

SECTION 087100
DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Hardware for wood, aluminum, and hollow metal doors.
- B. Hardware for fire-rated doors.
- C. Lock cylinders for doors with balance of hardware specified in other Sections.
- D. Thresholds.
- E. Smoke and draft control seals.
- F. Weatherstripping and gasketing.

1.02 RELATED REQUIREMENTS

- A. Section 061000 - Rough Carpentry
- B. Section 079200 - Joint Sealants
- C. Section 081113 - Hollow Metal Doors and Frames
- D. Section 081416 - Flush Wood Doors.
- E. Section 081423.16 - Plastic Laminate-Faced Wood Doors.
- F. Section 084113 - Aluminum-Framed Entrances and Storefronts
- G. Section 084313 - Aluminum-Framed Storefronts
- H. Section 099000 - Painting and Coating

1.03 REFERENCE STANDARDS

- A. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
- B. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
- C. BHMA A156.1 - Standard for Butts and Hinges; 2021.
- D. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.
- E. BHMA A156.3 - Exit Devices; 2020.
- F. BHMA A156.4 - Door Controls - Closers; 2019.
- G. BHMA A156.5 - Cylinders and Input Devices for Locks; 2020.
- H. BHMA A156.6 - Standard for Architectural Door Trim; 2021.
- I. BHMA A156.7 - Template Hinge Dimensions; 2016.
- J. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.
- K. BHMA A156.13 - Mortise Locks & Latches Series 1000; 2022.
- L. BHMA A156.16 - Auxiliary Hardware; 2018.
- M. BHMA A156.18 - Materials and Finishes; 2020.
- N. BHMA A156.21 - Thresholds; 2019.
- O. BHMA A156.22 - Standard for Gasketing; 2021.
- P. BHMA A156.26 - Standard for Continuous Hinges; 2021.
- Q. BHMA A156.28 - Standard for Recommended Practices for Mechanical Keying Systems; 2018.
- R. BHMA A156.115 - Hardware Preparation in Steel Doors and Steel Frames; 2016.
- S. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.

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- T. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
- U. ITS (DIR) - Directory of Listed Products; Current Edition.
- V. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
- W. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.
- X. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
- Y. UL (DIR) - Online Certifications Directory; Current Edition.
- Z. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
- AA. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.
- BB. Door And Hardware Institute (DHI) Publications:
 - 1. DHI TDH-003-20 - Sequence and Format for the Hardware Schedule; 2019.
 - 2. DHI TDH-004-20- Keying Systems and Nomenclature; 2019.
 - 3. DHI TDH-009-20 - Recommended Locations for Architectural Hardware for Doors Installed in Standard Steel Frames; Updated 2020.

1.04 ADMINISTRATIVE REQUIREMENTS

- A. Coordinate the manufacture, fabrication, and installation of products that door hardware is installed on. Coordinate with blocking and reinforcement requirements for the required hardware with the corresponding door and frame manufacturers prior to fabrication.
- B. Coordinate blocking and reinforcement requirements for the required wall-mounted hardware prior to erecting walls.
- C. Sequence installation to ensure facility services connections are achieved in an orderly and expeditious manner.
- D. Preinstallation Meeting:
 - 1. Convene a preinstallation meeting one week prior to commencing work of this Section.
 - 2. Require attendance by personnel of related trades, installers, and the following:
 - a. Architect.
 - b. Contractor
 - c. Hardware Supplier's Architectural Hardware Consultant (AHC).
 - d. Hardware Installer.
 - 3. Review installation details and requirements for hardware items.
 - 4. Review coordination details.
 - 5. Identify which hardware that is furnished without fastener holes and will require drilling and countersinking to be performed by the installer.
- E. Furnish templates for door and frame preparation to manufacturers and fabricators of products requiring internal reinforcement for door hardware.
- F. Keying Requirements Meeting:
 - 1. Arrange for a keying meeting, with Architect, Owner and hardware supplier, and other involved parties to ensure locksets and locking hardware, are functionally correct and keying complies with project requirements.
 - 2. Attendance Required:
 - a. Contractor.
 - b. Owner.
 - c. Architect.
 - d. Architectural Hardware Consultant (AHC).
 - 3. Furnish three (3) copies of the approved Schedule of Locks and Cylinders to guide the meeting.
 - 4. Agenda:
 - a. Establish keying requirements.

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- b. Verify locksets and locking hardware are functionally correct for project requirements.
- c. Verify that keying and programming complies with Project requirements.
- d. Establish keying submittal schedule and update requirements.
- 5. Incorporate Owner's keying instructions and directives established at the Keying Requirements Meeting into keying submittal including, but not limited to, the following:
 - a. Key control system requirements.
 - b. Schematic diagram of preliminary key system.
- 6. Record minutes and distribute copies within two days after meeting to participants, with two copies to Architect, Owner, participants, and those affected by decisions made.
- 7. Deliver the Owner-approved Keying Schedule to the permanent core manufacturer.

1.05 SUBMITTALS

- A. See Section 013000 - Administrative Requirements for submittal procedures.
- B. Product Data: Manufacturer's catalog literature for each type of hardware, marked to clearly show products to be furnished for this project, and includes construction details, material descriptions, finishes, and dimensions and profiles of individual components.
- C. Shop Drawings:
 - 1. Door Hardware Schedule
 - a. Submit a detailed listing that includes each item of hardware to be installed on each door.
 - b. Prepared by or under supervision of Architectural Hardware Consultant (AHC).
 - c. Comply with DHI TDH-003-20 using door numbering scheme and hardware set numbers as indicated in Contract Documents.
 - d. Arrange hardware details, opening details and headings in vertical schedule format.
 - e. List groups and suffixes in proper sequence.
 - f. Include complete description for each door listed.
 - g. Include manufacturers names, product names, catalog numbers. Include functions, types, styles, sizes and finishes of each item.
 - h. Include account of abbreviations and symbols used in schedule.
 - i. Note which hardware that is furnished without fastener holes and will require drilling and countersinking to be performed by the installer.
 - 2. Keying:
 - a. Submit a schedule of locks and cylinders with the hardware schedule. Schedule of locks and cylinders shall comply with the following:
 - 1) Submit schedule of openings that receive locks and cylinders. Include the following information according the Drawings:
 - (a) Column 1: Opening No.
 - (b) Column 2: Opening Location.
 - 2) The schedule shall also contain the following empty columns which shall be reviewed and filled in at the Keying Meeting:
 - (a) Column 3: Core Mark/Key Set.
 - (b) Column 4: Key Quantity.
 - (c) Column 5: Keyway
 - b. Keying Schedule:
 - 1) Furnish keying information in compliance with DHI TDH-004-20 standards.
- D. Samples for Verification
 - 1. Promptly after receipt of approved Hardware Schedule, submit samples of the following to represent compliance with specified requirements, style, color, and finish:
 - a. Full size samples:
 - 1) Conventional Hinges
 - 2) Locksets
 - 3) Closers:
 - (a) Cam-Action Type.

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- (b) Rack-and-Pinion Type
 - 4) Exit Devices
 - 5) Exit Device Trims
 - b. Minimum 2-inch by 4-inch sheet samples:
 - 1) Protection Plates
 - c. Minimum length of 12 inches for the following products:
 - 1) Continuous Hinges
 - 2) Drip Caps
 - 3) Weatherstripping
 - 4) Gasketing
 - 5) Door Bottom Seals
 - 6) Thresholds
 - 2. Retain approved samples at the Project site. Turnover approved samples to Owner at Substantial Completion with Operation and Maintenance Manual.
 - 3. Include product description with samples.
- E. Informational Submittals:
- 1. Manufacturer's Installation Instructions: Indicate special procedures and perimeter conditions requiring special attention.
 - 2. Manufacturer's qualification statement.
 - 3. Installer's qualification statement.
 - 4. Supplier's qualification statement.
 - 5. Glass Door Exit Devices: Check opening by accurate field measurement before fabrication. Show recorder measurements on shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of the work and possible damage to the finished product.
- F. Closeout Submittals—Furnish the following in compliance with 017800 - Closeout Submittals:
- 1. Approved Hardware Schedule with as-installed details noted.
 - 2. Product data and maintenance data for installed hardware—Include the following:
 - a. Manufacturer's printed instructions for installation, adjusting, troubleshooting, repair, and assembly/disassembly/reassembly, routine procedures for preventative maintenance,
 - b. Manufacturer's data on operating hardware, lubrication requirements, and inspection procedures related to preventative maintenance.
 - c. Manufacturer's parts lists and templates.
 - 3. AHC's inspection reports consisting of the following:
 - a. Date of inspections
 - b. Facility name and address
 - c. Company name and address of inspecting company
 - d. Verification of visual inspection and functional operation of door openings with builder's hardware.
 - e. Itemized list of product deficiencies with corresponding opening number and manufacturer's product number. Include date of follow-up inspection and AHC's certification when deficiencies are corrected.
 - f. List of openings in compliance with Project requirements.
 - g. Identify openings with Architect's door number.
 - h. Identify fire-rated doors with rating of protection expressed in minutes.
 - i. Name and signature of AHC performing inspections.
 - 4. Owner-Approved Key Schedule.
 - 5. Warranty: Submit manufacturer's warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.
 - 6. Project Record Documents: Record actual locations of concealed equipment, services, and conduit.
 - 7. Maintenance Materials and Tools:

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- a. Furnish the following for Owner's use in maintenance of project:
 - 1) Manufacturer's tools for use with mortise locksets:
 - (a) Cylinder wrench: Tool for installing, removing, and testing cylinders.
 - (b) Spanner wrench: Tool for installing sectional trim.
 - (c) Allen wrench: Tool for installing and removing inside levers.
 - (d) Emergency access keys for privacy locksets.
 - 2) Manufacturer's tools for use with cylindrical locksets:
 - (a) Spring loading tool.
 - (b) Spanner wrench: Tool for removing inside levers and inside rose.
8. See Section 017800 - Closeout Submittals for additional provisions.

1.06 QUALITY ASSURANCE

- A. Standards for Fire-Rated Doors: Maintain one copy of each referenced standard on site, for use by Architect and Contractor.
- B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum three years of documented experience.
- C. Installer Qualifications: Company specializing in performing work of the type specified for commercial door hardware with at least three years of documented experience.
- D. Supplier Qualifications:
 1. The permanent employees must include at least one Architectural Hardware Consultant (AHC) currently certified by the Door and Hardware Institute (DHI).
 2. The supplier's AHC shall be available during normal working hours for hardware consultation to the Owner, Architect, and Contractor.

1.07 DELIVERY, STORAGE, AND HANDLING

- A. Package hardware items individually; label and identify each package with door opening code to match door hardware schedule.
- B. Permanent Cores and Keys: Deliver keys and cores with identifying tags to Owner by security shipment direct from manufacturer.

1.08 WARRANTY

- A. See Section 017800 - Closeout Submittals for additional warranty requirements.
- B. Manufacturer Warranty: Provide manufacturer warranty against defects in material and workmanship for period indicated, from Substantial Completion. Complete forms in Owner's name and register with manufacturer.
 1. Closers: Five years, minimum.
 2. Exit Devices: Three years, minimum.
 3. Locksets and Cylinders: Three years, minimum.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
- B. Provide individual items of single type, of same model, and by same manufacturer.
- C. Locks: Provide a lock for each door, unless it's indicated that lock is not required.
 1. Lock Function:
 - a. Provide lock and latch function numbers and descriptions of manufacturer's series as indicated in Hardware Sets.
 - b. Provide an office lockset for swinging doors for which a lock function is not indicated.
 - c. Provide privacy function mortise locksets with visual indicators for doors serving the following rooms:
 - 1) Single occupant restrooms.
 - 2) Family toilets and bathing rooms.

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- 3) Assisted-use toilets and bathing rooms.
2. Trim: Provide lever handle on both sides of each lock, unless otherwise indicated.
3. Strikes:
 - a. Finish: To match lock or latch.
 - b. Strike Lip:
 - 1) Single Door Openings:
 - (a) Curved lip
 - (b) Lip-to-center (LTC) dimension of sufficient length that minimally clears frame trim.
 - (c) Extra-Long-Lip Strikes: Provide for locks used on frames with applied wood casing trim.
 - 2) Pair Door Openings:
 - (a) Flat lip
 - (b) 7/8-inch LTC for 1-3/4 thick inactive leaf.
 - c. Frame Strike Box: Provide strike box fabricated for use with aluminum framing, wood inactive leaves, and frames not manufactured with a strike box.
 - d. Center Strike at Pairs of Doors: Flat lip, 7/8-inch LTC.
 - e. Strikes for locksets at new frames shall be 4-7/8 inches tall except where noted otherwise.
- D. Door Pulls and Push Plates:
 1. Provide a pair of pulls where back-to-back BTB mounting is indicated.
 2. On glazed storefront doors, provide matching door pulls/push plates on both faces unless otherwise indicated.
- E. Closers:
 1. Provide door closer on each exterior door, unless otherwise indicated.
 2. Provide door closer on each fire-rated and smoke-rated door.
 3. Spring hinges are not an acceptable self-closing device, unless otherwise indicated.
- F. Overhead Stops and Holders (Door Checks):
 1. Provide swinging doors with overhead stops. Omit overhead stop where door opening is specified with one or more of the following items:
 - a. Floor stop.
 - b. Spring-stop arm assembly.
 - c. Wall stop.
- G. Drip Guards: Provide at head of outswinging exterior doors unless protected by roof or canopy directly overhead.
- H. Thresholds:
 1. Exterior Applications: Provide at each exterior door, unless otherwise indicated.
- I. Smoke and Draft Control Seals:
 1. Provide gasketing for 20-minute fire-rated doors and for smoke-and-draft control doors that complies with local codes, requirements of assemblies tested in accordance with UL 1784.
- J. Weatherstripping and Gasketing:
 1. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
 2. Provide door bottom sweep on each exterior door, unless otherwise indicated.
 3. Fabricate as continuous gasketing, do not cut or notch gasketing material.
- K. Fasteners:
 1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.
 2. Aluminum fasteners are not permitted.
 3. Screw Drives:

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- a. Provide Phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.
- b. Provide tamper resistant fasteners 6-lobe, Torx, and Spanner for electric hardware.
- c. The following are drives are acceptable as tamper-resistant:
 - 1) 6-lobe
 - 2) Torx
 - 3) Spanner
4. Fasteners shall be finished to match corresponding door hardware.
5. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.
6. Self-drilling (Tek) type screws are not permitted.
7. Provide stainless-steel machine screws and lead expansion shields for concrete and masonry substrates.
8. Provide wall grip inserts for hollow wall construction.
9. Surface Mounted Hardware: Unless otherwise noted, fasteners are to be concealed.
10. Fire-Resistance-Rated Applications:
 - a. Comply with NFPA 80.
 - b. Comply with the fire-rated products manufacturers' UL10C listings for the specified rating and hardware configuration.
 - c. Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.
 - d. Where doors are not adequately blocked and reinforced, provide steel through bolts for attachment of surface mounted closers, hinges, and exit devices to door panels where proper door blocking is not provided.
 - e. Provide frame-applied intumescent seals and gasketing for fire-rated UL10C Category B doors.

2.02 PERFORMANCE REQUIREMENTS

- A. Provide door hardware products that comply with the following requirements:
 1. Applicable provisions of federal, state, and local codes.
 2. Accessibility: ADA Standards and ICC A117.1.
 3. Fire-Resistance-Rated Doors: Provide hardware compliant with NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
 4. Hardware on Fire-Resistance-Rated Doors: Listed and classified by UL (DIR) or ITS (DIR) as suitable for application indicated.
 5. Hardware for Smoke and Draft Control Doors (Indicated as "S" on Drawings): Provide door hardware that complies with local codes, and requirements of assemblies tested in accordance with UL 1784.
 6. Hardware Preparation for Steel Doors and Steel Frames: BHMA A156.115.
 7. Hardware Preparation for Wood Doors with Wood or Steel Frames: BHMA A156.115W.
 8. Products Requiring Electrical Connection: Listed and classified by UL (DIR) as suitable for the purpose specified.

2.03 BUTT HINGES

- A. Manufacturers:
 1. BEST; dormakaba Group: www.bestaccess.com.
- B. Properties:
 1. Butt Hinges:
 - a. Template screw hole locations.
 - b. Bearings:
 - 1) Standard Weight (SW) Hinges: Minimum of two (2) permanently lubricated non-detachable bearings.
 - 2) Heavy Weight (HW) Hinges: Minimum of four (4) permanently lubricated bearings on heavy weight hinges.

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- 3) Bearing assembly installed after plating.
 - 4) Exposed fully hardened bearings.
 - 5) Bearing Shells: Shapes consistent with barrels.
 - c. Pins:
 - 1) Easily seated, non-rising pins.
 - 2) Fully plate hinge pins.
 - 3) Non-Removable Pins: Slotted stainless-steel screws.
 - d. UL 10C listed and NFPA 80-compliant for use on fire-rated doors.
- C. Widths:
 - 1. As required to clear surrounding trim.
 - 2. Sufficient size to allow 180-degree swing of door.
- D. Finishes:
 - 1. Comply with BHMA A156.18 requirements for the finishes identified in Hardware Sets.
 - 2. Fully polish steel hinges prior to plating; front, back, and barrel.
- E. Grades:
 - 1. Butt Hinges: Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.
 - 2. Comply with BHMA A156.18 Materials and Finishes.
- F. Material:
 - 1. Provide steel hinges except as follows:
 - a. Interior non-rated doors serving wet locations, humid locations, and non-conditioned spaces: Provide hinges with brass or bronze base material.
 - b. Interior fire-rated doors serving wet locations, humid locations, and non-conditioned spaces: Provide steel hinges with rust resisting base (K).
 - c. Exterior non-rated doors: Provide hinges with brass or bronze base material.
 - d. Exterior fire-rated doors: Provide steel hinges with rust resisting base (K).
- G. Types:
 - 1. Butt Hinges: Include full mortise hinges.
- H. Other Requirements:
 - 1. Butt hinges shall have non-removable pins (NRP). Omit NRP feature from hinges at the following doors:
 - a. Doors equipped with passage locksets and passage exit device trim functions.
 - b. Inswinging doors.
- I. Quantities: Three (3) hinges per leaves up to 90 inches in height. Add one (1) for each additional 30 inches in height or fraction thereof.
- J. Sizes:
 - 1. Minimum hinge weight, thickness and height according to the following door sizes:
 - a. For doors up to 36 inches wide and up to 1-3/4 inches thick provide hinges with a minimum thickness of 0.134-inch and a minimum of 4-1/2 inches in height.
 - b. For doors from 36 inches wide up to 42 inches wide and up to 1-3/4 inches thick provide hinges with a minimum thickness of 0.145-inch and a minimum of 4-1/2 inches in height.
 - c. For doors from 42 inches wide up to 48 inches wide and up to 1-3/4 inches thick provide hinges with a minimum thickness of 0.190-inch and a minimum of 5 inches in height.
 - d. For doors greater than 1-3/4 inches thick provide hinges with a minimum thickness of 0.190-inch and a minimum of 5 inches in height.
- K. Approved Products:
 - 1. Butt Hinges:
 - a. Ball Bearing, Five (5) Knuckle:
 - 1) Brass, Bronze HW Hinges:
 - (a) BEST: FBB199

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- 2) Brass, Bronze SW Hinges:
 - (a) BEST: FBB191
- 3) Steel HW Hinges:
 - (a) BEST: FBB168
- 4) Steel SW Hinges:
 - (a) BEST: FBB179

2.04 CONTINUOUS HINGES

- A. Manufacturers:
 - 1. BEST; dormakaba Group.
- B. Properties:
 - 1. Geared Continuous Hinges
 - a. Non-handed.
 - b. Anti-spinning through-fastener.
 - c. UL 10C listed for fire-resistance-rated doors:
 - 1) Metal Door Installation:
 - (a) Rated up to 90 minutes without fire studs.
 - (b) Provide fire studs for fire rating greater than 90 minutes.
 - 2) Wood Door Installation:
 - (a) Rated up to 60 minutes without fire studs.
 - (b) Provide fire studs for fire rating greater than 60 minutes.
 - 3) Fire studs shall be stainless steel. Provide in compliance with the manufacturer's UL10C listing for the indicated rating and door height.
- C. Finishes:
- D. Grades:
 - 1. Continuous Hinges: Comply with BHMA A156.26, Grade 1.
- E. Material:
 - 1. Gear Hinges: 6063-T6 aluminum.
- F. Types:
 - 1. Include geared, edge mounted hinges.
- G. Quantities: One per door leaf.
- H. Sizes:
 - 1. Widths:
 - a. As required to clear surrounding trim.
 - b. Sufficient size to allow 180-degree swing of door.
 - 2. Length: 1-inch less than door height (LDH).
- I. Other Requirements:
 - 1. Provide hinges lead lined (LL) model for the following door types:
 - a. Lead lined doors
 - b. Doors weighing more than 450 pounds up to 1,000 pounds.
 - 2. Provide continuous hinges with anti-vandal bearing at the top of the hinge to prevent passage of destructive objects into the gears (SO).
 - 3. Where door receiving continuous hinge is also receiving a mortise or concealed automatic door bottom, prepare the bottom of the door hinge leaf according to the door bottom manufacturer's template for the corresponding door bottom (ADB).
- J. Products—Provide 1-3/4 inches thick swinging doors with approved aluminum geared hinges according to door material. Provide continuous hinges according to door inset condition as follows:
 - 1. No inset, flush with frame:
 - a. BEST: 661HD
 - 2. 3/32" inset:

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- a. BEST: 671HD
- 3. 1/8" inset:
 - a. BEST: 667HD

K. Provide BEST model # 672HD for 2 inches thick doors.

2.05 BOLTS

- A. Manufacturers:
 - 1. ABH: www.abhmfg.com.
- B. Fire-Rating: At fire rated doors, provide products certified by UL to UL10C, complying NFPA 80 and NFPA 252 for the indicated fire rating.
- C. Provide products compatible with the corresponding door material.
- D. Properties:
 - 1. Flush Bolts:
 - a. Provide flush bolts centered in the lock edge of inactive leaf of pair door openings. Provide flushbolt type specified and according to the following types:
 - 1) Self-Latching Flush Bolts:
 - (a) Automatically latching upon closing of door
 - (b) Manually retracted top bolt
 - (c) Automatically retracting bottom bolt upon opening the active leaf.
 - (d) Bolt Throws: 3/4 inch, minimum.
 - 2. Dustproof Strikes: Provide for bottom bolt to allow bolting into floor and metal thresholds.
- E. Other Requirements:
 - 1. Extension Bolts: In leading edge of door, one bolt into floor, one bolt into top of frame.
 - 2. Lever extensions:
 - a. Rod length shall be 12 inches minimum.
 - b. Top rod shall have sufficient length to accommodate locating the flushbolt 72 inches AFF to centerline.
 - 3. Omit bottom bolts where noted in the Hardware Sets.
 - 4. Where bottom bolt is omitted at fire-rated doors, provide manufacturers fire bolt compliant with the indicated rating.
- F. Approved Products:
 - 1. Self-Latching Flushbolt:
 - a. Metal Doors:
 - 1) ABH: 1863
 - b. Wood Doors:
 - 1) ABH: 1873
 - 2. Dustproof Strike:
 - a. ABH: 1870
 - 3. Fire Bolt:
 - a. ABH: 1858

2.06 EXIT DEVICES

- A. Manufacturers:
 - 1. BEST, dormakaba Group: www.bestaccess.com/.
- B. Properties:
 - 1. Actuation Type: Comply with BHMA A156.3 push pad requirements.
 - 2. Chassis:
 - a. The chassis is constructed from investment cast steel, zinc dichromated.
 - b. Center chassis of concealed cervical rod devices are Steel plated, heavy wrought Steel Assembly with lock in place Top and Bottom Latch Adjustors. Adjustment is accessible through the door after installation.

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- c. Chassis of other devices are constructed from investment cast steel, zinc dichromated.
 - d. Compatibility:
 - 1) Door Face: Provide exit devices according to lock stile width.
 - 2) Handing: As indicated on Drawings.
 - 3) Door Thickness: As indicated on Drawings.
 - 4) Door moldings: Provide devices with shim kits to raise the device from the door surface to accommodate glass light molding and door trim.
 - 5) Function: Provide exit devices compatible with the function and trim specified in the Hardware Sets.
 - 3. Size:
 - a. The actuating portion of the releasing device shall extend not less than one-half of the door leaf width.
 - b. Provide vertical rod devices of sufficient length according to the door height indicated on Drawings.
 - c. Provide exit devices and exit device trims to fit the corresponding door thickness.
 - 4. Touchpads:
 - a. T-style metal touchpads and rail assemblies with matching chassis covers end caps.
 - 5. Latch Bolts: Stainless-steel deadlocking with 3/4 inch projection using latch bolt.
 - 6. Lever Design: Match project standard lockset trims.
 - 7. Cylinders:
 - a. Include for cylinder for cylinder dogging (CD) and for locking trims. Cylinders shall be compatible with the required permanent key system.
 - b. Provide cylinders with keyed SFIC temporary construction cores.
 - 8. Strike as recommended by manufacturer for application indicated.
 - 9. Sound dampening on touch bar.
 - 10. Dogging:
 - a. Non-Fire-Resistance-Rated Devices:
 - 1) Cylinder Dogging (CD) unless otherwise noted.
 - 2) Provide exit devices less dogging (LD) where specified in the Hardware Sets.
 - b. Fire-Resistance-Rated Devices: Manual dogging not permitted.
 - 11. Touch bar assembly on wide stile exit devices to have a 1/4 inch clearance to allow for vision frames.
 - 12. All exposed exit device components to be of architectural metals and true architectural finishes.
 - 13. Handing: Field-reversible.
 - 14. Conceal fasteners on back side of device channel.
 - 15. Vertical Latch Assemblies' Operation: Gravity, without use of springs.
 - a. Latch Bolts: Stainless-steel, with 3/4-inch-throw.
- C. Grades:
- 1. Comply with BHMA A156.3, Grade 1 requirements.
 - 2. Provide wide stile devices unless otherwise noted. Provide narrow stile devices where stile width is less than 5 inches.
 - 3. Provide exit device types according to door configuration as follows:
 - a. Single Doors:
 - 1) Provide mortise exit devices unless otherwise noted.
 - 2) Provide mortise exit devices where opening is also specified to receive adjustable gaskets.
 - 3) Provide rim exit devices for aluminum storefront doors.
 - b. Pair Doors:
 - 1) Provide both leaves with concealed vertical rod (CVR) exit devices.

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- c. Provide exit devices tested and certified by UL or by a recognized independent laboratory for mechanical operational testing to 10 million cycles minimum with inspection confirming Grade 1 Loaded Forces have been maintained.
- D. Standards Compliance:
 - 1. UL Listed for Panic and Fire for Class II Circuitry.
 - 2. Provide UL (DIR) listed exit device assemblies for fire-resistance-rated doors. Comply with the manufacturer's listing for the indicated fire-rating.
 - 3. Comply with UL 10C.
- E. Other Requirements:
 - 1. Vertical rod devices:
 - a. Provide less bottom rod (LBR) at scheduled locations to eliminate use of floor mounted strikes. Provide fire bolt assembly for fire-rated LBR devices.
 - 2. Outside Trims
 - a. Unless otherwise noted, provide lever trim with manufacturer's standard escutcheon plate for the required exit device type and function specified in the Hardware Sets.
 - b. Outside trim shall be compatible with the specified exit device.
 - c. Omit lever trim where an offset pull is specified. Provide cylinder attachment kits for BHMA A156.3 functions 03 and 04. Provide escutcheon plates for 03 and 04 functions where specified for wood doors that receive CVR devices.
 - 3. Provide shim kits compatible with the exit device to allow devices to minimally clear vision frames and door moldings.
- F. Approved Products:
 - 1. BEST/Precision 2000 Series.

2.07 LOCK CYLINDERS

- A. Manufacturers:
 - 1. BEST, dormakaba Group: www.bestaccess.com/.
- B. Properties:
 - 1. Lock Cylinders: Provide key access on outside of each lock, unless otherwise indicated.
 - 2. Provide cams and tailpieces for cylinders in accordance with the corresponding hardware manufacturers' requirements and instructions for the specified device.
 - 3. Include cylinder collars, blocking rings, washers to surround and protect the exposed cylinder and portions thereof from wrenching, cutting, pulling and prying.
 - 4. Provide key cylinders with appropriate format interchangeable cores where indicated.
- C. Grades:
 - 1. Certified to BHMA A156.5 Grade 1 requirements.
- D. Material:
 - 1. Manufacturer's standard corrosion-resistant brass alloy.
- E. Types: As applicable to each item specified.
 - 1. Core Type: Small format interchangeable core (SFIC).
 - 2. Number of pinned chambers: Seven-pin.
- F. Applications:
 - 1. When provisions for lock cylinders are referenced elsewhere in the Project Manual to this Section, provide compatible type of lock cylinder, keyed to building keying system, unless otherwise indicated.
- G. Provide cylinders at locations indicated in Hardware Sets and as follows:
 - 1. As required for items with locking devices required by other Sections.
 - 2. CD Devices.
 - 3. Exit Device Trims.
 - 4. Locksets.
- H. Approved Products:

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1. BEST:
 - a. Mortise: 1E Series
 - b. Rim: 12E Series

2.08 MORTISE LOCKS FOR ALUMINUM DOORS

- A. Manufacturers
 1. Accurate Lock and Hardware Co., LLC; www.accuratelockandhardware.com/#sle
- B. Properties:
 1. Provide mortise locksets and latchsets according to the following:
 - a. Case: Heavy gauge, plated steel.
 - b. Armor Front: Adjustable bevel.
 - 1) Material: Brass, bronze, aluminum or stainless steel according to required finish. Comply with BHMA A156.18.
 - 2) Adjustable bevel faceplate.
 - c. Handing: As indicated on Drawings.
 - d. Door Thickness Coordination Fitting:
 - 1) 1-3/4 inch (44 mm) standard lock configuration.
 - 2) Provide locksets according to door thickness specified.
 - e. Latch:
 - 1) Brass material.
 - 2) Anti-friction operation.
 - 3) Latchbolt Throw: 1/2-inch (12.7 mm), minimum.
 - f. Strike: 4-7/8 inches tall, ASA type with dust box.
 - g. Backset: 2 inches
 - h. Cylinders: Provide cylinders compatible with the required permanent key system.
 - i. Trim:
 - 1) Sectional type:
 - (a) Oblong shape
 - (b) 1/2-inch projection
 - (c) 2-11/16 inches tall
 - (d) 1-3/16 inches wide
 - (e) 1-1/2 inches center-to-center (CTC) fastener hole pattern.
 - 2) Lever:
 - (a) Match design of mortise locksets for hollow metal and wood doors..
 - (b) Omit outside lever where pull trim is separately specified.
 - j. Function: See Hardware Sets.
- C. Finishes: Comply with BHMA A156.18 requirements for the finishes identified in Hardware Sets.
- D. Approved Products: Provide Accurate 8800 Series locksets.

2.09 MORTISE LOCKS FOR WOOD DOORS AND HOLLOW METAL DOORS

- A. Manufacturers:
 1. BEST, dormakaba Group: www.bestaccess.com/.
- B. Properties:
 1. Provide mortise locksets and latchsets according to the following:
 - a. Handing: As indicated on Drawings.
 - b. Fitting modified ANSI A115.1 door preparation.
 - c. Door Thickness Coordination Fitting:
 - 1) 1-3/4 inch standard lock configuration.
 - 2) Available for up to 2-1/4 inches thick door. Provide locksets according to door thickness specified.
 - d. Latchbolt and Deadbolt Extension: Minimum of 3/8 inch into the case when fully extended.

- e. Latch: Stainless-steel.
 - 1) Latchbolt Throw: 3/4 inch, minimum.
- f. Auxiliary Deadlatch: One-piece stainless-steel, permanently lubricated.
- g. Backset: 2-3/4 inch.
- h. Cylinders:
 - 1) Cylinder Core Types:
 - (a) 7-pin.
 - (b) Small format interchangeable core (SFIC).
 - (c) Provide cylinders with keyed SFIC temporary construction cores.
- i. Lever Trim:
 - 1) Style:
 - (a) Sectional type.
 - (b) Lever Design: Match lever design of cylindrical locksets.
 - 2) Special, high-strength springs and a positive stop eliminate unsightly sagging levers.
 - 3) Spindle: Trims shall utilize 5/16-inch (8 mm) high-strength alloy steel spindles for extra durability.
 - 4) Independent support springs for inside and outside levers.
 - 5) Handles: Made of forged or cast brass, bronze, or stainless-steel construction. Levers that contain a hollow cavity are not acceptable.
 - 6) Levers to operate a roller bearing spindle hub mechanism.
 - 7) Visual Indicators:
 - (a) Provide mortise locksets with visual indicators where noted in the hardware sets and at the following locations:
 - (1) Visual indicators are required on both sides of the door where privacy function is specified (VIBE).
 - (b) Indicators are to be designed to display the lock status of the outside lever. Indicators shall function as follows:
 - (1) Privacy function locksets shall have text reading OCCUPIED displayed in the window when in the locked position and VACANT when in the unlocked position (O).
 - (2) When in the locked state, the indicator window shall display a closed padlock icon on red background.
 - (3) When in the unlocked state, the indicator window shall display an open padlock icon on green background.
 - (c) Visual indicator trim shall be compatible with the corresponding lockset trim and lockset function.

- C. Finishes:
 - 1. Comply with BHMA A156.18 requirements for the finishes identified in Hardware Sets.
- D. Grades:
 - 1. Comply with BHMA A156.13, Operational Grade 1 requirements.
- E. Other Requirements:
 - 1. Provide locksets made in a manufacturing facility to compliant with ISO 9001-Quality Management and ISO 14001-Environmental Management.
- F. Approved Products:
 - 1. BEST 40H Series 15.

2.10 CYLINDRICAL LOCKS

- A. Manufacturers:
 - 1. BEST, dormakaba Group: www.bestaccess.com/.
- B. Properties:

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1. UL listed for use on single doors with fire-resistance-rating up to 3 hours and minimum latchbolt throw of 1/2 inch.
2. UL listed for use on pairs of doors with fire-resistance-rating up to 3 hours and minimum latchbolt throw of 3/4 inch.
3. Mechanical Locks:
 - a. Fitting modified ANSI A115.2 door preparation.
 - b. Door Thickness Coordination Fitting:
 - 1) 1-3/4 inches to 2-1/4 inches thick doors without the use spacers.
 - 2) Provide locksets according to door thickness specified.
 - c. Construction: Hub, side plate, shrouded rose, locking pin to be a one-piece casting with a shrouded locking lug.
 - 1) Through-bolted anti-rotational studs.
 - 2) Chassis: Critical latch and chassis components are brass or corrosion- treated steel.
 - 3) Cast stainless-steel latch retractor with roller bearings for exceptionally smooth operation and superior strength and durability.
 - d. Bored Hole: 2-1/8 inches diameter.
 - e. Backset:
 - 1) 2-3/4 inches except at the following locations:
 - (a) Provide 3-3/4 inches backset where adjustable gaskets are provided.
 - f. Latch:
 - 1) Stainless-steel.
 - 2) Latchbolt Throw:
 - (a) 9/16-inch, minimum.
 - (b) Provide 3/4-inch-throw at fire-rated pair doors.
 - g. Cylinders:
 - 1) Cylinder Core Types:
 - (a) 7-pin
 - (b) Small format interchangeable core (SFIC).
 - (c) Cylinders shall be compatible with the required permanent key system.
 - (d) Provide cylinders with keyed SFIC temporary construction cores.
 - h. Lever Trim:
 - 1) Style: See Hardware Sets.
 - 2) Special, high-strength springs and a positive stop eliminate unsightly sagging levers.
 - 3) Strength: Locksets outside locked lever designed to withstand minimum 1,400 inch-lbs of torque. In excess of that, a replaceable part will shear. Key from outside and/or inside lever will still operate lockset.
 - 4) Independent spring mechanism for each lever.
 - (a) Contain lever springs in the main lock hub.
 - 5) Outside Lever Sleeve: Seamless one-piece construction.
 - 6) Keyed Levers:
 - (a) Removable only after core is removed by authorized control key.
 - (b) Levers shall accept required cylinder core type. The compatible tailpiece for cylinder core shall be included by the lockset manufacturer.

C. Finishes:

 1. Comply with BHMA A156.18 requirements for the finishes identified in Hardware Sets.

D. Grades: Comply with BHMA A156.2, Series 4000, Operational Grade 1 requirements.

 1. Durability: Passing 50 million cycle tests verified by third party testing agency.

E. Material: Manufacturer's standard for specified lock.

 1. Critical Latch and Chassis Components: Brass or corrosion-resistance treated steel.
 2. Outside Lever Sleeve: Hardened steel alloy.

- F. Approved Products:
1. BEST 9K Series with 15C trim style.

2.11 SURFACE CLOSERS

- A. Manufacturers:
1. Cam-Action Closers:
 - a. dormakaba; dormakaba Group: www.dormakaba.com/us-en/.
 2. Rack-and-Pinion Closers:
 - a. BEST, dormakaba Group www.bestaccess.com/.
- B. Types—Provide rack-and-pinion type closers except where cam-action closers are specified.
- C. Grades:
1. Comply with BHMA A156.4, Grade 1 requirements.
 2. Underwriters Laboratories Compliance:
 - a. Product Listings:
 - 1) UL (DIR) and ULC for use on fire-resistance-rated doors.
 - 2) Meeting requirements of UL 10C for positive pressure.
- D. Properties—Cam-Action Closers:
1. Mounting: Closers are to be surface mounted.
 2. Maximum Projection from Face of Door: 2-1/2 inches.
 3. Mechanism:
 - a. Cam-action closers shall include steel cam, roller, and adjustable spring, incorporating a track arm assembly.
 - b. Include separate, tamper-resistant, retention ring, self-regulating adjusting valves for closing and latching speeds, and backcheck.
 - c. Body: Provide cast iron closers. Aluminum alloy body is acceptable for cam-action closers.
 - d. Spring Power Adjustment: Field-adjustable for BHMA A156.4 sizes 1 through 5 unless otherwise noted.
 4. Hydraulic Fluid: All-weather type.
 5. Arm Assembly:
 - a. Provide arms with integral hold-open feature as specified in the Hardware Sets. Omit mechanical hold-open from fire-rated doors.
 - b. Provide standard track assemblies unless otherwise noted.
 - c. Where obstructions limit opening angle and wall or floor stops are prohibited, provide heavy duty spring-loaded stop track arms according to required mounting side:
 - 1) Pull Side Mount: Provide ST track arm assembly.
 - 2) Push Side Mount: Provide SPT track arm assembly.
 - 3) Cushion stop blocks are not approved as a substitute for heavy duty spring-loaded stops. If approved manufacturer does not offer spring-loaded stop track arm assemblies, provide the following products:
 - (a) An approved cam-action closer with standard track arm assembly (pull-side or push side, as indicated) in conjunction with approved heavy-duty concealed overhead stop.
 - (b) Provide adapter plate to accommodate closer and overhead stop installation.
- E. Properties—Rack-and-Pinion Closers:
1. Mounting: Closers are to be surface mounted.
 2. Maximum Projection from Face of Door: 2-1/4 inches.
 3. Construction: Closer bodies shall be corrosion resistant aluminum.
 4. Mechanism:
 - a. Full rack and pinion constructed from corrosion resistant aluminum, incorporating a double lever arm assembly.

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- b. Include separate, tamper-resistant, self-regulating adjusting valves for closing and latching speeds, and backcheck.
 - c. Spring Power Adjustment: Field-adjustable for BHMA A156.4 sizes 1 through 6.
 - d. Hydraulic Fluid: All-weather type.
 - 5. Arm Assembly:
 - a. Provide standard arm assemblies unless otherwise noted.
 - b. Provide arms with integral hold-open feature as specified in the Hardware Sets. Omit mechanical hold-open from fire-rated doors.
 - c. Parallel arm to be a heavy-duty rigid arm (SPA).
 - d. Where obstructions limit opening angle and wall or floor stops are prohibited, provide heavy duty spring-stop arms according to required mounting side:
 - 1) Pull Side Mount: Provide S-IS arm assembly.
 - 2) Push Side Mount:
 - (a) Parallel Arm Mount: Provide S-DS arm assembly.
 - (b) Top Jamb Mount: Provide S-IS for standard reveals and S-ISJ for reveals greater than standard.
 - e. Where IS arm assemblies and S-IS arm assemblies are specified in hardware sets, if approved manufacturer does not offer these arm assemblies, provide the following items:
 - 1) An approved closer with a standard arm assembly (regular or top jamb, as indicated) in conjunction with an approved heavy-duty concealed overhead stop.
 - 2) Provide adapter plate to accommodate closer and overhead stop installation.
 - 6. Covers:
 - a. Type: Full cover.
 - b. Material: Plastic.
 - c. Finish: Painted.
- F. Other requirements:
 - 1. Provide closers with delayed action (DA) feature where specified in the Hardware Sets. DA feature shall include a separate independent valve for delay control adjustment. DA closers shall comply with BHMA A156.4 delayed action closer requirements.
 - 2. Cam-action closers:
 - a. Provide cam-action closers with backplates.
 - b. Provide angle brackets for closers for ST and SPT track arm assemblies.
 - 3. Installation:
 - a. Mount closers on non-public side of door and stair side of stair doors unless otherwise noted in hardware sets.
 - b. At outswinging exterior doors, mount closer on interior side of door.
 - c. Provide adapter plates, shim spacers, and blade stop spacers as required to accommodate the following:
 - 1) Frame conditions.
 - 2) Door conditions.
 - 3) Required door hardware.
- G. Approved Products:
 - 1. Surface Mounted Cam-Action Closers:
 - a. Dormakaba: TS93 Series.
 - 2. Surface Mounted Rack-and-Pinion Closers:
 - a. BEST: EHD9000 Series.
 - b. Mounting Type: Concealed in the frame.
 - c. Construction:
 - 1) Cast-iron body along with heavy-duty ball bearings at the spindle.
 - 2) Steel cam-and-roller assembly coupled to dual steel pistons.
 - d. Single acting and double acting as indicated on Drawings.

- e. Provide manufacturer's recommended brackets, arm assemblies, channels, and accessories for adapting closers to the indicated door and frame materials.
- f. Exterior doors weighing maximum 200 pounds.
- g. Interior doors weighing maximum 250 pounds.
- h. The specified hinges and pivots.
- i. Mechanism:
 - 1) Compact design fitting a 1-3/4" x 4" header for aluminum frames.
 - 2) Sweep and latch closing speeds are to be controlled by two noncritical temperature compensating valves.
 - 3) Built-in pressure relief valve.
 - 4) Mechanical backcheck to slow the door prior to contact with the cushion.
 - 5) Provide barrier free design at interior non-rated doors.
 - 6) Include integral cushion for 105° swing unless 90° is specified in the Hardware Sets.
- j. Include cover plates with the hardware finish indicated in the Hardware Sets.
- k. Include brackets and mounting channels as required to ensure proper installation.
- l. Provide extended spindle as required to allow for the required clearance at the bottom of the door.
- m. Provide adapter plates, shim spacers, and blade stop spacers as required by frame and door conditions.
- n. Provide mounting channels for concealed closers in hollow metal frames.
- o. Provide offset slide arm cover channels for frames with single acting doors equipped with hinges and pivots.

2.12 OVERHEAD STOPS AND HOLDERS

- A. Manufacturers:
 - 1. ABH: www.abhmfg.com.
- B. Properties:
 - 1. Function:
 - a. As indicated in the hardware sets.
 - b. Stop Settings:
 - 1) Field-adjustable 85 to 110 degrees opening.
 - 2) Field-adjustment capability shall be able within range of 85 to 110 degrees in increments of 5 degrees.
 - c. Function: As indicated in the hardware sets. Provide stop-only function in lieu hold-open at fire-rated doors.
 - d. Hold-Open Settings:
 - 1) Selective on/off and friction holden as indicated in the hardware sets.
 - 2) Hold open positions to be field-adjustable except where template degree is noted in the hardware sets. Field-adjustment capability shall be able within range of 85 to 110 degrees in increments of 5 degrees.
 - 3) Provide nylon composites for proven friction resistance and durability at friction hold-open functions.
 - e. Provide units with built-in cushion stop except where units are specified as less spring cushion (LS).
 - 2. Sizes: As recommended by manufacturer's based on hinge/pivot type and frame opening width.
- C. Finishes:
 - 1. Comply with BHMA A156.18 requirements for the finishes identified in Hardware Sets.
 - 2. Provide all non-ferrous materials at exterior locations (N).
 - 3. Arms and Brackets: Comply with BHMA A156.18 requirements for the finishes identified in Hardware Sets.
- D. Grades:

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1. Comply with BHMA A156.8 , Grade 1 requirements unless otherwise noted.
 2. Provide units that meet or exceed BHMA A156.8, Grade 3 requirements at doors that are up to 24 inches wide and where noted in the hardware sets. Units shall meet or exceed BHMA A156.8, Grade 1 requirements for doors greater than 24 inches wide.
 3. Underwriters Laboratories Compliance:
 - a. Product Listing: UL (DIR) and ULC for use on fire-resistance-rated doors.
 - b. Comply with NFPA 80 and UL10C requirements for the indicated fire rating.
 4. Material: Base metal as indicated for each item by BHMA material and finish designation.
 5. Types—As indicated in the Hardware Sets:
 - a. Surface-applied.
 - b. Concealed, slim design (SL)
- E. Additional Requirements:
1. Consult factory for non-standard templating to accommodate the other required hardware.
 2. Provide angle jamb bracket for pull-side mounting overhead stops at inswing doors specified to receive surface mounted overhead stops.
 3. Approved Products:
 - a. Surface Overhead Stops and Holders:
 - 1) Grade 1:
 - (a) ABH: 9000A Series.
 - 2) Grade 3:
 - (a) ABH: 4400 Series.
 - b. Concealed Overhead Stops and Holders:
 - 1) Grade 1:
 - (a) ABH: 1000SA Series
 - 2) Grade 3:
 - (a) ABH: 4000RA Series

2.13 PROTECTION PLATES

- A. Manufacturers:
1. Architectural Builders Hardware Mfg (ABH): www.abhmfg.com.
- B. Plate Types:
1. Kick Plates:
 - a. Provide along bottom edge of push side of doors with closers, unless otherwise indicated.
 - b. Omit kick plates at the following locations:
 - 1) Aluminum storefront and glass entry doors.
 2. Mop Plates: Provide along bottom edge of pull-side door faces to provide protection from cleaning liquids and equipment damage to door surface.
- C. Plate Sizes:
1. Thickness: 0.050-inch
 2. Heights:
 - a. Kick Plates: 10 inches tall.
 - b. Mop Plates:
 - 1) 6 inches tall unless otherwise noted.
 3. Widths:
 - a. Push Side Mounted Plates:
 - 1) Single Doors:
 - (a) Unless otherwise noted, 2 inches less than door width (LDW).
 - (b) 2-1/2 inches LDW at openings with adjustable gasketing.
 - 2) Pair Doors:
 - (a) Unless otherwise noted, 1-inch LDW.
 - (b) 2 inches LDW at openings with push-side astragal.

- (c) 2 inches LDW at openings with adjustable gasketing.
- b. Pull Side Mounted Plates:
 - 1) Unless otherwise noted: 1/2-inch LDW.
 - 2) At pair doors with an astragal on the pull side: 1-1/2 inches LDW.
- D. Edges: Beveled sides, top, and bottom edges (B4E).
- E. Grades:
 - 1. Comply with BHMA A156.6 requirements according to type:
 - a. Kick Plates: J102
 - b. Mop Plates: J103
- F. Provide UL labeled stamped into protections plates at fire rated doors where the top of the protection plate is 16 inches above the bottom of the door.
- G. Material:
 - 1. Metal Properties: Compliant with BHMA A156.18 finish number indicated in the Hardware Set.
- H. Installation:
 - 1. Fasteners: Countersunk screw fasteners
- I. Approved Products:
 - 1. ABH: PP0050 Series.

2.14 STOPS AND HOLDERS

- A. Manufacturers:
 - 1. Architectural Builders Hardware Mfg (ABH): www.abhmfg.com.
- B. General:
 - 1. Provide overhead stop/holder when wall or floor stop is not feasible.
- C. Grades:
 - 1. Comply with BHMA A156.16 Resilient Material Retention Test requirements.
 - 2. Wall Type Bumper: L02251 with fasteners compatible with wall construction.
- D. Material: Base metal as indicated for each item by BHMA material and finish designation.
- E. Types:
 - 1. Wall Bumpers: Bumper, concave, wall stop in cast housing .
- F. Products—Provide stops from one approved manufacturer as follows:
 - 1. Wrought Concave Wall Bumpers:
 - a. ABH: Model #AB409

2.15 THRESHOLDS

- A. Manufacturers:
 - 1. National Guard Products, Inc: www.ngpinc.com/.
- B. Properties:
 - 1. Threshold Surface:
 - a. Fluted horizontal grooves across full width unless otherwise noted.
 - b. Provide smooth, flat threshold surface for automatic door bottom gasket.
 - 2. Thresholds shall be barrier-free designs.
 - 3. Length: Match corresponding opening width
- C. Grades:
 - 1. Comply with BHMA A156.21 requirements according to type.
 - 2. Provide BHMA A156.21 standard duty thresholds unless otherwise noted.
- D. Types:
 - 1. Saddle Thresholds:
 - a. Exterior Saddle Thresholds:

- b. Interior Saddle Thresholds:
 - 1) Typical Wall Thickness: 1/8-inch.
 - 2) Overall Height: 1/4-inch.
 - 3) Width: 4 inches
 - 2. Bumper Seal Thresholds with Gasket:
 - a. Include silicone gaskets.
 - b. Overall Height: 1/2-inch.
 - c. Width: 5 inches.
 - d. Typical Wall Thickness: 1/8-inch minimum
 - 3. Plate Thresholds:
 - a. Smooth flat top solid metal member.
 - b. Height: 1/4-inch unless otherwise noted.
 - c. Width: 4 inches unless otherwise noted.
- E. Fasteners—Requirements according to type as follows:
 - 1. Metal thresholds:
 - a. Include stainless-steel machine screws and lead anchors for installing threshold at masonry floors.
 - b. Include stainless-steel wood screws for installing threshold at wood floors.
- F. Approved Products:
 - 1. Bumper Thresholds:
 - a. NGP Model #896S
 - 2. Plate Thresholds:
 - a. NGP Model #8144 Smooth Side Up.
 - 3. Saddle Thresholds:
 - a. Interior Type: NGP Model #413

2.16 WEATHERSTRIPPING AND GASKETING

- A. Manufacturers:
 - 1. National Guard Products, Inc: www.ngpinc.com/.
- B. Fabrication: Provide gasketing and weatherstripping products in continuous lengths sized according to type as follows:
 - 1. Length to match corresponding frame component:
 - a. Drip Caps: 4 inches greater than door width.
 - b. Astragals: Match door height.
 - c. Gaskets and Weatherstrips—Length to match corresponding frame component:
 - 1) Frame head: Match opening width.
 - 2) Frame jambs: Match opening height.
 - d. Door Bottoms and sweeps: Match door width.
- C. Properties:
 - 1. Weatherstripping Air Leakage Performance: Not exceeding 0.3 cfm/sq ft of door opening at 0.3 inches of water pressure differential for single doors, and 0.5 cfm/sq ft of door area at 0.3 inches of water pressure differential for double doors for gasketing other than smoke control, as tested according to ASTM E283/E283M; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
 - 2. Fire-Rating: At fire rated doors, provide products certified by UL to UL10C, complying NFPA 80 and NFPA 252 for application to hollow metal fire doors rated up to 3 hrs., and wood fire doors rated up to 90 minutes.
 - 3. Smoke and Draft Control: Provide products certified by UL to UL1784 complying NFPA 105.
- D. Drip Caps:
 - 1. Material: Aluminum

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2. Application: Surface mounted with screws to exterior side of frame face.
- E. Astragals:
 1. Beveled T-Astragal:
 - a. Gasketing Material: Silicone bulb
 - b. Retainer Material: Aluminum
 - c. Application Type: Surface mounted with screws to door edge of active leaf.
 2. Flat Bar Astragal:
 - a. Material: 2 inches x 1/8-inch-thick aluminum or steel.
 - b. Application: Surface mounted with screws to pull-side door face of active leaf.
 3. Mortise Astragal for double acting doors:
 - a. Gasketing Material: Black Nylon Brush
 - b. Retainer Material: Aluminum
 - c. Application Type: Mortised into center of door vertical edges.
- F. Adhesive-Backed Gasketing:
 1. Acoustic Pads:
 - a. Material: Acoustic Foam
 - b. Application: Surface mounted with pressure sensitive adhesive, adhered to the door rabbet of jambs at bottom of the frame.
 - c. Provide acoustic pads where doors are equipped with automatic door bottoms that concealed in the bottom edge of the door.
 2. Bulb Gasketing:
 - a. Material: Silicone bulb
 - b. Application—Surface mounted with modified acrylic pressure sensitive adhesive, adhered to the following:
 - 1) Stops at frame heads.
 - 2) Strike jamb frame stops.
 - 3) Door rabbet of hinge jamb.
 - c. 3-Fin Gasketing:
 - 1) Material: Thermo-Plastic Elastomer, triple-fin
 - 2) Application—Surface mounted with modified acrylic pressure sensitive adhesive, adhered to the following:
 - (a) Door rabbet of heads.
 - (b) Door rabbet of strike jambs.
 - (c) Hinge jamb frame stops.
- G. Adjustable Gasketing:
 1. Housing:
 - a. Height according to frame type:
 - 1) Provide 13/16-inch gasket housing for cased open frames.
 - 2) Provide 1/2-inch gasket housing for frames that require an integral stop.
 - b. Width: 1-1/4 inches.
 - c. Material: Aluminum with screw-adjustable retainer.
 2. Gasket Material: Silicone
 3. Adjustment
 - a. Range: 1/4-inch.
 - b. Adjustment screws spaced 10 inches on center.
 4. Application: Surface-mounted to soffit of frame heads and jambs. Miter cut the ends of adjustable gasket lengths at head and jamb corners. The other ends are to be square cut.
- H. Weatherstrips:
 1. Retainer Material: Aluminum
 2. Gasket Material: Silicone bulb
 3. Application: Surface mounted with screws to frame soffit of heads and jambs.
 4. Provide bar-type weatherstrips where other soffit mounted hardware occurs:

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- a. Retainer Material: 1/4-inch-thick x 1-1/2 inches wide solid aluminum
 - b. Gasket Material: Silicone bulb
- 5. Provide concealed fastener type where specified in the Hardware Sets.
- I. Door Bottoms:
 - 1. Automatic Door Bottom:
 - a. Endurance tested to 5 million cycles.
 - b. Flame-Resistant
 - c. Moisture-Resistant
 - d. Housing Fitment: 5/8-inch wide x 1-7/16 inches tall mortise.
 - e. Gasket: Silicone in aluminum housing
 - f. Maximum Drop: 1/2-inch.
 - g. Application: Concealed in bottom of the door, centered in bottom edge of door.
 - h. Provide end caps for both ends of the door bottom.
 - 2. Brush Sweeps:
 - a. Retainer Material: Aluminum.
 - b. Gasket Material: 3/4-inch exposed nylon brush
 - c. Application: Surface mounted with screws at the bottom of the pull-side door face. Provide 5/16-inch wide x 3/4-inch-tall snap-on cover to conceal fasteners.
 - d. Include retainers with integral drip design at exterior outswing doors.
 - e. Unless otherwise noted the nylon brush shall include an EPDM rubber insert.
- J. Grades: Comply with BHMA A156.22.
- K. Approved Products:
 - 1. Astragals:
 - a. Beveled T Astragals:
 - 1) NGP Model #158S
 - b. Flat Bar Astragal:
 - 1) NGP Model #139 Series
 - c. Mortise Astragal for double acting doors:
 - 1) NGP Model #A635-BB
 - 2. Drip Caps:
 - a. NGP Model #16
 - 3. Head and Jamb Seals:
 - a. Adhesive Gasketing, Acoustic Pads:
 - 1) NGP Model #60FP
 - b. Adhesive Gasketing, Bulb:
 - 1) NGP: 2525 Series
 - c. Adhesive Gasketing, 3-Fin :
 - 1) NGP: 5075 Series
 - d. Adjustable Gaskets for frames with integral stop:
 - 1) NGP 107 Series
 - e. Adjustable Gaskets for cased open frames:
 - 1) NGP 1038N Series
 - f. Weatherstrips:
 - 1) NGP: 161S
 - g. Bar Weatherstrips:
 - 1) NGP 700S Series
 - h. Weatherstrips, Concealed Fastener:
 - 1) NGP 172S Series
 - 2) Pemko 29310 S Series
 - 4. Door Bottom Seals:
 - a. Automatic Door Bottoms:
 - 1) NGP Model #225S Series

- b. Brush Sweep:
 - 1) NGP Model #C697
- c. Drip Sweep:
 - 1) NGP Model #C699

2.17 MISCELLANEOUS ITEMS

- A. Properties:
 - 1. Mounting Brackets:
 - a. Provide mounting brackets to eliminate interference of installation of closer soffit plates with other soffit mounted hardware.
 - b. Mounting brackets shall be sized as recommended by the manufacturer according to soffit width and stop height.
 - 2. Silencers:
 - a. Provide at equal locations on door frame stops to mute sound of door's impact upon closing. Provide silencers according to frame material and opening type as follows:
 - 1) Frame Material:
 - (a) Hollow Metal Frames: Provide silencers compliant with BHMA A156.16 L03011 requirements.
 - (b) Wood Frames: Provide silencers compliant with BHMA A156.16 L03021 requirements.
 - 2) Opening Type:
 - (a) Single Door: Provide three on strike jamb of frame.
 - (b) Pair of Doors: Provide two on head of frame, one for each door at latch side.
 - b. Material: Rubber, gray color.
- B. Approved Products:
 - 1. Mounting Brackets:
 - a. Provide ABH 3750 Series except where soffit component obstacle is greater than 5/8-inch tall.
 - b. Where obstacles are greater than 5/8-inch tall and no more than 15/16-inch tall, provide NGP 3SP Series.
 - 2. Silencers:
 - a. Metal Frames: Provide ABH Model #AB608.

2.18 ELECTRIFIED HARDWARE

- A. Properties:
 - 1. Door Position Switches—Recessed devices with magnetic contact complying with the following:
 - a. Effective Gap Range: Up to 1/2-inch maximum.
 - b. Power Rating: 200mA Max, 30VAC/VDC.
 - c. Mounting: Self-locking.
 - d. Size: 3/4-inch diameter.
 - e. Switch Configuration: SPDT with magnetic tamper except where DPDT is required.
- B. Approved Products:
 - 1. Door Position Switches:
 - a. Dormakaba: MC Series
 - 2. Monitor Strike:
 - a. Provide Dormakaba MS Series where specified in the Hardware Sets.

2.19 KEYS AND CORES

- A. Manufacturers:
 - 1. BEST, dormakaba Group: www.bestaccess.com/.
- B. Properties:
 - 1. Comply with BHMA A156.28.

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2. Cores:
 - a. Permanent Cores—Furnish keyed cores for locksets and cylinders complying with the following:
 - 1) Grade: Meet or exceed A156.5 Grade 1 requirements and exceed extended life cycle testing.
 - 2) Core Format and Profile: SFIC.
 - 3) Number of pinned chambers: 7.
 - 4) Keyway: As selected by Owner from manufacturer's offering based on security level required.
 - 5) Keying:
 - (a) Comply with the Owner-Approved Keying Schedule.
 - (b) Key System Level: Great grand master keyed unless otherwise instructed by Owner at Keying Meeting.
 - 6) Finish: Match corresponding lock.
 - b. Temporary/Construction Cores—Provide locksets and cylinders with construction cores that comply with the following:
 - 1) Construction cores shall be identical to permanent cores except as follows:
 - (a) Keyway: Use manufacturer's standard keyway. The keyway for construction cores shall be incompatible with permanent cores.
 - (b) Keying: Construction cores shall be key-alike.
 - (c) Finish: Faces shall be painted green.
 3. Keys:
 - a. Keys for construction cores shall be incompatible with permanent cores.
 - b. Furnish keys in following quantities:
 - 1) Construction Core Keys:
 - (a) Construction Core Operating Keys: 15 each.
 - (b) Construction Control Keys: 2 each.
 - 2) Permanent Keys:
 - (a) Top Master Key: 1 each.
 - (b) Master Keys: 4 each.
 - (c) Control Keys: 2 each.
 - (d) Change Keys: 2 each for each permanent core.
 - c. Key Control:
 - 1) Furnish key collection envelopes, receipt cards, and index cards in quantity suitable to manage number of keys.
 - 2) Stamping:
 - (a) Furnish permanent keys and cores with key control stamping:
 - (1) Legibly stamp cores with corresponding key symbol identified in the Owner-Approved keying schedule. Key symbol marking shall not be visible when core is installed.
 - (2) Legibly stamp the bow permanent keys with the phrase "Do Not Duplicate" and with the corresponding key symbol identified in the Owner-Approved keying schedule.
 - 3) Include installation of permanent cores.
- C. Approved Products:
1. BEST
 - a. Construction Cores: Provide Model #7190224
 - b. Construction Core Control Keys: Provide Model #7147449
 - c. Construction Core Operating Keys: Provide Model #7148872
 - d. Permanent Cores and Keys: Provide BEST Patented CORMAX keys and cores.

2.20 FINISHES

- A. Provide hardware finished according to the following requirements:

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1. Construction Core Faces: Painted green.
2. Cylinder Housings: Match finish of corresponding lock.
3. Permanent Core Faces:
 - a. Provide satin brass finish cores complying with BHMA A156.18 finish code 606 for black finish locksets and cylinders.
4. Gasket material fixed in screw-on retainers: Black.
5. Hardware for Aluminum Storefront Doors:
 - a. Except for closers, hardware at aluminum doors shall be finished to match door panel finish.
 - b. Closers: Coating color shall be the BHMA A156.18 appearance equivalent finish of the corresponding hinge finish.
6. Scheduled Finish Code 000:
 - a. Adhesive Gaskets: Black.
 - b. Door Position Switches: Black.
 - c. Monitor Strikes: Manufacturer's standard.
 - d. Silencers: Black rubber.
7. Screw-on retainers of gaskets and weatherstrips:
 - a. Head, jamb, and mullion mounted items shall be finished to match corresponding frame color.
 - b. Door mounted items shall be finished to match corresponding door color.
8. Other Hardware: Comply with BHMA A156.18 requirements for the finishes identified in Hardware Sets.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Verify the following is correct and complete prior to installing door hardware:
 1. Doors and frames are labeled, frames are properly installed, and dimensions are as indicated on Drawings.
 2. Frames are square and plumb.
 3. Finishing of doors and frames has been completed.
 4. Field-painting of factory primed hardware has been completed.
 5. Allow finishes to cure for at least seven calendar days prior to installing hardware.
 6. Masonry wash down is complete.
 7. Confirm walls have sufficient blocking and reinforcements for wall-mounted hardware.
 8. Confirm doors and frames are correctly prepared for hardware and have sufficient blocking and reinforcements for hardware.
- B. Correct all defects and deficiencies prior to proceeding with installation.

3.02 INSTALLATION

- A. Wall Blocking—Provide internal blocking, reinforcements, and supports in walls in accordance with the manufacturer's instructions for the following:
 1. Wall Stops
 2. Other wall-mounted hardware.
- B. Install hardware in accordance with manufacturer's instructions and applicable codes.
- C. Install hardware using the fasteners provided from the manufacturer and in accordance with the manufacturer's instructions.
- D. Drill, tap, and countersink screw holes that are required by the manufacturer but could not be done at the factory. Comply with manufacturer's instructions.
- E. Self-clinching fasteners, rivet nuts, and threaded inserts are not permitted.
- F. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
- G. Install hardware for smoke and draft control doors in accordance with NFPA 105.

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- H. Use templates furnished for the hardware item by its manufacturer.
- I. Do not install surface mounted items until application of finishes to substrate is fully complete.
- J. Wash down masonry walls and complete painting or staining of doors and frames.
- K. Complete finish flooring prior to installation of aluminum thresholds.
- L. Install flushbolts and hardware containing concealed rods prior to installing doors.
- M. Install coordinators, fillers, and mounting brackets after door and hinge installation and prior to installing closers and strike for exit devices.
- N. Where frame soffits receive gaskets, install soffit mounted hardware items to mounting brackets designed to prevent damage to gaskets and gasket housings.
- O. Hardware locations:
 - 1. Comply with ICC A117.1 and mounting heights indicated on Drawings.
 - 2. Install in compliance with DHI TDH-009-20.
 - 3. For Aluminum Doors and Frames: See Section 084313.
 - 4. For Steel Doors and Frames: See Section 081113.
 - 5. For Wood Doors comply with the following:
 - a. Section 081416 and 081423.16.
 - 6. Mounting centerline heights unless otherwise indicated on Drawings:
 - a. Distance from finished floor to center line of hardware item:
 - 1) Strikes for lever locksets:
 - (a) At new frames: 40 inches.
 - 2) Exit Devices:
 - b. Silencers:
 - 1) Single Door Openings—Install three silencers in frame stop of strike jamb as follows:
 - (a) 8 inches from top of finished opening to top-silencer centerline.
 - (b) 2 inches from top of strike to middle-silencer centerline.
 - (c) 10 inches from finished floor to bottom-silencer centerline.
 - 2) Pair Door Openings—Install two silencers in frame stop of head as follows:
 - (a) Install silencers on the active door side and inactive door side.
 - (b) Locate silencers 5 inches from center of head to silencer centerline.
 - (c) Space silencers 10 inches on center.
- P. Weatherstrip and Gaskets:
 - 1. Install weatherstrips and gaskets in continuous lengths to achieve full and uninterrupted seal at heads and at jambs.
 - 2. Install weatherstrips after door and hinge installations and prior to installing closers, strikes for exit devices, and soffit mounted hardware.
 - 3. Install closer soffit plates, strikes for rim exit devices, top strikes for SVR exit devices, and other soffit mounted hardware against bar-type weatherstrip.
 - 4. Clean frames in accordance with gasket manufacturer's instructions prior to installing adhesive-backed gaskets.
- Q. Thresholds:
 - 1. Install plate type thresholds with the smooth side facing upwards.
 - 2. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal.
 - 3. Anchor thresholds to floor with stainless-steel countersunk screws.
 - 4. See Section 079200 for additional requirements.
- R. Install construction cores in locksets and cylinders for use during the construction period. Replace construction cores with permanent cores at Substantial Completion unless otherwise instructed by the Owner.
- S. Field Painting Factory-Primed Hardware:

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1. Paint the following hardware to match corresponding frame finish prior to installation:
 - a. Mounting Brackets.
2. Comply with Section 099000 and the manufacturer's instructions. Mask and tape off moving parts, triggers, releases, actuating portions, bearings, testing agency labels, and fastener holes prior to painting. Remove masking and tape after painting is completed and prior to installation of hardware.
3. Ensure hardware functions and operates properly before and after applying paint. Immediately replace damaged and defective hardware.

3.03 FIELD QUALITY CONTROL

- A. Perform field inspection and testing. Comply with Section 014000 - Quality Requirements.
- B. Enlist services of an AHC to perform the following:
 1. Certify that hardware has been furnished and installed in accordance with the following:
 - a. The manufacturer's instructions and as specified.
 - b. Project requirements.
 2. Schedule at least two inspections by AHC, the first shall be promptly after hardware installation is complete. The second shall be two weeks prior to Substantial Completion.
 3. Include report from AHC inspection results in closeout documents.

3.04 ADJUSTING

- A. Adjust work under provisions of Section 017000 - Execution and Closeout Requirements.
- B. Adjust hardware according to instructions in AHC inspection reports.
- C. Adjust hardware for smooth operation.
- D. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.
- E. Ensure sound seals are adjusted such that a Arkansas driver's license continuously meets resistance between seal and door.
- F. Adjust closers to comply with ICC A117.1.
- G. Adjustments shall comply with NFPA 80.

3.05 CLEANING

- A. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
- B. Clean adjacent surfaces soiled by hardware installation activities.
- C. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.
- D. See Section 017419 - Construction Waste Management and Disposal, for additional requirements.

3.06 PROTECTION

- A. Protect finished Work.
- B. Provide full protective barrier between hardware and the remaining Work during construction period. Apply protective barrier and prevent damage to hardware.
- C. Do not permit adjacent work to damage hardware or finish.

3.07 SCHEDULES

- A. Scheduled Finishes:
 1. 000—Custom Finish
 2. 600—Primed For Painting
 3. 606—Satin Brass/Brass Base Material
 4. 622—Flat Black Coated/Brass, Bronze Base Material
 5. 631—Flat Black Coated/Steel Base Material
 6. 693—Black Painted

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7. 711—Flat Black Coated Anodized/Aluminum Base Material
8. 719—Mill Finish Aluminum Uncoated

B. Scheduled Manufacturers:

1. ABH—Architectural Builders Hardware Manufacturing Inc.
2. ACC—Accurate Lock & Hardware Co.
3. BES—Best Access Systems
4. DKA—Dormakaba Architectural Hardware
5. NGP—National Guard Products, Inc
6. PRE—BEST/Precision Exit Devices

C. Opening List:

1. Door Number	Hardware Set
101	1
103	5
104	10
105	10
106	12
107	12
108a	4
108b	4
109	10
110	5
111b	2
112	8
114	12
115	11
116	9
118	3
120a	7
120b	6
202	6
S111	15
S113	15
S114	13
S115	13
S117	19
S119	16
S121	14
S122	19
S123	13
S124	19
S201	17
S202	18

D. Hardware Sets:

Set #1

2 Continuous Hinge	672 HD UL SO	711	BES
1 Exit Device	2601 CD S519 S460 S519	622	PRE
1 Exit Device	2603 CD NCA-03 S519 S460 S519	622	PRE
2 Mortise Cylinder	1E7 4 C4 PATD	622	BES
1 Rim Cylinder	12E7 2 S2 PATD	622	BES
3 Construction Core	7190224	000	BES
2 Overhead Concealed Stop	1020SA	693	ABH
2 Door Closer	EHD9016 AVB AF90 BP90	693	BES
1 Threshold	By Door Manufacturer		

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1	Set Meeting Stiles Seals	By Door Manufacturer		
1	Set Head & Jambs Weatherstrips	By Frame Manufacturer		
2	Door Bottom	By Door Manufacturer		
2	Door Position Switch	MC4 Black	000	DKA

Set #2

3	Hinge	FBB168 NRP	631	BES
1	Intruder Lockset	9K 3 7 IN 15 C S3 PATD	622	BES
2	Construction Core	7190224	000	BES
1	Door Closer	EHD9016 AVB SPA90	693	BES
1	Kick Plate	PP0050 B4E CSK	622	ABH
1	Wall Stop	AB409	622	ABH
3	Silencer	AB608 Grey	000	ABH

Set #3

3	Hinge	FBB199 NRP	622	BES
1	Exit Device	2303 LD M4903A S982	622	PRE
1	Mortise Cylinder	1E7 4 C4 PATD	622	BES
1	Construction Core	7190224	000	BES
1	Door Closer	EHD9016 AVB SDS90	693	BES
1	Saddle Threshold	413 10-24SSMS/LA	719	NGP
1	Set Bar Weatherstrips	700S Black (Head & Jambs)	711	NGP
1	Brush Sweep	C697 Black	711	NGP

NOTE: Template stop at 110 degrees.

Set #4

3	Hinge	FBB168	631	BES
1	Passage Set	9K 3 0 N 15 C S3	622	BES
1	Door Closer	EHD9016 AVB SIS90	693	BES
1	Kick Plate	PP0050 B4E CSK	622	ABH
1	Mop Plate	PP0050 B4E CSK	622	ABH
3	Silencer	AB608 Grey	000	ABH

NOTE: Template deadstop at 95 degrees.

Set #5

1	Continuous Hinge	671 HD UL SO	711	BES
1	Entrance Lockset	8856.200.29L/2R	622	ACC
1	Mortise Cylinder	1E7 4 C258 B35103 PATD	622	BES
1	Construction Core	7190224	000	BES
1	Door Closer	TS9315 T CS	693	DKA
1	Wall Stop	AB409	622	ABH
1	Set Head & Jambs Weatherstrips	By Frame Manufacturer		

Set #6

3	Hinge	FBB191 NRP	622	BES
1	Storeroom Lockset	9K 3 7 D 15 C S3 PATD	622	BES
1	Construction Core	7190224	000	BES
1	Door Closer	EHD9016 AVB SDS90	693	BES
1	Saddle Threshold	413 10-24SSMS/LA	719	NGP
1	Set Bar Weatherstrips	700S Black (Head & Jambs)	711	NGP
1	Brush Sweep	C697 Black	711	NGP

Set #7

6	Hinge	FBB191 NRP	622	BES
1	Set Self Latching Flush Bolts	1863P	693	ABH

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1	Dust Proof Strike	1870	693	ABH
1	Storeroom Lockset	9K 3 7 D 15 C S3-7/8 PATD	622	BES
1	Construction Core	7190224	000	BES
1	Door Closer	EHD9016 AVB SDST90 (Active)	693	BES
1	Overhead Holder	N9030A (Inactive)	693	ABH
1	Saddle Threshold	413 10-24SSMS/LA	719	NGP
1	Beveled T-Astragal	158S Black	711	NGP
1	Set Bar Weatherstrips	700S Black (Head & Jambs)	711	NGP
2	Brush Sweep	C697 Black	711	NGP

Set #8

3	Hinge	FBB179	631	BES
1	Storeroom Lockset	9K 4 7 D 15 C S3 PATD	622	BES
1	Construction Core	7190224	000	BES
1	Mounting Bracket	3750	600	ABH
1	Door Closer	EHD9016 AVB SDS90	693	BES
1	Kick Plate	PP0050 B4E CSK	622	ABH
1	Plate Threshold	8144 Smooth Side Up 10-24SSMS/LA	719	NGP
1	Set Adjustable Gaskets	107S Black (Head & Jambs)	711	NGP
1	Automatic Door Bottom	225S	628	NGP

NOTE: Template deadstop at 95 degrees.

Set #9

3	Hinge	FBB179	631	BES
1	Storeroom Lockset	9K 3 7 D 15 C S3 PATD	622	BES
1	Construction Core	7190224	000	BES
1	Door Closer	EHD9016 AVB AF90	693	BES
1	Kick Plate	PP0050 B4E CSK	622	ABH
1	Mop Plate	PP0050 B4E CSK	622	ABH
3	Silencer	AB608 Grey	000	ABH

Set #10

1	Continuous Hinge	671 HD UL SO	711	BES
1	Narrow Stile Lockset	8853.200.39L/2R	622	ACC
1	Mortise Cylinder	1E7 4 C258 B35103 PATD	622	BES
1	Construction Core	7190224	000	BES
1	Door Closer	TS9315 T CS	693	DKA
1	Wall Stop	AB409	622	ABH
1	Set Head & Jambs Weatherstrips	By Frame Manufacturer		

Set #11

3	Hinge	FBB191	622	BES
1	Privacy Indicator Lockset	45H 0 L 15 H VIBE O	622	BES
1	Door Closer	EHD9016 AVB SIS90	693	BES
1	Kick Plate	PP0050 B4E CSK	622	ABH
1	Mop Plate	PP0050 B4E CSK	622	ABH
3	Silencer	AB608 Grey	000	ABH

NOTE: Template stop at 95 degrees.

Set #12

3	Hinge	FBB179	631	BES
1	Privacy Indicator Lockset	45H 0 L 15 H VIBE O	622	BES
1	Door Closer	EHD9016 AVB AF90	693	BES
1	Kick Plate	PP0050 B4E CSK	622	ABH
1	Mop Plate	PP0050 B4E CSK	622	ABH

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1	Wall Stop	AB409	622	ABH
3	Silencer	AB608 Grey	000	ABH

Set #13

3	Hinge	FBB199 NRP	622	BES
1	Intruder Lockset	9K 3 7 IN 15 C S3 PATD	622	BES
2	Construction Core	7190224	000	BES
1	Door Closer	EHD9016 AVB SDS90	693	BES
1	Bumper Threshold	896S 10-24SSMS/LA	719	NGP
1	Set Bar Weatherstrips	700S Black (Head & Jambs)	711	NGP
1	Drip Sweep	C699 Black	711	NGP
1	Drip Cap	16 Black	711	NGP
1	Door Position Switch	MC4 Black	000	DKA

Set #14

3	Hinge	FBB199 NRP	622	BES
1	Storeroom Lockset	9K 3 7 D 15 C S3 PATD	622	BES
1	Construction Core	7190224	000	BES
1	Door Closer	EHD9016 AVB SDS90	693	BES
1	Bumper Threshold	896S 10-24SSMS/LA	719	NGP
1	Set Bar Weatherstrips	700S Black (Head & Jambs)	711	NGP
1	Drip Sweep	C699 Black	711	NGP
1	Drip Cap	16 Black	711	NGP
1	Door Position Switch	MC4 Black	000	DKA

Set #15

3	Hinge	FBB199 NRP	622	BES
1	Entrance Lockset	9K 4 7 AB 15 C S3 PATD	622	BES
1	Construction Core	7190224	000	BES
1	Mounting Bracket	3750	600	ABH
1	Door Closer	EHD9016 AVB SDS90	693	BES
1	Kick Plate	PP0050 B4E CSK	622	ABH
1	Plate Threshold	8144 Smooth Side Up 10-24SSMS/LA	719	NGP
1	Set Adjustable Gaskets	107S Black (Head & Jambs)	711	NGP
1	Automatic Door Bottom	225S	628	NGP

NOTE: Template deadstop at 95 degrees.

Set #16

3	Hinge	FBB191	622	BES
1	Passage Set	9K 4 0 N 15 C S3	622	BES
1	Door Closer	EHD9016 AVB SIS90	693	BES
1	Kick Plate	PP0050 B4E CSK	622	ABH
1	Plate Threshold	8144 Smooth Side Up 10-24SSMS/LA	719	NGP
1	Set Adjustable Gaskets	107S Black (Head & Jambs)	711	NGP
1	Automatic Door Bottom	225S	628	NGP

NOTE: Template deadstop at 95 degrees.

Set #17

3	Hinge	FBB191 NRP	622	BES
1	Entrance Lockset	9K 3 7 AB 15 C S3 PATD	622	BES
1	Construction Core	7190224	000	BES
1	Door Closer	EHD9016 AVB SDS90	693	BES
1	Kick Plate	PP0050 B4E CSK	622	ABH
1	Set Bar Weatherstrips	700S Black (Head & Jambs)	711	NGP

NOTE: Template deadstop at 90 degrees.

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Set #18

3	Hinge	FBB191 NRP	622	BES
1	Special Function Lockset	9K 3 7 DR 15 C S3 PATD	622	BES
2	Construction Core	7190224	000	BES
1	Door Closer	EHD9016 AVB SISH90	693	BES
1	Set Weatherstrips	161S Black (Head & Jambs)	711	NGP
1	Monitor Strike	MS14	000	DKA

NOTE: Template stop at 110 degrees.

Set #19

1	Cylinder	E Series x PATD as required	622	BES
1	Construction Core	7190224	000	BES

END OF SECTION

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