SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes door hardware.

B. Related Requirements:

1. Section 08 12 13 “Hollow Metal Frames”.
2. Section 08 14 16 “Flush Wood Doors”.
3. Section 08 31 13 “Access Doors and Frame”.
4. Section 08 41 13 “Aluminum-Framed Entrances and Storefronts”.

1.2 PREINSTALLATION MEETINGS

A. Keying Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

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 diagram.
3. Requirements for key control system.
4. Address for delivery of keys.

B. Preinstallation Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination."

1.3 ACTION SUBMITTALS

A. Product Data: Submit product data including installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Submit shop drawings with details of electrified door hardware, indicating the following:

C. Samples: Submit samples of exposed door hardware for each type indicated below, in specified finish. Tag with full description for coordination with the Door Hardware Schedule.

1. Door Hardware: As follows:

a. Locks and latches.
b. Operating trim.
c. Wall stops.
d. Floor stops.
e. Magnetic latches.
f. Coat hooks.

2. Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.

D. Door Hardware Schedule: Submit door hardware schedule prepared by or under the supervision of door hardware supplier. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware. The Architect's review of schedule shall neither be construed as a complete check nor shall it relieve the Contractor of responsibility for errors, deviations, or omissions from the specified requirements to provide complete door hardware for the project.

1. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.

a. Organize door hardware sets in same order as in the Door Hardware Schedule.

2. Content: Include the following information:

a. Hardware designation code, Type, style, function, size, label, hand, and finish of each door hardware item.
b. Manufacturer of each item.
c. Fastenings and other pertinent information.
d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
e. Explanation of abbreviations, symbols, and codes contained in schedule.
f. Mounting locations for door hardware. Supply templates to door and frame manufacturer(s) to enable proper and accurate sizing and locations of cutouts for hardware. Detail conditions requiring custom extended lip strikes, or other special or custom conditions.
g. Door and frame sizes and materials.

E. Keying Schedule: Submit keying schedule prepared by or under the supervision of supplier, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.

1.4 INFORMATIONAL SUBMITTALS

A. Manufacturer Certificate: Submit certification from the card access control system manufacturer that the installer has been factory trained and certified to install its card reader/locksets.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: Submit maintenance data for each type of door hardware. Include final hardware and keying schedule.

B. Warranties: Submit special warranties specified in this Section.

C. Fire-Rated Door Assembly Testing: Submit a written record of each fire door assembly to the Owner to be made available to the Authority Having Jurisdiction (AHJ) for future building inspections.

1.6 MAINTENANCE MATERIAL SUBMITTALS

A. Maintenance Tools: Furnish a complete set of specialized tools for Owner's continued adjustment, maintenance, removal, and replacement of door hardware.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

1. All entry card reader/locksets shall be installed by a factory authorized installer who has installed card access control system reader/locksets for at least three projects of similar size over the last five years which were similar in material, design, and extent to that indicated for this project and whose work has resulted in construction with a record of successful in-service performance. The installer's forces shall have been certified by the card access control system manufacturer to install the card/reader locksets.
2. All entry card reader/lockset door batteries shall be replaced at the time of Substantial Completion.

B. Supplier Qualifications: Door hardware supplier, who has completed a minimum of three (3) projects over the last 5 years which were similar in material, design and extent to that indicated for the Project - as determined by the Architect - and which have resulted in construction with a record of successful in service performance, and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

1. Scheduling Responsibility: Preparation of door hardware and keying schedules.

C. Architectural Hardware Consultant Qualifications: A person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.

D. Source Limitations: Obtain each type of door hardware from a single manufacturer, unless otherwise indicated.

E. Regulatory Requirements: Comply with the following:

1. Provide hardware items complying with the applicable provisions for accessibility and usability by the disabled and handicapped in compliance with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1, FED-STD-795, "Uniform Federal Accessibility Standards,"
2. NFPA 101: Comply with applicable provisions for means of egress doors.

F. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by Underwriters Laboratories, Inc. for fire ratings indicated, based on testing according to NFPA 252. Provide only door hardware items that are identical to items tested by UL for the types and sizes of doors required. In case of conflict between type of hardware specified and type required for accessibility or fire protection, furnish type required by NFPA and UL. Doors indicated in fire rated partitions and walls shall be positive latching and self-closing, with smoke gaskets where required by applicable codes.

1. Wherever exit device hardware is required on doors, comply with UL 305. Furnish hardware to door manufacturer for installation at factory. Provide supplementary label, "Fire Exit Hardware," on each exit device to certify that panic hardware has been panic load tested with door.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

1.9 COORDINATION

A. Coordinate layout and installation of recessed pivots and closers with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified in Section 03 30 00 "Cast-in-Place Concrete."

B. Templates: Furnish templates and door hardware schedules, coordinated for the application of door hardware items with door and frame details, to door opening fabricators and trades performing door opening work to permit the preparation of doors and frames to receive the specified door hardware. Where the door hardware item scheduled is not adaptable to the finished size of door opening members requiring door hardware, submit an item having a similar operation and quality to the Architect for review. Each door hardware item shall be fabricated to templates.

C. Fire Rated Door Hardware: Where hardware is to be installed on fire-rated entrances, provide Hardware manufacture’s written instructions for coordination with door manufacture and verification that the selected hardware will comply with fire rating requirements.

1.10 WARRANTY

A. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:

1. Faulty operation of door hardware.
2. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

B. Warranty Period for Manual Closers: Ten years from date of Substantial Completion.

C. Warranty Period for Concealed Floor Closers: Five years from date of Substantial Completion.

D. Warranty Period for Exit Devices: Five years from date of Substantial Completion.

E. Warranty Period for Other Hardware: Two years from date of Substantial Completion.

F. Warranty for Mortised Mechanical Lock and Latchsets: Ten years from date of Substantial Completion.

G. Warranty for Heavy Duty Cylindrical Mechanical Lock and Latchsets: Seven years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 **(H): HANGING**

A. (HB): BUTT HINGE

1. General:

a. Hinge Quantity: Provide hinge quantity as recommended by hinge manufacturer based on door width, weight, thickness, door material, and hinge cup selection.

1) Installer shall coordinate with door hardware manufacture for hinge capacity and verify with door weight and dimensions.

b. General Hinge and Pivot Characteristics: Where door jamb or trim projects to such an extent that the width of leaf specified will not allow the door to clear such frame or trim, furnish hinges and pivots with leaves of sufficient width to clear. Hinges and pivots shall be template hinges conforming to BHMA A156.1 and in accordance with door and frame material requirements.

c. Butt Hinge Quantity: Provide the following, unless otherwise indicated:

1) Two Hinges: For doors with heights up to and including 60 inches (1524 mm).
2) Three Hinges: For doors with heights of greater than 60 inches (1524 mm) to and including 90 inches (2286 mm).
3) Four Hinges: For doors with heights greater than 90 inches (2286 mm) to and including 120 inches (3048 mm).

4) Provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).

d. Butt Hinge Sizes: 4-1/2 inches (114 mm) high by 4 inches (102 mm) or 4-1/2 inches (114 mm) wide for doors up to and including 36 inches (914 mm) in width; 5 inches (127 mm) high by 4 inches (102 mm) or 4-1/2 inches (114 mm) wide for doors greater than 36 inches (914 mm) in width.

1) Hinge Characteristics: Full mortise type with square corners. All butt hinges are to have non-rising pins for interior hinges and all exterior butt hinges are to be made of non-ferrous base metal and have non-removable pins (NRP). Provide only steel bodied butt and pivot hinges at labeled doors. All butt hinges shall be furnished with button tips. Provide heavy weight, ball bearing, hinges at doors 40 inches (1016 mm) and greater in width.

e. Electrified Functions for Hinges and Pivots: Furnish fully concealed circuit, tamper resistant, wired hinges and pivots at doors requiring power transfer or door monitoring from jamb to door. All electrified hinges and pivots shall be rated for the in-rush amperage of the door mounted device being electrified.

f. Fasteners: Package all hinges and pivots with machine and wood screws as required by door and frame construction.

2. (HBS): Butt Hinge, Standard Weight

a. HBS02 - Standard Weight, Ball Bearing, 5 Knuckle, Steel: Complying with BHMA A156.1 A8112, one of the following:

1) BB5000; Bommer Industries, Inc., Landrum, SC (BI).
2) BB1279; Hager Companies (HAG).
3) TA2714; McKinney Products Company (MCK).
4) FBB179; Stanley Commercial Hardware (STH).
5) 5BB1; Ives (IVS).

3. (HBH): Butt Hinge Heavy Weight

a. HBH01 - Heavy Weight, Ball Bearing, 5 Knuckle, Steel: Complying with BHMA A156.1 A8111, one of the following:

1) BB5004; Bommer Industries, Inc., Landrum, SC (BI).
2) BB1168; Hager Companies (HAG).
3) T4A3786; McKinney Products Company (MCK).
4) FBB168; Stanley Commercial Hardware (STH).
5) 55BB1HW; Ives (IVS).

B. HP): PIVOT HINGES

1. General:

a. Hinge Quantity: Provide hinge quantity as recommended by hinge manufacturer based on door width, weight, thickness, door material, and hinge cup selection.

1) Installer shall coordinate with door hardware manufacture for hinge capacity and verify with door weight and dimensions.

b. General Pivot Hinge Characteristics: Where door jamb or trim projects to such an extent that the width of leaf specified will not allow the door to clear such frame or trim, furnish hinges and pivots with leaves of sufficient width to clear. Hinges and pivots shall be template hinges conforming to BHMA A156.1 and in accordance with door and frame material requirements.

c. Offset Pivot Hinge Quantity: Provide the following, unless otherwise indicated:

1) Two Hinges: For doors with heights up to and including 60 inches (1524 mm).
2) Three Hinges: For doors with heights of greater than 60 inches (1524 mm) to and including 90 inches (2286 mm).
3) Four Hinges: For doors with heights greater than 90 inches (2286 mm) to and including 120 inches (3048 mm).
4) Provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).

d. Electrified Functions for Hinges and Pivots: Furnish fully concealed circuit, tamper resistant, wired hinges and pivots at doors requiring power transfer or door monitoring from jamb to door. All electrified hinges and pivots shall be rated for the in-rush amperage of the door mounted device being electrified.

e. Fasteners: Package all hinges and pivots with machine and wood screws as required by door and frame construction.

2. (HPC): Center Pivots

a. HPC01- Center Pivots: Mortised mounted, non-handed, center pivot set with sealed bearings for protection against weather and debris and composed of a head mounted top pivot and floor mounted bottom pivot. Furnish with extended spindles. Complying with BHMA A156.4 C07032.

1) Model 370 Center Hung Pivot Set; Rixson-Firemark, Inc. (RIX).
2) 7255 Pivot Set; Ives (IVS).
3) 0370 Center Hung Pivot Set; Architectural Builders Hardware Mfg., Inc. (ABH).
4) Model 370 Center Hung Pivot less standard top pivot x 345 Top Pivot; Rixson-Firemark, Inc. (RIX).

(HS): SLIDING

1. Type HSS02: Sliding door Hardware for surface mounted exposed track system

a. Pemko Stainless Steel Sliding Track Hardware system

b. Hafele: Barn door Hardware for wood or glass doors:

c. Dorma Manet:

d. Dorma Agile:

2.2 (S): SECURING

A. (SC): CYLINDERS AND KEYING

1. (SCK): CYLINDER CORES AND KEYING

a. General: Provide Standard cylinder core systems, unless Interchangeable core system is requested by the Owner.

1) Construction Core: Provide construction core in locks during construction and as may be necessary for security or as may be requested by the Owner. Upon completion of the construction phase, construction keyed cylinders shall be voided mechanically without the removal of the cylinders from the locks. All construction keyed cylinders shall be individually keyed as required and subject to a single master key.

2) Keying System: Final keying to determine lock cylinders, keyed alike sets, level of keying, master key groups, grandmaster keying system shall be as directed by the Owner. Supplier and Contractor shall meet with the Owner and obtain final instructions in writing. Provide two nickel silver keys for each lock, and six keys for each grandmaster and masterkey system. Provide two blank keys for each lock for the Owner's convenience in making additional keys.

3) Key Control System: Furnish a key control system of the type specified. Furnish complete accessories including key gathering envelopes, labels, reserve pattern key tags with self-locking key clips, key receipt forms, key receipt holders, 3-way visible card index, temporary key markers and permanent key markers.

a) Model 1205-D; Lund Equipment Co., Inc.
b) Aristocrat AWC 450-S; Telkee, Inc.

b. SCK02: Interchangeable Core Cylinder Bodies: Full faced cylinders with square shouldered (not tapered) compression rings, standard threaded. Provide empty rings for installation into all locks.

1) 1100 Series Flexible Head Mortise Cylinder; Corbin Russwin Architectural Hardware (CR).
2) 6300/7300 Series Adjustable Front Cylinder; Sargent Manufacturing Company (SGT).
3) FSIC system by Schlage Lock Company (SCH).

B. (SL): LOCKS AND LATCHES

1. (SLM): Mortise Lock and Latch Sets: Heavy duty, commercial, mortise bodies complying with BHMA A156.13 Series 1000, Grade 1, with throughbolted lever trim. Furnish mortise type, field reversible without disassembly, field multifunctional without opening lock cases, lock and latch sets with 1 or 2 piece anti-friction deadlocking stainless steel latchbolts having a minimum 3/4 inch (19 mm) throw, 2-3/4 inches (70 mm) backset, and UL listed for 3 hour doors. All lock and latch sets, to be furnished complete with heavy 0.109 inch (2.77 mm) (12 gage)wrought steel zinc dichromate or chrome plated case, trim, adjustable beveled square cornered armored fronts, and cold forged steel or stainless steel hubs. Conceal fastenings, washers and bushings. Provide

wrought, or black plastic, box strikes for each lock and latch set. Provide brass, bronze or stainless steel strikes with curved lips of sufficient length to protect frames. Provide solid forged or cast levers with wrought roses. Where lock functions are scheduled provide non-handed guard bolt and stainless steel deadbolt with a minimum 1 inch (25 mm) throw. Refer to other section for electro mechanical mortise lock and latch set, Type ESLM.

a. Strikes for Locks and Latches: All strikes for locks and latches shall be provided by the lock and latch manufacturer unless otherwise specified or scheduled, refer to Article 'Locks and Latches.'
b. Strikes on Rabbeted Doors: Provide special rabbeted front and strike on locksets for rabbeted meeting stiles.
c. Manufacturers:

    1) Sargent 8200 Series; Sargent Manufacturing Company (SGT). Provide handed ANSI 4-7/8 inch curved lip strikes die punched to match bolts provided with latchset functions only, provide non-handed standard curve lip strikes 82-0110 for all other functions.

        a) Turnlever: unless otherwise indicated or selected by the Architect from manufacture's full range of options, provide J, L, or P Design with 130KB Thumbturn.

    2) Corbin-Russwin ML2000 Series; Corbin Russwin Architectural Hardware (CR). Provide handed ANSI 4-7/8" curved lip strikes die punched to match bolts provided with latchset functions only 340L62 (RH) and 340L63 (LH), provide handed standard curve lip strikes for all other functions 340L60 (RH) and 340L61 (LH).

        a) Turn lever: unless otherwise indicated or selected by the Architect from manufacture's full range of options, provide Lustra LSA Design x 519F10

    3) Schlage L9000 Series; Schlage Lock Company (SCH). Provide handed ANSI 4-7/8 inch curved lip strikes die punched to match bolts provided with latchset functions only (Part No. XL11-820/XL11-821), provide non-handed standard curve lip strikes for all other functions 10-072.

        a) Turn lever: unless otherwise indicated or selected by the Architect from manufacture's full range of options, provide03 Design x A Rose x 09-905.

d. Functions:

    1) SLM01 Passage or Closet Latch. ANSI F01. Latch bolt operated by lever from either side at all times.

    2) SLM07 Storeroom or Closet Lock. ANSI F07. Latch bolt operated by key from outside or by operating inside lever. Outside lever is always inoperative. Auxiliary dead latch.

    3) SLM19 Privacy, Bedroom or Bath Lock. ANSI F19. Latch bolt operated by lever from either side. Dead bolt operated by turn from inside and emergency release from outside. Operating inside lever retracts both bolts. (Non-keyed locksets; Similar with SLM02 except when inside handle is

operated, both latchbolt and deadbolt retract simultaneously and outside handle is unlocked;; Similar with SLM22 except it has additional dead bolt)

4) SLM26 Institutional Privacy. ANSI F26. Latch bolt operated by lever from either side except when outside lever is locked by turn inside. Latch bolt by key outside with override of turn inside when manually held in locked position. Operating inside lever or closing door unlocks outside lever. Auxiliary dead latch. (Keyed Lastchbolt Locksets, Single Cylinder)

e. (SLMK): Mortised Keypad Operated Functions

1) SLMK1: Keypad Operated Functions and Mechanical Mortised Locks: Mortise Lock Set Push Button Combination Locks.

a) KP8200; Sargent Manufacturing Company (SGT). .
b) CO-100-MS Series Locks; Schlage Lock Company (SCH).
c) 8100 Series; Kaba Ilco Corp..

(SD): DEAD BOLTS/DEAD LOCKS

1. (SDM): Manual

a. SDM05 Bottom Rail Mortised Deadlocks: Heavy duty, commercial, deadlock complying with BHMA A156.5 Type E8211, Grade 1. Furnish bottom rail deadlocks less thumb turn and key cylinders. Where thumb turn, or key, cylinders are scheduled, furnish types as specified for mortise locks fitted with proper cams.

1) MS1861; Adams-Rite Manufacturing Co. (ARM).

D. (SS): DUST PROOF STRIKE

1. (SSF) Floor Type

a. SSF01 Dustproof Floor Strikes: Complying with BHMA A156.16, Type L04251, L04021 or L14021, one of the following:

a) No. 80; Door Controls International.
b) DP2; Ives.
c) 3910; Trimco (Triangle Brass Manufacturing Company, Inc.) (TBM).

2.3 (O): OPERATING

A. (OP): PUSHES AND PULLS

1. (OPS): Pushes and Pulls; Surface Mounted Type

a. OPS02 – Ladder Pull, Round Bar Pull with Round Stanchions in finish as scheduled. Provide push pulls to length as selected from Manufacture's full line of options with minimum 2-11/16 inch (68 mm) projection, minimum 1-1/2 inch (38 mm) clearance with bases centered and anchored to top and bottom rails. Furnish spacers threaded to accept concealed through-bolt attachment including provision for spanner tightening of bolts of assembly. Do not provide baseplates at stile to pull interface. Full height pulls are allowed only on pull side.

1) IVES Long Door Pulls 9266
2) Dorma TG 9387 Handles
3) Strongar Hardware Ladder Pull Handle
4) Rockwood Manufacturing Company (RM); RM3300 with straight intermediate post.

B. (OC): CLOSERS

1. (OCS): Surface Mounted Type

a. OCS01: Surface-Mounted Cast-Iron Closers: Closers shall be certified by ETL laboratories and the manufacturer to a minimum of 8,000,000 cycles and meet BHMA A156.4, Grade 1. Closers used in conjunction with overhead stops and holders shall be templated and coordinated to function properly. Properly detail closers to meet application requirements by providing drop plates, brackets, etc. to meet application and installation requirements as indicated. Comply with manufacturer's recommendations for size of door closer depending on size of door, stack pressure conditions, exposure to weather, and anticipated frequency of use. Closers shall have adjustable spring power, full rack and pinion, independent closing speed and latch regulating V-slotted valves, fully hydraulic with a high strength cast iron cylinder and solid forged steel arms, bore diameter of 1-1/2 inches (38.1 mm), pinion shaft diameter of 5/8 inches (15.87 mm), adjustable back check, cushion and built-in stop feature where scheduled, hold open arms where scheduled, delayed action where scheduled, arm finish to match closer cover finish scheduled. Provide metal covers of clean line design with plated or primed for paint finish as scheduled and that require removal in order to make adjustments to closer.

1) 4110/4010; LCN Closers (LCN); Parallel arms
2) 281; Sargent Manufacturing Company (SGT); Parallel arms
3) PR-9500-M/R-9500-M; Norton (NO).

2. (OCC): Overhead Concealed Type

a. OCC01: Overhead Concealed Closers, Butt and Offset Hung: Closers shall meet BHMA A156.4, Grade 1. Properly detail closers to meet application and installation requirements as indicated. Comply with manufacturer's recommendations for size of door closer depending on size of door, stack pressure conditions, and anticipated frequency of use. Provide manufacturer's standard cover plate finished to match exposed portions of butts or pivots provided. Provide adjustable back check, cushion and built-in stop feature where scheduled, hold open arms where scheduled, delayed action where scheduled, arm finish to match closer cover finish scheduled.

1) 2010/2030; LCN Closers (LCN).
2) 91 Series; Rixson-Firemark, Inc. (RIX)
3) RTS 88 Series, Offset Slide Arm; Dorma.

b. OCC02: Overhead Concealed Closers, Center Hung: Closers shall meet BHMA A156.4, Grade 1. Properly detail closers to meet application and installation requirements as indicated. Comply with manufacturer's recommendations for size of door closer depending on size of door, stack pressure conditions, and anticipated

frequency of use. Provide manufacturer's standard cover plate finished to match exposed portions of pivots provided. Provide with manufacturer's standard top arm and pivot to suit conditions indicated. Provide adjustable back check, cushion and built-in stop feature where scheduled, hold open arms where scheduled, delayed action where scheduled, arm finish to match closer cover finish scheduled.

1) 6030; LCN Closers (LCN).
2) RTS 88 Series, End Loaded Arm; Dorma.

C. (OS): STOPS AND HOLDERS

1. General:

a. Floor Stops: Cast half dome design with rubber bumper, finish as scheduled. Provide manufacturer's standard riser heights as required for carpeted areas in conjunction with the floor bumpers scheduled. Unless otherwise scheduled, provide floor stops at each door leaf where partition construction does not allow the door to swing greater than 90 degrees.

b. Wall Stops: Cast disc type with concave rubber bumper, having a minimum 2-1/8 inch (54 mm) diameter base with nominal 1 inch (25 mm) projection and concealed attachment to substrate. Unless otherwise scheduled, provide wall stops at each door leaf where partition construction does not allow the door to swing greater than 90 degrees.

c. Electromagnetic Door Hold Opens for Labeled Fire and Smoke Door Assemblies: Provide each electromagnetic door hold open with fail-safe operation, concealed wiring, door mounted contact plates with concealed mounting fasteners, shims, extensions, and installed approximately 6 inches in from lock edge of door. Comply with BHMA A156.15 for wall mounted single unit, water resistant floor mounted single unit, water resistant floor mounted double unit for back to back mounting to the extent indicated. Coordinate voltage and current characteristics with power supplied to holders, in addition coordinate with fire detectors and interface with fire alarm system.

2. (OSS): Stops

a. OSS02: Roller Latch Angle Stops: Special angle stop BHMA A156.16 Type E19111, fabricated from brass or bronze, for single doors without stops and having a minimum of two rubber silencers per stop, minimum 1-1/2 inches (38 mm) wide by 4-1/2 inches (114 mm) long base for mortising into the head of door frame, 9/16 inch (14 mm) maximum stop face projection, adjustable roller latch and ramp roller strike; finish as scheduled.

1) 4040 Adjustable Roller Latch; Door Controls International (DCI).
2) RL1152; Ives (IVS).
3) 593; Rockwood Manufacturing Company (RM)
4) 1559BL; Trimco (Triangle Brass Manufacturing Company, Inc.) (TBM).

b. OSS06: Floor Stop for Doors with Standard 3/8 inch (9.5 mm) Clearance: Comply with BHMA 156.16 Type L12161, L02141 or L12141.

1) 3310X; Door Controls International (DCI).
2) FS436; Ives (IVS).
3) 1210; Trimco (Triangle Brass Manufacturing Company, Inc.) (TBM).

4) 441; Rockwood Manufacturing Company (RM)

c. OSS10: Magnetic Catches: Aluminum bodied extra heavy duty magnetic catch with outside dimensions of approximately 13/16 by 3-1/8 by 1 inch complying with BHMA A156.9, Type B03161 fabricated with self aligning magnets and furnished complete with door strikes.

1) 327; H.B. Ives (IVS).
2) CD45 Double Magnetic Cabinet Catch; Stanley Commercial Hardware (STH).

D. (MS): SILENCERS

1. (MSW): Silencers for Wood Doors

a. MSW01 Silencers for Wood Door Frames: BHMA A156.16, Type L03021; grey rubber, minimum 5/8 by 3/4 inch (16 by 19 mm); fabricated for drilled-in application to frame, specifically designed to absorb shock and reduce noise of door closing. Provide two silencers for each pair of doors, three silencers for each single door.

1) 9S; Door Controls International (DCI).
2) SR65; H. B. Ives (IVS).
3) 1229B; Trimco (Triangle Brass Manufacturing Company, Inc.) (TBM).
4) 609; Rockwood Manufacturing Company (RM).

2. (MSM): Silencers for Metal Doors

a. MSM01, Silencers for Metal Door Frames: BHMA A156.16, Type L03011; grey rubber, minimum diameter 1/2 inch (13 mm); fabricated for drilled-in application to frame, specifically designed to form an air pocket to absorb shock and reduce noise of door closing. Provide two silencers for each pair of doors, three silencers for each single door.

1) 8S; Door Controls International (DCI).
2) SR64; H. B. Ives (IVS).
3) 1229A; Trimco (Triangle Brass Manufacturing Company, Inc.)(TBM).
4) 608; Rockwood Manufacturing Company (RM)

b. MOH07; Coat Hooks: Double coat hook, cast brass bodied, minimum 1-1/8 by 1-1/8 by 1-1/8 inch (28.6 by 28.6 by 28.6 mm) projection.

1) 582 Double Coat Hook; H.B. Ives (IVS).

2.4 FABRICATION

A. Manufacturer's Nameplate: Provide each door hardware item without exposed manufacturers' labels, names, or designs.

B. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips oval-head screws with finished heads to match surface of door hardware item being attached.

Machine screws and expansion shields shall be used for attaching hardware to concrete and masonry. Use throughbolts for renovation work only where existing door blocking and reinforcements are unknown.

C. Concealed Fasteners: All new doors and door frames have been specified with adequate blocking and reinforcement provisions to eliminate exposed throughbolting of hardware items. Doors installed with exposed throughbolts will be rejected and replaced by the Contractor at no cost to the Owner. Where through bolts are used on existing doors provide sleeves for each through bolt.

2.5 FINISHES

A. Standard: Comply with BHMA A156.18.

B. Appearance of Finished Work: Finishes of the same designation, that come from two or more sources, shall match when the items are viewed at arm's length and approximately 24 inches (610 mm) apart. Unless otherwise scheduled, match each hardware item in a single hardware set with the scheduled latch or lock set finish. Painting of BHMA 600 (USP) surfaces is required and is specified under Section 09 91 23 "Interior Painting."

C. Designations: The abbreviations used to schedule hardware finishes are generally BHMA (Federal Standards where indicated in parenthesis) designations. Comply with base material and finish requirements indicated by the following:

1. BHMA 600 (USP): Primed for painting.
2. BHMA 605 (US3): Bright brass, clear coated.
3. BHMA 606 (US4): Satin brass, clear coated.
4. BHMA 611 (US9): Bright bronze, clear coated.
5. BHMA 612 (US10): Satin bronze, clear coated.
6. BHMA 613 (US10B): Dark-oxidized satin bronze, oil rubbed.
7. BHMA 618 (US14): Bright nickel plated, clear coated.
8. BHMA 619 (US15): Satin nickel plated, clear coated.
9. BHMA 625 (US26): Bright chromium plated.
10. BHMA 626 (US26D): Satin chromium plated.
11. BHMA 628 (US28): Satin aluminum, clear anodized.
12. BHMA 629 (US32): Bright stainless steel.
13. BHMA 630 (US32D): Satin stainless steel.
14. Alum.: Aluminum.

D. All door hardware exposed to view shall be **Matte Black**, unless otherwise noted. Door hardware exposed to view at Door #101A shall be **BHMA 628**.

PART 3 - EXECUTION

3.1 PREPARATION

A. Hardware for fire door assemblies shall be installed in accordance with NFPA 80. Hardware for smoke and draft control door assemblies shall be installed in accordance with NFPA 105. Install hardware for non-labeled and non-smoke and draft door assemblies in accordance with BHMA A156.115for steel doors and frames, and BHMA A156.115-W series for wood doors, and hardware manufacturer's installation instructions for doors and frames fabricated from other than steel or wood.

B. All modifications to fire doors and frame for electric and mortised hardware shall be made by the respective door and frame manufacturers.

C. Smoke Seals at S Labeled Door Assemblies: Provide and install smoke seals at S labeled doors in accordance with door manufacturer's instructions.

3.2 INSTALLATION

1. Mounting Heights: Mount door hardware units at the following heights, unless specifically indicated on the Drawings or required to comply with governing regulations:

2. Locks and Latches: 38 inches (956 mm) to center of lever from finish floor.
3. Door Pulls: 44 inches (1118 mm) from finish floor to center of grip. Pull bases centered on door stiles, unless otherwise indicated.

4. Door Pulls: Pull bases centered on top and bottom door rails, and spaced from lock edge of door stile as indicated, or recommended, by the pull manufacturer.
5. Push Plates: 44 inches (1118 mm) from finish floor to center of plate. Coordinate with pull location.
6. Horizontal Push/Pull Bar: 42 inches (1067 mm) from finish floor to center of pull/pull. Push/Pull bases centered on door stiles, unless otherwise indicated.
7. Butt Hinges: 10 inches (254 mm) to bottom of lowest hinge from finish floor; 5 inches (127 mm) to top of upper hinge from top of door; space intermediate hinges equally between lower and upper hinges.
8. Deadbolts: Not more than 44 inches (1118 mm) from finish floor to operating trim.
9. Flush Bolt Operating Mechanisms: Top bolt 66 to 72 inches (1676 to 1829 mm) from finish floor, bottom bolt 12 inches (305 mm) from finish floor.

10. Exit Devices: 40 inches (1016 mm) from finish floor to center of touch bar. 38 inches (965 mm) from finish floor to center of cross bar.
11. Coat Hooks: 48 inches (1200 mm) from finish floor to center of coat hook.
12. Door Guards: Not more than 54 inches (1372 mm) from finished floor to center of door guard.
13. Door Viewers: Not more than 60 inches (1524 mm) from finished floor to center of viewer at each non-ADA accessible hotel room suite entry door. Not more than 60 inches (1524 mm) and not more than 43 inches (1092 mm) from finished floor to center of viewers at each ADA accessible hotel room suite entry door.

14. Install each door hardware item to comply with manufacturer's written instructions. Install overhead surface closers for maximum degree of opening obtainable. Place on room side of corridor doors, stair side of stair doors, secondary corridor side of doors between corridors. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be finished, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
15. All wall stops shall be installed with reinforced blocking in wallboard construction. Drywall anchors are not an acceptable means of reinforcement/blocking. Provide intermediate steel plates or channel reinforcement backing at wall stops mounted in wallboard construction.
16. Do not install permanent key cylinders in locks until the time of preliminary acceptance by the Owner. At the time of preliminary acceptance, and in the presence of the Owner's representative, permanent key all lock cylinders. Record and file all keys in the key control system specified, and turn system over to Owner for sole possession and control.
17. Key control storage system shall be installed where directed by the Owner.
18. Thresholds: Thresholds shall be secured with a minimum of 3 fasteners per single door width and 6 fasteners per double door width with a maximum spacing of 12 inches (305 mm). Minimum screw size shall be No. 10 length, dependent on job conditions, with a minimum of 3/4 inch (19 mm) thread engagement into the floor or anchoring device used. Screw heads to be countersunk and flush with face of threshold. Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Section 07 92 00 "Joint Sealants." Once installed thresholds shall not rock or cause noise when walked on.

3.3 FIELD QUALITY CONTROL

1. Independent Architectural Hardware Consultant: Owner will engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.
2. Independent 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.

3.4 ADJUSTING

1. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every hardware component. Replace hardware components that cannot be adjusted to operate as intended. Adjust door control devices to compensate for building stack pressures, final operation of forced air mechanical equipment and to comply with referenced accessibility requirements.

2. Test each electrical hardware item to determine if devices are properly functioning. Wiring shall be tested for correct voltage, current carrying capacity, and proper grounding. Stray voltages in wiring shall be eliminated.
3. Coordinate with electrical installation for interface and connection with life safety and security systems.

4. All guestroom entry card reader/lockset door batteries shall be replaced at the time of Substantial Completion.

5. Fire-Rated Door Assembly Testing: Upon completion of the installation, test each fire door assembly in the project to confirm proper operation of its closing device and that it meets all criteria of a fire door assembly as per NFPA 80 2007 Edition. The inspection of the fire doors is to be performed by individuals with knowledge and understanding of the operation components of the type of door being subjected to testing and who are either credentialed as an Architectural Hardware Consultant (AHC) or as a Fire Door Annual Inspector (FDAI). A written record shall be maintained and transmitted to the Owner to be made available to the Authority Having Jurisdiction (AHJ). The record shall list each fire door assembly throughout the project, and include each door number, an itemized list of hardware set components at each door opening, and each door location in the facility.

3.5 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation. Clean hardware components as necessary to restore proper finish. Provide protection during the progress of the work and maintain conditions that ensure door hardware is in perfect working order and without damage or deterioration at time of Substantial Completion.

3.6 OPENINGS SCHEDULE

Refer to Openings Schedule on Drawings.

END OF SECTION 08 71 00