

BuildingName
The Description of the Project
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SPECIFICATION DIVISION 8

NUMBER SECTION DESCRIPTION

DIVISION 08 OPENINGS

SECTION 087100 - DOOR HARDWARE

END OF CONTENTS TABLE

DIVISION 08 OPENINGS
SECTION 087100 - DOOR HARDWARE

REVISION HISTORY

APRIL 2005 - UPDATED SWEEP SEALS, JAMB SEALS AND THRESHOLDS.

FEBRUARY 2007 - UPDATED TO REMOVE SPECIFIC REFERENCES TO RICK HADDEN. QUESTIONS REGARDING CORE TYPE, KEYING, AND BUILDING STANDARDS SHOULD BE DIRECTED TO A LOCKSMITH AT THE KEY OFFICE. IN GENERAL, AVOID USE OF SPECIFIC CONTACT NAMES IN SPECIFICATION.

DECEMBER 2008 - ADDED SUBMITTAL REQUIREMENTS, ADDED ACCESS CONTROL PRODUCTS AND UPDATED PRODUCT NUMBERS.

JANUARY 2013 REVISED FORMATTING AND CONTENT

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

EDIT BELOW TO SUIT PROJECT.

- B. Related Sections:
1. Division 6 Section: Architectural Woodwork.
 2. Division 8 Section: Aluminum Entrances and Storefront.
 3. Division 12 Section: Laboratory Casework and Fixtures.
 4. Division 28 Section: Access Control and Monitoring System.

1.2 SUMMARY

- A. Section Includes: Door hardware as indicated on drawings and in schedules

EDIT BELOW TO SUIT PROJECT.

Hinges.
Closers.
Double-acting closer/pivot sets.
Door Operators.
Small Format Interchangeable Cores (SFIC).
Locks and latches.
Strikes.
Latches.
Stops.
Silencers.
Push/pull sets.
Exit device (panic set).
Astragals.
Flush bolts.

Coordinators.
Trim protector bars.
Kickplates.
Sweep seals.
Jamb seals.
Automatic door bottoms.
Electrically activated hold-open devices.
Thresholds.
Removable Mullion.
Concealed power transfer.
Door position switch.
Request to exit sensor.

TYPICALLY DELETE BELOW. INCLUDE FOR PROJECTS WITH ALUMINUM ENTRANCES AND STOREFRONT.

- B. Products specified under this section but provided under sections:
1. 08410: Aluminum Entrances and Storefront.

1.3 SUBMITTALS

- A. Submittals: Submit the following:
1. Manufacturer's product literature.
 2. Schedule of hardware showing application to project.
 3. Furnish templates to each fabricator of doors and frames, as required for preparation to receive hardware.

INCLUDE PARAGRAPHS 4 & 5 BELOW FOR PROJECTS WITH ELECTRIFIED HARDWARE.

4. Wiring Diagrams: For power, signal, and control wiring and including the following:
 - a. Details of interface of electrified door hardware and building safety and security systems.

RETAIN FOUR SUBPARAGRAPHS BELOW IF ELECTRIFIED DOOR HARDWARE IS COMPLEX. IF ONLY ELECTRIC STRIKES ARE REQUIRED, THIS LEVEL OF DETAIL MIGHT NOT BE NECESSARY.

- b. Schematic diagram of systems that interface with electrified door hardware.
 - c. Point-to-point wiring.
 - d. Risers.
 - e. Elevations doors controlled by electrified door hardware.
5. Operation Narrative: Describe the operation of doors controlled by electrified door hardware. Include description of how the opening is to function at all times, including normal operation, upon activation of the building fire alarm system, and upon loss of power.

TYPICALLY DELETE BELOW -- INCLUDE FOR PROJECTS IN BFS BUILDINGS WITH SPECIAL LOCKING ARRANGEMENTS THAT IMPEDE EGRESS (I.E. DELAYED EGRESS, DOOR INTERLOCKS)

6. Special locking arrangements in buildings under the jurisdiction of the State of Michigan Bureau of Fire Services (BFS) require submission of the following documents to BFS for door locking review:
 - a. Floor plan showing door locations to be locked and type of hardware and equipment scheduled for installation.
 - b. A description of the "sequence of operations" of the door locking system outlining operation during normal operation, upon activation of the building fire alarm system, and upon loss of primary power the fire alarm system.
 - c. Product literature for the door hardware and related equipment, including locks, control equipment, accessory equipment, power supplies, and any other hardware used.

1.4 QUALITY ASSURANCE

**INCLUDE PARAGRAPHS A AND B IN EVERY SPECIFICATION SECTION.
EDIT THE REFERENCE STANDARDS FOR PROJECT REQUIREMENTS.**

- A. Manufacturers and Products: The products and manufacturers specified in this Section establish the standard of quality for the Work. Subject to compliance with all requirements, provide specified products from the manufacturers named in Part 2.
- B. Reference Standards: Products in this section shall be built, tested, and installed in compliance with the specified quality assurance standards; latest editions, unless noted otherwise.
 1. NFPA 70: National Electrical Code.
 2. NFPA 80: Standard for Fire Doors and Other Opening Protectives
 3. NFPA 252: Standard Methods of Fire Tests of Door Assemblies.
 4. ANSI A 156 series standards applicable to each particular type of hardware.

PART 2 - PRODUCTS

THE HARDWARE INCLUDED IN THIS SECTION MAY NOT BE SUITABLE FOR SPECIALIZED FIRE-RATED DOORS - I.E. FRP DOORS, LARGE WOOD DOORS, EXTENSIVE GLASS, ETC. CONSULT WITH DOOR AND HARDWARE MFRS TO DETERMINE UL LISTED HARDWARE. COORDINATE SPECIALIZED HARDWARE WITH KEY OFFICE TO ENSURE MAINTAINABILITY.

2.1 HARDWARE, GENERAL

- A. Standards: Where base material and quality of finish are not otherwise specified, comply with ANSI A 156 series standards applicable to each particular type of hardware.
- B. 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, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.

- C. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

2.2 HINGES

- A. Provide 5-knuckle, 2 ball-bearing hinges; swaged; inner leaf beveled; with square corners; nonremovable pin, complete with set screw (knurled pin not acceptable); and as follows:

SELECT FULL MORTISE UNLESS OTHERWISE REQUIRED.

1. Type: Full-mortise.
2. Type: Half-surface.
3. Type: Half-mortise.
4. Type: Full surface.

TYPICALLY SELECT STEEL FOR INTERIOR DOORS AND FOR ALL FIRE RATED OPENINGS. STEELS IS APX HALF THE COST OF BRASS

SELECT BRASS FOR EXTERIOR DOORS, OR WHERE CORROSION IS EXPECTED (HIGH HUMIDITY, POOL AREAS, ETC.) BRASS IS MORE DURABLE THAN STAINLESS FOR THESE EXPOSURES.

5. Base Metal: Steel.
6. Base Metal: Stainless Steel.
7. Base Metal: Brass.

SELECT FROM VARIOUS FINISHES, OR RETAIN THE FOLLOWING. FINISH METALS ARE PLATED OVER STEEL OR BRASS, OR IN THE CASE OF STAINLESS STEEL AND BRASS, THE BASE METAL MAY BE FINISHED.

8. Finish: To match "Finishes" requirements of this Section.
9. Size and Weight: Provide hinges sized as follows:

BELOW FOR MOST STANDARD DOORS.

- a. Doors not wider than 3 feet 6 inches nor taller than 7 feet 6 inches:
 - 1) Size: 4-1/2 inches by 4-1/2 inches; 0.180-inch thick.

ABOVE FOR HEAVY, HIGH-FREQUENCY DOORS. BELOW IS ECONOMICAL HINGE FOR MEDIUM WEIGHT, AVERAGE FREQUENCY DOORS.

- 2) Size: 4-1/2 inches by 4-1/2 inches; 0.134-inch thick.

BELOW FOR EXTRA LARGE DOORS.

- b. Doors wider than 3 feet 6 inches or taller than 7 feet 6 inches:
 - 1) Size: 5 inches by 4-1/2 inches; 0.190-inch thick.

ABOVE FOR HEAVY, HIGH-FREQUENCY DOORS. BELOW IS ECONOMICAL HINGE FOR MEDIUM WEIGHT, AVERAGE FREQUENCY DOORS.

- 2) Size: 5 inches by 4-1/2 inches; 0.145-inch thick.

DELETE BELOW UNLESS 1-3/8 INCH THICK INCLUDED. NOTE THAT BELOW SELECTION IN FOR AVERAGE FREQUENCY SERVICE DOORS - MODIFY VALUE TO .180 FOR HIGH FREQUENCY DOORS

- c. Doors 1-3/8 inches thick and not wider than 3 feet nor taller than 7 feet: 4-1/2 inches by 4 inches; 0.134-inch thick.
- 10. Manufacturer: Hager, Ives, McKinney, or Stanley.

USE BELOW FOR ALL ALUMINUM STOREFRONT DOORS, EXTERIOR HOLLOW METAL DOORS AND VERY HIGH FREQUENCY AND/OR HEAVY INTERIOR DOORS. ALSO USE AS STANDARD FOR HOUSING WORK.

- B. Continuous Gear Hinges: Provide units designed for heavy-duty, high-traffic use in new applications. Fabricate units of Class I anodized, 6063 T6 aluminum alloy with polyacetal thrust bearings.

- 1. Color: Clear anodized
- 2. Color: Dark bronze anodized.

BELOW IS STANDARD. ALSO AVAILABLE ARE RETROFIT UNITS THAT COVER BUTT CUT OUTS ON EXISTING FRAMES, AND A VARIETY OF FULL- AND HALF-SURFACE UNITS - SEE PRODUCT CATALOGS

- 3. Manufacturer/Model: Select Products Limited, SL-11HD, or equivalent products of Hager-Roton or Pemko.

2.3 CLOSERS

- A. Provide closers with field-adjustable, full-range sizing feature capable of complying with manufacturer's size recommendations for application indicated; and complying with applicable portions of the Americans with Disabilities Act (ADA).

- 1. Manufacturer/Model: LCN, 4000 Series "Smoothee" or Sargent no substitutions.

- a. Interior doors:

- 1) Closer mounted on pull side of door:
 - a) Regular: LCN 4011 REG or Sargent 281 O
 - b) Hold open: LCN 4011 H or Sargent 281 H
- 2) Closer mounted on the push side of door
 - a) Regular: LCN 4110 EDA or Sargent 281 P10
 - b) Hold open: LCN 4110 H-EDA or Sargent 281 PH10
 - c) Stop arm: LCN 4110 CUSH or Sargent 281 PS
- 3) Closer mounted on the non-door side of the frame:
 - a) Regular: LCN 4021 REG or Sargent 281 OZ

- b. Exterior doors

- 1) Closer mounted on push side of door
 - a) Regular: LCN 4021 REG or Sargent 281 OZ

- B. Unless otherwise indicated, mount closer bodies on room side (not corridor side) of doors. Refer doubtful conditions to Architect for decision.

THE FOLLOWING CLOSER/PIVOT SET CAN BE USED TO HANG AND CONTROL DOUBLE-ACTING DOORS OF WOOD, ALUMINUM OR HOLLOW METAL CONSTRUCTION. SIMPLE DOUBLE-ACTING HINGES CAN ALSO BE USED, BUT REQUIRE LARGE CLEARANCES TO WORK PROPERLY.

2.4 DOUBLE-ACTING CLOSER/PIVOT SETS

- A. Provide concealed, double-acting closer for installation in hollow metal frame, and adequately sized in accordance with manufacturer's recommendations to suit door type, size and application.
 - 1. Provide units with manufacturer's standard adjustable auxiliary stops.
 - 2. Manufacturer/Model:
 - a. LCN No. 6030. No substitutions.
- B. Accessory Hinges: Provide manufacturer's standard center pivot sets designed specifically for use with indicated closer.
 - 1. Manufacturer/Model: Ives No. 7255. No substitutions.

THE FOLLOWING IS THE UNIVERSITY STANDARD ADA DOOR OPERATOR. NOTE THE FOLLOWING:

IF A DOOR OPERATOR IS USED IN LIEU OF PHYSICAL OPERATING CLEARANCES ON THE EGRESS SIDE, IT MUST BE CONNECTED TO EMERGENCY POWER (I.E. BUILDING GENERATOR). BATTERY BACKED OPTIONS ARE NOT AVAILABLE. (NFPA 80)

ON ALL FIRE RATED DOORS, DOOR OPERATORS ARE REQUIRED TO BE CONNECTED TO THE BUILDING FIRE ALARM SYSTEM (NFPA 80). IF DOOR IS TIED TO BUILDING FIRE ALARM SYSTEM, COMMUNICATE RELATED OPERATIONAL ISSUES TO BUILDING MANAGER. COORDINATE WITH DESIGN MANAGER.

2.5 DOOR OPERATORS

- A. General: Of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated.
 - 1. Type: Low-energy power operated, complying with ANSI/BHMA A156.19.
 - 2. Connections: For power and control wiring.
 - 3. Adjustment Features: Fully adjustable without removing entrance doors, including
 - 4. On/Off Feature: On/off/hold-open switch controls electric power to operator.
- B. Electrohydraulic automatic operators: Self-contained overhead units, with closing speed controlled by gear train and dynamic braking action of electric motor and with manual operation and spring closing when power is off.
 - 1. Closing Mechanism: Power-assisted spring operated.
 - 2. Mounting: Surface mounted
 - 3. Manual Operation: Requires less than 15 lbf to set door in motion when power is off, according to ANSI/BHMA A156.19.
 - 4. Activation Device: Manufacturer's standard 4-inch diameter round stainless steel push-plate switch with contrasting-colored, engraved message. International symbol of accessibility and "Push to Open."

EDIT BELOW TO BE PROJECT SPECIFIC.

- C. Manufacturer/Model: LCN, Model 4642 (for push side mount) or 4631 (for pull side mount). No substitutions.

INCLUDE THE FOLLOWING FOR DOORS CONNECTED TO BUILDING FIRE ALARM SYSTEM.

- D. Provide acrylic sign adjacent to door actuator:
 - 1. Copy: "Push button disabled during fire alarm"
 - 2. Color, font, and details to match building standard room signs.

2.6 SMALL FORMAT INTERCHANGABLE CORES (SFIC)

RETAIN BELOW IF DEMOLISHING EXISTING DOORS

- A. Salvage existing cores and reinstall in new devices.

FOR CONSISTENCY AND EASE IN KEYING IN EXISTING BUILDINGS, VERIFY WHICH MANUFACTURER'S CORES ARE USED IN THAT BUILDING. SPECIFY CORES FROM SAME MANUFACTURER AND KEYWAY FOR NEW DOORS. CALL KEY OFFICE TO OBTAIN CORE TYPE AND KEYWAY INFORMATION.

- B. Provide small format 7-pin removable cores to match building standard.
 - 1. Manufacturers:
 - a. Best Coremax.
 - b. Medeco Keymark.
 - c. Schlage Everest.
- C. Provide keying in a masterkey system to be designed by Owner. Keying is the responsibility of the Contractor; and shall be performed by the cylinder supplier. Deliver keyed cores to the University of Michigan Key Office for installation by Owner. Contact the Owner's Key Office (764-3481) for questions concerning keying.

RETAIN BELOW FOR PROJECTS WITH EXTERIOR DOORS OR LARGE INTERIOR AREAS. COORDINATE WITH CM.

- D. Construction Locks: In each exterior door, provide temporary cylinders, installed simultaneously with the lock. Temporary cylinders shall remain for the duration of construction.

2.7 LOCKS AND LATCHES

- A. General:
 - 1. BHMA A156.13 (mechanical); A156.25 (electromechanical), grade 1.
 - 2. Provide mortise type, lever handle locksets equipped to receive SFIC.
 - 3. Manufacturer/Model of Locksets: Unless noted otherwise for specific function noted, provide one of the following:
 - a. Sargent 8200 Series.
 - b. Corbin Russwin ML2200 series.
 - c. Schlage L Series.

BELOW IS TYPICAL OF MANY BUILDINGS BUT NOT ALL, CONFIRM BUILDING STANDARD WITH KEY OFFICE

4. Lever style: Sargent J-style tubular lever or equivalent by or equivalent model by Schlage or Corbin Russwin
5. Rose style: 2" diameter
6. Thumbturn: For all locksets with thumb turn functionality, provide oversized ADA style thumb turns.
 - a. Sargent LB thumbturn
 - b. Schlage EZ turn: L583-363
 - c. Corbin Russwin Ergonomic Thumbturn: 707F58
7. Knurled handle: Provide on locksets to hazardous areas, including mechanical rooms, elevator machine rooms, electrical closets and substation rooms, and stairways.

B. Mechanical Locksets:

BELOW ARE EXAMPLES OF TYPICAL UNITS. VERIFY TRIM STYLE DESIRED. LNJ NOTED BELOW IS TUBULAR LEVER ARM WITH SMALL ROUND ETCHUTSION. GENRALLY, MATCH STYLES IN ADJACENT PORTIONS OF BUILDING. CONTACT A LOCKSMITH AT THE KEY OFFICE FOR INFORMATION ON EXISTING LOCK STYLES.

ANSI FUNCTION CODES LISTED BELOW IF AVAILABLE. USE CODE TO DETERMINE EQUIVALENCE BETWEEN MANUFACTURERS DURING SUBMITTAL PHASE.

- a. Office Lockset with thumb turn: ANSI function F04
 - 1) Sargent 8205.
 - 2) Schlage L9050
 - 3) Corbin Russwin ML2054

ALL CLASSROOMS SHOULD BE LOCKABLE FROM INSIDE THE ROOM AND PROVIDE VISUAL INDICATION OF DOOR STATUS ON CLASSROOM SIDE. REVIEW DESIRED FUNCTION WITH USER - SHOULD THE DOOR REVERT TO LOCKED OR REVERT TO UNLOCKED STATE AFTER IT IS OPENED?

- b. Office Locksets for Classroom use:
 - 1) Office Lockset: ANSI function F04; Schlage L9050 with locked/unlocked indicator on room side L283-711 or equivalent model by Sargent or Corbin Russwin.
 - 2) Office Lockset with Automatic unlocking: Schlage L9056 with locked/unlocked indicator on room side L283-711 or equivalent model by Sargent or Corbin Russwin.
- c. Passage Lockset: ANSI function F01
 - 1) Sargent 8215.
 - 2) Schlage L9010.
 - 3) Corbin Russwin ML2010.

THE FOLLOWING SPACES SHOULD HAVE STORE ROOM FUNCTION SETS: PHONE CLOSETS AND TELECOMMUNICATION ROOMS, MECHANICAL ROOMS, ELEVATOR MACHINE ROOMS, SUBSTATIONS AND TUNNEL DOORS.

- d. Service/Store Room Lockset: ANSI function F07
 - 1) Sargent 8204.
 - 2) Schlage L9080
 - 3) Corbin Russwin ML2057.
- e. Privacy Lockset with "Occupied" Indicator and coin turn override: Schlage L9044 with L283-722 indicator or equivalent model by Sargent or Corbin Russwin.

- C. Electromechanical Locks: Solenoid driven; mortise latchbolt; with strike that suits frame; keyed override, with request to exit and door position switches.

BELOW IS ELECTRICALLY UNLOCKED DEVICE FOR ACCESS CONTROL INSTALLATIONS - FAIL SECURE (LOCKED). MECHANICAL EGRESS ALWAYS AVAILABLE. INCLUDES REQUEST TO EXIT SWITCH (RX) AND DOOR POSITION SENSOR (DPS). COORDINATE WITH ELECTRICAL FOR RELATED WORK.

1. Electromechanical (Fail Secure): Schlage L9092 RX DPS or equivalent model by Sargent or Corbin Russwin.

- D. Digital Locksets

USE BELOW FOR ALL ANIMAL HOLDING ROOM APPLICATIONS. FOR OTHER USES, ANOTHER LOCK FUNCTION MAY BE NEEDED. PROGRAMMING IS DONE AT THE LOCKSET; SPECIAL HANDHELD PROGRAMMER/SOFTWARE IS NOT NEEDED.

1. Battery-powered, self-contained electronic locks; consisting of complete lockset, mounting hardware, SFIC, strike, and with features and accessories indicated. Provide key override, low-battery detection and warning, LED status indicators, and ability to program at the lock.

PART NUMBER BELOW IS KEYPAD ONLY WITH LEVER STYLE TO MATCH SARGENT J-STYLE LEVER.

- a. Manufacturer/Model: Schlage only; Model CO-100-MS-70-KP with TLR Tubular lever style. No substitutions.

USE BELOW FOR LSA CLASSROOM AND SOME LAB APPLICATIONS. COORDINATE FUNCTION WITH LSA REP AND CLASSROOM OPERATIONS. PROGRAMMING IS DONE AT THE DOOR VIA SOFTWARE AND HANDHELD PROGRAMMER. HAS INCREASED FUNCTIONALITY OVER CO-100 DEVICE ABOVE. VERIFY WITH USER THAT THEY HAVE THE PROGRAMMING DEVICE

2. Battery-powered, self-contained electronic locks; consisting of complete lockset, mounting hardware, SFIC, strike, and with features and accessories indicated. Provide key override, low-battery detection and warning, LED status indicators, and ability to program at the lock.

NOTE THAT SCHLAGE OFFERS BOTH CO-200 AND AD-200 LOCKSETS. THE AD LOCKSET PROVIDES FUTURE NETWORKING CAPABILITY AND IS THE CURRENT STANDARD.

PART NUMBERS BELOW INCLUDES LEVER STYLE TO MATCH SARGENT J-STYLE LEVER.

PART NUMBER BELOW IS KEYPAD ONLY

- a. Manufacturer/Model: Schlage only; Model AD-200-MS-70-KP with TLR Tubular lever style. No substitutions.

PART NUMBER BELOW IS MAG STRIPE AND KEYPAD. NOTE THAT THIS DOES NOT AUTOMATICALLY REQUIRE USERS TO USE BOTH KEYPAD AND CARD.

- b. Manufacturer/Model: Schlage only; Model AD-200-MS-70-MGK with TLR Tubular lever style. No substitutions.

2.8 STRIKES

- A. General: With each lockset, furnish companion strike as indicated, for installation on door jamb.
- B. Mechanical Strikes: Provide handed-type strike plates with curved lip; flat (non-handed) strikes are not permitted.

USUALLY RETAIN THE FOLLOWING UNLESS CERTAIN THAT EXTENDED LIPS ARE NOT REQUIRED.

- 1. Provide strike plates with extended lips where required to protect door frame and trim from being marred by latchbolt. Provide strike plates that project not more than 1/8 inch beyond door frame trim at single doors; and flush with face of doors at double (pair) door applications.
- 2. Provide custom-fabricated strike plates at existing door frames if required for compatibility with new lockset or latchset units. Fabricate units of base metal and finish specified. Provide units manufactured by Accurate Hardware Inc., or equivalent.

USE THE FOLLOWING ELECTRIC STRIKE FOR SINGLE ACCESS CONTROL DOORS THAT ARE NOT RATED. TYPICALLY KEY OFFICE PREFERS USE OF ELECTROMECHANICAL MORTISE LOCKSET OR PANIC DEVICE.

NOTE THAT ELECTRIC STRIKES REQUIRE USE OF PASSIVE INFRARED REQUEST TO EXIT DEVICE (PIR RTE). COORDINATE WITH ELECTRICAL.

- C. Electric Strikes: Provide electric door strikes of the appropriate model for the associated door's lock.
 - 1. Manufacturer/Models:
 - a. Von Duprin, 6000 series (6112 or 6215).
 - b. HES, 1006, 9600, and 9400 series.

BELOW FOR LOW FREQUENCY CLOSET DOORS ONLY.

2.9 LATCHES

- A. Touch latches: Latch unit consists of concealed, integral latching mechanism and spring that releases and springs door into open position when face of door is pushed.
 - 1. Manufacturer/Model: Ives No. CL12, complete with related strike.
- B. Roller latches: Forged bronze roller latches with rubber roller. Furnish units designed to be mortised into door, and with adjusting screws on face of latch. With each roller latch, furnish companion strike for installation on jamb.
 - 1. Manufacturer/Model: Ives model no. RL30, or equivalent products of Rockwood or Door Controls International.

2.10 STOPS

- A. Provide rubber exposed resilient parts; size and mount units to comply with manufacturer's recommendations for the exposure condition. Reinforce the substrate as recommended.

SELECT ONE OF THE FOLLOWING.

1. Color of Resilient Parts: Black.
2. Color of Resilient Parts: Gray.
3. Manufacturer/Model: Rockwood model indicated, or equivalent products of Brookline, Builder's Brass Works, Ives, Stanley, Door Controls International.

SELECT ONE OF THE FOLLOWING TO SUIT PROJECT AND SUBSTRATE.

- a. Model No.: 442 (floor mounted).
- b. Model No.: 440 (floor mounted, limited door bottom clearance).
- c. Model No.: 409 (wall mounted, hollow wall expansion anchor).
- d. Model No.: 410 (wall mounted, plastic).
- e. Model No.: 411 (wall mounted, expansion shield).

CONSIDER BELOW FOR APPLICATIONS WHERE FIXED STOP IS IMPRACTICAL. TYPICALLY RETAIN FOR HOSPITAL PROJECTS.

VERIFY THAT STOP IS COMPATIBLE WITH CLOSER SPECIFIED. NOTE THAT INTEGRAL STOPS ARE AN OPTION FOR SOME CLOSERS.

B. Concealed overhead door stops: BHMA A156.8

1. Manufacturers/Models:
 - a. Glynn-Johnson 410 series.
 - b. Rixson 6 series.
 - c. Rockwood 14000 series.

2.11 SILENCERS

A. Provide manufacturer's standard profile silencers of 1/8-inch thick hard rubber for metal door frames as follows:

1. Manufacturer: Ives or Rockwood.

2.12 PUSH/PULL SET

A. Provide pull handles and push plates with concealed mounting fasteners wherever possible, and as follows:

SELECT BELOW AS APPROPRIATE TO PROJECT.

1. Material: Solid stainless steel.
2. Material: Solid brass.
3. Material: Solid nylon plastic.

SELECT ONE FINISH BELOW.

4. Finish: Satin.
5. Finish: Polished.
6. Finish: Gloss.

SELECT ONE COLOR OPTION BELOW.

7. Color: Clear and transparent.
8. Color: INSERT COLOR
9. Manufacturers:
 - a. Rockwood models indicated.
 - b. Baldwin.
 - c. Brookline.

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- d. Builder's Brass Works.
- e. Corbin Russwin.
- f. Ives
- g. Stanley.

BELOW ARE EXAMPLE ONLY, NOT UM STANDARDS

- 10. Model numbers:
 - a. Push Plates: Rockwood; No. 71 (6 inches by 15 inches
 - b. Pull: Rockwood; No. 112 (13 inches by 1 inch diameter.
 - c. Pull: No. 71 (6 inches by 15 inches) base plate.

EXIT DEVICES BELOW ARE TOUCH PAD STYLE FOR STEEL AND WOOD DOORS ONLY. DEVICES LISTED MAY NOT BE APPROPRIATE FOR ALUMINUM DOORS. REVIEW MANUFACTURER CATALOGS PRIOR TO SELECTION. TUBULAR STYLE DEVICES ARE ALSO ACCEPTABLE (VONDUPRIN 55/88 SERIES).

FOR ACCESS CONTROL APPLICATIONS, TYPICALLY SPECIFY VON DUPRIN QEL TYPE DEVICES OR EQUIVALENT FROM SARGENT. QEL DEVICES OBTAIN POWER FROM POWER SUPPLIES AT THE ACCESS CONTROL PANEL ASSEMBLIES AND DO NOT NEED LOCAL POWER SUPPLIES.

2.13 EXIT DEVICE (PANIC SET)

EXIT DEVICES LISTED BELOW ARE APPROVED BY PLANT DEPARTMENT. USE RIM TYPE DEVICES EXCEPT AT MULLIONLESS DOUBLE DOOR OPENINGS.

APPLICATION: SINGLE DOOR OR DOUBLE DOOR WITH MULLION, WOOD OR STEEL, NON-FIRE-RATED.

- A. Non-Fire-Rated Rim Type Exit Device: Rim type units activated by a partial-width touch-bar, complete with accessories, including strike and hex-key operated dogging device mounted on mechanism housing to hold the touch-bar depressed and the latch bolt in the open position.

IT IS STRONGLY RECOMMENDED THAT YOU SELECT APPROPRIATE UNITS AND TRIM FROM CATALOG. USE CHOICES BELOW ONLY FOR VERY SIMPLE PROJECTS.

BELOW IS UNIT WITH OUTSIDE KEY CYLINDER RETRACTING LATCH BOLT, AND WITH OPTIONAL PULL HANDLE. POSSIBLE USE IN PUBLIC BUILDING ENTRANCE AND SECURE CORRIDOR-TO-ROOM ENTRANCE.

- a. Manufacturer/Model of Exit Devices: Von Duprin model 98NL with 990NL-R trim; or equivalent products of Sargent only.

BELOW IS UNIT WITH NO OUTSIDE CYLINDER, BUT WITH PULL HANDLE. POSSIBLE USE IN SERIES OF MULLIONED OPENINGS WHERE ANOTHER DOOR HAS CYLINDER FOR ENTRY.

- b. Manufacturer/Model of Exit Devices: Von Duprin model 98DT with 990DT trim; or equivalent products of Sargent only.

BELOW IS UNIT WITH NO OUTSIDE CYLINDER AND NO PULL HANDLE. POSSIBLE USE IN SECURED EXIT ONLY FOR BUILDING.

- c. Manufacturer/Model of Exit Devices: Von Duprin model 98EO; or equivalent products of Sargent only.

BELOW IS UNIT WITH OUTSIDE CYLINDER. PULL HANDLE MUST BE SPECIFIED SEPARATELY (OPTIONAL VON DUPRIN OR HEWI, FOR EXAMPLE). USE SIMILAR TO FIRST EXAMPLE ABOVE.

- d. Manufacturer/Model of Exit Devices: Von Duprin model 98NL-OP with 110NL trim; or equivalent products of Sargent only.

BELOW IS ELECTROMECHANICAL UNIT WITH OUTSIDE CYLINDER AND RIGID LEVER TRIM. OTHER OPTIONS ARE AVAILABLE. NOTE THAT THIS DEVICE CANNOT BE USED FOR FIRE RATED DOORS. SELECT 98 SERIES E-TYPE DEVICE.

- 2. Electromechanical exit device
 - a. Manufacturer/Model of Exit Devices:
 - 1) Von Duprin model 35A series as follows:
 - a) QEL latch retraction
 - b) Less dogging
 - c) Request to exit switch
 - d) Dummy trim 03 lever trim.
 - 2) Equivalent products of Sargent only.

APPLICATION: SINGLE DOOR OR DOUBLE DOOR WITH MULLION, WOOD OR STEEL, FIRE-RATED.

- B. Fire-Rated Rim Type Exit Device: Fire-rated, UL listed, rim type units activated by a partial-width touch-bar, complete with accessories including strike.

IT IS STRONGLY RECOMMENDED THAT YOU SELECT APPROPRIATE UNITS AND TRIM FROM CATALOG. USE CHOICES BELOW ONLY FOR VERY SIMPLE PROJECTS.

BELOW IS UNIT WITH OUTSIDE CYLINDER RETRACTING LATCH BOLT, AND WITH OPTIONAL (RIGID) LEVER HANDLE. POSSIBLE USE IN ELECTRICAL SUBSTATIONS.

- a. Manufacturer/Model of Exit Devices: Von Duprin model 98NL-F, 992L-rigid trim, and optional no. 03 lever; or equivalent products of Sargent only.

BELOW IS UNIT WITH DOUBLE CYLINDER. POSSIBLE USE IN RATED, SECURED, CORRIDOR-TO-ROOM ENTRANCE.

- b. Manufacturer/Model of Exit Devices: Von Duprin model 98L-F, 992L-double cylinder function trim and standard no. 06 lever; or equivalent products of Sargent only.

BELOW IS UNIT WITH NO OUTSIDE CYLINDER. POSSIBLE USE IN STAIR DOOR APPLICATIONS.

- c. Manufacturer/Model of Exit Devices: Von Duprin model 98L-F-BE, 992L-R with optional no. 03 lever; or equivalent products of Sargent only.

APPLICATION: DOUBLE DOORS WITHOUT MULLION, WOOD OR STEEL, NON-FIRE-RATED.

- C. Non-Fire-Rated Surface Mounted Vertical Rod Type Exit Device: Surface mounted, vertical rod type units activated by a partial-width touch-bar, complete with accessories including strike. Equip units with hex-key operated dogging device mounted on mechanism housing to hold the touch-bar depressed and the latch bolt in the open position. Omit bottom rods unless otherwise indicated.

IT IS STRONGLY RECOMMENDED THAT YOU SELECT APPROPRIATE UNITS AND TRIM FROM CATALOG. USE CHOICES BELOW ONLY FOR VERY SIMPLE PROJECTS.

BELOW IS UNIT WITH OUTSIDE CYLINDER RETRACTING LATCH BOLT (NIGHT LATCH FUNCTION) AND STANDARD PULL HANDLE. LIMIT USE TO MECHANICAL, ELECTRICAL OR SIMILAR SERVICE ROOMS THAT CAN ACCEPT NIGHT-LATCH FUNCTION - OTHERWISE USE MORTISE TYPE DEVICE WITH DOUBLE CYLINDER (SEE SUBSEQUENT PARA BELOW). USE IN CONJUNCTION BLANK ESCUTCHEON FUNCTION DEVICE BELOW ON OTHER DOOR OF PAIR.

- a. Manufacturer/Model of Exit Devices: Von Duprin model 9827NL, 990NL-V trim; or equivalent products of Sargent only.

BELOW IS UNIT WITH BLANK ESCUTCHEON AND STANDARD PULL HANDLE. USE IN CONJUNCTION WITH NIGHT LATCH FUNCTION UNIT ABOVE.

- b. Manufacturer/Model of Exit Devices: Von Duprin model 9872NL-BE, 990NL-V trim; or equivalent products of Sargent only.

BELOW IS UNIT WITH BLANK ESCUTCHEON AND OPTIONAL LEVER HANDLE. USE IN CONJUNCTION WITH NON-FIRE-RATED MORTISE UNIT (SEE SUBSEQUENT PARA BELOW).

- c. Manufacturer/Model of Exit Devices: Von Duprin model 9827L-BE, 992L-rigid trim; or equivalent products of Sargent only.

APPLICATION: DOUBLE DOORS WITHOUT MULLION, WOOD OR STEEL, FIRE-RATED.

- D. Fire-Rated Surface Mounted Vertical Rod Type Exit Device: Fire-rated, UL listed, surface mounted, vertical rod type units activated by a partial-width touch-bar, complete with accessories including strike.

IT IS STRONGLY RECOMMENDED THAT YOU SELECT APPROPRIATE UNITS AND TRIM FROM CATALOG. USE CHOICES BELOW ONLY FOR VERY SIMPLE PROJECTS.

BELOW IS UNIT WITH OUTSIDE CYLINDER RETRACTING LATCH BOLT, AND WITH OPTIONAL (RIGID) LEVER HANDLE (PULL COULD ALSO BE USED - SPEC 9827NL-F). LIMIT USE TO MECHANICAL, ELECTRICAL OR SIMILAR SERVICE ROOMS THAT CAN ACCEPT NIGHT-LATCH FUNCTION - OTHERWISE USE MORTISE TYPE DEVICE WITH DOUBLE CYLINDER (SEE SUBSEQUENT PARA BELOW). USE IN CONJUNCTION WITH EXIT ONLY FUNCTION DEVICE (9827EO-F) ON OTHER DOOR OF PAIR.

- a. Manufacturer/Model of Exit Devices: Von Duprin model 9827L-F, 992L-rigid trim with optional no. 03 lever; or equivalent products of Sargent only.

BELOW IS UNIT WITH NO OUTSIDE TRIM FOR EXIT ONLY. USE THIS UNIT IN CONJUNCTION WITH EITHER VERTICAL SURFACE ROD DEVICE IMMEDIATELY ABOVE OR MORTISE UNIT WITH DOUBLE CYLINDER DESCRIBED IN SUBSEQUENT PARA BELOW.

- b. Manufacturer/Model of Exit Devices: Von Duprin model 9827EO-F; or equivalent products of Sargent only.

APPLICATION: DOUBLE DOORS WITHOUT MULLION, WOOD OR STEEL, NON-FIRE-RATED. THE ONLY SANCTIONED USE OF THE MORTISE DEVICE BELOW IS IN A MULLIONLESS OPENING AS PART OF A PAIR, WITH THE OTHER DEVICE A VERTICAL SURFACE ROD TYPE.

- E. Non-Fire-Rated Mortise Type Exit Device: Surface mounted, vertical rod type units activated by a partial-width touch-bar, complete with accessories including strike. Equip units with hex-key operated dogging device mounted on mechanism housing to hold the touch-bar depressed and the latch bolt in the open position. Omit bottom rods unless otherwise indicated.

IT IS STRONGLY RECOMMENDED THAT YOU SELECT APPROPRIATE UNITS AND TRIM FROM CATALOG. USE CHOICES BELOW ONLY FOR VERY SIMPLE PROJECTS.

BELOW IS UNIT WITH OUTSIDE CYLINDER RETRACTING LATCH BOLT, AND WITH OPTIONAL DOUBLE CYLINDER INSTALLED INSIDE ON LATCH HEAD. THIS COMBINATION IMPROVES LOCKING FUNCTION FLEXIBIITY AND IS PREFERRED BY PLANT. USE AS ONE OF A PAIR IN A MULLIONLESS OPENING, WITH THE OTHER DOOR EQUIPPED WITH DEVICE HAVING VERTICAL SURFACE RODS AND BLANK ESCUTCHEON FUNCTION INDICATED IN NON-FIRE-RATED DEVICE PARA ABOVE (9827NL-BE OR 9872L-BE).

- a. Manufacturer/Model of Exit Devices: Von Duprin model 9875L, 992L-M-double cylinder trim, and with optional no. 03 lever; or equivalent products of Sargent only.

BELOW IS UNIT SAME AS ABOVE, EXCEPT FOR APPLICATIONS THAT DO NOT REQUIRE SECURED (LOCKABLE) DOORS. USE AS ONE OF A PAIR IN A MULLIONLESS OPENING, WITH THE OTHER DOOR EQUIPPED WITH DEVICE HAVING VERTICAL SURFACE RODS AND BLANK ESCUTCHEON FUNCTION INDICATED ABOVE (9827NL-BE OR 9872L-BE).

- b. Manufacturer/Model of Exit Devices: Von Duprin model 9875L-F-BE, and with optional no. 03 lever; or equivalent products of Sargent only.

APPLICATION: DOUBLE DOORS WITHOUT MULLION, WOOD OR STEEL, FIRE-RATED. THE ONLY SANCTIONED USE OF THE MORTISE DEVICE BELOW IS IN A MULLIONLESS OPENING AS PART OF A PAIR, WITH THE OTHER DEVICE A VERTICAL SURFACE ROD TYPE. WHERE THE SELECTIONS INDICATED WOULD INTERFERE WITH TWO-WAY CORRIDOR TRAFFIC, AND A MULLIONED OPENING CANNOT BE SUBSTITUTED, CONSIDER PROVIDING ELECTRIC HOLD-OPEN DEVICES.

- F. Fire-Rated Mortise Type Exit Device: Fire-rated, UL listed, mortise type units activated by a partial-width touch-bar, complete with accessories including strike.

IT IS STRONGLY RECOMMENDED THAT YOU SELECT APPROPRIATE UNITS AND TRIM FROM CATALOG. USE CHOICES BELOW ONLY FOR VERY SIMPLE PROJECTS.

BELOW IS UNIT WITH OUTSIDE CYLINDER RETRACTING LATCH BOLT, AND WITH OPTIONAL DOUBLE CYLINDER INSTALLED INSIDE ON LATCH HEAD. THIS COMBINATION IMPROVES LOCKING FUNCTION FLEXIBIITY AND IS PREFERRED BY PLANT. USE AS ONE OF A PAIR IN A MULLIONLESS OPENING, WITH THE OTHER DOOR EQUIPPED WITH DEVICE HAVING VERTICAL SURFACE RODS AND EXIT-ONLY FUNCTION (9827EO-F).

- a. Manufacturer/Model of Exit Devices: Von Duprin model 9875L-F, 992L-M-double cylinder trim, and with optional no. 03 lever; or equivalent products of Sargent only.

BELOW IS UNIT SAME AS ABOVE, EXCEPT FOR APPLICATIONS THAT DO NOT REQUIRE SECURED (LOCKABLE) DOORS. USE AS ONE OF A PAIR IN A MULLIONLESS OPENING, WITH THE OTHER DOOR EQUIPPED WITH DEVICE HAVING VERTICAL SURFACE RODS AND EXIT-ONLY FUNCTION (9827EO-F).

- b. Manufacturer/Model of Exit Devices: Von Duprin model 9875L-F-BE, 992L-M trim and with optional no. 03 lever; or equivalent products of Sargent only.

2.14 ASTRAGALS

- A. Manufacturer/Model of Astragals: EXAMPLE Pemko; No. 357SP, or equivalent products of National Guard, Reese, Zero.

2.15 FLUSH BOLTS

DO NOT EDIT WITHOUT PRODUCT CATALOG.

- A. Manual Flush Bolts: Mortise units, UL listed and rated for indicated application, with spring loaded snap action levers for manual operation.

USE BELOW ON RATED DOORS WHERE INACTIVE LEAF NOT REQUIRED FOR EGRESS.

1. Manufacturer/Model of Manual Flush Bolts: Provide Ives model numbers indicated or equivalent products of Rockwood or Door Controls International, as follows:

DELETE INAPPROPRIATE TYPES BELOW.

- a. Metal Doors: FB458, both top and bottom bolts.
b. Wood Doors: FB358, both top and bottom bolts.

SELECT ONE OF THE FOLLOWING.

- c. Dust Proof Strike: DP1 (threshold mounting).
d. Dust Proof Strike: DP2 (floor or threshold mounting).

USE BELOW FOR EASIER OPERATION AND WHERE INACTIVE LEAF IS NOT REQUIRED FOR EGRESS.

- B. Constant Latching Flush Bolts: Mortise units, UL listed and rated for indicated application, with automatically retracting bottom bolt, and manually released top bolt when active leaf is opened.

1. Manufacturer/Model of Constant Latching Flush Bolts: Provide Ives model numbers indicated or equivalent products of Rockwood or Door Controls International, as follows:

DELETE INAPPROPRIATE TYPES BELOW.

- a. Metal Doors: FB51P (includes both top and bottom bolts).
- b. Wood Doors: FB61P (includes both top and bottom bolts).

SELECT ONE OF THE FOLLOWING

- c. Dust Proof Strike: DP1 (threshold mounting).
- d. Dust Proof Strike: DP2 (floor or threshold mounting).

USE BELOW WHERE INACTIVE LEAF IS REQUIRED FOR EGRESS.

- C. Automatic Flush Bolts: Mortise units, UL listed and rated for indicated application, automatically retracting when active leaf is opened.

1. Manufacturer/Model of Automatic Flush Bolts: Provide Ives model numbers indicated or equivalent products of Rockwood or Door Controls International, as follows:

DELETE INAPPROPRIATE TYPES BELOW.

- a. Metal Doors: FB31P, (includes both top and bottom bolts).
- b. Wood Doors: FB41P, (includes both top and bottom bolts).

SELECT ONE OF THE FOLLOWING.

- c. Dust Proof Strike: DP1 (threshold mounting).
- d. Dust Proof Strike: DP2 (floor or threshold mounting).

2.16 COORDINATOR

DO NOT EDIT WITHOUT PRODUCT CATALOG.

- A. Device coordinating pair of doors with astragals ensuring proper closing sequence. Provide coordinators complete with carry-bar and UL listed and rated for indicated application.

1. Manufacturer/Model of Coordinator: Ives model numbers indicated, or equivalent products of Rockwood or Door Controls International, as follows:

MODEL NUMBERS BELOW ARE FOR TYPICAL APPLICATIONS. CONSULT PRODUCT CATALOG FOR SIZES NOT LISTED BELOW.

USE BELOW FOR PAIR OF 2'-6" DOORS IN 5'-0" OPENING OR UNEQUAL PAIR OF DOORS IN 4'-0" OPENING (3'-0" ACTIVE LEAF WITH 1'-0" INACTIVE LEAF).

- a. Model: COR-42.

USE BELOW FOR PAIR OF 3'-0" DOORS IN 6'-0" OPENING.

b. Model: COR-52.

USE BELOW FOR PAIR OF 3'-6" DOORS IN 7'-0" OPENING.

c. Model: COR-60.

2.17 TRIM PROTECTOR BARS

- A. Provide type 304 stainless steel bent bar shape fabricated of 3/8-inch thick, 1-1/2-inch wide stock. Fabricate units 12-inches long overall with 4-inch long straight section for under-lever mounting.

MOST COMMON UNITS LISTED BELOW - OTHER SHAPES AND MOUNTING CONDITIONS ARE AVAILABLE.

1. Manufacturer/Model of Trim Protector Bars: Subject to compliance with requirements provide the following:
 - a. Solid Core Wood Doors: R110LPB; Rockwood Products Incorporated.
 - b. Hollow Metal Doors: R111LPB; Rockwood Products Incorporated.
 - c. Hollow Core Wood Doors: R112LPB; Rockwood Products Incorporated.

2.18 KICKPLATES

- A. Provide solid metal units as follows:

SELECT ONE MATERIAL BELOW.

1. Material: Stainless steel.
2. Material: Brass satin.

SELECT ONE FINISH BELOW.

3. Finish: Polished.
4. Finish: Satin.
5. Size: 1 1/2 inches less than door width on push side, 1/2 inch less than door width on pull side, by 8 inches high, by 0.050-inch thick.
6. Manufacturer/Model of Kickplates: EXAMPLE Rockwood K1050 series, 8 inches high or equivalent by any BHMA member.

THE FOLLOWING PRODUCT IS NOT UL LISTED FOR FIRE RATED DOORS.

- B. Provide non-colored, transparent acrylic plastic units as follows:

1. Size: 1 1/2 inches less than door width on push side, 1/2 inch less than door width on pull side, by 8 inches high, by 1/4 inch thickness.
2. Manufacturer/Model of Kickplates: EXAMPLE Rockwood K4125, 8 inches high or equivalent products by any BHMA member.

2.19 SWEEP SEALS

- A. Provide manufacturer's standard weatherstripping of type, size and profile indicated, continuous at bottom edges of each indicated door. Provide non-corrosive fasteners.

SUFFIX BELOW IS FOR CLEAR ANODIZED ALUMINUM FINISH. CHANGE SUFFIX TO "D" FOR DARK BRONZE ANODIZED ALUMINUM.

1. Manufacturer/Model Sweep Seals: EXAMPLE Pemko; No. 18062CNB, or equivalent products by any BHMA member.

2.20 JAMB SEALS

BELOW FOR STANDARD LIGHT-TIGHT DOORS - CONSIDER INCLUDING THRESHOLD FOR ADDITIONAL LIGHT-TIGHTNESS.

- A. Provide manufacturer's standard weatherstripping of type, size and profile indicated, continuous at head and jamb edges of each indicated door opening. Provide non-corrosive fasteners.

"CR" SUFFIX BELOW IS FOR CLEAR ANODIZED ALUMINUM FINISH. CHANGE TO "DR" SUFFIX FOR DARK BRONZE ANODIZED ALUMINUM.

1. Manufacturer/Model Jamb Seals: EXAMPLE Pemko; No. 315CR, or equivalent products by any BHMA member.

BELOW FOR SOUND-PROOFING - CONSIDER INCLUDING THRESHOLD TO ASSIST SOUND-PROOFING.

- B. Provide manufacturer's standard sound attenuating jamb and head seals of type, size, and profile indicated, continuous at head and jamb edges of scheduled door openings. Provide units with noncorrosive fasteners.

1. Manufacturer/Model: Pemko No. 350 CSR, or equivalent products by any BHMA member.

2.21 AUTOMATIC DOOR BOTTOM

NOTE THAT AUTOMATIC DOOR BOTTOMS CAN INCREASE DOOR OPENING FORCE REQUIREMENTS AND IMPEDE LATCHING IF NOT PROPERLY ADJUSTED. USE ONLY WHEN REQUIRED FOR SOUND ATTENUATION, RODENT ROOMS AND OTHER SPECIFIC APPLICATIONS. TYPICALLY, LIGHT SEALS CAN BE SATISFACTORILY ACCOMPLISHED USING A SWEEP SEAL/THRESHOLD COMBINATION. AVOID SPECIFYING FULLY MORTISED UNITS (DIFFICULT TO MAINTAIN) AND SURFACE MOUNTED UNITS (NOT ADA COMPLIANT)

- A. Provide manufacturer's standard units of type, size and profile indicated, continuous at bottom of indicated door opening. Provide non-corrosive fasteners.

BELOW IS NON-HANDED SEMI-MORTISED UNIT WITH SPONGE NEOPRENE SEAL. BE SURE TO INCLUDE LOW PROFILE THRESHOLD WHEN SPECIFYING A DOOR BOTTOM OVER CARPET.

"C" SUFFIX BELOW IS FOR CLEAR ANODIZED ALUMINUM FINISH. CHANGE TO "D" SUFFIX FOR DARK BRONZE ANODIZED ALUMINUM.

1. Manufacturer/Model Automatic Door Bottoms: EXAMPLE Semi-mortised Pemko; No. 4301CRL, or equivalent products by any BHMA member.

2.22 ELECTRICALLY ACTIVATED MAGNETIC HOLD-OPEN DEVICE

COORDINATE THIS EQUIPMENT WITH ELECTRICAL ENGINEER. ELECTRICAL SHEETS SHOULD SHOW WIRING, CONDUIT AND BOXES REQUIRED FOR AUTOMATIC HOLD-OPEN DEVICES.

- A. Provide units consisting of a silently-operating wall-mounted electromagnet in electrical box with cover plate and door-mounted contact plate. Provide contact plate with swivel adjustment that adjusts to door contact angle indicated on drawings. Provide units that UL and FM listed.

1. Minimum holding force: 25 lbs.
2. Operating Voltage: 24 V. AC.
3. Finish: Brushed zinc on all visible components.

SELECT ONE OF THE FOLLOWING.

4. Manufacturer/Model:
 - a. Surface-mounted: LCN model SEM7830, Sargent 1560, Rixson 900 series.
 - b. Flush-mounted: LCN model SEM7840, Sargent 1561, Rixson 900 series.

2.23 THRESHOLDS

- A. Provide manufacturer's standard, extruded, anodized aluminum units of type, size, and profile indicated, and complying with applicable portions of the Americans with Disabilities Act (ADA). Provide units continuous across bottom of door openings. Provide noncorrosive fasteners.

MODEL NUMBER BELOW IS FOR A LATCHING PANIC THRESHOLD. LATCHING PANIC THRESHOLDS ARE DESIGNED TO WORK IN CONJUNCTION WITH SURFACE APPLIED VERTICAL ROD EXIT DEVICES. THEY ARE ALSO USED TO PROVIDE A DOOR STOP AND SEAL AT THE BOTTOM OF THE DOOR FOR LIGHT AND SOUND ATTENUATION.

CONSULT MANUFACTURER'S CATALOG FOR OTHER APPLICATIONS: CHANGE IN FLOOR LEVEL, THERMAL BARRIER, ETC

1. Manufacturer/Model: Pemko No. 2005AT, or equivalent products by any BHMA member.

MODEL NUMBER BELOW IS A LOW PROFILE THRESHOLD FOR USE WITH AN AUTOMATIC DOOR BOTTOM OVER CARPET.

2. Manufacturer/Model: Pemko No. 2364A, or equivalent products by any BHMA member.

CONSIDER REMOVABLE MULLIONS BELOW WHERE FIXED MULLIONS CANNOT BE PROVIDED. COORDINATE WITH ALUMINUM ENTRANCES AND STOREFRONTS SECTION.

2.24 REMOVABLE MULLION

BELOW IS NON-KEYED REMOAVABLE MULLION FOR ALUMINUM ENTRANCES. MODEL LISTED IS NOT COMPATIBLE WITH ELECTRIC STRIKES.

- A. Aluminum mullion: Provide removable mullion with weatherstripping, stabilizer set, and indicated door strikes.

SELECT FINISH. DARK BRONZE ANODIZED IS TYPICALLY APPLICABLE TO ALUMINUM ENTRANCES.

1. Finish: 313AN dark bronze anodized.
2. Manufacturer/Model:

BELOW IS NON-RATED DEVICE

- a. Von Duprin 5654, with weatherstripping and 154 stabilizer set or equivalent by Sargent.

BELOW IS KEYED ROBUST MULLION FOR HIGH TRAFFIC OPENINGS. IT DOES NOT HAVE WEATHERSTRIPPING FOR INFILTRATION/NOISE REDUCTION.

- B. Galvanized steel mullion: Provide units with keyed mechanism for quick removal of mullion; mortised cylinder equipped with space for building standard 7-pin SFIC. Unit shall self-lock upon reinstallation.

SELECT FINISH. DARK BRONZE COLOR AND FLUOROPOLYMER IS APPLICABLE TO ALUMINUM ENTRANCES

1. Finish: SP313 dark bronze painted finish.
2. Finish: Two-coat fluoropolymer finish as selected by Architect to match framing.
3. Manufacturer/Model:

BELOW IS NON-RATED DEVICE

- a. Von Duprin KR4954, with 154 stabilizer set or equivalent by Sargent.

BELOW IS RATED DEVICE. NOTE THAT THIS MULLION IS NOT EASILY REMOVED.

- b. Von Duprin KR9954, with 154 stabilizer set or equivalent by Sargent.

2.25 CONCEALED POWER TRANSFER

INCLUDE BELOW TO TRANSFER POWER FROM FRAME TO DOOR FOR DOORS WITH ELECTRIFIED MORTISE LOCKSET OR EXIT DEVICE. ELECTRIFIED HINGES ARE TYPICALLY NOT USED. COORDINATE WITH ELECTRICAL ENGINEER.

NOTE THAT EPT WILL VOID RATING OF EXISTING RATED DOOR / FRAME ASSEMBLY. IF RATING IS REQUIRED, SHOULD BE SPECIFIED WITH NEW DOORS AND FRAMES ONLY.

- A. Provide mortised electric power transfer device that is completely concealed when the door is in the closed position. Device shall be equipped with sufficient number and gage of conductors to accommodate function for hardware specified.

1. Manufacturer/Model:
Securitron EPT
Von Duprin EPT
- B. Armored door cords, electric hinges and other power transfer devices are not permitted.

2.26 WIRING HARNESS

INCLUDE BELOW TO CONNECT POWER FROM CONCEALED POWER TRANSFER TO ELECTROMECHANICAL LOCKSET.

- A. Provide manufacturer's quick connect wiring harness between concealed power transfer and electromechanical locking device. Harness shall have connectors on the lockset end, crimped pins on the other. Size harness as needed for door.
 1. Manufacturer/Model:
Allegion Connect

2.27 DOOR POSITION SWITCH

TYPICALLY DELETE BELOW - SPECIFIED IN DIV 28 ACCESS CONTROL SPEC. COORDINATE WITH ELECTRICAL.

- A. Provide low voltage recessed position sensor with ABS plastic enclosure.
 1. Manufacturer/Model: UTC Interlogix 1078 Series only.

2.28 FINISHES

- A. Provide finishes complying with BHMA A156.18 as follows.

SELECT FINISHES FROM LIST BELOW, OR REVISE TO SUIT PROJECT. GENERALLY MATCH HARDWARE FINISH OF ADJACENT WORK IN BUILDING. CONTACT A LOCKSMITH AT THE KEY OFFICE WITH QUESTIONS REGARDING SPECIFIC FINISH FOR EACH BUILDING.

1. US 10 (satin bronze).
2. US 10B (oil rubbed bronze)
3. US 26D (dull chrome).
4. US 32D (satin stainless).
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Noticeable variations in the same piece are not acceptable.
- D. Standards: Where base material and quality of finish are not otherwise specified, comply with ANSI A 156 series standards applicable to each particular type of hardware.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install each hardware item to comply with manufacturer's printed installation instructions and recommendations for application indicated, unless otherwise indicated by referenced standard or by provisions of this Section.
- B. Hardware Mounting Heights: Door and Hardware Institute "Recommended Locations for Builder's Hardware for Custom Steel Doors and Frames".

DELETE THE FOLLOWING IF NO NEW HARDWARE INSTALLED ON EXISTING DOORS OR ON NEW DOORS IN EXISTING FRAMES.

- C. Hardware at Existing Doors and Frames:
 - 1. Match existing hardware preparation heights on door or frame to be reused.

DELETE THE FOLLOWING PARA AND SUBPARAS IF NEW LOCKSETS OR LATCHSETS ARE NOT INSTALLED IN CONJUNCTION WITH EXISTING FRAMES.

- 2. Where new locksets are indicated to be installed at openings with an existing door frame, verify the compatibility of the existing strike plate and cut-out locations with the new hardware.
 - a. Where no existing strike exists, or where the new lockset cannot be located at a height matching the existing strike, cut out metal frames and provide new insert tabs, or rout out wood frames, as required to fully mortise the new strike plate.

DELETE SUBPARA ABOVE OR BELOW IF NOT APPLICABLE TO PROJECT.

- b. Where an existing strike plate and cut-out is not of suitable size or configuration to ensure proper operation of the lockset, including protection of frame finish, modify or replace strike plate, as practicable. Where new strike plates are required, modify frame as required for a fully mortised installation and install custom-fabricated replacement strike plates to accurately fit within existing mortise cut-outs.
- D. Sound-Attenuating Seals and other Acoustic Barrier Components: Install complete length of door edges, with tight joints to components on adjacent door edges. No gaps at any point around the door perimeter are allowed. Coordinate closer selection and installation (if applicable) to ensure compatibility with seals.
- E. Silencers: Install silencers as follows:
 - 1. Single Door Frames: Install three, equally spaced silencers on the latch jamb of new hollow metal door frames.

DELETE ABOVE AND BELOW TO SUIT PROJECT.

- 2. Double Door Frames: Install two silencers on the head of each new hollow metal double door frame.

DELETE BELOW IF NOT APPLICABLE, OR MODIFY TO SUIT PROJECT CONDITIONS.

3. Existing Door Frames: Where new doors are scheduled to be installed in new frames, or where new hardware is scheduled to be installed on existing doors, inspect existing silencers and replace damaged and defective units.

ALWAYS INCLUDE BELOW FOR PROJECTS WITH ACCESS CONTROL AND EXIT DEVICES.

F. Coordination with access control installation:

1. Electrified exit devices:

INCLUDE BELOW FOR RETROFIT APPLICATIONS ONLY

- a. Coordinate installation of electrified exit devices / electrification kits with access control system installation such that system is immediately ready to support electrified locking / unlocking of the device.

RETAIN BELOW IF ADDING ACCESS CONTROL TO EXISTING DOORS WITH EXIT DEVICES.

2. Exit device dogging:
 - a. Remove dogging capability and provide replacement cover plate on existing door hardware added to access control system.

INCLUDE BELOW FOR PROJECTS WITH ACCESS CONTROL.

3.2 COMMISSIONING

- A. Perform the commissioning activities as outlined in the Division 1 Section titled Commissioning and other requirements of the Contract Documents.

3.3 ADJUSTING

- A. 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.

EDIT BELOW TO SUIT PROJECT REQUIREMENTS.

1. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
2. Door Closers: Adjust sweep period and operating force to comply with accessibility requirements and ensure proper door function.

NOT REQUIRED FOR MOST SMALL PROJECTS. REVIEW WITH KEY OFFICE, CLIENT AND CM IF RETAINED TO ENSURE ENFORCEMENT.

- B. Post occupancy adjustment: Return to project one month after Owner's occupancy, and adjust hardware to proper operation and function. Instruct Owner's personnel in proper maintenance and adjustment.

3.4 **HARDWARE SET SCHEDULE**

EXAMPLES FOLLOW, REVISE TO SUIT PROJECT.

- A. Set No. 1:
 - Office Lockset
 - Butt Hinges (1-1/2 pr.)
 - Closer
 - Stop
- B. Set No. 2:
 - Office Lockset with automatic unlocking
 - Butt Hinges (1-1/2 pr.)
 - Stop
 - Kickplate
- C. Set No. 3:
 - Active Leaf
 - Classroom Lockset
 - Butt Hinges (1-1/2 pr.)
 - Closer
 - Stop
 - Astragal
 - Kickplate
 - Inactive Leaf
 - Automatic Flush Bolts (1 pr.)
 - Butt Hinges (1 1/2 pr)
 - Closer
 - Stop
 - Kickplate

END OF SECTION 087100