.

1.04 QUALITY ASSURANCE

- A. Listed and Labeled electrified door hardware as defined in NFPA 70, Article 100, by a testing agency acceptable to authority having jurisdiction.
- B. Hardware supplier will employ an Architectural Hardware Consultant (AHC) as certified by DHI and a member of the seal program who will be available at reasonable times during course of work for Project hardware consultation.

- C. Door hardware conforming to ICC/ANSI A117.1: Handles pulls, latches locks and operating devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
- D. Fired Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and/or labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to UL 10C, unless otherwise indicated.
- E. Fire Door Inspection: Prior to receiving certificate of occupancy have fire rated doors inspected by an independent Certified Fire and Egress Door Assembly Inspector (FDAI), as certified by Intertek (ITS), a written report be submitted to Owner and Contractor. Doors failing inspection must be adjusted, replaced or modified to be within appropriate code requirements.
- F. Smoke and Draft Control Door Assemblies: Where smoke and draft control door assemblies are required, provide door hardware that meets requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.
- G. Door hardware certified to ANSI/BHMA standards as noted, participate and be listed in BHMA Certified Products Directory.
- H. Substitution request: create a comparison chart that includes the testing information as well as the warranty for both the specified product and the proposed substitution. Include the reason for requesting the substitution, clear catalog copy highlighting the proposed product and options, compliance statement, technical data, product warranty and lead time, to show how the proposed can meet or exceed established level of design, function, and quality. Approval of request is at the discretion of the owner, architect, and their designated consultants and will be addressed via addendum prior to bid date.
- I. Meetings: Comply with requirements in Division 1 Section "Project Meetings."
 - 1. Keying Meeting
 - a. Within fourteen days of receipt of approved door hardware submittals, contact Owner with representative from hardware supplier to establish a keying conference. Verify keyway, visual key identification, number of master keys and keys per lock. Provide keying system per Owner's instructions.
- J. Installer Qualifications: Specialized in performing installation of this Section and have five years minimum documented experience.
- K. Hardware listed in 3.07 – Hardware Schedule is intended to establish minimum level of design, type, function and grade of hardware to be used.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Provide clean, dry and secure room for hardware delivered to Project but not yet installed. Shelf hardware off of the floor and with larger items of hardware being stored on wooden pallets. Arrange locksets and keyed cylinders by opening number. Organize the balance of hardware by brand, model of hardware, and hardware set number. Leave the door markings of the hardware visible for installers.

- B. Furnish hardware that is not bulk packed with each unit marked and numbered in accordance with approved finish hardware schedule. Include architect's opening number, hardware set number, and item number for each type of hardware. Include keyset symbols and corresponding hardware component for keyed products.
- C. Pack each item complete with necessary parts and fasteners in manufacturer's original packaging.
- D. Deliver architectural hardware to the job site according to the phasing agreed upon in the pre-installation meeting. Inventory the delivery with the supplier's assistance. Immediately note shortages and damages on the shipping receipts and bill of lading. Coordinate replacement or repair with the supplier.
- E. Deliver permanent keys and related accessories directly to Owner via registered mail or overnight package service. Establish the instructions for delivery to Owner at "Keying Conference."
- F. Waste Management and Disposal: Separate waste materials for use or recycling in accordance with Division 1.

1.06 WARRANTY

- A. General Warranty: Owner may have under provisions of the Contract Documents and be an addition and run concurrently with other warranties made by Contractor under requirements of the Contract documents.
- B. Special Warranty: Warranties specified in this article will not deprive Owner of other rights.
 - 1. Ten years for manual door closers.
 - 2. Five years for mortise, auxiliary and bored locks.
 - 3. Five years for exit devices.
- C. Replace or repair defective products during warranty period in accordance with manufacturer's warranty at no cost to Owner. There is no warranty against defects due to improper installation, abuse, and failure to exercise normal maintenance.
- D. Maintenance Tool and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, removal and replacement of door hardware.

PART 2 – PRODUCTS

2.01 HINGES

- A. Hinges, electric hinges, and self-closing hinges of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Products to be certified and listed by the following:
 - 1. Butts and Hinges: ANSI/BHMA A156.1.
 - 2. Template Hinge Dimensions: ANSI/BHMA A156.7.
 - 3. Self-Closing Hinges: ANSI/BHMA A156.17.

C. Butt Hinges:

1. Hinge weight and size unless otherwise indicated in hardware sets:
 - a. Doors up to 36" wide and up to 1-3/4" thick provide hinges with a minimum thickness of .134" and a minimum of 4-1/2" in height.
 - b. Doors from 36" wide up to 42" wide and up to 1-3/4" thick provide hinges with a minimum thickness of .145" and a minimum of 4-1/2" in height.
 - c. For doors from 42" wide up to 48" wide and up to 1-3/4" thick provide hinges with a minimum thickness of .180" and a minimum of 5" in height.
 - d. Doors greater than 1-3/4" thick provide hinges with a minimum thickness of .180" and a minimum of 5" in height.
 - e. Width of hinge is to be minimum required to clear surrounding trim.
2. Base material unless otherwise indicated in hardware sets:
 - a. Exterior Doors: 304 Stainless Steel, Brass or Bronze material.
 - b. Interior Doors: Steel material.
 - c. Fire Rated Doors: Steel or 304 Stainless Steel materials.
 - d. Stainless Steel ball bearing hinges to have stainless steel ball bearings. Steel ball bearings are unacceptable.
3. Quantity of hinges per door unless otherwise stated in hardware sets:
 - a. Doors up to 60" in height provide 2 hinges.
 - b. Doors 60" up to 90" in height provide 3 hinges.
 - c. Doors 90" up to 120" in height provide 4 hinges.
 - d. Doors over 120" in height add 1 additional hinge per each additional 30" in height.
 - e. Dutch doors provide 4 hinges.
4. Hinge design and options unless otherwise indicated in hardware sets:
 - a. Hinges are to be of a square corner five-knuckle design, flat button tips and have ball bearings unless otherwise indicated in hardware sets.
 - b. Out-swinging exterior and out-swinging access controlled doors are required to have Non-Removable Pins (NRP) to prevent removal of pin while door is in closed position.
 - c. When full width of opening is required, use hinges that are designed to swing door completely from opening when door is opened to 95 degrees.
 - d. When shims are necessary to correct frame or door irregularities, provide metal shims only.
5. Acceptable Manufacturers:

	Standard Weight	Heavy Weight
Hager	BB1279/BB1191	BB1168/BB1199
Bommer	BB5000/BB5002	BB5004/BB5006
McKinney	TA2714/TA2314	T4A3786/T4A3386

2.02 FLUSH BOLTS

- A. Flush bolts of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Manufacturer to be listed by the following: Auxiliary Hardware: ANSI/BHMI A156.16.
- C. Labeled openings: Provide automatic or constant latching flush bolts per hardware schedule for inactive leaf of pairs of doors. Provide dust proof strikes for bottom bolt.

- D. Non-Labeled openings: Provide two flush bolts for inactive leaf of pairs of doors per hardware schedule. Provide extension rods so that the center line of the top flush bolt is not more than 78" above the finish floor. Provide dust proof strike from bottom bolt.

E. Acceptable Manufacturers:

	Manual Flush Bolt		Dust Proof Strike
Hager	282D		280X
Rockwood	555		570
Trimco	3917		3911

2.03 LOCKS AND LATCHES

- A. Locks and latches of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Product to be certified and listed by following:
 1. ANSI/BHMA A156.2 Series 4000 Certified to Grade 2.
 2. ANSI/BHMA A250.13 Certified for a minimum design load of 860 lbf (80 psf) for a single out swinging doors measuring 36" in width and 84" height and a minimum design of 860 lbf (50 psf) for out swinging single doors measuring 48" in width and 84" height.
 3. UL/cUL Labeled and listed for functions up to 3 hours for single doors up to 48" in width and up to 96" in height.
 4. UL10C/UBC 7-2 Positive Pressure Rated.
- C. Lock and latch function numbers and descriptions of manufacturer's series as listed in hardware sets.
- D. Material and Design:
 1. Lock and latch chassis to be zinc dichromate for corrosion resistance.
 2. Keyed functions to be of a freewheeling design to help resist against vandalism.
 3. Non-handed, field reversible.
 4. Thru-bolt mounting with no exposed screws.
 5. Levers, zinc cast and plated to match finish designation in hardware sets.
 6. Roses, wrought brass or stainless steel material.
- E. Latch and Strike:
 1. Stainless steel latch bolt with minimum of 1/2" throw and deadlocking for keyed and exterior functions. Standard backset to be 2-3/4" and adjustable faceplate to accommodate a square edge door or a standard 1/8" beveled edge door.
 2. Strike is to fit a standard ANSI A115 prep measuring 1-1/4" x 4-7/8" with proper lip length to protect surrounding trim.

F. Acceptable Manufacturers:

Hager	3500 Series
Schlage	AL Series
Best	7K Series

2.04 EXIT DEVICES

- A. Exit Devices of one manufacturer as listed for continuity of design and consideration of warranty. Touchpad type, finish to match balance of door hardware.
- B. Standards: Manufacturer to be certified and/or listed by the following:
 - 1. BHMA Certified ANSI A156.3 Grade 1.
 - 2. UL/cUL Listed for up to 3 hours for “A” labeled doors.
 - 3. UL10C/UBC 7-2 Positive Pressure Rated.
 - 4. UL10B Neutral Pressure Rated.
 - 5. UL 305 Listed for Panic Hardware.
 - 6. 2007 Florida Building Code Certification Number: FL9481.1.
 - 7. ANSI/BHMA A250.13 Severe Windstorm Resistant Component.
- C. Material and Design:
 - 1. Provide exit devices with actuators that extend a minimum of one-half of door width.
 - 2. Where trim is indicated in hardware sets provide the lever design to match design of lock levers.
 - 3. Exit device to mount flush with door.
 - 4. Latchbolts:
 - a. Rim device – 3/4” throw, Pullman type with automatic dead-latching, stainless steel
 - b. Surface vertical rod device – Top 1/2” throw, Pullman type with automatic dead-latching, stainless steel.
Bottom 1/2” throw, Pullman type, held retracted during door swing, stainless steel.
 - 5. Fasteners: Wood screws, machine screws, and thru-bolts.
- D. Lock and Latch Functions: Function numbers and descriptions of manufacturer’s series and lever styles indicated in door hardware sets.

E. Acceptable Manufactures:

Hager	4500 Series	
Von Duprin	99 Series	
Sargent	80 Series	

2.05 CYLINDERS AND KEYING

- A. Cylinders of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Products to be certified and listed by the following:
 - 1. Auxiliary Locks: ANSI/BHMA A156.5
 - 2. DHI Handbook “Keying systems and nomenclature” (1989)
- C. Cylinders:
 - 1. Manufacturer’s standard tumbler type, conventional core as directed by Architect/Owner
 - 2. Furnish with cams/tailpieces as required for locking device that is being furnished for project.

D. Keying:

1. Copy of Owners approved keying schedule submitted to Owner and Architect with documentation of which keying conference was held and Owner’s sign-off.
2. Provide a bitting list to Owner of combinations as established, and expand to twenty-five percent for future use or as directed by Owner.
3. Key into Owner’s existing keying system if applicable.
4. Keys to be shipped to Owner’s Representative, individually tag per keying conference.
5. Provide construction keyed cylinders and 10 keys as required per the keying meeting.

E. Acceptable Manufacturers:

PROVIDE AS DIRECTED BY ARCHITECT/OWNER

2.06 PUSH/PULL PLATES

- A. Push/Pull plates and bars of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Standards: Manufacturer to be certified by the following:
 1. Architectural Door Trim: ANSI/BHMA A156.6.
 2. Americans with Disabilities Act Accessibility Guidelines (ADAAG).
- C. Push plates: .050” thick, square corner and beveled edges with countersunk screw holes. Width and height as stated in hardware sets.

D. Acceptable Manufacturers:

Hager	30S
Rockwood	
Trimco	

- E. Pull Plates: .050” thick, square corner and beveled edges. Width and height as stated in hardware sets, 3/4” diameter pull, with clearance of 2-1/2” from face of door.

F. Acceptable Manufacturers:

Hager	H33J
Rockwood	
Trimco	

2.07 CLOSERS

- A. Closers of one manufacturer as listed for continuity of design and consideration of warranty, unless otherwise indicated on hardware schedule, comply with manufacturer’s recommendations for size of closer, depending on width of door, frequency of use, atmospheric pressure, ADAAG requirement, and fire rating.

B. Standards: Manufacturer to be certified and or listed by the following:

1. BHMA Certified ANSI A156.4 Grade 1.
2. ADA Complaint ANSI A117.1.
3. UL/cUL Listed up to 3 hours.
4. UL10C Positive Pressure Rated.
5. UL10B Neutral Pressure Rated.

C. Material and Design:

1. Provide cast iron non-handed bodies with full plastic covers.
2. Closers will have separated staked adjustable valve screws for latch speed, sweep speed, and backcheck.
3. Provide Tri-Pack arms and brackets for regular arm, top jamb, and parallel arm mounting.
4. One-piece seamless steel spring tube sealed in hydraulic fluid.
5. Double heat-treated steel tempered springs.
6. Precision-machined heat-treated steel piston.
7. Triple heat-treated steel spindle.
8. Full rack and pinion operation.

D. Mounting:

1. Out-swing doors use surface parallel arm mount closers except where noted on hardware schedule.
2. In-swing doors use surface regular arm mount closers except where noted on hardware schedule.
3. Provide brackets and shoe supports for aluminum doors and frames to mount fifth screw.
4. Furnish drop plates where top rail conditions on door do not allow for mounting of closer and where backside of closer is exposed through glass.

E. Size closers in compliance with requirements for accessibility (ADAAG). Comply with following maximum opening force requirements.

1. Interior hinged openings: 5.0 lbs.
2. Fire-rated and exterior openings use minimum opening force allowable by authority having jurisdiction.

F. Fasteners: Provide self-reaming, self-tapping wood and machine screws, and sex nuts and bolts for each closer.

G. Acceptable manufacturers:

Hager	5100 Series
LCN	4040XP Series
Sargent	281 Series

A. Size closers in compliance with requirements for accessibility (ADAAG). Comply with following maximum opening force requirements.

1. Interior hinged openings: 5.0 lbs.
2. Fire-rated and exterior openings are to be adjusted to have minimum opening force allowable by authority having jurisdiction.

2.08 PROTECTIVE TRIM

A. Protective trim of one manufacturer as listed for continuity of design and consideration of warranty.

- B. Size of protection plate: single doors, size two inches less door width (LDW) on push side of door, and one inch less door width on pull side of door. For pairs of doors, size one inch less door width (LDW) on push side of door, and 1/2 inch on pull side of door. Adjust sizes to accommodate accompanying hardware, such as, edge guards, astragals and others.
 - 1. Kick Plates 10" high or sized to door bottom rail height.
 - 2. Mop Plates 4" high.
- C. Products to be certified and listed by the following:
 - 1. Architectural Door Trim: ANSI/BHMA A156.6.
 - 2. UL.
- D. Material and Design:
 - 1. 0.050" gage stainless steel.
 - 2. Corners square, polishing lines or dominant direction of surface pattern so they run across door width of plate.
 - 3. Bevel top, bottom, and sides uniformly leaving no sharp edges.
 - 4. Countersink holes for screws. Space screw holes so they are no more than eight inches CTC, along a centerline not over 1/2" in from edge around plate. End screws maximum of 0.53" from corners.
- E. UL label stamp required on protection plates when top of plate is more than 16 inches above bottom of door on fire rated openings. Verify door manufacturer's UL listing for maximum height and width of protection plate to be used.
- F. Acceptable Manufacturers:

Hager	190S
Trimco	
Burns	

2.09 STOPS AND HOLDERS

- A. Stops and holders of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Wall Stops: Provide door stops wherever necessary to prevent door or hardware from striking an adjacent partition or obstruction. Provide wall stops when possible. Door stops and holders mounted in concrete floor or masonry walls have stainless steel machine screws and lead expansion shields.
- C. Products to be certified and listed by the following:
 - 1. Auxiliary Hardware: ANSI/BHMA A156.16.
- D. Acceptable Manufacturers:

	Convex	
Hager	232W	
Rockwood		
Burns		

- E. Overhead Stops and Holders: Provide overhead stops and holders for doors that open against equipment, casework sidelights and other objects that would make wall stops/holders and floor stops/holders inappropriate. Provide sex bolt attachments for mineral core wood door applications.
- F. Products to be certified and listed by the following:
 - 1. Overhead Stops and Holders: ANSI/BHMA A156.8 Grade 1.
- G. Acceptable Manufacturers:

	Heavy Duty Surface	
Hager	7000 SRF Series	
Glynn Johnson	90 SRF Series	
Sargent	590 Series	

2.10 THRESHOLDS

- A. Thresholds of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Set thresholds for exterior and acoustical openings in full bed of sealant with lead expansion shields and stainless steel machine screws complying with requirements specified in Division 7 Section “Joint Sealants: Notched in field to fit frame by hardware installer. Refer to Drawings for special details.
- C. Standards: Manufacturer to be certified by the following:
 - 1. Thresholds: ANSI/BHMA A156.21.
 - 2. American with Disabilities Act Accessibility Guidelines (ADAAG).
- D. Acceptable Manufacturers:

Hager	417S/520S
K.N. Crowder	
Reese	

2.11 DOOR GASKETING AND WEATHERSTRIP

- A. Door gasketing and weatherstrip of one manufacturer as listed for continuity of design and consideration of warranty.
- B. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing where indicated on hardware schedule. Provide noncorrosive fasteners for exterior applications.
 - 1. Perimeter gasketing: Apply to head and jamb, forming seal between door and frame.
 - 2. Meeting stile gasketing: Fasten to meeting stiles, forming seal when doors are in closed position.
 - 3. Door buttons: Apply to bottom of door, forming seal with threshold or floor when door is in closed position.
 - 4. Sound Gasketing: Cutting or notching for stop mounted hardware not permitted.
 - 5. Drip Guard: Apply to exterior face of frame header. Lip length to extend 4” beyond width of door.
- C. Products to be certified and listed by the following:
 - 1. Door Gasketing and Edge Seal Systems: ANSI/BHMA A156.22.
 - 2. BHMA certified for door sweeps, automatic door bottoms, and adhesive applied gasketing.

- D. Smoke-Labeled Gasketing: Comply with NFPA 105 listed, labeled, and acceptable to Authorities Having Jurisdiction, for smoke control indicated.
 - 1. Provide smoke-labeled gasketing on 20 minute rated doors and on smoke rated doors.
- E. Fire-Rated Gasketing: Comply with NFPA 80 listed, labeled, and acceptable to Authorities Having Jurisdiction, for fire ratings indicated.
- F. Refer to Section 08 1416 Wood Doors for Category A or Category B. Comply with UBC 7-2 and UL10C positive pressure where frame applied intumescent seals are required.

G. Acceptable Manufacturers:

1. Perimeter Gasketing:

	Stop Applied	Adhesive Applied
Hager	881S	726
K.N. Crowder		
Reese		

2. Meeting Stile Weatherstrip:

Hager	756S
K.N. Crowder	
Reese	

3. Overlapping Astragal:

Hager	835S
K.N. Crowder	
Reese	

4. Door Bottom Sweeps:

Hager	750S / 770SV
K.N. Crowder	
Reese	

5. Overhead Drip Guard

Hager	810S
K.N. Crowder	
Reese	

2.12 SILENCERS

- A. Where smoke, light, or weather seal are not required, provide three silencers per single door frame, two per double door frame and four per Dutch door frame.
- B. Products to be certified and listed by the following:
 - 1. Auxiliary Hardware: ANSI/BHMA A156.16

C. Acceptable Manufacturers:

	Hollow Metal Frame	
Hager	307D	
Rockwood		
Trimco		

2.13 KEY CABINET

- A. Provide key cabinet; surface mounted to wall.
- B. Key control system:
 1. Include two sets of key tags, hooks, labels, and envelopes.
 2. Contain system in metal cabinet with baked enamel finish.
 3. Capacity will be able to hold actual quantities of keys, plus 50 percent.
 4. Provide tools, instruction sheets, and accessories required to complete installation.

C. Acceptable Manufacturers:

Lund Equipment
Telkee Incorporated
Key Control

2.14 FINISHES

- A. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if within range of approved samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within range of approved samples.
- B. Comply with base material and finish requirements indicated by ANSI/BHMA A156.18 designations in hardware schedule.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. Examine doors and frames, with Installers present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.

3.02 INSTALLATION

- A. Install hardware using manufactures recommended fasteners and installation instructions, at height locations and clearance tolerances that comply with:
 - 1. NFPA 80
 - 2. NFPA 105
 - 3. ICC/ANSI A117.1
 - 4. ANSI/BHMA A156.115 Hardware Preparation in Steel Doors and Steel Frames
 - 5. ANSI/BHMA A156.115W hardware Preparation in Wood Doors with Wood or Steel Frames
 - 6. DHI Publication – Installation Guide for Doors and Hardware
 - 7. Approved shop drawings
 - 8. Approved finish hardware schedule
- B. Install soffit mounted gaskets prior other soffit mounted hardware to provide a continuous seal around the perimeter of the opening without cutting or notching.
- C. Install door closers so they are on the interior of the room side of the door. Stairwell doors will have closers mounted on the stair side and exterior doors will be mounted on the interior side of the building.
- D. In drywall applications provide blocking material of sufficient type and size for hardware items that mount directly to the wall.
- E. Locate wall mounted bumper to contact the trim of the operating trim.
- F. Mount mop and kick plates flush with the bottom of the door and centered horizontally on the door.
- G. Set thresholds for exterior, and acoustical doors at sound control openings in full bed of sealant complying with requirements specified in Division 07 Section “Joint Sealants” forming a tight seal between threshold and surface to which set.
- H. Anchor all components firmly into position and use anchoring devices furnished with the hardware item, unless otherwise specified.
- I. Do not install surface mounted items until finishes have been completed on substrates involved. Set unit level, plumb and true to line location. Adjust and reinforce attachment substrate as necessary for proper installation and operation.

3.03 FIELD QUALITY CONTROL

- A. Material supplier to schedule final walk through to inspect hardware installation ten (10) business days before final acceptance of Owner. Material supplier will provide a written report detailing discrepancies of each opening to General Contractor within seven (7) calendar days of walk through.

3.04 ADJUSTMENT, CLEANING, AND DEMONSTRATING

- A. Adjustment: Adjust and check each opening to ensure proper operation of each item of finish hardware. Replace items that cannot be adjusted to operate freely and smoothly or as intended for application at no cost to Owner.
- B. Cleaning: Clean adjacent surfaces soiled by hardware installation. Clean finish hardware per manufacturer's instructions after final adjustments have been made. Replace items that cannot be cleaned to manufacturer's level of finish quality at no cost to Owner.
- C. Conduct a training class for building maintenance personnel demonstrating the adjustment, operation of mechanical and electrical hardware. Special tools for finish hardware to be turned over and explained usage at the meeting.

3.05 PROTECTION

- A. Leave manufacturer's protective film intact and provide proper protection for all other finish hardware items that do not have protective material from the manufacture until Owner accepts project as complete.

3.06 HARDWARE SET SCHEDULE

- A. Intent of Hardware Groups
 - 1. Should items of hardware not specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
 - 2. Where items of hardware aren't correctly specified and are required for completion of the Work, a written statement of such omission, error, or other discrepancy is required to be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.
- B. Guide: Door hardware items have been placed in sets which are intended to be a guide of design, grade, quality, function, operation, performance, exposure, and like characteristics of door hardware, and may not be complete. Provide door hardware required to make each set complete and operational.
- C. Hardware schedule does not reflect handing, backset, method of fastening, and like characteristics of door hardware and door operation.
- D. Review door hardware sets with door types, frames, sizes and details on drawings. Verify suitability and adaptability of items specified in relation to details and surrounding conditions.

3.07 HARDWARE SCHEDULE

Hardware Sets

SET #1

Doors: 101A

3 Hinge	BB1199 5 X 4 1/2 NRP	US3	HA
1 Exit Device	4501 RIM	US3	HA
1 Closer	5100 x HDCS	GOL	HA
1 Set Weatherstrip	881S N x LAR	GLD	HA
1 Drip Cap	810S x LAR	GLD	HA
1 Door Bottom	770S V x LAR	GLD	HA
1 Threshold	520S V x LAR	GLD	HA

SET #2

Doors: 101B, 201A

3 Hinge	BB1279 4 1/2 x 4 1/2 NRP	US3	HA
1 Exit Device	4501 RIM F	US3	HA
1 Exit Device Trim	45BE AUG	US3	HA
1 Closer	5100 x HDCS	GOL	HA
1 Seal	726 x LAR	S	HA
1 Door Sweep	750S N x LAR	GLD	HA
1 Threshold	417S x LAR	GLD	HA

SET #3

Doors: 102A

NOTE: CYLINDER(S) AS REQUIRED.
REMAINDER OF HARDWARE BY DOOR SUPPLIER

SET #4**SEE SECTION 08 01 40 ENTRANCES FOR HARDWARE****SET #5**

Doors: 103B, 103C

6 Hinge	BB1279 4 1/2 x 4 1/2 NRP	US4	HA
2 Flush Bolt	282D	US4	HA
1 Dust Proof Strike	280X	US4	HA
1 Lockset	3580 AUG	US4	HA
2 OH Stops	7016 x SRF	US3	HA
1 Seal	726 x LAR	S	HA
1 Astragal	835S x LAR	GLD	HA

SET #6

Doors: 104

3 Hinge	BB1199 5 X 4 1/2 NRP	US4	HA
1 Exit Device	4501 RIM	US4	HA
1 Closer	5100 x HDCS	GOL	HA
1 Set Weatherstrip	881S N x LAR	GLD	HA
1 Drip Cap	810S x LAR	GLD	HA
1 Door Bottom	770S V x LAR	GLD	HA
1 Threshold	520S V x LAR	GLD	HA

SET #7

Doors: 201B

3 Hinge	BB1168 5 X 4 1/2	US3	HA
1 Exit Device	4501 RIM F	US3	HA
1 Exit Device Trim	45BE AUG	US3	HA
1 Closer	5100	GOL	HA
1 Wall Stop	232W	US3	HA
1 Seal	726 x LAR	S	HA

SET #8

Doors: 202

3 Hinge	BB1279 4 1/2 X 4 1/2	US4	HA
1 Lockset	3570 AUG	US4	HA
1 Closer	5100	GOL	HA
1 Kick Plate	190S 10" x 2" LDW	US4	HA
1 Wall Stop	232W	US4	HA
1 Seal	726 x LAR	S	HA

SET #9

Doors: 203

3 Hinge	BB1279 4 1/2 X 4 1/2	US4	HA
1 Push Plate	30S 6 X 16	US4	HA
1 Door Pull	H 33J 4 X 16	US4	HA
1 Closer	5100	GOL	HA
1 Kick Plate	190S 10" x 2" LDW	US4	HA
1 Mop Plate	190S 4" x 1" LDW	US4	HA
1 Wall Stop	232W	US3	HA
3 Door Silencer	307D	GREY	HA

END OF SECTION