

## PART 1 - GENERAL

### 1.1 RELATED DOCUMENTS

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

### 1.2 SUMMARY

#### .1 Section includes:

- .1 Mechanical door hardware for the following:
  - .1 Swinging doors.
  - .2 Sliding doors.
- .2 Cylinders for door hardware specified in other Sections.
- .3 Electrified door hardware, including
  - .1 Boxed power supplies for door hardware and door controller devices (DCD).
  - .2 All low voltage wiring and connections; but not including connections to door controller devices (DCD); and not including wiring used for the access control system's daisy-chained data network and power loop.
  - .3 Riser diagrams.
  - .4 Supply, installation, and commissioning.
- .4 Card Readers, access cards, key fobs.

#### .2 Examples of items not described herein:

- .1 Access Control System including:
  - .1 Wiring and conduit used for the access control system's daisy-chained data network and power loop.
  - .2 Connections made directly to any door controller devices (DCD)
  - .3 Door control devices (DCD).
  - .4 Site controllers.
  - .5 Access control software.
- .2 Electrical:
  - .1 Conduit and associated utility boxes connecting electric door hardware to utility/junction boxes located above the ceiling for those doors equipped with electric door hardware or access controls; including the utility/junction boxes themselves.
  - .2 Wiring and conduits used for the access control system's daisy-chained data network and power loop.
  - .3 Connections made to power feeds that are greater than 48 volts.
  - .4 Connections made to the building's fire alarm system.
- .3 Door hardware provided as part of a demountable partition system.
- .4 Automatic door operators.
- .5 Floor mounted closers.
- .6 Hardware for folding or bi-fold doors.
- .7 Astragals provided as part of labeled fire-rated assemblies.
- .8 Door silencers when not provided with steel, stainless steel, aluminum, or wood frames.
- .9 Door hardware provided as part of
  - .1 Overhead door assemblies.
  - .2 Overhead grille assemblies.
  - .3 Detention frames.
- .10 Hinges and gasketing provided as part of sound control door assembly.
- .11 Installation of entrance door hardware for
  - .1 Aluminum-framed entrances and storefronts.

- .2 All-glass entrances and storefronts.
- .3 Folding automatic entrances.
- .4 Sliding Automatic Entrances.
- .5 Swinging Automatic Entrances.
- .6 Intensive Care Unit/Critical Care Unit (ICU/CCU) Entrances.
- .7 Detention doors.
- .8 Doors in wire mesh partitions.
- .12 Plastic door protection units that match wall protection units.
- .13 Radiation Protection, including lead-lined astragals provided as part of labeled fire-rated assemblies.
- .14 Detection devices installed at door openings and provided as part of an intrusion-detection system.
- .15 Access control devices installed at door openings and provided as part of a security access system.

### 1.3 ACTION SUBMITTALS

- .1 Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- .2 Shop Drawings: Details of electrified door hardware, indicating the following:
  - .1 Wiring Diagrams: For power, signal, and control wiring and including the following:
    - .1 Details of interface of electrified door hardware and building safety and security systems.
    - .2 Schematic diagram of systems that interface with electrified door hardware.
    - .3 Point-to-point wiring.
    - .4 Risers.
    - .5 Elevations doors controlled by electrified door hardware.
  - .2 Operation Narrative: Describe the operation of doors controlled by electrified door hardware.
- .3 Samples for Verification: For exposed door hardware of each type required, in each finish specified, prepared on Samples of size indicated below. Tag Samples with full description for coordination with the door hardware schedule. Submit Samples before, or concurrent with, submission of door hardware schedule.
- .4 Samples for Verification: For each finish specified, submit tagged finish samples of sizes indicated below. Tag Samples with full description for coordination with the door hardware schedule. Submit Samples before, or concurrent with, submission of door hardware schedule.
  - .1 Sample Size: Full-size units or minimum 51-by-102 mm Samples for sheet and 102 mm long Samples for other products.
    - .1 Full-size Samples will be returned to Contractor upon request. 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.
- .5 Other Action Submittals:
  - .1 Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
    - .1 Submittal Sequence: Submit door hardware schedule concurrent with submissions of Product Data, Samples, and Shop Drawings. Coordinate submission of door hardware schedule with scheduling requirements of other work to facilitate the fabrication of other work that is critical in Project construction schedule.
    - .2 Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule." Double space entries, and number and date each page.
    - .3 Format: Use same scheduling sequence and format and use same door numbers as in the Contract Documents.

- .4 Content: Include the following information:
  - .1 Identification number, location, hand, fire rating, size, and material of each door and frame.
  - .2 Locations of each door hardware set, cross-referenced to Drawings on floor plans and to door and frame schedule.
  - .3 Complete designations, including name and manufacturer, type, style, function, size, quantity, function, and finish of each door hardware product.
  - .4 Description of electrified door hardware sequences of operation and interfaces with other building control systems.
  - .5 Fastenings and other pertinent information.
  - .6 Explanation of abbreviations, symbols, and codes contained in schedule.
  - .7 Mounting locations for door hardware.
  - .8 List of related door devices specified in other Sections for each door and frame.
- .2 Keying Schedule: Prepared by or under the supervision of Installer, detailing Public Works' final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.
- .6 Certification:
  - .1 For projects involving door hardware for more than ten openings provide a letter of certification at the same time as the hardware schedule is submitted, and each time it is resubmitted, signed and dated by the AHC stating the following:
    - .1 "I have reviewed the drawings, specifications, and the door hardware schedule required to be submitted by the Contractor dated xyz, and hereby certify that the door hardware schedule identifies all required door hardware needed for the proper operation of doors as intended and described herein whether specifically identified in the Contract Documents or not, including but not limited to cores, cylinders, rings, brackets, fasteners, adapter plates, arms, escutcheon plates, plugs, wires, rectifiers, power supplies, and seals."
  - .2 Provide documentation showing that the AHC designation of the person is current.
- 1.4 INFORMATIONAL SUBMITTALS
  - .1 Qualification Data: For Installer and Architectural Hardware Consultant.
  - .2 Product Certificates: When requested by the Public Works Representative provide product certificates for electrified door hardware, from the manufacturer.
    - .1 Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.
  - .3 Product Test Reports: When requested by the Public Works Representative provide product test reports for compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.
  - .4 Warranty: Special warranty specified in this Section.
- 1.5 CLOSEOUT SUBMITTALS
  - .1 Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final hardware and keying schedule.
  - .2 Fire-Rated Door Assembly On-Site Testing Reports: For each fire-rated door assembly.
- 1.6 QUALITY ASSURANCE

- .1 Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available at no additional cost during the course of the Work to consult with Contractor, Public Works Representative, and Public Works about door hardware and keying.
  - .1 Scheduling Responsibility: Preparation of door hardware and keying schedules.
  - .2 Engineering Responsibility: Preparation of data for electrified door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- .2 Architectural Hardware Consultant Qualifications: A person 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 and who is currently certified by DHI as follows:
  - .1 For door hardware, an Architectural Hardware Consultant (AHC), and if the project entails electrified door hardware, then Architectural Hardware Consultant (AHC) who is also an Electrified Hardware Consultant (EHC).
- .3 Source Limitations: Obtain each type of door hardware from a single manufacturer.
  - .1 Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.
- .4 Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated.
- .5 Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- .6 Means of Egress Doors: Latches do not require more than 67 N to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.
- .7 Accessibility Requirements: For door hardware on doors in an accessible route, comply with the more stringent requirements of CSA B651-12 - Accessible design for the built environment and building accessibility requirements of the jurisdiction that building is located in.
  - .1 Provide operating devices that do not require tight grasping, pinching, or twisting of the wrist and that operate with a force of not more than 22.2 N.
  - .2 Comply with the following maximum opening-force requirements:
    - .1 Interior, Non-Fire-Rated Hinged Doors: 22.2 N applied perpendicular to door.
    - .2 Sliding or Folding Doors: 22.2 N applied parallel to door at latch.
    - .3 Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
  - .3 Bevel raised thresholds with a slope of not more than 1:2. Provide thresholds not more than 13 mm high.
  - .4 Adjust door closer sweep periods so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 75 mm from the latch, measured to the leading edge of the door.
- .8 Keying Conference: Conduct conference at Project site to comply with requirements in Section 01 31 00 "Project Management and Coordination." In addition to Public Works Construction Manager, Contractor, and Public Works' Consultant, conference participants shall also include Installer's Architectural Hardware Consultant and may include the Public Works' security consultant. 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 Requirements for access control.
  - .5 Address for delivery of keys.
- .9 Preinstallation Conference: Conduct a conference at Project site if complexity of projects demands it or if requested by one the Contractor, Installer, AHC, or the Public Works Representative.
  - .1 Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
  - .2 Inspect and discuss preparatory work performed by other trades.
  - .3 Inspect and discuss electrical roughing-in for electrified door hardware.
  - .4 Review sequence of operation for each type of electrified door hardware.
  - .5 Review required testing, inspecting, and certifying procedures.
- 1.7 DELIVERY, STORAGE, AND HANDLING
  - .1 Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
  - .2 Tag each item or package separately with identification coordinated with the final door hardware schedule, and include installation instructions, templates, and necessary fasteners with each item or package.
  - .3 Deliver keys to manufacturer of key control system for subsequent delivery to Public Works Representative.
  - .4 For high security cylinders, deliver keys and permanent cores to Public Works Representative by registered mail or overnight package service.
- 1.8 COORDINATION
  - .1 Coordinate layout and installation of floor-recessed door hardware with floor construction. Cast anchoring inserts into concrete. Concrete, reinforcement, and formwork requirements are specified elsewhere.
  - .2 Installation Templates: Distribute for doors, frames, and other work specified to be factory prepared. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
  - .3 Security: Coordinate installation of door hardware, keying, and access control with Public Works' security consultant.
  - .4 Electrical System Roughing-In: Coordinate layout and installation of electrified door hardware with connections to power supplies and building safety and security systems.
  - .5 Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.
- 1.9 WARRANTY
  - .1 Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fails in materials or workmanship within specified warranty period.
    - .1 Failures include, but are not limited to, the following:
      - .1 Structural failures including excessive deflection, cracking, or breakage.
      - .2 Faulty operation of doors and door hardware.
    - .2 Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

- .2 Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.
  - .1 Electromagnetic and Delayed-Egress Locks: Five years from date of Substantial Completion.
  - .2 Exit Devices: Two years from date of Substantial Completion.
  - .3 Manual Closers: 10 years from date of Substantial Completion.
  - .4 Concealed Floor Closers: 10 years from date of Substantial Completion.

#### 1.10 MAINTENANCE SERVICE

- .1 Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Public Works' continued adjustment, maintenance, and removal and replacement of door hardware.
- .2 Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Provide parts and supplies that are the same as those used in the manufacture and installation of original products.

### PART 2 - PRODUCTS

#### 2.1 SCHEDULED DOOR HARDWARE

- .1 Provide door hardware for each door as scheduled to comply with requirements in this Section and as required for the proper operation of doors as intended and described herein whether specifically identified in the Contract Documents or not, including but not limited to cores, cylinders, rings, brackets, fasteners, adapter plates, arms, escutcheon plates, plugs, wires, transformers, relays, rectifiers, filters, power supplies, and seals.
  - .1 Door Hardware Sets: Provide quantity, item, size, finish or colour indicated.
  - .2 Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
  - .3 Grade: Provide Grade 1, unless noted otherwise.
- .2 Products specified in the Door Hardware Groupings correspond to products specified in Part 2 and typically identified using **BOLD** product descriptions.

#### 2.2 BUTT HINGES

- .1 Hinges: BHMA A156.1.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 Bommer Industries, Inc.
    - .2 DORMA Architectural Hardware; Member of The DORMA Group North America.
    - .3 Hager Companies.
    - .4 McKinney Products Company; an ASSA ABLOY Group company.
    - .5 PBB, Inc.
    - .6 Stanley Commercial Hardware; Div. of The Stanley Works.
  - .2 Template Requirements: Provide template-produced hinges for hinges installed on hollow-metal doors and hollow-metal frames.
    - .1 Template Hinge Dimensions: BHMA A156.7.
  - .3 Hinge Weight: Unless otherwise indicated, provide the following:
    - .1 Entrance Doors: Heavy-weight hinges.
    - .2 Doors with Closers: Antifriction-bearing hinges.
    - .3 Interior Doors: Standard-weight hinges.
  - .4 Base and Pin Metal:
    - .1 Exterior Hinges: Stainless steel with stainless-steel pin.
    - .2 Interior Hinges: Steel with steel pin.

- .3 Hinges for Fire-Rated Assemblies: Steel with steel pin.
- .5 Pins: Non-rising loose unless otherwise indicated.
  - .1 Out Swinging Exterior Doors: Non-removable.
  - .2 Out Swinging Corridor Doors with Locks: Maximum security.
- .6 Mounting: Full mortise (butts).
- .7 Tips: Flat button, unless noted otherwise.
- .8 Corners: Square.

.2 Antifriction-Bearing Hinges

- .1 Bearing Material: Ball bearing.

.3 Electrified Antifriction-Bearing Hinges

- .1 Power Transfer: Concealed PTFE-jacketed wires, secured at each leaf and continuous through hinge knuckle.

2.3 SELF-CLOSING HINGES AND PIVOTS

.1 Self-Closing Hinges and Pivots: BHMA A156.17.

- .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
  - .1 Bommer Industries, Inc.
  - .2 Hager Companies.
  - .3 McKinney Products Company; an ASSA ABLOY Group company.
  - .4 PBB, Inc.
  - .5 Stanley Commercial Hardware; Div. of The Stanley Works.

.2 **Spring Hinges:** Wrought steel, with torsion spring.

- .1 Type: Single acting, unless otherwise noted.
- .2 Mounting: Full mortise (butts).

.3 **Gate-Spring Pivot Sets:** Double acting; non-handed; consisting of bottom pivot with door and jamb bracket and top pivot assembly with jamb bracket.

- .1 Mounting: Mortise.
- .2 Tension: Adjustable.
- .3 Base Metal: Cast, forged, or extruded brass or bronze.

2.4 CENTER-HUNG PIVOTS

.1 Center-Hung Pivots: BHMA A156.4.

- .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - .1 DORMA Architectural Hardware; Member of The DORMA Group North America.
  - .2 IVES Hardware; an Ingersoll-Rand company.
  - .3 Rixson Specialty Door Controls; an ASSA ABLOY Group company.

.2 Center-Hung Pivot:

- .1 Bottom Pivots: Surface floor mounted, recessed in floor in cement case, or mortised into jamb; and mortised into door; with thrust ball bearing.
- .2 Base Metal: Brass, bronze, or steel.

2.5 CONTINUOUS HINGES

- .1 Continuous Hinges: BHMA A156.26; minimum 3.0 mm- thick, hinge leaves with minimum overall width of 102 mm; fabricated to full height of door and frame and to template screw locations; with components finished after milling and drilling are complete.

- .2 **Continuous, Gear-Type Hinges:** Extruded-aluminum, pinless, geared hinge leaves joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 Bommer Industries, Inc.
    - .2 Hager Companies.
    - .3 McKinney Products Company; an ASSA ABLOY Group company.
    - .4 Pemko; an ASSA ABLOY Group company.
    - .5 Stanley Commercial Hardware; Div. of The Stanley Works.
  - .2 Grade: Rated for not less 150% of the weight of the door.
  - .3 Hinges for Fire-Rated Assemblies: With steel fire pins to hold fire-rated doors in place if required by tested listing.
  - .4 Mounting: Concealed leaf, unless noted otherwise.
  - .5 Electric Option, when so required: Electric through wires.

## 2.6 MECHANICAL LOCKS AND LATCHES

- .1 Lock Functions: As indicated in door hardware schedule.
- .2 Lock Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:
  - .1 Bored Locks: Minimum 13 mm latchbolt throw.
  - .2 Mortise Locks: Minimum 19 mm latchbolt throw.
  - .3 Deadbolts: Minimum 25 mm bolt throw.
- .3 Lock Backset: 70 mm, unless noted otherwise.
- .4 Lock Trim, unless noted otherwise
  - .1 Levers: Wrought, forged, or cast.
  - .2 Lever Style: Plain lever.
  - .3 Escutcheons (Roses): Wrought, forged or cast.
  - .4 Dummy Trim: Match lever lock trim and escutcheons.
  - .5 Operating Device: Lever with escutcheons (roses).
- .5 Strikes: Provide manufacturer's standard strike for each lock bolt or latchbolt complying with requirements indicated for applicable lock or latch and with strike box and curved lip extended to protect frame; finished to match lock or latch.
  - .1 Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
  - .2 Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
  - .3 Aluminum-Frame Strike Box: Manufacturer's special strike box fabricated for aluminum framing.
  - .4 Rabbet Front and Strike: Provide on locksets for rabbeted meeting stiles.
- .6 **Bored Locks:** BHMA A156.2; Series 4000.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 Best Access Systems; Div. of Stanley Security Solutions, Inc.
    - .2 DORMA Architectural Hardware; Member of The DORMA Group North America.
    - .3 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
    - .4 Schlage Commercial Lock Division; an Ingersoll-Rand company.
- .7 **Mortise Locks:** BHMA A156.13; stamped steel case with steel or brass parts; Series 1000.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 Best Access Systems; Div. of Stanley Security Solutions, Inc.
    - .2 DORMA Architectural Hardware; Member of The DORMA Group North America.
    - .3 SARGENT Manufacturing Company; an ASSA ABLOY Group company.



- .4 Schlage Commercial Lock Division; an Ingersoll-Rand company.
  - .8 **Roller Latches:** BHMA A156.16; rolling plunger that engages socket or catch, with adjustable roller projection.
    - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
      - .1 Architectural Builders Hardware Mfg., Inc.
      - .2 CBH Manufacturing Inc.
      - .3 Door Controls International, Inc.
      - .4 IVES Hardware; an Ingersoll-Rand company.
      - .5 Standard Metal Hardware manufacturing Ltd.
      - .6 Stanley Commercial Hardware; Div. of The Stanley Works.
    - .2 Mounting: Mortise.
  - .9 **Push-Pull Latches:** Mortise, BHMA A156.13; with paddle handles that retract latchbolt; capable of being mounted vertically or horizontally.
    - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
      - .1 Architectural Builders Hardware Mfg., Inc.
      - .2 CBH Manufacturing Inc.
      - .3 Glynn-Johnson; an Ingersoll-Rand company.
      - .4 IVES Hardware; an Ingersoll-Rand company.
    - .2 Lever and Escutcheon Material: Stainless steel.
- 2.7 AUXILIARY LOCKS
- .1 **Bored Auxiliary Locks:** BHMA A156.5; with strike that suits frame.
    - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
      - .1 Best Access Systems; Div. of Stanley Security Solutions, Inc.
      - .2 Medeco Security Locks, Inc.; an ASSA ABLOY Group company.
      - .3 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
      - .4 Schlage Commercial Lock Division; an Ingersoll-Rand company.
    - .2 Backset: 70 mm.
    - .3 Material: Brass, bronze, or stainless steel.
    - .4 Deadlatches: Deadlocking latchbolt operated by key outside and turn inside, unless noted otherwise.
    - .5 Deadlocks: Deadbolt operated by key outside and turn inside, unless noted otherwise.
      - .1 Provide "In Use / Vacant" indicator with emergency key override in lieu of key outside, when specifically indicated, Grade 2 or better.
  - .2 **Mortise Auxiliary Locks:** BHMA A156.5; with strike that suits frame.
    - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
      - .1 Best Access Systems; Div. of Stanley Security Solutions, Inc.
      - .2 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
      - .3 Schlage Commercial Lock Division; an Ingersoll-Rand company.
    - .2 Backset: 70 mm.
    - .3 Material: Brass, bronze, or stainless steel.
    - .4 Deadlocks: Deadbolt operated by key outside and turn inside, unless noted otherwise.
    - .5 Deadlatches: Latchbolt and auxiliary deadlatch operated by key outside and turn inside, unless noted otherwise.
    - .6 Deadlocks for Sliding Doors: Expanding or interlocking-type deadbolt operated by key outside and turn inside, unless noted otherwise.
    - .7 Deadlatches for Sliding Doors: Hook-type latchbolt operated by key outside and handle inside, unless noted otherwise.
  - .3 **Narrow Stile Auxiliary Locks:** BHMA A156.5; with strike that suits frame.

- .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 Accurate Lock & Hardware Co.
    - .2 Adams Rite Manufacturing Co.; an ASSA ABLOY Group company.
  - .2 Backset: Half the width of the door stile.
  - .3 Strike: Flat with extra-long lip.
  - .4 Case Material: Stainless steel.
  - .5 Armored Front and Strike Material: Brass, bronze, stainless steel.
  - .6 Deadlock: Deadlocking bolt.
    - .1 Operation: Key outside and operating trim inside, unless noted otherwise.
  - .7 Deadlatch: Latchbolt with auxiliary deadlatch operated by key outside and paddle or lever inside; for single swinging doors.
  - .8 Multipoint Lock: Deadlocking bolt for pairs of swinging doors.
    - .1 Operation: Key outside and turn, lever, or knob inside.
    - .2 Type: Three point.
  - .9 Latch/Lock: Deadbolt and latchbolt; both operated by key both sides; inside handle operates only latchbolt.
- .4 **Push-Button Combination Locks:** BHMA A156.5; cylindrical; lock opens by entering a one- to five-digit code by pushing correct buttons in correct sequence; automatically relocks when door is closed; with strike that suits frame.
- .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 Kaba Ilco Corp.; a Kaba Group company.
  - .2 Lockset Configuration: Standard.
  - .3 Override: By key cylinder.

## 2.8 ELECTRIC STRIKES

- .1 **Electric Strikes:** BHMA A156.31; UL1034 listed, with faceplate to suit lock and frame.
- .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 Adams Rite Manufacturing Co.
    - .2 Dortronics Systems, Inc.
    - .3 Folger Adam Electric Door Controls; an ASSA ABLOY Group company.
    - .4 HES, Inc.; an ASSA ABLOY Group company.
    - .5 Rutherford Controls Int'l. Corp.
    - .6 Von Duprin; an Ingersoll-Rand company.
  - .2 Material: Stainless steel.
  - .3 Mounting: Mortise wherever practical. Semi-rim and Rim wherever required.
  - .4 Fire-Rated Door Assemblies: Use fail-secure electric strikes with fire-rated devices.
  - .5 Monitoring: Mechanical latchbolt.
  - .6 Audible Signal: silent, unless noted otherwise.

## 2.9 ELECTROMAGNETIC LOCKS

- .1 **Electromagnetic Locks:** BHMA A156.23; electrically powered; with electromagnet attached to frame and armature plate attached to door; as required by application indicated.
- .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 DORMA Architectural Hardware; Member of The DORMA Group North America.
    - .2 Dortronics Systems, Inc.
    - .3 Rixson, an ASSA ABLOY Group company
    - .4 Rutherford Controls Int'l. Corp.
    - .5 Schlage Commercial Lock Division; an Ingersoll-Rand company.
    - .6 Securitron Magnalock Corporation; an ASSA ABLOY Group company.
  - .2 Type: Provide direct-hold type; unless noted otherwise.

- .1 Direct-Hold Type: Type E08501/E08511/E08521, lock mounted on face of header; strike angle mounted on door pull side.
  - .2 Shear Type: Type E08571/E08581, lock mortised in header; strike mortised in top of door.
  - .3 Strength Ranking: 6672 N.
  - .4 Inductive Kickback Peak Voltage: Not more than 0 V.
  - .5 Options:
    - .1 Magnetic bond sensor.
    - .2 Double LED indicators.
    - .3 Adjustable time delay with automatic relock.
    - .4 Integral door position switch, when scheduled.
- .2 **Delayed-Egress Electromagnetic Locks:** BHMA A156.24, electrically powered, with electromagnet attached to frame and armature plate attached to door; applying pressure to door more than 3 seconds initiates irreversible alarm and 15-second delay for egress. When integrated with fire alarm, fire alarm voids 15-second delay.
- .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 Rutherford Controls Int'l. Corp.
    - .2 Schlage Commercial Lock Division; an Ingersoll-Rand company.
    - .3 Securitron Magnalock Corporation; an ASSA ABLOY Group company.
  - .2 Grade: Security Grade, activated from secure side of door by initiating device.
  - .3 Provide the following options:
    - .1 Wall-mounted key switch, c/w cylinder and core as required, to specifications of this Specification Section.
    - .2 Built-in sensor detects pressure applied to door.
    - .3 Built-in sounder alarm.
    - .4 3-second nuisance alarm.
    - .5 15-Second Building Code Sign.

## 2.10 ELECTROMECHANICAL LOCKS

- .1 **Electromechanical Locks:** BHMA A156.25; motor or solenoid driven; **bored or mortise** latchbolt; with strike that suits frame, unless noted otherwise.
- .1 Products: Subject to compliance with requirements, provide one of the following products :
    - .1 Profile Series as marketed by SARGENT Manufacturing Company; an ASSA ABLOY Group company.
    - .2 AD-Series as marketed by Schlage Commercial Lock Division; an Ingersoll-Rand company.
  - .2 Actuating Device: Integral 125kHz proximity card reader, unless noted otherwise.
    - .1 Integral 13.56 MHz iClass smart card reader, when specifically noted.
    - .2 Integral 125 kHz proximity card and 13.56 MHz iClass smart card reader, when specifically noted.
    - .3 Integral PIN keypad, when specifically noted.
    - .4 Combination of thereof when specifically noted.
  - .3 Faceplate Material: Stainless steel.
  - .4 Trim: Lever; unless noted otherwise.
  - .5 Function: Latch with key; unless noted otherwise.
    - .1 Cylinder and Core: Provide as required, to requirements of this Specification Section.

## 2.11 SELF-CONTAINED ELECTRONIC LOCKS

- .1 **Self-Contained Electronic Locks:** BHMA A156.25, bored or mortise; with internal, battery-powered or self-powered, self-contained electronic locks; consisting of complete lockset, motor-driven lock mechanism, and actuating device; enclosed in zinc-dichromate-plated, wrought-steel case, and strike that suits frame. Provide key override, low-battery detection and warning, LED status indicators, and ability to program at the lock.
- .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :

- .1 Best Access Systems; Div. of Stanley Security Solutions, Inc.
- .2 Kaba Ilco Corp.; a Kaba Group company.
- .3 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
- .4 Schlage Commercial Lock Division; an Ingersoll-Rand company.
- .2 Actuating Device: Digital keypad; unless noted otherwise.
- .3 Faceplate Material: Stainless steel.
- .4 Trim: Lever; unless noted otherwise.
- .5 Function: Latch with key; unless noted otherwise.
  - .1 Cylinder and Core: Provide as required, to specifications of this Specification Section.

## 2.12 EXIT LOCKS AND EXIT ALARMS

- .1 Exit Locks and Alarms: BHMA A156.29.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 Detex Corporation.
    - .2 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
  - .2 **Exit Locks:** Surface mounted; battery powered, housed in metal case; with manufacturer's standard strike that suits frame; with red-and-white lettering reading "EMERGENCY EXIT PUSH TO OPEN--ALARM WILL SOUND."
    - .1 Type: Type E0421, activated arm, push plate or paddle; or Type E0431, activated by horizontal actuating bar; unless noted otherwise.
    - .2 Latching: Single point latching, unless noted otherwise.
      - .1 Provide two-point latching and multi-point latching when specifically noted.
    - .3 Cylinder and Core: Provide as required, to specifications of this Specification Section.
    - .4 Options:
      - .1 Low-battery alert.
      - .2 Outside key control.

## 2.13 MANUAL FLUSH BOLTS

- .1 Manual Flush Bolts: BHMA A156.16; minimum 19 mm throw; designed for mortising into door edge. One set of two per door, unless noted otherwise.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 Adams Rite Manufacturing Co.; an ASSA ABLOY Group company.
    - .2 Door Controls International, Inc.
    - .3 IVES Hardware; an Ingersoll-Rand company.
  - .2 **Manual-Extension Flush Bolts:** Type L0481/L04251/L04261/L04271, fabricated from extruded brass or aluminum, with 305 mm rod actuated by flat lever; listed and labeled for fire-rated doors. Provide with matching strike.
  - .3 **Slide Flush Bolts:** Type L04201, cast brass, with rod actuated by slide. Provide with matching strike.

## 2.14 AUTOMATIC AND SELF-LATCHING FLUSH BOLTS

- .1 Automatic and Self-Latching Flush Bolts: BHMA A156.16; minimum 19 mm throw; designed for mortising into door edge. 1 set of two per door, unless noted otherwise.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :
    - .1 Door Controls International, Inc.
    - .2 IVES Hardware; an Ingersoll-Rand company.
  - .2 **Automatic Flush Bolts:** Fabricated from steel and brass components, with spring-activated bolts that automatically retract when active leaf is opened and that automatically engage when active door depresses bolt trigger; listed

and labeled for fire-rated doors. Provide brass or stainless-steel cover plate, top and bottom matching strikes, guides, guide supports, wear plates, and shims.

- .3 **Self-Latching Flush Bolts:** Type 27, fabricated from steel and brass components, with spring-activated bolts that automatically engage when active door depresses trigger; listed and labeled for fire-rated doors. Bolts are manually retracted by a slide in the bolt face. Provide brass or stainless-steel cover plate, matching top and bottom strikes, guides, guide supports, wear plates, and shims.

## 2.15 EXIT DEVICES AND AUXILIARY ITEMS

- .1 Exit Devices and Auxiliary Items: BHMA A156.3.

- .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following :

- .1 DORMA Architectural Hardware; Member of The DORMA Group North America.
- .2 Norton Door Controls; an ASSA ABLOY Group company.
- .3 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
- .4 Von Duprin; an Ingersoll-Rand company.

- .2 Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.

- .3 Fire Exit Devices: Devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.

- .4 Exit Devices - General

- .1 Actuating Bar: Pushpad, decorative, with grooved/textured push surface.
  - .1 Provide narrow-stile pushpad for narrow stile doors.
- .2 Material: Stainless steel.
- .3 Outside Trim Function: as noted in Schedule.
- .4 Options: Provide options when specifically noted.
  - .1 Dogging: engage dogging via hex key unless noted otherwise.
    - .1 Engage dogging via keyed cylinder, when specifically noted.
  - .2 Electric Dogging.
  - .3 Pushpad monitor switch.
  - .4 Double-pushpad monitor switch.
  - .5 Electric locking and unlocking.
  - .6 Integral 125 kHz proximity card reader, 13.56 MHz iClass smart card reader, PIN keypad, or combination thereof, as specifically noted.
  - .7 Delayed egress.
  - .8 Alarm.
- .5 Floor Strikes: Provide flush bottom strike whenever practical. Provide dust cover where available.

- .5 **Rim Exit Devices:** Type 1, unless noted otherwise.

- .1 Provide Type 4 for narrow stile doors.

- .6 **Mortise Exit Devices:** Type 3, unless noted otherwise.

- .1 Provide Type 10 for narrow stile doors.

- .7 **Surface Vertical-Rod Exit Devices:** Type 2, unless noted otherwise.

- .1 Provide Type 5 for narrow stile doors.
- .2 Provide exit device less bottom rod when specifically noted.

- .1 Type 6, for narrow stile doors.
    - .2 Type 7, for wood doors.
    - .3 Type 8, for metal doors.
    - .4 Provide exit device less bottom rod when specifically noted.
  - .9 Multi-Point Combination Exit Devices:
    - .1 Type: Type 9, rim and surface vertical rods, unless noted otherwise.
      - .1 Provide Type 11 for narrow stile doors.
      - .2 Provide Type 12, mortise and concealed vertical rods, if specifically noted.
      - .3 Provide exit device less bottom rod when specifically noted.
  - .10 Automatic Latching Two-Point Bolts:
    - .1 Type: Type 23, concealed, unless noted otherwise.
      - .1 Type 24, surface, when specifically noted.
    - .2 Material: Stainless steel.
  - .11 Extension Flush Bolt Sets: BHMA A156.3.
    - .1 Type: Type 25, automatic, unless noted otherwise.
      - .1 Type 27, self-latching, when specifically noted
    - .2 Material: Stainless steel.
  - .12 **Removable Mullions:** BHMA A156.3, Type 22.
    - .1 Remove mullions by removing fasteners, unless noted otherwise.
      - .1 Remove mullions by operating a key cylinder when specifically noted.
    - .2 For Non-Rated Openings: With malleable-iron top and bottom retainers, and prepared for strikes to suit door hardware.
      - .1 Locations: Installation in non-rated door frames.
      - .2 Materials
        - .1 For pressed steel door frames: Tube-steel
        - .2 For aluminum door frames: Extruded aluminum
    - .3 For Rated Openings: Provide removable mullions for use with fire exit devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire and panic protection, based on testing according to UL 305 and NFPA 252. Use mullions only with exit devices for which they have been tested.
  - .13 Exit Device Outside Trim: Lever to match lock trim, unless noted otherwise.
    - .1 Pull, when specifically noted.
    - .2 Provide cylinder when specifically noted.
  - .14 Through-Bolt Fasteners: For exit devices and trim.
- 2.16 LOCK CYLINDERS
- .1 Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
    - .1 Provide Standard Lock Cylinders, on all interior doors, unless noted otherwise.
    - .2 Provide High-Security Lock Cylinders on all exterior doors; and when specifically noted.
    - .3 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - .1 Best Access Systems; Div. of Stanley Security Solutions, Inc.
      - .2 Medeco Security Locks, Inc.; an ASSA ABLOY Group company.
      - .3 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
      - .4 Schlage Commercial Lock Division; an Ingersoll-Rand company.
      - .5 Yale Security Inc.; an ASSA ABLOY Group company.

- .2 Standard Lock Cylinders: BHMA A156.5.
  - .1 Keyway:
    - .1 New Buildings: Contractor's choice of a proprietary protected keyway whose patent does not expire for a further ten years minimum.
    - .2 Existing Buildings: Match existing keying system if one exists, otherwise comply with requirements for new buildings.
- .3 **High-Security Lock Cylinders:** BHMA A156.30, M, mechanical.
  - .1 Key Control Level: Category A or B, unless noted otherwise.
  - .2 Destructive Test Level: Category A.
  - .3 Surreptitious Entry Resistance Level: Category A.
  - .4 Keyway:
    - .1 Contractor's choice of a proprietary protected keyway whose patent does not expire for a further ten years minimum.
- .4 Cylinders: Manufacturer's standard tumbler type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:
  - .1 Number of Pins: Six.
  - .2 Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.
  - .3 Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
  - .4 Bored-Lock Type: Cylinders with tailpieces to suit locks.
    - .1 High-Security Grade: BHMA A156.5, Grade 1A, listed and labeled as complying with pick- and drill-resistant testing requirements in UL 437 (Suffix A).
- .5 Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
  - .1 Small Format Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
- .6 Construction Keying: Comply with the following:
  - .1 Cylinders with Interchangeable Cores:
    - .1 Provide construction cores that are replaceable by permanent cores.
    - .2 Provide 10 construction master keys.
      - .1 Replace construction cores with permanent cores as directed by Public Works Representative.
  - .2 Cylinders not equipped with Interchangeable Cores:
    - .1 Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

## 2.17 KEYING

- .1 Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A. Incorporate decisions made in keying conference.
  - .1 Existing System:
    - .1 Master key or grand master key locks to Public Works existing system.
- .2 Keys:
  - .1 Stamping: Permanently inscribe each key with a visual key control number.
  - .2 Quantity: In addition to one extra key blank for each lock, provide the following:
    - .1 Cylinder Change Keys: Three.
    - .2 Master Keys: Five.
    - .3 Grand Master Keys: Five.

.4 Great-Grand Master Keys: Five.

2.18 KEY CONTROL SYSTEM

- .1 **Key Control Cabinet:** BHMA A156.5; metal cabinet with baked-enamel finish; containing key-holding hooks, labels, 2 sets of key tags with self-locking key holders, key-gathering envelopes, and temporary and permanent markers; with key capacity of 150 percent of the number of locks.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 American Key Boxes and Cabinets.
    - .2 HPC, Inc.
    - .3 Lund Equipment Co., Inc.
  - .2 Wall-Mounted Cabinet: Cabinet with hinged-panel door equipped with key-holding panels and pin-tumbler cylinder door lock.

2.19 OPERATING TRIM

- .1 Operating Trim: BHMA A156.6; stainless steel, unless otherwise indicated.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 Canadian Builders Hardware Manufacturing Inc.
    - .2 Hager Companies.
    - .3 IVES Hardware; an Ingersoll-Rand Company.
    - .4 Standard Metal Hardware Manufacturing Ltd.
- .2 **Flat Push Plates:** 1.3 mm thick, 102 mm wide by 406 mm high with square corners and beveled edges; secured with exposed screws.
- .3 **Straight Door Pulls:** Type J401, with minimum clearance of 38 mm from face of door.
  - .1 Type: 19 mm constant-diameter pull, unless noted otherwise.
  - .2 Mounting: Through bolted with oval-head machine screws and countersunk washers.
  - .3 Overall Length: 229 mm, unless noted otherwise.
- .4 **Offset Door Pulls:** Type J402, with minimum clearance of 38 mm from face of door.
  - .1 Type: 19 mm constant-diameter pull, unless noted otherwise.
  - .2 Mounting: Through bolted with oval-head machine screws and countersunk washers.
  - .3 Overall Length: 229 mm, unless noted otherwise.
- .5 **Flush Door Pulls:** Type J403, mortised 13 mm deep; secured with screws.
  - .1 Shape: Rectangular with rectangular recess.
  - .2 Size: 57 x 178 mm high.
- .6 **Straight Pull-Plate Door Pulls:** Type J405, 1.3 mm thick plate, 102 mm wide by 406 mm high with square corners and beveled edges; pull with minimum clearance of 38 mm from face of door.
  - .1 Type: 19 mm constant-diameter pull.
  - .2 Mounting: Through bolted with oval-head machine screws and countersunk washers.
  - .3 Overall Pull Length: 229 mm.
- .7 **Single Horizontal Push Bar:** Type J501, horizontal bar, with minimum clearance of 38 mm from face of door.
  - .1 Shape and Size: 25 mm constant-diameter round bar.
  - .2 Mounting: Through bolted with oval-head machine screws and countersunk washers.
- .8 **Bar Set Option Push-Pull:** Type J505, consisting of J501 single Horizontal Push Bar one side and Type J402 Offset Door Pull.
  - .1 Shape and Size: constant-diameter round bar.



- .1 Horizontal Push Bar; 25 mm.
- .2 Offset Pull Bar; 19 mm.
- .2 Mounting: Through bolted with oval-head machine screws and countersunk washers.
- .3 Overall Length: 229 mm, unless noted otherwise.

- .9 **Cylinder Finger Pull:** Type J303, 50 x 95 x 16 mm projection, with cut out for cylinder, stainless steel.

## 2.20 ACCESSORIES FOR PAIRS OF DOORS

- .1 **Coordinators:** BHMA A156.3; Type 21A, consisting of active-leaf, hold-open lever and inactive-leaf release trigger; fabricated from steel with nylon-coated strike plates; with built-in, adjustable safety release, and override feature.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 Don-Jo Mfg., Inc.
    - .2 Door Controls International, Inc.
    - .3 Hager Companies.
    - .4 IVES Hardware; an Ingersoll-Rand Company
- .2 **Flat Overlapping Astragals:** BHMA A156.22; Type ROY634, flat primed steel metal bar, surface mounted on face of door with screws; minimum 3.2 mm thick by 51 mm wide by full height of door.
  - .1 Material: aluminum for exterior doors, primed steel for interior doors.
- .3 **Overlapping-with-Gasket Astragals:** BHMA A156.22; T-shaped metal, surface mounted on edge of door with screws; with integral gasket and base metal as follows:
  - .1 Base Metal: Aluminum.
  - .2 Gasket Material: Silicone.

## 2.21 SURFACE CLOSERS

- .1 Surface Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves and forged-steel main arm. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 DORMA Architectural Hardware; Member of The DORMA Group North America.
    - .2 LCN Closers; an Ingersoll-Rand company.
    - .3 Norton Door Controls; an ASSA ABLOY Group company.
    - .4 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
- .2 **Surface Closer with Cover:** Modern Type with mechanism enclosed in cover.
  - .1 Mounting: Mount closer on non-public side of door, unless noted otherwise.
  - .2 Type: Regular arm, unless noted otherwise.
    - .1 Hold open, when specifically noted.
    - .2 Dead stop, when specifically noted.
    - .3 Dead stop hold open, when specifically noted.
    - .4 Delayed action closing, when specifically noted.
  - .3 Backcheck: Effective between 60 and 85 degrees of door opening.
  - .4 Cover Material: Molded plastic, unless noted otherwise.
    - .1 Aluminum, when specifically noted.
    - .2 Plated steel, when specifically noted.
  - .5 Closing Power Adjustment: At least 35 percent more than minimum tested value.
  - .6 Provide adapter plates, shim spacers, and blade stop spacers as required by frame and door conditions.

## 2.22 CONCEALED CLOSERS

- .1 Concealed Closers: BHMA A156.4; rack-and-pinion hydraulic type with adjustable sweep and latch speeds controlled by key-operated valves. Comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 DORMA Architectural Hardware; Member of The DORMA Group North America.
    - .2 LCN Closers; an Ingersoll-Rand company.
    - .3 Norton Door Controls; an ASSA ABLOY Group company.
    - .4 Rixson Specialty Door Controls; an ASSA ABLOY Group company.
    - .5 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
- .2 Concealed Overhead Closer: mortised into head frame; with cast-metal body and exposed cover plate.
  - .1 Type: Concealed arm and track, center pivoted, double acting.
  - .2 Arm: Manually selected hold open.
  - .3 Track: Manually selected hold open.
  - .4 Cover Plate Material: Aluminum.
  - .5 Backcheck: Adjustable.
  - .6 Closing Power Adjustment: At least 50 percent more than minimum tested value.

## 2.23 CLOSER HOLDER RELEASE DEVICES

- .1 **Closer Holder Release Devices:** BHMA A156.15; closer connected with separate or integral releasing and fire- or smoke-detecting devices. Upon activation by a signal to the closer, or loss of power, the door shall become self-closing.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 DORMA Architectural Hardware; Member of The DORMA Group North America.
    - .2 LCN Closers; an Ingersoll-Rand company.
    - .3 Norton Door Controls; an ASSA ABLOY Group company.
    - .4 Rixson Specialty Door Controls; an ASSA ABLOY Group company.
    - .5 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
  - .2 Type: Single-point hold open, unless noted otherwise.
    - .1 Multiple-point hold open, when specifically noted.
    - .2 Free-swinging release, when specifically noted.
  - .3 Mounting: Mount closer on non-public side of door, unless noted otherwise.
  - .4 Options: Provide options when specifically noted.
    - .1 Adjustable backcheck.
    - .2 Integral smoke detector.
  - .5 Provide adapter plates, shim spacers, and blade stop spacers as required by frame and door conditions.

## 2.24 MECHANICAL STOPS AND HOLDERS

- .1 **Wall- and Floor-Mounted Stops:** BHMA A156.16; polished cast brass, bronze, or aluminum base metal.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 Architectural Builders Hardware Mfg., Inc.
    - .2 Canadian Builders Hardware Manufacturing Inc.
    - .3 Hager Companies.
    - .4 IVES Hardware; an Ingersoll-Rand company.
    - .5 Standard Metal Manufacturing Inc.
- .2 **Rigid-Type Floor Stop:** Type L02011/L02021; with rubber bumper.

- .3 **Dome-Type Floor Stop:** Type L02141/L02161; with minimum 25 mm- high bumper for doors without threshold and 35 mm- high bumper for doors with threshold; provide with extruded aluminum riser for carpet installations.
- .4 **Combination Floor Stop and Holder:** Type L01301; with automatic hold open and release by pushing door.
- .5 **Combination Wall Stop and Holder:** Type L01291; with automatic hold open and release by pushing door.
- .6 **Lever-Type Door Holders:** Type L01381; minimum 102 mm- long arm that swings up and remains in vertical position; with replaceable rubber tip; for surface-screw application.
- .7 **Wall Bumpers:** Type L02101; with rubber bumper; 64 mm diameter, minimum 19 mm projection from wall; with backplate for concealed fastener installation; with concave bumper configuration.
- .8 **Roller-Type Wall Bumpers:** Type L02191; minimum 111 mm projection from wall; for surface-screw application.

## 2.25 ELECTROMAGNETIC STOPS AND HOLDERS

- .1 **Electromagnetic Door Holders:** BHMA A156.15; unit with strike plate attached to swinging door; coordinated with fire detectors and interface with fire alarm system for labeled fire-rated door assemblies.
  - .1 Mounting: Type to suit door and site conditions, unless specifically noted otherwise.
    - .1 Wall-mounted electromagnetic, as required to suit site conditions or when specifically noted otherwise.
    - .2 Single floor-mounted electromagnet, as required to suit site conditions or when specifically noted otherwise.
    - .3 Single floor-mounted electromagnet double, as required to suit site conditions or when specifically noted otherwise.
  - .2 Options: complete with adapter plates, brackets, extension arms, and mounting brackets to suit door and site conditions.
  - .3 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 Architectural Builders Hardware Mfg., Inc.
    - .2 DORMA Architectural Hardware; Member of The DORMA Group North America.
    - .3 LCN Closers; an Ingersoll-Rand company.
    - .4 SARGENT Manufacturing Company; an ASSA ABLOY Group company.

## 2.26 OVERHEAD STOPS AND HOLDERS

- .1 **Overhead Stops and Holders:** BHMA A156.8.
  - .1 Provide overhead stops with hold-open feature, unless noted otherwise.
    - .1 Provide overhead stops without hold open feature on openings located in fire separations and on doors equipped with door closers equipped with hold-open feature.
  - .2 Provide overhead stops and holders to suit door closer, if so specified, and suit other door hardware and door and frame configuration.
    - .1 Use only manufacturers' extra-heavy-duty grade models for exterior doors.
  - .3 Provide shock-absorber feature on all exterior doors.
  - .4 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 Canadian Builders Hardware Manufacturing Inc.
    - .2 Architectural Builders Hardware Mfg., Inc.
    - .3 Glynn-Johnson; an Ingersoll-Rand Company.
    - .4 Hager Companies.
    - .5 Standard Metal Manufacturing Inc.

- .1 Door Gasketing: BHMA A156.22; air leakage not to exceed 0.000774 cu. m/s per m of crack length for gasketing other than for smoke control, as tested according to ASTM E 283; with resilient or flexible seal strips that are easily replaceable and readily available from stocks maintained by manufacturer.
  - .1 Gasketing Material: Provide gasketing material specified, unless noted otherwise.
    - .1 For door gasketing applied to doors and frames installed in a fire separation, provide gasketing material required to maintain the required rating of the opening.
  - .2 Profiles: Provide door gasketing of profiles noted, including but not limited to those described herein.
  - .3 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 Hager Companies.
    - .2 National Guard Products.
    - .3 Pemko Manufacturing Co.; an ASSA ABLOY Group company.
    - .4 Zero International.
- .2 **Adhesive-Backed Perimeter Gasketing:** Type ROY154/ROY155, Neoprene bulb gasket material applied to frame rabbet with self-adhesive.
- .3 **Spring-Metal Perimeter Gasketing:** Type ROK154/ROK155, Minimum 0.20 mm- thick brass or bronze, 0.20 mm-thick stainless steel, or 0.30 mm- thick aluminum gasket material, fastened to frame rabbet with nails or screws.
- .4 **Rigid, Housed, Perimeter Gasketing:** Type ROY164/ROY165, Sponge neoprene gasket material held in place by aluminum, brass or bronze, or stainless steel housing; fastened to frame stop with screws.
- .5 **Adjustable, Housed, Perimeter Gasketing:** ROY164/ROY165 Screw-adjustable sponge neoprene gasket material held in place by aluminum, brass or bronze, or stainless steel housing; fastened to frame stop with screws.
- .6 **Overlapping Astragals for Meeting Stiles:** Type ROY734/ROY735, Nylon brush gasket material held in place by aluminum or bronze retainer and overlapping when doors are closed; mounted to face of meeting stile with screws; surface mounted to each door.
  - .1 Type ROF724/ROF 725, Mortised into edge of each door.
- .7 **Adjustable Astragals for Meeting Stiles:** Screw-adjustable brush pile gasket material held in place by aluminum or bronze housing; mounted with screws.
  - .1 Mounting:
    - .1 Type ROF734/ROF735, Surface mounted on face
    - .2 Type ROF 834/ROF 835, Mortised into edge of each door.
- .8 **Door Sweeps:** Type ROB416, Neoprene gasket material held in place by flat aluminum or bronze housing or flange; surface mounted to face of door with screws.
- .9 **Door Shoe Type with Drip Cap:** Type ROB536, Neoprene gasket material held in place by aluminum or bronze retainer; mounted to bottom edge of door with screws.
  - .1 Mounting: Surface mounted on bottom edge of door.
- .10 **Automatic Door Bottom Type:** Sponge neoprene gasket material held in place by aluminum, bronze, or aluminum lined with 1.2 mm thick lead housing that automatically drops to form seal when door is closed; mounted to bottom edge of door with screws.
  - .1 Mounting: Surface mounted on face, unless noted otherwise
    - .1 Semi-mortised into bottom, when specifically noted.
    - .2 Mortised into bottom of door, when specifically noted.
  - .2 Type: Low-closing-force type for doors required to meet accessibility requirements.

- .1 **Thresholds:** BHMA A156.21; fabricated to full width of opening indicated.
    - .1 Profiles and Configurations: Provide thresholds to suit door, frame, and site conditions, and barrier free regulations, including but not limited to types listed herein. Ensure thresholds are of adequate size to bridge over any gap between the floor slab and any adjacent foundation and exterior walk, pad, or landing.
    - .2 Type: Fluted top, barrier free.
    - .3 Base Metal: Aluminum, unless noted otherwise.
    - .4 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - .1 Hager Companies.
      - .2 National Guard Products.
      - .3 Pemko Manufacturing Co.; an ASSA ABLOY Group company.
      - .4 Rixson Specialty Door Controls; an ASSA ABLOY Group company.
      - .5 Zero International.
  - .2 Saddle Thresholds: Type J12130
  - .3 Latching Panic Thresholds: Type J15130
- 2.29 SLIDING DOOR HARDWARE
- .1 Sliding Door Hardware: BHMA A156.14; consisting of complete sets including rails, hangers, supports, bumpers, floor guides, and accessories indicated.
    - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - .1 Hager Companies.
      - .2 Stanley Commercial Hardware; Div. of The Stanley Works.
      - .3 K.N.Crowder Manufacturing, Inc.
  - .2 **Horizontal Sliding Door Hardware:** Rated to suit door weight plus 50%, but in no case less than 109 kg.
    - .1 Material: Galvanized steel or extruded aluminum.
    - .2 Rail: Box profile.
    - .3 Hanger Configuration: four-wheel truck hanger assembly with top mounting plate that allows vertical adjustment.
    - .4 Accessories: Provide the following accessories, unless noted otherwise.
      - .1 Extruded aluminum fascia of height to conceal track and hangers; clear anodized finish, unless noted otherwise.
      - .2 Rail supports and mounting brackets, intermediate and splice supports to suit configuration.
      - .3 Flush Door Pull: mortised door pull, 57 x 178 by 12mm deep, brushed stainless finish, one per side of door.
        - .1 K.N. Crowder Model C-90B or equivalent.
      - .4 Guide channel, for recessing into bottom of door, with in-floor roller guide.
      - .5 In-track stop and heavy duty floor mounted door stop.
      - .6 Bypass sliding door hardware as required to suit configuration.
  - .3 **Pocket Sliding Door Hardware Kits:** Rated for doors weighing up to 54 kg, overhead box rail with support header. Includes uprights used to support and attachment of a wall substrate to create the door pocket and allow for its alignment with adjacent partition substrate material, unless provided with door frame.
    - .1 Configuration: single or double pocket door, to suit configuration shown.
    - .2 Rail Material: Galvanized steel or extruded aluminum.
    - .3 Rail Configuration: Box profile.
    - .4 Wheel Assembly: four-wheel truck hanger assembly with top mounting plate that allows vertical adjustment.
    - .5 Upright Material: rolled-formed steel.
    - .6 Latch / Pull:

- .1 Passage Function: Provide passage function door pulls, unless noted otherwise; consisting of the following components:
  - .1 Flush Door Pull: mortised door pull, 57 x 178 by 12mm deep, brushed stainless finish, one per side of door.
    - .1 K.N. Crowder Model C-90B or equivalent.
  - .2 Door Edge Pull: Mortised spring-loaded door edge pull, 12.5 x 50 mm high with 32 mm throw, recessed into edge of door, brushed stainless steel finish.
    - .1 K.N. Crowder Model C-91 or equivalent.
- .2 Privacy Function: Provide privacy function lockset and pulls, only when specifically noted; consisting of the following components:
  - .1 Lockset: mortised privacy lockset for pocket doors, with 75mm long levered thumb turn one side, with coin emergency release other side, stainless steel door strike, ADA-approved.
    - .1 K.N. Crowder Model C-92 L-HL or equivalent.
  - .2 Door Pull: round wrought door pull to ANSI A156.6, Type J401, 19mm diameter x 203 mm length, brushed stainless steel finish, one per side of door.
- .7 Accessories: Provide the following accessories unless noted otherwise.
  - .1 Bumper stops; wrought steel.
  - .2 Guide channel, for recessing into bottom of door, with in-floor roller guide.
  - .3 Shim kits as required to suit width of adjacent partition framing.

## 2.30 METAL PROTECTIVE TRIM UNITS

- .1 Metal Protective Trim Units: BHMA A156.6; fabricated from 1.3 mm- thick stainless steel; with manufacturer's standard machine or self-tapping screw fasteners.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 Architectural Builders Hardware Mfg., Inc.
    - .2 Canadian Builders Hardware Manufacturing Inc.
    - .3 Don-Jo Mfg., Inc.
    - .4 Hager Companies.
    - .5 IVES Hardware; an Ingersoll-Rand company.
    - .6 Standard Metal Manufacturing Inc.
- .2 **Armor Plates:** 914 mm high by door width with allowance for frame stops.
- .3 **Kick Plates:** 254 mm high by door width with allowance for frame stops.
- .4 **Mop Plates:** 152 mm high by 25 mm less than door width.
- .5 **Stretcher Plates:** 203 mm high by door width with allowance for frame stops.
- .6 **Non-mortise Cap Door Edging:** 1067 mm- high by minimum 1.3 mm- thick metal sheet formed into "U" shape; with 32 mm length of leg on faces of door; for surface mounting on door.
  - .1 Leg Offset: To accommodate door protection plate of type indicated.
- .7 **Mortise Cap Door Edging:** 1067 mm- high by minimum 1.3 mm- thick metal sheet formed into "U" shape; with 22 mm length of leg on faces of door; for mortise application into edge of door.

## 2.31 AUXILIARY DOOR HARDWARE

- .1 Auxiliary Hardware: BHMA A156.16.
  - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 Architectural Builders Hardware Mfg., Inc.
    - .2 Canadian Builders Hardware Manufacturing Inc.

- .3 Don-Jo Mfg., Inc.
  - .4 Hager Companies.
  - .5 Stanley Commercial Hardware; Div. of The Stanley Works.
  - .2 **Door Viewer:** Type L03171; solid brass with optical glass lenses; adjustable to door thickness and permitting 1-way observation with minimum 190-degree viewing angle; unless noted otherwise.
    - .1 Door Viewers for Fire-Rated Doors: Type L03221, Solid brass with optical glass lenses; listed and labeled for use in fire-rated door assemblies; adjustable to door thickness, and permitting 1-way observation with minimum 120-degree viewing angle.
  - .3 **Latch Guards:** Stainless steel latch guards designed to prevent prying of doors, with concealed fasteners, of configuration to suit door hardware.
- 2.32 PADLOCKS
- .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - .1 Best Access Systems; Div. of Stanley Security Solutions, Inc.
    - .2 Master Lock Company, LLC.
  - .2 **Industrial Padlocks:** ASTM F883 Grade 4 or better, unless noted otherwise. Complete with chain. Complete with core and keyway matching bore and mortise locks. Shackle length suited for intended locking condition.
    - .1 ASTM F883 Grade 6 for corrosion resistance.
    - .2 ASTM F883 Grade for shackle cutting.
- 2.33 AUXILIARY ELECTRIFIED DOOR HARDWARE
- .1 Auxiliary Electrified Door Hardware:
    - .1 Manufacturers: Subject to compliance with requirements, provide products by one of the following:
      - .1 SARGENT Manufacturing Company; an ASSA ABLOY Group company.
      - .2 Schlage Commercial Lock Division; an Ingersoll-Rand company.
      - .3 Securitron Magnalock Corporation; an ASSA ABLOY Group company.
    - .2 Power supplies as an integral part of an access control system may be provided by the Access Control System manufacturer subject to compliance with requirements.
  - .2 **Boxed Power Supplies:** Modular unit in NEMA ICS 6, Type 4 enclosure; filtered and regulated; voltage rating and type matching requirements of door hardware served; listed and labeled for use with fire alarm systems. Furnish units with fire alarm disconnect contact relay and with "AO" Auto Operator signal function for use with power operated doors.
    - .1 Certifications: ULc listed
  - .3 **Monitor Strikes:** Cast strike with toggle.
  - .4 **Door Position Switches:** Magnetically operated reed switch designed for concealed mounting.
  - .5 **Door and Frame Transfer Devices:** Steel housing for mortise in hinge stile of door, with flexible tube for wiring bundle; accommodating doors that swing open to 120 degrees.
  - .6 **Card Reader:** 125 kHz Proximity card Reader, wall mounted, unless noted otherwise; compatible with Access Control System
    - .1 13.56 MHz iClass smart card reader, when specifically noted.
    - .2 PIN keypad, when specifically noted
    - .3 And combination thereof, when specifically noted.

- .7 **Access Control Cards:** standard HID cards to suit readers; complete with the following; unless noted otherwise
  - .1 Plain white PVC gloss finish.
  - .2 Vertical slot punch.
  - .3 Sequential Matching Internal/External numbering.

- .8 **Key Fob:** HID key fob to suit readers, complete with numbering.

## 2.34 ELECTRIC BOXES, CONDUITS, AND LOW-VOLTAGE WIRING

- .1 Electrical Boxes and Conduits for Low-Voltage Wiring: supplied as part of the scope of work of this Section to the requirements for conduits stated in Division 28.
- .2 Low-voltage Wiring: supplied as part of the scope of work of this Section to the requirements for low-voltage wiring stated in Division 28 and that required of the hardware manufacturer.

## 2.35 FABRICATION

- .1 Manufacturer's Nameplate: Do not provide products that have manufacturer's name or trade name displayed in a visible location except in conjunction with required fire-rated labels and as otherwise approved by Public Works Representative.
  - .1 Manufacturer's identification is permitted on rim of lock cylinders only.
- .2 Base Metals: Produce door hardware units of base metal indicated, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18.
- .3 Fasteners: Provide door hardware manufactured to comply with published templates prepared for machine, wood, and sheet metal screws. Provide screws that comply with commercially recognized industry standards for application intended, except aluminum fasteners are not permitted. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
  - .1 Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
  - .2 Fire-Rated Applications:
    - .1 Wood or Machine Screws: For the following:
      - .1 Hinges mortised to doors or frames; use threaded-to-the-head wood screws for wood doors and frames.
      - .2 Strike plates to frames.
      - .3 Closers to doors and frames.
    - .2 Steel Through Bolts: For the following unless door blocking is provided:
      - .1 Surface hinges to doors.
      - .2 Closers to doors and frames.
      - .3 Surface-mounted exit devices.
  - .3 Spacers or Sex Bolts: For through bolting of hollow-metal doors.
  - .4 Fasteners for Wood Doors: Comply with requirements in DHI WDHS.2, "Recommended Fasteners for Wood Doors."
  - .5 Gasketing Fasteners: Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

## 2.36 FINISHES

Provide finishes complying with BHMA A156.18 as indicated in door hardware schedule.



- .2 Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- .3 Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

### PART 3 - EXECUTION

#### 3.1 EXAMINATION

- .1 Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire-rated door assembly construction, wall and floor construction, and other conditions affecting performance.
- .2 Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- .3 Proceed with installation only after unsatisfactory conditions have been corrected.

#### 3.2 PREPARATION

- .1 Steel Doors and Frames: For surface applied door hardware, drill and tap doors and frames according to ANSI/SDI A250.6.
- .2 Wood Doors: Comply with DHI WDHS.5 "Recommended Hardware Reinforcement Locations for Mineral Core Wood Flush Doors."

#### 3.3 INSTALLATION

- .1 Mounting Heights: Mount door hardware units at heights to comply with the following unless otherwise indicated or required to comply with governing regulations.
  - .1 Standard Steel Doors and Frames: ANSI/SDI A250.8.
  - .2 Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
  - .3 Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.
- .2 Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work. Do not install surface-mounted items until finishes have been completed on substrates involved.
  - .1 Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
  - .2 Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- .3 Existing frames and doors scheduled to receive new hardware: carefully remove existing hardware, tag and bag, and turn over to Public Works Representative.
  - .1 Metal doors/frames: Weld or fasten with screws filler pieces in existing hardware cut-outs and mortises not scheduled for re-use by new hardware. Leave surfaces smooth and flush with adjacent surface. Do not use

- .2 Remove unused existing floor closers; fill empty floor closer cavities with concrete.
  - .4 Hinges: Install types and in quantities indicated in door hardware schedule but not fewer than the number recommended by manufacturer for application indicated or one hinge for every 750 mm of door height, whichever is more stringent, unless other equivalent means of support for door, such as spring hinges or pivots, are provided.
  - .5 Intermediate Offset Pivots: Where offset pivots are indicated, provide intermediate offset pivots in quantities indicated in door hardware schedule but not fewer than one intermediate offset pivot per door and one additional intermediate offset pivot for every 750 mm of door height greater than 2286 mm.
  - .6 Lock Cylinders:
    - .1 Provide cylinders and cores for all locks.
    - .2 Install construction cores to secure building and areas during construction period.
      - .1 Replace construction cores with permanent cores as directed by Public Works Representative.
  - .7 Key Control System: Tag keys and place them on markers and hooks in key control system cabinet, as determined by final keying schedule.
  - .8 Door Closers: Install door closers inside rooms, stairs and within building interior, with fasteners that are not exposed on door. Coordinate with Wood Door Division to insure doors are supplied with required top rail blocking reinforcement to enable non-through bolted installation. For special doors where blocking reinforcement construction is not available furnish closer with sex-nut bolt sleeve fasteners, painted to match door face finish.
  - .9 Conduits and Low Voltage Wiring: Install as part of the scope of work of this Section to the requirements for conduits stated in Division 28 and that of the door hardware manufacturers.
    - .1 Coordinate boxes and conduit installation with door frames and work of other trades.
    - .2 Run all low-voltage wires in conduits. Conceal all boxes and conduits.
    - .3 Install boxes and conduits to connect all electrified door hardware to boxed power supplies and to door control devices as required.
  - .10 Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings. Verify location with Public Works Representative.
    - .1 Configuration: Provide the least number of power supplies centrally located, required to adequately serve doors with electrified door hardware.
  - .11 Thresholds: Set thresholds for exterior doors and other doors indicated in full bed of sealant complying with requirements specified in Section 07 92 00 "Joint Sealants." Install thresholds with ¼ -20 Stainless steel or dark bronze machine screws, and expansion shields.
  - .12 Stops: Provide floor stops for doors unless wall or other type stops are indicated in door hardware schedule. Do not mount floor stops where they will impede traffic.
  - .13 Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
  - .14 Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
  - .15 Door Bottoms: Apply to bottom of door, forming seal with threshold when door is closed.
- 3.4 FIELD QUALITY CONTROL
- .1 Independent Architectural Hardware Consultant: For projects consisting of hardware for more than ten openings, engage a qualified independent Architectural Hardware Consultant to perform inspections and to prepare inspection reports.

- .1 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.
  - .2 Fire-Rated Door Assembly On-Site 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. Provide a written record to the Public Works. 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 ADJUSTING
  - .1 Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
    - .1 Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
    - .2 Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
    - .3 Door Closers: Adjust sweep period to comply with accessibility requirements and requirements of authorities having jurisdiction.
  - .2 Occupancy Adjustment: Approximately six months after date of Substantial Completion, Installer's Architectural Hardware Consultant shall examine and readjust each item of door hardware, including adjusting operating forces, as necessary to ensure function of doors, door hardware, and electrified door hardware.
- 3.6 CLEANING AND PROTECTION
  - .1 Clean adjacent surfaces soiled by door hardware installation.
  - .2 Clean operating items as necessary to restore proper function and finish.
  - .3 Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.
- 3.7 DOOR HARDWARE SCHEDULE - GENERAL
  - .1 Scope of Work: Supply and install all required door hardware needed for the proper operation of doors as intended and described herein whether specifically identified in the Contract Documents or not, including but not limited to cores, cylinders, rings, brackets, fasteners, adapter plates, arms, escutcheon plates, plugs, wires, rectifiers, power supplies, and seals.
  - .2 Exposed Hardware Finish: BHMA 630 (US32D) Satin stainless steel; or equivalent.
  - .3 Lever Style: Match existing.
- 3.8 DOOR HARDWARE GROUPS
  - .1 HG01
    - .1 Staff Room,
    - .2 Single Interior Swing Doors, Non-Rated

- .2 1 – Lockset, Passage function, Bored or Mortise type with lever style to match existing.
- .3 1 – Overhead Boxed Door Closer w/ hold-open, w/o stop.
- .4 1 – Set Adhesive-Backed Perimeter Gasketing.
- .5 1 – Automatic Door Bottom.
- .6 Operation:
  - .1 Door automatically closes.
  - .2 Free entry and exiting at all times.
- .2 HG02-PD
  - .1 LAN / Exhibit / Storage Room, Card Controlled Access  
Single Interior Swing Door, Rated / Non-Rated
    - .1 Anti-Friction Bearing Hinges
    - .2 1 – Mortise Lockset, Store Room function, lever style to match existing.
    - .3 1 – Cylinder/Small Format Interchangeable Core to suit.
    - .4 1 – Floor / Wall mounted stop, to suit.
    - .5 1 – Electric strike, model Rutherford RCI AS65 or AL65, to suit; field selectable fail secure/fail safe, c/w latch bolt monitor switch.
    - .6 1 – ShadowProx Card Reader, 125 Hz type, by Kantech
    - .7 1 – Overhead Boxed Door Closer, w/o hold-open, w/o stop.
    - .8 1 – Door Control Device (DCD).
    - .9 1 – Request to Exit motion detector.
    - .10 1 – Recessed Contact switch.
    - .11 Other Requirements:
      - .1 Provide Detailed Wiring Riser Diagrams.
      - .2 120 Volt Power.
      - .3 Access Control Network Connection.
      - .4 Provide battery back-up for electric door hardware, 30-minute duration when doors are in the locked configuration.
    - .12 Boxed Power Supply(s), to suit (May be combined with other similar power supplies in immediate vicinity); at 150% of required capacity.
    - .13 Operation:
      - .1 Doors automatically close.
      - .2 Door normally locked.
      - .3 Door with cylinder temporarily unlocks using key.
      - .4 Door equipped with card reader temporarily unlocks upon card validation.
      - .5 Both doors may be programmed to remain unlocked during business hours as per access control software.
      - .6 Free exiting at all times.
      - .7 Latch bolt monitor switch signifies if door is in the closed and latched position.
      - .8 Request-to-exit cancels out alarm state during free existing.
- .3 HG03
  - .1 Quiet Room, Keyed  
Single Interior Swing Door, Non-Rated
    - .1 Anti-Friction Bearing Hinges
    - .2 1 – Lockset, Privacy/bathroom function, Bored or Mortise type with lever style to match existing.
    - .3 1 – Floor / Wall mounted stop, to suit.
    - .4 Operation:
      - .1 Door must be manually closed.
      - .2 Door normally unlocked but can be manually locked from inside.
      - .3 Door can be unlocked from outside using emergency key and/or pin
      - .4 Free exiting at all times.

- .4 Other Requirements
  - .1 In General
    - .1 Provide brushed/dull chrome/nickel finish to match existing on all exposed-to-view hardware.
  - .2 Access Control
    - .1 Extend existing Kantek Entrapass Corporate Card Access/Alarm System into suite, including any required site controllers.
    - .2 Provide labour, materials, and products necessary to ensure full compatibility and integration with existing Card Access/Alarm System.
    - .3 Install all high and low voltage wiring in conduits.
    - .4 Provide Boxed Power Supply(s), to suit (May be combined with other similar power supplies in immediate vicinity); at 150% of required capacity.
    - .5 Provide Key fobs, 125 Hz type, and compatible with card readers and access control system specified, in quantities as required by Public Works Representative.
    - .6 Program access controls software to suite Tenant requirements. Provide training of system capabilities to Tenant's staff.
    - .7 Relocate Public Works Representative's existing access control PC from the Stockroom on the 4<sup>th</sup> floor to the NEW stockroom on the 3<sup>rd</sup> floor, complete with all required data wiring and associated work.
  - .3 Mechanical Locks
    - .1 Cylinder/Small Format Interchangeable Cores to suit to match base building system.
    - .2 Provide master key unique to tenant's suite.
    - .3 Provide three keys for each keyed lock, engraved with door number or other acceptable unique identifier.

END OF SECTION