

PART 1 – GENERAL

1.1 SUMMARY

A. Section Includes:

1. Door and related hardware specified or indicated on drawings to complete project.
2. Accessories, tools and fasteners required for installation and maintenance.
3. Installation.

B. Related Sections:

1. 08 11 13 - Hollow Metal Doors and Frames
2. 08 41 26 - All Glass Entrances and Storefronts
3. Division 26 Electrical Sections

C. Substitutions: Where allowed herein.

1.2 REFERENCES

A. Door & Hardware Institute (DHI):

1. Recommended Locations for Builders' Hardware for Standard Steel Doors and Frames, Latest Edition.

B. Seattle Building Code, (SBC):

1. 2015 Edition with State Amendments.

C. National Fire Protection Association (NFPA):

1. NFPA 101 "Life Safety Code", 2012 Edition.
2. Standard No. 80 "Fire Doors & Windows", Latest Edition.
3. NFPA 70 "National Electrical Code" (NEC). See Division 26 for applicable Edition.

1.3 AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI):

A. Standard A156.18 "Materials and Finishes".

B. Governing Codes: Where conflict occurs between above codes and standards the most stringent requirement governs.

1.4 DEFINITIONS

A. Tight-Fitting Door: Rated or non-rated door/frame assembly meeting the clearances in NFPA 80 and Part 3 of this Section.

1.5 SYSTEM DESCRIPTION

A. Performance Requirements:

1. Provide hardware complying with NFPA 80 and IBC

2. Provide hardware listed by Underwriters' Laboratories or other approved testing agency.
3. Hardware for fire-rated openings: Comply with NFPA 80.
4. Install hardware complying with Part 3.

1.6 SUBMITTALS

A. Submit in accordance with Section 01 33 00 - Submittal Procedures.

B. Door Hardware Schedule & Format:

1. Submit 5 reproducible copies or PDF digital copy of schedule on 8-1/2 inch by 11 inch sheets numbered consecutively
2. Furnish cover sheet listing name of project as shown on Contract Documents, name of Owner, name of Architect, name of Contractor, name of Architectural Hardware Consultant (AHC) and date of submittal or revision of submittal.
3. Furnish a vertical listing of hardware items used followed by manufacturer's name either on cover sheet or immediately following cover sheet. Example: "hinges - manufacturer's name". Also include a complete list and description of abbreviations used within the submittal.
4. Schedule hardware items for each door separately in typed vertical form; list each door in numerical order under a separate heading using door number in sequence as shown in door Opening Schedule. Note: Openings are scheduled following the numerical order of plan sheets.
 - a. Do not group doors with like or similar hardware under a single heading. Multiple headings may occur on a submittal page provided all hardware, including the heading, can be listed without continuing onto another page.
 - b. Completely describe each opening and show hardware symbols, as listed in door Opening Schedule, in margin opposite each item of hardware and describe each piece of hardware with specified manufacturer's numbers or their equivalents as approved for each item.
 - c. Unless approved prior to bid, list only catalog numbers of named manufacturers on submittal.
 - d. Hardware schedules not complying with above will not be reviewed and will be returned for proper formatting.
 - e. Example of acceptable format:

Heading 101

One sgl dr 101 corridor 100 from Classroom 101 LHR 90
 3-0 x 7-0 x 1-3/4 WD x HM 20 min.

3	ea	Hinges T4A3786-NRP 4-1/2 x 4-1/2	10B	MC
1	ea	Classroom Lock ML2055-CSR	10B	CR
1	ea	Closer PR7500	690	NO
1	ea	Wall Stop WS02	10B	MC
1	ea	Kickplate KP50-HB4E 10 x 34	10B	MC
1	Set	Gasket S88D 17'		PE

- f. Owner will not be review hardware schedules unless first reviewed and approved by Contractor.
- g. Owner will review schedule and will return 1 copy to Contractor with comments.
- h. Approval of schedule does not relieve Contractor of providing hardware specified for project.

- i. Revise sheets having corrections and return updated copies for insertion into all distributed copies.
- C. Other Submittals:
 1. Provide updated pages to keep current approved "Door Hardware Schedule". Provide a new title page accompanying new sheet(s), include a revision date. Mark each new page "Revised" or "REV" and date of revision.
- D. Samples:
 1. Furnish samples on a timely basis upon request of Owner.
 2. Send samples to Owner.
- E. Templates:
 1. Send hardware template information for plastic faced door, aluminum doors, metal doors and frames, together with a copy of approved hardware schedule to respective door and frame manufacturers or fabricators not later than 14 days after approval of schedule.
 2. Send templates for mounting magnetic wall holders to those installing electrical boxes and maintain consistent mounting locations throughout.
 3. Coordinate templates between manufacturers of different hardware items to allow installation of various hardware items without interference between items. Special templates may be necessary.
 4. Clearly indicate on templates under door clearances for exit devices, automatic flushbolts to insure latching, and thresholds having built-in or applied stops.
- F. Keying Schedule:
 1. Upon receipt of approved hardware schedule, arrange interview between hardware supplier and Owner, to obtain necessary keying information.
 2. Submit 3 copies of keying schedule indicating door numbers in numerical sequence, lock or cylinder number and its particular keying. Obtain approval before proceeding.
- G. Contract Closeout Submittals:
 1. Comply with Section 01 77 00 – Closeout Procedures.
 2. Hardware Data & Maintenance Manuals: At time of acceptance of work, deliver two maintenance manuals. Include the following for each hardware item having operative parts:
 - a. Table of contents.
 - b. Catalog data.
 - c. Isometric drawings, which identify and list, part numbers.
 - d. Installation templates including special templates.
 - e. Installation instructions.
 - f. Manufacturer's maintenance instruction and maintenance schedule; include special lubricate and fluids information.
 - g. Under separate section "Doors with Electric Hardware", include copy of door elevations, riser diagrams, and point-to-point wiring data identified by applicable door number. Include description of electric operation for each door or group of doors.
 - h. Assemble data in a clearly identified 3-ring binder organized with tabs.

- i. Include in each manual one updated copy of hardware schedule, listing hardware installed, including changes and revisions approved by Owner during construction.
 - j. Manufacturer's written warranty covering specified time periods.
3. Certifications: Arrange for hardware supplier to visit Site and certify following:
- a. Hardware is installed and operating in a satisfactory manner.
 - b. Hardware installed is as listed on approved door hardware submittal, including changes and revisions approved by Owner during construction.
 - c. Submit certifications in writing addressed to Owner.

1.7 QUALITY ASSURANCE

A. Qualifications:

- 1. Contractor is responsible for:
 - a. Proper application and fit of door and specialty hardware in locations as indicated on drawings or as specified.
 - b. Items not specifically mentioned, but necessary to complete work are to be furnished matching in quality and finish of specified items in similar locations.
 - c. Coordinate dimensions between hardware items.
 - d. Furnish and install only hardware items listed on approved Door Hardware submittal.
- 2. Contractor's selection of hardware supplier:
 - a. Select recognized builders hardware supplier who has been furnishing hardware in area of project for period not less than five years.
 - b. Recognized supplier to have on staff an Architectural Hardware Consultant (AHC) certified by the Door and Hardware Institute.
 - c. Hardware supplier's AHC to be available at all reasonable times during course of work to meet personally with Owner or Contractor for hardware consultation.
 - d. Supplier willing to agree in writing to maintain parts inventory of items supplied for future service to Owner.

- B. Pre Installation Conference: Arrange for hardware supplier to meet with installer and discuss installation of hardware, templates and any unique hardware applications.

1.8 DELIVERY, STORAGE & HANDLING

- A. Delivery: Package each item of hardware separately with necessary fasteners, screws, bolts, tampons, keys and installation templates. Deliver packages clearly identified with heading number as approved on hardware schedule.
- B. Storage: Provide storage area for hardware, which is dry, secure, and complete with shelving and tables for unpacking and sorting.

1.9 WARRANTY

- A. Special Warranties: Submit manufacturer's standard written product warranty signed by manufacturer's authorized official, guaranteeing to repair or replace defective products during following warranty periods:

<u>PRODUCT</u>	<u>WARRANTY PERIOD</u>
Hinges	Life of Building
Mortise Locks	5 Years from date of Substantial Completion
Bored Locks	5 Years from date of Substantial Completion
Exit Devices (Mechanical)	5 Years from date of Substantial Completion
Door Closers (Mechanical)	10 Years from date of Substantial Completion
All other products	1 Year from date of Substantial Completion

- B. Submit in accordance with Section 01 78 36 "Warranties".

1.10 MAINTENANCE

A. Tools:

1. After final adjustment of door hardware, turn over to Owner tools furnished during construction used for installation and adjustment.
2. Tag and identify each item as to its use and applicable piece of door hardware.

PART 2 – PRODUCTS

2.1 DOOR HARDWARE

A. General:

1. Comply with requirements in IBC, NFPA 80 and 101.
2. Door hardware items are specified from catalogs noted in this section. Only products, which have UL10C listings will be acceptable on fire rated openings, and will set standard for project.
3. Hardware items by other than named manufacturers will be reviewed for acceptance against specified items.
4. Except where scheduled otherwise, products within each hardware category are to be by one manufacturer, e.g. hinges, locks, closers, and exit devices.

B. Screws and Fasteners

1. All required screws shall be supplied as necessary for securing finish hardware in the appropriate manner. Thru-bolts shall be supplied for exit devices and door closers where required by code and the appropriate blocking or reinforcing is not present in the door to preclude their use.

C. Hanging Devices

1. Hinges

- a. Hinges shall conform to ANSI A156.1 and have the number of knuckles as specified, oil-impregnated bearings as specified with NRP (non-removable pin) feature, at all exterior reverse bevel doors. Unless otherwise scheduled, supply one (1) hinge for every 30" of door height (See * in hardware set). Hinge height 4 ½" for doors up to 36" wide, 5" for doors over 36" wide, or as recommended by the manufacturer.

- 1) Basis of Design: McKinney
- 2) Hager.
- 3) Stanley.

2. Continuous Hinges/Edge Guards

a. ANSI/BHMA Standard A156.26 Grade 1. 12 gauge, Hospital Tip

- 1) Basis of Design: Markar
- 2) McKinney
- 3) or Approved Equal.

D. Cylinders and Keying

1. Cylinders

- a. All cylinders shall meet the requirements of UL437 including those for pick and drill resistance. Pick resistance shall incorporate two or more independent locking mechanisms including a pin tumbler device with six top pin chambers with mushroom shaped driver pins and a coded sidebar locking mechanism operated independently from the six top pin tumbler device. Drill resistance shall incorporate cylinder housing with fixed in-place case-hardened inserts to protect the pin tumbler shear line, cylinder plugs with case-hardened inserts to protect the pin tumbler shear line and the side bar, mushroom shaped stainless steel driver pins and stainless steel side pins. All cylinders shall be factory master keyed.

- 1) Specified Manufacturer: Medeco M³. No Substitutions.

2. Keying

- a. All locks and cylinders shall be provided with construction cylinders, for use during the construction phase. All permanent cylinders shall be keyed to the existing Medeco M3 Master key system, per the approved key schedule. See Paragraph 1.6F. Provide the following quantity of keys:

- 1) Two (2) change keys per lock
- 2) Three (3) grand master keys
- 3) Six (6) master keys per master level
- 4) Five (5) construction/temporary keys

- b. Master keys and all high-security or restricted keyway blanks shall be sealed in tamper-proof packaged boxes when shipped from the factory. The boxes shall be shrink wrapped and imprinted to ensure the integrity of the packaging.

3. Cylinder Installation

- a. The general contractor shall install all construction cylinders/cores, at the time of hardware installation.
- b. When requested by the Owner, the general contractor shall remove all construction cylinders/cores, and install all permanent cylinders/cores. Construction cylinders/cores are to be returned to the hardware supplier.

E. Locking Devices

1. Mortise locksets

- a. All locksets shall be ANSI 156.13 Series 1000, Grade 1 Certified. All functions shall be manufactured in a single sized case formed from 12 gauge steel minimum. The lockset shall have a field-adjustable, beveled armored front, with a .125" minimum thickness and shall be reversible without opening the lock body. The lockset shall be 2 3/4" backset with a one-piece 3/4" anti-friction stainless steel latchbolt. The deadbolt shall be a full 1" throw made of stainless steel and have 2 hardened steel roller inserts. All strikes shall be non-handed with a curved lip. To insure proper alignment, all trim, shall be thru-bolted and fully interchangeable between rose and escutcheon designs.

- 1) Basis of Design: Sargent 8200 Series. No Substitutions.

2. Lockset strikes

- a. Strikes shall be non-handed and available with curved lip, full lip or ASA type strikes as required. Provide strikes with lip-length required to accommodate jamb and/or trim detail and projection.

F. Door Closers

1. Surface mounted closers – heavy duty

- a. All door closers shall be ANSI 156.4, Grade 1 Certified. All surface closers shall be of full rack and pinion construction. Closing speed, latching speed and backcheck shall be controlled by key operated valves. Closers shall be non-handed to meet a variety of door conditions and design requirements.

- 1) Basis of Design: LCN 4040 Series, No Substitutions.

G. Door Trim and Protective Plates

1. Kick plates shall be .050 gauges and 1-1/2 inches less full width of door, or as specified.

- a. Basis of Design: McKinney
- b. Rockwood
- c. or Approved Equal.

H. Door Stops and Holders

1. Wall Mounted Door Stops

- a. Where a door is indicated on the plans to strike flush against a wall, wall bumpers shall be provided. Provide convex or concave design as indicated.

- 1) Basis of Design: McKinney
- 2) Rockwood
- 3) or Approved Equal.

2. Overhead Stops and Holders

- a. Where specified, overhead stops/holders as shown in the hardware sets are to be provided. Track, slide, arm and jamb bracket shall be constructed of extruded

bronze and shock absorber spring shall be of heavy tempered steel. Overhead stops shall be of non-handed design.

- 1) Basis of Design: Rixson
- 2) Sargent
- 3) or Approved Equal.

3. Magnetic Hold-Opens

- a. Magnetic door holders shall meet or exceed ANSI A156.15 and be UL listed 228 for Door Closer and Holders, with or without integral smoke detectors. Holding force shall be 25 to 40 pounds and shall be fail-safe. Pushpin release that eliminates residual magnetism shall be standard. Provide magnetic hold-opens with triple-voltage coil that can receive 12 VDC, 24 VAC/DC, or 120VAC; or coordinate required voltage with electrical.

- 1) Basis of Design: Rixson
- 2) Sargent
- 3) or Approved Equal.

I. Automatic Door Operators

1. Provide AccessOne™ Series 2100 Low Energy Electrohydraulic automatic swing door operator by KM Systems, Inc., Monroe, N.C. Installation to be performed by the local certified representative.
 - a. No substitutions
2. Operator shall be electrohydraulic, completely self-contained with precision pump driven by a single phase 1/8 H.P. AC motor and high strength rack and pinion output. The totally enclosed operator shall be surface mounted above the door to the header or transom bar. The opening force shall be generated hydraulically and transmitted to the door through an arm linkage. Opening speed shall be fully adjustable and feature dual back check control allowing adjustment of both back check speed and position. Closing shall be by spring force generated by an internal compression spring. The single internal spring shall reduce manual opening force to not more than 15 lbf. Adjustable closing speed and latch speed shall control the door in the closing cycle. The pump shall include a safety release valve that prevents damage or malfunction from excessive pressure. An adjustable limit switch shall interrupt power to the motor when the door reaches 90° full open. The door will remain in the open position by means of a continuous rated low current solenoid valve until the hold open time delay is satisfied. In the case of a power outage, the operator shall allow the door to be operated manually without damage to the operator or components.
3. The system shall include a solid state control providing adjustable hold open time (0 - 30 sec.), mode selector switch, and LED indication for activation signal, safety mat/sensor signal, and neon lamp indication for operator power. Mode selector will provide three operational modes:
 - a. Timer Mode: Door remains in the open position until the preset hold time expires,
 - b. Ratchet Mode: Door remains in the open position until it receives a second activation signal. After receipt of second activation signal, door closes.
 - c. Ratchet with Time-out Mode: Door remains in the open position until it receives a second activation signal. After receipt of a second activation signal, door closes.

If the second signal is not received within 60 seconds, control will time out and allow door to close.

4. Operator control shall include a standard three position switch with functions for ON, OFF, and HOLD OPEN. Operator shall be capable of remaining in the hold open position for extended periods of time without damage to the operator or components.
 5. Operator shall be completely self-contained within an enclosure formed by a 1/4" structural aluminum backplate (alloy 6061-T6) and an 5-11/16" x 5-7/8" extruded aluminum cover (alloy 6063-T6). Cover shall be removable and allow full access to the operator without removing the operator from the backplate. Cover shall be integral color anodized/painted to match adjacent storefront/frame finish:
 - a. 204-R1 Clear
 6. Activation Devices: Opening cycle shall be activated by touchless switch. Switches shall be installed in a standard 2-gang electrical wall box provided by the electrical contractor and placed in a location in compliance with ANSI A117.1.
 - a. U-WAV Touchless Switch by Larco
 - b. Approved equal
- J. Gasketing and Thresholds
1. Provide continuous weatherseal on exterior doors and smoke, light, or sound seals on interior doors where indicated or scheduled. Provide intumescent seals as required to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies. Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.
- K. Silencers
1. Furnish rubber door silencers all hollow metal frames; two (2) per pair and three (3) per single door frame.

2.2 FINISHES

- A. Provide hardware, including exposed fasteners, attachments, and accessory items, in the finish listed in the hardware set, except as noted otherwise in this section.
- B. ANSI Finishes: Hardware submittals using ANSI finish equivalents will be accepted.
- C. Provide all lockset/latchset lever trim, exit device push rail and trim, and all push/pull units with MicroShield antimicrobial coating.

PART 3 – EXECUTION

3.1 EXAMINATION

- A. Verify frames are plumb and doors are ready to receive work, and dimensions are as indicated on shop drawings or as instructed by manufacturers.
- B. Beginning of installation means acceptance of existing conditions.

3.2 INSTALLATION

A. General:

1. Install each hardware item in accordance with each manufacturer's instructions and recommendations.
2. Install no hardware until substrate finishes are complete.
3. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or otherwise finished, install each item completely then remove and store during application of finishes; reinstall upon completion of finishing operations.
4. Set items level, plumb, and true to line and location.
5. Adjust and reinforce attachment substrate as necessary for a secure installation.
6. Drill and countersink items not factory prepared for fasteners.
7. Space fasteners and anchors per manufacturer's instructions and in accordance with industry standards.
8. Do not install hardware on doors, which have been improperly prepared.
9. Attach wall mounted hardware to concealed wall blocking. Do not install wall-mounted hardware where wall blocking has not been installed and arrange for blocking to be installed before proceeding.

B. Installation Clarification: Direct questions regarding placement of hardware to Owner for clarification prior to installation.

C. Fire-rated Openings:

1. In addition to previous requirements, conform to NFPA 80 and IBC covering installations of fire door assemblies.
2. Refer to instructions from door and frame manufacturers regarding special hardware installation requirements, including function holes, undercutting and minimum clearances between hardware cutouts.

D. Acceptable Installation:

1. Install doors and frames plumb.
2. Clearances:

a. Rated and Non-Rated Doors:

- 1) Wood Doors: 1/8 inch maximum, 1/16 inch minimum, clearance between door and frame and along meeting edges. When installed clearances between door and frame, including meeting edges are to be equal.
- 2) Metal Doors: 1/8 inch plus 1/16 inch maximum tolerance between door and frame and along meeting edges. Installed clearances between door and frame, including meeting edges are to be equal, but not less than 1/16 inch between the door and frame.

b. Under Door Maximum Clearances at Rated Doors:

- 1) 3/4 inch to concrete or ceramic tile.
- 2) 5/8 inch to rigid tile (vinyl or sheet vinyl).
- 3) 1/2 inch to top of carpet.
- 4) 3/8 inch to top of noncombustible sill or threshold.

- 5) Exceptions: Where exit device templates indicate reduced clearances comply with most stringent lesser dimensions.
3. Astragals: Must lie flat against opposing door face for entire height of door.
4. Do not proceed with additional hardware installation until above clearances have been met.
- E. Installation Templates, Instruction Sheets, and Schedules: Retain copies of templates, instruction sheets, schedules, installation details and similar data regarding hardware, maintenance and servicing. See Part 1 under Contract Close-out Submittals for assembly and distribution of data.
- F. Locations: Unless otherwise indicated on drawings or listed below, locate hardware in accordance with DHI recommended locations. Mount each hardware type at same location regardless of door material.
- G. Hardware & Specialties: In addition to installation requirements specified above, install hardware as follows.
 1. Hinges:
 - a. Hang doors within following tolerances: 1/8" maximum between door and frame, and 1/8" maximum between meeting edges of pairs of doors.
 - b. Provide under door clearance at fire-assemblies per NFPA 80.
 - c. Where shimming is necessary for proper door/ frame installation, use only metal shims.
 - d. Install hinges flush with frame rabbets and edge of doors.
 - e. Drive hinge pin flush with top of hinge barrel after doors are hung plumb.
 - f. Install electric hinges or pivots as center hinge or second hinge from bottom where doors have 2 pairs of hinges.
 - g. Doors with spring hinges: Conform to adjustment requirements for closers.
 2. Locks: Install only curved lip strikes and a dust box behind each strike.
 - a. Install locks 40/1/4 inches above finished floor. This will establish the lever height throughout the project. Coordinate electric strike locations so all levers are mounted same height throughout the project.
 - b. Install only curved lip strikes and install a dust box behind each strike. Grout box in frame not acceptable as equivalent to a dust box.
 - c. Pairs of doors with cylindrical locks: Install protective back strikes except at doors with overlapping metal astragals.
 3. Closers:
 - a. Install closers to permit maximum degree of door swing allowed by job conditions. Follow manufacturer's instructions.
 - b. Do not install parallel arm closers until after weather-stripping or seals have been installed on head frame.
 4. Door Stops:
 - a. Install stops to permit maximum degree of door swing allowed by job conditions.

- b. Locate floor stops so as not to create a tripping hazard, and to catch door at a point 6 inches in from latch edge, but in no case further than 1/3 door width measured from
- c. Locate projecting wall stops 80 inches above finished floor with sloped edge on top.
- d. Wall stops intended for knobs and levers are to be located centered on spindle. Do not install stops having concave bumpers when convex bumpers are scheduled.

5. Doorplates (Kick Plates):

- a. Armor and kick plates: Install on push side of single acting doors.
- b. Mop plates: Install on pull side of single acting doors.
- c. Drill pilot holes for fasteners prior to installing plates on plastic laminate faced doors.
- d. When plates have bevels on 3 sides mount flat edge facing floor.

6. Weather-stripping (Seals & Gaskets):

- a. Install per manufacturers' instructions.
- b. Do not cut or interrupt extrusions for weatherstripping, seals or gaskets for a door closer accessory, i.e. soffit shoe.
- c. Contact hardware supplier when a conflict arises for alternate method of attachment, including templates, and obtain approval from Owner prior to installation.

H. Miscellaneous Hardware:

1. Component Gasket System for "S" Label:

- a. Follow door and/or frame manufacturer's "Installation Instruction".
- b. Retain copy of instructions for inclusion into 3-ring closeout binder. See Part 1 this Section.
- c. Install gasket system on a single and pair of doors, and obtain approval from Owner before proceeding. Approval will be based on a demonstration doors close and latch smoothly without latchbolt bind, and review of installation instructions.

3.3 FIELD QUALITY CONTROL:

- A. Tests: Magnetic Release Door Holders: Test each magnetic release after installation and note holding force. Magnetic holders, which do not have 25-pound minimum holding force, are to have voltage checked at each holder, and condition corrected.

B. Manufacturer's Field Service:

- 1. Closers: After air-handling system has been balanced, arrange for closers to be finally adjusted by person trained by closer manufacturer or closer manufacturer's representative.
 - a. Adjust closers so doors take 3 seconds minimum to swing from a 70-degree open position to a point 3" from latching.
 - b. Adjust closers not to exceed following opening forces:

3.4 ADJUSTING

- A. Adjust and check each item of hardware and each door, to insure proper operation and function of each unit.
- B. Lubricate moving parts with graphite-type lubricant, unless otherwise recommended by manufacturer.
- C. Replace hardware, which cannot be lubricated and adjusted, to operate freely and smoothly.
- D. Final Adjustment:
 - 1. Whenever hardware installation is made more than 1 month prior to acceptance of Work, make final adjustment and check of hardware during week immediately prior to acceptance, unless otherwise directed by Owner.
 - 2. Clean and relubricate operating items as necessary to restore proper functioning and finish of hardware and doors.
 - 3. Make final adjustment of locksets and closers to compensate for operation of heating and ventilating systems under supervision of manufacturer's representative.

3.5 PROTECTION AND CLEANING

- A. Installed Hardware:
 - 1. Protect Hardware against damage.
 - 2. Remove protective coverings from hardware after surrounding surfaces have received final painting or refinishing and room or area is ready for final inspection.
 - 3. Replace damaged hardware units and units which cannot be refinished to the Owner's satisfaction.
- B. Installed Doors:
 - 1. Do not prop doors open using any item wedged between hinge jamb and door.
 - 2. Use only rubber stops, cardboard or rope.
 - 3. Do not use unprotected wood wedges under wood doors.
 - 4. Do not use bare wire or other unprotected means of securing doors in open position, which may damage or mar the finish of door or hardware.
- C. Job Acceptance: Prior to acceptance of job clean hardware surfaces on both interior and exterior doors of mortar, plaster, paint, caulking and other contaminants. Replace hardware damaged after installation or where finish cannot be restored after cleaning.

3.6 DEMONSTRATION

- A. Instructions: Provide instruction in operation and maintenance of key control system. See Part 2 Paragraph 2.1 – D.2 for requirements.

3.7 DOOR HARDWARE SCHEDULE: BASIS OF DESIGN

- A. Manufacturer's abbreviations:
 - 1. AUROAurora Door
 - 2. HS HES
 - 3. LA Larco

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|-----|------|------------|
| 4. | LCN | LCN |
| 5. | MKHR | Markar |
| 6. | MK | McKinney |
| 7. | MD | Medeco |
| 8. | PEMK | Pemko |
| 9. | RIX | Rixson |
| 10. | SA | Sargent |
| 11. | SCHL | Schlage |
| 12. | SU | Securitron |
| 13. | TR | Trimco |

Hardware Group: 1

Door NN241A-A, NN241B-A, 3'-0" x 7'-0" x 1-3/4" HMD/HMF (NR) ACOUSTIC

3	EA	HINGE	T4A3786	MK
1	EA	LOCKSET	8204 LNL (STOREROOM)	MK
1	EA	CYLINDER	10T0200	MD
1	EA	ACOUSTIC AUTO DOOR BOTTOMS	PDB 411_E	PEMK
1	RL	GASKETING	S88D20	PEMK

Hardware Group: 2

Doors NN 241A-B, 241A-C, 241B-B, 241B-C 2'-8" or 3'-0" x 7'-0" x 1-3/4" HMD/HMF (NR) ACOUSTIC

6	EA	HINGE	T4A3786	MK
1	EA	LOCKSET	8204 LNL (STOREROOM)	MK
1	EA	CYLINDER	10T0200	MD
1	EA	ADJUSTABLE ASTRAGAL	351_V	PEMK
2	EA	ACOUSTIC AUTO DOOR BOTTOMS	PDB 411_E	PEMK
1	RL	GASKETING	S88D20	PEMK

Hardware Group: 3

Doors NN241B1, Control 241A1 to Control 241B1 3'-0" x 7'-0" Basis of Design: Aurora Door

1	EA	MORTISE LATCH	ADA 6	AURO
2	EA	THUMBTURN	1744 9001	AURO
2	EA	PULL, STD STRAIGHT	12"X1" US 32D	AURO
1	EA	AUTO DOOR BOTTOM	MFGR STANDARD	AURO

Hardware Group: 4

Door CC210, CC210.2 Equipment Rooms WDD/(E) HMF (45 MIN)

1	EA	CONTINUOUS HINGE	HG-305 CTP	MKHR	R
1	EA	CONTINUOUS HINGE	HG-305 CTP	MKHR	L
2	EA	POWER TRANSFER	EL-EPT	SECR	
1	EA	OVERHEAD STOP	1-336- 90 DEGREE (CONCEALED)	RIX	
2	EA	KICKPLATE	K1050 B4E CSK	ROCK	
2	EA	MEETING STYLE ASTRAGAL	18061CNB	PEMK	
1	RL	GASKETING	S88D20	PEMK	
2	EA	DOOR POSITION SWITCH	1078	SENO	
2	EA	ELECTRIC EXIT DEVICE	NB-12-56-8715	SA	
1	EA	DOOR OPERATOR	UWMC STANDARD		
1	EA	ACTIVATION BUTTON	UWMC STANDARD		

Hardware Group: 5

Door CC200 S Hallway WDD/(E) HMF (45 MIN)

1	EA	(EX)	CONTINUOUS HINGE	HG-305 CTP	MKHR	R
1	EA	(EX)	CONTINUOUS HINGE	HG-305 CTP	MKHR	L
2	EA	(EX)	POWER TRANSFER	EL-EPT	SECR	
1	EA		OVERHEAD STOP	1-336- 90 DEGREE (CONCEALED)	RIX	
2	EA		KICKPLATE	K1050 B4E CSK	ROCK	
2	EA		MEETING STYLE ASTRAGAL	18061CNB	PEMK	
1	RL		GASKETING	S88D20	PEMK	
2	EA		DOOR POSITION SWITCH	1078	SENO	
2	EA		ELECTRIC EXIT DEVICE	NB-12-56-8715	SA	
2	EA		MAG LOCK	M450-DPS	SCHL	
1	EA		EGRESS BUTTON	H100-B-PE-PN	HSP	
1	EA		REQUEST TO EXIT	DS160	BOSCH	
1	EA		INTEGRATE WITH EXISTING CARD SYSTEM			
1	EA		DOOR OPERATOR	UWMC STANDARD		
1	EA		ACTIVATION BUTTON	UWMC STANDARD		

Hardware Group: 6

Door NN241L S Hallway to CCL1 PR 4'-0"/2'-0" X 7'-0" HMD / HMF (LEAD LINED)

2	EA		CONTINUOUS HINGE	HG-305 CTP	MKHR	
1	EA		LOCKSET	74-8237 (CLASSROOM) LEAD LINED	SARG	
1	EA		MORTISE CYLINDER	10T0200	MD	
1	EA		CLOSER	4040 @48" DOOR LEAF	LCN	
1	EA		FLUSHBOLT	W3913 – TOP	TR	
1	EA		DOOR HOLDER	1255	TR	
2	EA		FLOOR STOP	1211	TR	
2	EA		ARMOUR PLATE	KA050-2 46"X42"	TR	
1	EA		ASTRAGAL	18041CNB – 84"	PEMK	
3	EA		SILENCERS	1229A - GRAY	PEMK	
2	EA		EDGE GUARD	1EG308 - 84	MKHR	
2	EA		ELECTRIC EXIT DEVICE	NB-12-56-8715	SARG	
2	EA		MAG LOCK	M450-DPS	SCHL	
1	EA		EGRESS BUTTON	H100-B-PE-PN	HSP	
1	EA		REQUEST TO EXIT	DS160	BOSCH	
1	EA		INTEGRATE WITH EXISTING CARD SYSTEM			
1	EA		DOOR OPERATOR	UWMC STANDARD		
1	EA		ACTIVATION BUTTON	UWMC STANDARD		

END OF SECTION