PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:
   1. Swinging doors.
   2. Sliding doors.
   3. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:
   1. Mechanical door hardware.
   2. Electromechanical door hardware.
   3. Cylinders specified for doors in other sections.

C. Related Sections:
   1. Division 08 Section “Door Hardware Schedule”.
   2. Division 08 Section “Hollow Metal Doors and Frames”.
   3. Division 08 Section “Interior Aluminum Doors and Frames”.
   4. Division 08 Section “Plastic Laminate Faced Wood Doors”.
   5. Division 08 Section “Flush Wood Doors”.
   6. Division 08 Section “Access Control Hardware”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

   6. NFPA 105 - Installation of Smoke Door Assemblies.
   7. State Building Codes, Local Amendments.
   8. 521 CMR – Massachusetts Architectural Board Regulations.

E. Standards: All hardware specified herein shall comply with the following industry standards:
1. ANSI/BHMA Certified Product Standards - A156 Series
2. UL10C – Positive Pressure Fire Tests of Door Assemblies

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."

2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.

3. Content: Include the following information:
   a. Type, style, function, size, label, hand, and finish of each door hardware item.
   b. Manufacturer of each item.
   c. Fastenings and other pertinent information.
   d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
   e. Explanation of abbreviations, symbols, and codes contained in schedule.
   f. Mounting locations for door hardware.
   g. Door and frame sizes and materials.
   h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:
2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Proof of Certification: Provide copy of manufacturer(s) official certification or accreditation document indicating proof of status as a qualified installer of Windstorm assemblies.

E. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

F. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Submittals.

1.4 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

B. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

C. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a certified Architectural Hardware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and Owner concerning both standard and electromechanical door hardware and keying.

D. Windstorm Assembly Installer Qualifications: Installers are to be factory trained and certified prior to project bid, and are responsible for commissioning, servicing, and warranting the installed equipment specified for the project.

E. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.
1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.

2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

F. Each unit to bear third party permanent label demonstrating compliance with the referenced standards.

G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

H. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

I. At completion of installation, provide written documentation that components were applied to manufacturer's instructions and recommendations and according to approved schedule.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.6 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door Hardware and Electrical Connections: Coordinate the layout and installation of scheduled electrified door hardware and related access control equipment with required connections to source power junction boxes, low voltage power supplies, detection and monitoring hardware, and fire and detection alarm systems.

C. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.7 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Standard Warranty Period: One year from date of Substantial Completion, unless otherwise indicated.

D. Special Warranty Periods:

1. Ten years for mortise locks and latches.
2. Five years for exit hardware.
3. Twenty five years for manual surface door closer bodies.
4. Ten years for heavy duty floor closers.
5. Two years for shallow depth floor closers.
6. Two years for electromechanical door hardware.
1.8 MAINTENANCE SERVICE

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

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.

B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:

C. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.

D. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.2 HANGING DEVICES

A. Hinges: ANSI/BHMA A156.1 certified butt hinges with number of hinge knuckles as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity, unless otherwise indicated:
   a. Two Hinges: For doors with heights up to 60 inches.
   b. Three Hinges: For doors with heights 61 to 90 inches.
   c. Four Hinges: For doors with heights 91 to 120 inches.
   d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
   a. Widths up to 3’0”: 4-1/2” standard or heavy weight as specified.
   b. Sizes from 3’1” to 4’0”: 5” standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:
a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.
c. Tornado Resistant Assemblies: At a minimum, provide heavy weight hinges with stainless steel screws used in accordance with and specified as part of a Severe Storm Shelter Opening meeting ICC 500 and FEMA 361.

4. Hinge Options: Comply with the following where indicated in the Hardware Sets or on Drawings:
   a. Non-removable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the all out-swinging lockable doors.

5. Acceptable Manufacturers:
   a. Hager Companies (HA).
   b. McKinney Products (MK).

B. Continuous Geared Double-acting Hinges. ANSI/BHMA A156.26 Grade 1-600 Certified continuous geared hinges. Hinges are non-handed and allow the door to swing up to 100 degrees in either direction.

1. Acceptable Manufacturers:
   a. Pemko Manufacturing (PE) – DHS Series.

C. Floor Closers: ANSI/BHMA A156.4 certified floor closers. Provide independent and adjustable valves for closing speed, latch speed, and backcheck with built-in dead stop and hold open features as specified. Provide finished cover plates or thresholds as indicated in door Hardware Sets.

1. Acceptable Manufacturers:
   a. Rixson Door Controls (RF).

D. Pivots: ANSI/BHMA A156.4, Grade 1, certified. Space intermediate pivots equally not less than 25 inches on center apart or not more than 35 inches on center for doors over 121 inches high. Pivot hinges to have oil impregnated bronze bearing in the top pivot and a radial roller and thrust bearing in the bottom pivot with the bottom pivot designed to carry the full weight of the door. Pivots to be UL listed for windstorm where applicable.

1. Acceptable Manufacturers:
   a. Ives (IV).
   b. Rixson Door Controls (RF).
2.3 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: ANSI/BHMA A156.3 and A156.16, Grade 1, certified.
   1. Manual flush bolts to be furnished with top rod of sufficient length to allow bolt location approximately six feet from the floor.
   2. Furnish dust proof strikes for bottom bolts.
   3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
   4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
   5. Acceptable Manufacturers:
      a. Rockwood Manufacturing (RO).
      b. Trimco (TC).

B. Coordinators: ANSI/BHMA A156.3 certified door coordinators consisting of active-leaf, hold-open lever and inactive-leaf release trigger. Model as indicated in hardware sets.
   1. Acceptable Manufacturers:
      a. Rockwood Manufacturing (RO).
      b. Trimco (TC).

C. Door Push Plates and Pulls: ANSI/BHMA A156.6 certified door pushes and pulls of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.
   1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
   2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
   3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
   4. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets.
   5. Acceptable Manufacturers:
      a. Rockwood Manufacturing (RO).
      b. Trimco (TC).

2.4 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.
B. Source Limitations: Obtain each type of keyed cylinder and keys from the same source manufacturer as locksets and exit devices, unless otherwise indicated.

C. Cylinders: Original manufacturer cylinders complying with the following:
   1. Mortise Type: Threaded cylinders with rings and cams to suit hardware application.
   2. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
   3. Bored-Lock Type: Cylinders with tailpieces to suit locks.
   4. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.

D. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
   1. Interchangeable Cores: Core insert, removable by use of a special key; usable with other manufacturers' cylinders.
   2. Removable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware. Provide removable core (small or large format) as specified in Hardware Sets.

E. Patented Cylinders: ANSI/BHMA A156.5, Grade 1, certified patented cylinders employing a utility patented and restricted keyway requiring the use of a patented key. Cylinders are to be protected from unauthorized manufacture and distribution by manufacturer’s United States patents. Cylinders are to be factory keyed with owner having the ability for on-site original key cutting.
   1. Acceptable Manufacturers:
      a. Arrow (AW) – Pointe Flex Series.
      b. Medeco (MC) - X4 Series.

F. Keying System: Each type of lock and cylinders to be factory keyed.
   1. Conduct specified "Keying Conference" to define and document keying system instructions and requirements.
   2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
   3. Existing System: Key locks to Owner's existing system.
   4. New System: Key locks to a new key system as directed by the Owner.

G. Key Quantity: Provide the following minimum number of keys:
   1. Change Keys per Cylinder: Two (2)
   2. Master Keys (per Master Key Level/Group): Five (5).

H. Construction Keying: Provide construction master keyed cylinders.
I. Construction Keying: Provide temporary keyed construction cores.

J. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Acceptable Manufacturers:
   a. Lund Equipment (LU).
   b. MMF Industries (MM).
   c. Telkee (TK).

2.5 MECHANICAL LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): ANSI/BHMA A156.13, Series 1000, Operational Grade 1 certified. Locksets are to be manufactured with a corrosion resistant steel case and be field-reversible for handing without disassembly of the lock body.

1. Extended cycle test: Locks to have been cycle tested in ordinance with ANSI/BHMA 156.13 requirements to 10 million cycles.

2. Acceptable Manufacturers:

B.

2.6 AUXILIARY LOCKS

A. Mortise Deadlocks, Small Case: ANSI/BHMA A156.5, Grade 1, certified small case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. Steel or stainless steel bolts with a 1" throw and hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other specified locksets.

1. Acceptable Manufacturers:
   a. Corbin Russwin Hardware (RU) - DL4100 Series.

2.7 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

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: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.5.
4. Dustproof Strikes: BHMA A156.16.

2.8 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.

2. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer's catalog and template book for specific requirements.

3. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.

4. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.

5. Flush End Caps: Provide flush end caps made of architectural metal in the same finish as the devices as in the Hardware Sets. Plastic end caps will not be acceptable.

6. Electromechanical Options: Subject to same compliance standards and requirements as mechanical exit devices, electrified devices to be of type and design as specified in hardware sets. Include any specific controllers when conventional power supplies are not sufficient to provide the proper inrush current.

7. Egress Pathway Exit Devices: Egress pathway devices connect to the building fire alarm system and when activated begin a looping sequence of synchronized signals integrating flashing LEDs, a conical beam laser and white noise followed by voice commands creating clear pathway to safety and emergency exit locations.
8. Electroluminescent Exit Devices: Increase visibility of exit locations supplementing life safety codes requiring egress path marking systems. Integral "EXIT" green-blue electroluminescent signage provides 3 to 5 times the visibility of other light sources. Devices can be used as a stand-alone feature or wired in conjunction with the fire alarm system.

   a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
   b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

10. Vertical Rod Exit Devices: Provide and install interior surface and concealed vertical rod exit devices as Less Bottom Rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.

11. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.


13. Extended cycle test: Devices to have been cycle tested in ordinance with ANSI/BHMA 156.2 requirements to 9 million cycles.

14. Extended cycle test: Devices to have been cycle tested in ordinance with ANSI/BHMA 156.2 requirements to 50 million cycles.

15. Rail Sizing: Provide exit device rails factory sized for proper door width application.

16. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 certified panic and fire exit hardware devices furnished in the functions specified in the Hardware Sets. Exit device latch to be stainless steel, pullman type, with deadlock feature.

1. Acceptable Manufacturers:
   a. Von Duprin 99 Series

C. Multi-Point Exit Devices for Severe Storm Shelter Openings: Multi-point exit devices specifically engineered for out-swinging door applications on tornado or hurricane resistant safe shelter rooms. Extra heavy duty steel component construction with each of the latching points automatically activated when the device is locked. The multi-point exit device is approved for usage as part of a complete ICC 500 (2008) and FEMA 361 door, frame and hardware assembly.

1. Acceptable Manufacturers:
a. Corbin Russwin Hardware (RU) - FE5400S Series.
b. Sargent Manufacturing (SA) - FM8700 Series.

2.9 DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers including installation and adjusting information on inside of cover.

2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.

3. Cycle Testing: Provide closers which have surpassed 15 million cycles in a test witnessed and verified by UL.

4. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the physically handicapped, provide units complying with ANSI ICC/A117.1.

5. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.

   a. Where closers are indicated to have mechanical dead-stop, provide heavy duty arms and brackets with an integral positive stop.
   
   b. Where closers are indicated to have mechanical hold open, provide heavy duty units with an additional built-in mechanical holder assembly designed to hold open against normal wind and traffic conditions. Holder to be manually selectable to on-off position.
   
   c. Where closers are indicated to have a cushion-type stop, provide heavy duty arms and brackets with spring stop mechanism to cushion door when opened to maximum degree.
   
   d. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics. Provide drop plates or other accessories as required for proper mounting.

6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates, and through-bolt and security type fasteners as specified in the door Hardware Sets.

B. Door Closers, Surface Mounted (Large Body Cast Iron): ANSI/BHMA A156.4, Grade 1 surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control.
1. Acceptable Manufacturers:
   a. LCN 4040 XP
   b. LCN 1462FC

2.10 ARCHITECTURAL TRIM

A. Door Protective Trim
   1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
   2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
   3. Protection Plates: ANSI/BHMA A156.6 certified protection plates (kick, armor, or mop), fabricated from the following:
      a. Stainless Steel: 300 grade, 050-inch thick.
   4. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
   5. Metal Door Edging: Door protection edging fabricated from a minimum .050-inch thick metal sheet, formed into an angle or "U" cap shapes, surface or mortised mounted onto edge of door. Provide appropriate leg overlap to account for protection plates as required. Height to be as specified in the Hardware Sets.
   6. Acceptable Manufacturers:
      a. Hager Companies (HA).
      b. Rockwood Manufacturing (RO).

2.11 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 certified door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.
   1. Acceptable Manufacturers:
a. Hager Companies (HA).
b. Rockwood Manufacturing (RO).
c. Trimco (TC).

C. Overhead Door Stops and Holders: ANSI/BHMA A156.6, Grade 1 certified overhead stops and holders to be surface or concealed types as indicated in Hardware Sets. Track, slide, arm and jamb bracket to be constructed of extruded bronze and shock absorber spring of heavy tempered steel. Provide non-handed design with mounting brackets as required for proper operation and function.

1. Acceptable Manufacturers:

   a. Dorma (DO).
   b. Glynn Johnson (GJ).
   c. Rixson Door Controls (RF).
   d. Rockwood Manufacturing (RO).
   e. Sargent Manufacturing (SA).

2.12 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

   1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

   1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and UBC 7-2, Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Acceptable Manufacturers:

   1. National Guard Products (NG).
   2. Pemko Manufacturing (PE).
2.13 FABRICATION
A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.14 FINISHES
A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.
B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware.
C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION
A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION
A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

3.3 INSTALLATION
A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.
   1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.
B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and 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 specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

E. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Supplier will perform a final inspection of installed door hardware and state in report whether work complies with or deviates from requirements, including whether door hardware is properly installed, operating and adjusted.

3.5 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. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.
C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SCHEDULE

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

B. Refer to Section 080671, Door Hardware Schedule, for hardware sets.

C. Manufacturer’s Abbreviations:

1. MK - McKinney
2. RF - Rixson
3. RO - Rockwood
4. RU - Corbin Russwin
5. VD - Von Duprin
6. MC - Medeco
7. HS - HES
8. TC - Trimco
9. LC - LCN Closers
10. NO - Norton
11. PE - Pemko
12. SU - Securitron
13. SA - Sargent
14. 00 - Other

**Hardware Schedule**

Set: 1.0

Doors: 101A, 103B, 105A

DOOR HARDWARE 087100 - 18
<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>Model/Description</th>
<th>Door Correction</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 Pivot Set</td>
<td>195</td>
<td>626 RF</td>
<td></td>
</tr>
<tr>
<td>4 Pivot</td>
<td>M190</td>
<td>626 RF</td>
<td></td>
</tr>
<tr>
<td>2 Concealed Vert Rod Exit</td>
<td>9947EO</td>
<td>US26D VD</td>
<td></td>
</tr>
<tr>
<td>1 Removable Core Cyl (Mort)</td>
<td>1E74</td>
<td>26 MC</td>
<td></td>
</tr>
<tr>
<td>2 Pull</td>
<td>RM3751-96 Mbg-Type 12</td>
<td>US32D RO</td>
<td></td>
</tr>
<tr>
<td>2 Door Closer</td>
<td>4040XP CUSH</td>
<td>AL LC</td>
<td></td>
</tr>
<tr>
<td>2 Drop Plate</td>
<td>4040XP-18G</td>
<td>AL LC</td>
<td></td>
</tr>
<tr>
<td>1 Threshold</td>
<td>171A</td>
<td>PE</td>
<td></td>
</tr>
<tr>
<td>2 Sweep</td>
<td>18062CNB</td>
<td>PE</td>
<td></td>
</tr>
<tr>
<td><strong>Set: 2.0</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Doors: 101B, 102B</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Floor Closer</td>
<td>626 428N w/Patch Fittings</td>
<td>RF</td>
<td></td>
</tr>
<tr>
<td>4 Pull</td>
<td>RM3341-96</td>
<td>US32D RO</td>
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<td><strong>Set: 3.0</strong></td>
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<tr>
<td>Doors: 100</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Pivot Set</td>
<td>195</td>
<td>626 RF</td>
<td></td>
</tr>
<tr>
<td>2 Pivot</td>
<td>M190</td>
<td>626 RF</td>
<td></td>
</tr>
<tr>
<td>1 Rim Exit Device</td>
<td>99NL-OP 110MD-NL</td>
<td>US26D VD</td>
<td></td>
</tr>
<tr>
<td>1 Pull</td>
<td>RM3341-36</td>
<td>US32D RO</td>
<td></td>
</tr>
<tr>
<td>1 Door Closer</td>
<td>4040XP CUSH</td>
<td>AL LC</td>
<td></td>
</tr>
<tr>
<td>1 Drop Plate</td>
<td>4040XP-18G</td>
<td>AL LC</td>
<td></td>
</tr>
<tr>
<td>1 Threshold</td>
<td>171A</td>
<td>PE</td>
<td></td>
</tr>
<tr>
<td>1 Sweep</td>
<td>18062CNB</td>
<td>PE</td>
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<td><strong>Set: 4.0</strong></td>
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<tr>
<td>Doors: 115B, 115C, 117B, 117C</td>
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<td>1 NOT USED</td>
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<td><strong>Set: 5.0</strong></td>
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<tr>
<td>Doors: 115B, 115C, 117B, 117C</td>
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<tr>
<td>3 Hinge (heavy weight)</td>
<td>T4A3786 4-1/2&quot; x 4-1/2&quot;</td>
<td>US26D MK</td>
<td></td>
</tr>
<tr>
<td>1 Exit Device (rim, passage)</td>
<td>99NL-OP 110MD-NL</td>
<td>630 VD</td>
<td></td>
</tr>
<tr>
<td>1 Door Closer</td>
<td>4040XP CUSH</td>
<td>AL LC</td>
<td></td>
</tr>
<tr>
<td>1 Gasketing</td>
<td>S773W</td>
<td>PE</td>
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</tr>
</tbody>
</table>

DOOR HARDWARE 087100 - 19
Set: 6.0

Doors: 118A, 210A, 211A

3 Hinge (heavy weight) NRP  T4A3386 5" x 4-1/2" NRP          US32D MK
1 Fire Rated Rim Exit 99L-F 996L(Std)      US26D VD
1 Removable Core Cyl (Rim) 1E72        26 MC
1 Surface Closer 4040XP EDAw/62G          AL LC
1 Kick Plate K1050 10" x 2" LDW x 4BE         US32D RO

Set: 7.0

Doors: 102A, 105B

8 Hinge (heavy weight)  T4A3786 4-1/2" x 4-1/2"          US26D MK
2 Fire Rated Surf Vert Rod 9927L-F LBR 996L(Std)      US26D VD
2 Removable Core Cyl (Rim) 1E72        26 MC
2 Surface Closer 1461 FC REG          AL LC
2 Kick Plate K1050 10" x 2" LDW x 4BE         US32D RO
2 Electromagnetic Holder 998          689 RF
1 Gasketing S773W                   PE

Set: 8.0

Doors: 106, 107

3 Hinge (heavy weight)  T4A3786 4-1/2" x 4-1/2"          US26D MK
1 Push Plate 70C                   US32D RO
1 Pull Plate 111x70C             US32D RO
1 Surface Closer 1461 FC REG    AL LC
1 Kick Plate K1050 10" x 2" LDW x 4BE         US32D RO
1 Wall Stop 409              US32D RO

Set: 9.0

Doors: 108, 109, 2, 202, 203, 206

3 Hinge  TA2714 4-1/2" x 4-1/2"          US26D MK
1 Mortise Lock (storeroom) ML2057 125R LC  626 RU
1 Removable Core Cyl (Mort) 1E74        26 MC
1 Wall Stop 409              US32D RO

Set: 10.0
### MITCHELL HALL BUILDING ADDITION UCO
EDMOND, OK

### DOOR HARDWARE 087100 - 21

**Doors: 110, 113, 118B**

<table>
<thead>
<tr>
<th>Item</th>
<th>Model/Description</th>
<th>Quantity</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge</td>
<td>TA2714 4-1/2&quot; x 4-1/2&quot;</td>
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<td>US26D</td>
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<tr>
<td>1 Mortise Lock (classroom)</td>
<td>ML2055 125R LC</td>
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<tr>
<td>1 Removable Core Cyl (Mort)</td>
<td>1E74</td>
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<td></td>
</tr>
<tr>
<td>1 Surface Closer</td>
<td>1461 FC REG</td>
<td></td>
<td>AL LC</td>
</tr>
<tr>
<td>1 Kick Plate</td>
<td>K1050 10&quot; x 2&quot; LDW x 4BE</td>
<td></td>
<td>US32D</td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>409</td>
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<td>US32D</td>
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**Set: 11.0**

**Doors: 111, 112, 207, 208, 3, 4**

<table>
<thead>
<tr>
<th>Item</th>
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<th>Quantity</th>
<th>Finish</th>
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</thead>
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<tr>
<td>3 Hinge</td>
<td>TA2714 4-1/2&quot; x 4-1/2&quot;</td>
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<tr>
<td>1 Mortise Lock (privacy)</td>
<td>ML2030 125R</td>
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<tr>
<td>1 Surface Closer</td>
<td>1461 FC REG</td>
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<td>AL LC</td>
</tr>
<tr>
<td>1 Kick Plate</td>
<td>K1050 10&quot; x 2&quot; LDW x 4BE</td>
<td></td>
<td>US32D</td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>409</td>
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**Set: 12.0**

**Doors: 119, 120, 121, 209**

<table>
<thead>
<tr>
<th>Item</th>
<th>Model/Description</th>
<th>Quantity</th>
<th>Finish</th>
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</thead>
<tbody>
<tr>
<td>3 Hinge</td>
<td>TA2714 4-1/2&quot; x 4-1/2&quot;</td>
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<td>US26D</td>
</tr>
<tr>
<td>1 Office Lock</td>
<td>ML2051 125R LC</td>
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</tr>
<tr>
<td>1 Removable Core Cyl (Mort)</td>
<td>1E74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>409</td>
<td></td>
<td>US32D</td>
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</tbody>
</table>

**Set: 13.0**


<table>
<thead>
<tr>
<th>Item</th>
<th>Model/Description</th>
<th>Quantity</th>
<th>Finish</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 Hinge (heavy weight)</td>
<td>TA43786 4-1/2&quot; x 4-1/2&quot;</td>
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<td>US26D</td>
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<tr>
<td>1 Deadbolt</td>
<td>DL4117 LC</td>
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<tr>
<td>1 Removable Core Cyl (Mort)</td>
<td>1E74</td>
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<td></td>
</tr>
<tr>
<td>1 Push Plate</td>
<td>70C</td>
<td></td>
<td>US32D</td>
</tr>
<tr>
<td>1 Pull Plate</td>
<td>111x70C</td>
<td></td>
<td>US32D</td>
</tr>
<tr>
<td>1 Kick Plate</td>
<td>K1050 10&quot; x 2&quot; LDW x 4BE</td>
<td></td>
<td>US32D</td>
</tr>
<tr>
<td>1 Wall Stop</td>
<td>409</td>
<td></td>
<td>US32D</td>
</tr>
</tbody>
</table>

**Notes:** CLOSERS DELETED
DEADLOCK USED ONLY IF ROOM IS CLOSED FOR REPAIR OR SERVICE.

DOOR HARDWARE 087100 - 21
Set: 14.0

Doors: 114, 200

3 Hinge
1 Mortise Lock (storeroom)
1 Removable Core Cyl (Mort)
1 Surface Closer
1 Wall Stop

Set: 15.0

Doors: 103A

3 Hinge (heavy weight)
1 Mortise Lock (classroom)
1 Surface Closer
1 Kick Plate
1 Wall Stop
1 Gasketing

Set: 16.0

Doors: 115A, 117A

3 Hinge
1 Multi-Point Exit Device
1 Removable Core Cyl (Rim)
1 Surface Closer
1 Threshold
1 Gasketing
1 Door Bottom

Set: 17.0

Doors: 123A, 123B, 124

3 Hinge
1 Mortise Lock (classroom)
1 Removable Core Cyl (Mort)
1 Wall Stop

Set: 18.0

Doors: 201
<table>
<thead>
<tr>
<th>Item Description</th>
<th>Model/Description</th>
<th>Quantity</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Hinge (heavy weight)</td>
<td>T4A3786 4-1/2&quot; x 4-1/2&quot;</td>
<td>6</td>
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<tr>
<td>Dust Proof Strike</td>
<td>570</td>
<td>1</td>
<td>US26D RO</td>
</tr>
<tr>
<td>Flush Bolt</td>
<td>2942</td>
<td>1</td>
<td>US26D RO</td>
</tr>
<tr>
<td>Mortise Lock (storeroom)</td>
<td>ML2057 125R LC</td>
<td>1</td>
<td>626 RU</td>
</tr>
<tr>
<td>Removable Core Cyl (Mort)</td>
<td>1E74</td>
<td>1</td>
<td>26 MC</td>
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<tr>
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<td>2672</td>
<td>1</td>
<td>US28 RO</td>
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<td>CLOSERS DELETED</td>
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<tr>
<td>Set: 19.0</td>
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<td>Doors: 210B, 211B</td>
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<tr>
<td>Hinge (heavy weight)</td>
<td>T4A3786 4-1/2&quot; x 4-1/2&quot;</td>
<td>3</td>
<td>US26D MK</td>
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<tr>
<td>Fire Rated Rim Exit</td>
<td>99L-F 996L(Std)</td>
<td>1</td>
<td>US26D VD</td>
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<tr>
<td>Removable Core Cyl (Rim)</td>
<td>1E72</td>
<td>1</td>
<td>26 MC</td>
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<tr>
<td>Surface Closer</td>
<td>1461 FC REG</td>
<td>1</td>
<td>AL LC</td>
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<tr>
<td>Kick Plate</td>
<td>K1050 10&quot; x 2&quot; LDW x 4BE</td>
<td>1</td>
<td>US32D RO</td>
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<tr>
<td>Wall Stop</td>
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<tr>
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<td>626 RU</td>
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<tr>
<td>Removable Core Cyl (Mort)</td>
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<td>26 MC</td>
</tr>
<tr>
<td>Surface Closer</td>
<td>4040XP EDAw/62G</td>
<td>1</td>
<td>AL LC</td>
</tr>
<tr>
<td>Gasketing</td>
<td>S773W</td>
<td>1</td>
<td>PE</td>
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END OF SECTION 087100

DOOR HARDWARE

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