

Seaside Rehabilitation and Health Care Center
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SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Commercial door hardware for the following:
 - a. Swinging doors.
 - 2. Cylinders for doors specified in other Sections.
 - 3. Electrified door hardware.
 - 4. On site inspection of installed hardware, including proper installation of closers for degree of swing.
 - 5. Job site meeting for locating magnetic hold open devices.
- B. Related Sections include the following:
 - 1. Division 08 Section "Steel Doors and Frames" for kerf weatherstripping, smoke seals provided as part of the frame.
 - 2. Division 08 Section "Wood Doors" for astragals provided as part of a fire-rated labeled assembly.
 - 3. Division 08 Section "Aluminum-Framed Entrances and Storefronts" for partial entrance door hardware.

1.3 SUBMITTALS

- A. General: Submit in accordance with Division 01 Section "Submittal Procedures."
 - 1. Submittals for Division 08 Sections "Hollow Metal Doors and Frames," "Wood Doors," "Aluminum-Framed Entrances and Storefronts," and "Door Hardware" shall be made concurrently.
- B. Product Data: For each product specified. Include installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- C. Shop Drawings: Details of electrified door hardware, indicating the following:
 - 1. Wiring Diagrams: Detail wiring for power, signal, and control systems and differentiate between manufacturer-installed and field-installed wiring. Include the following:
 - a. System schematic.
 - 2. Detail interface between electrified door hardware and fire alarm system.
- D. Samples: For exposed door hardware of each type indicated below, in specified finish, full size. Tag with full description for coordination with the Door Hardware Schedule. Submit samples before, or concurrent with, submission of the final Door Hardware Schedule.
 - 1. As requested by Architect.

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2. Samples will be returned to Contractor. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated into the Work, within limitations of keying requirements.
- E. 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.
 - a. Organize door hardware sets in same order as in the Door Hardware Schedule at the end of Part 3.
 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 each 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. Description of each electrified door hardware function, including location .
 - i. Provide hardware for every door in the project, except as indicated, so that each door functions correctly for its intended use. Where a door is not included in the Door Hardware Schedule at end of Part 3, provide hardware scheduled for similar type opening and review with Architect.
 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, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- F. Pre-Order Meeting Minutes: Submit meeting notes regarding coordination, modifications and changes.
- G. Keying Schedule: Meet directly with the Owner to review hardware function and keying requirements. Prepare keying schedule by or under the supervision of supplier, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.
- H. Qualification Data: For firms and persons specified in "Quality Assurance" Article.
1. Include lists of completed projects with project names and addresses of architects and owners, and other information specified.
- I. Maintenance Data: For each type of door hardware to include in maintenance manuals specified in Division 01Section "Operation and Maintenance Data."
- J. Warranties: Special warranties specified in this Section.

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1.4 QUALITY ASSURANCE

- A. **Installer Qualifications:** An experienced installer who has completed 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.
- B. **Supplier Qualifications:** Door hardware supplier with warehousing facilities in Project's vicinity and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.
 - 1. **Electrified Door Hardware Supplier Qualifications:** An experienced door hardware supplier who has completed projects with electrified door hardware similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance, and who is acceptable to manufacturer of primary materials.
 - 2. **Scheduling Responsibility:** Preparation of door hardware and keying schedules.
- C. **Architectural Hardware Consultant Qualifications:** A person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.
 - 1. Architectural hardware consultant shall be a full time employee of the hardware supplier, shall be located within 2 hours driving time of the project site, and participate in job site meetings, keying and hardware function reviews, coordination and field examination of installed hardware.
- D. **Source Limitations:** Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
- E. **Pre-Ordering Meeting:** Before ordering hardware, have a meeting with the Contractor, Owner and Architect to review hardware functions, door swing clearances and closer requirements, requirements and conflicts with hold open devices, electronic locking, door stops and other similar hardware requirements affecting the use and operation of each opening.
 - 1. Prepare a list of questions, potential conflicts and questions and distribute to the Architect 5 days before the meeting.
 - 2. Shop drawings, door and frame shop drawings and door hardware schedule shall be furnished to the Architect at least 10 days before the meeting.
 - 3. Review each door on the project and record meeting notes regarding any coordination, modifications and changes. Submit meeting minutes within 3 days of meeting date.
- F. **Conditions and Coordination:** Hardware supplier shall determine conditions and materials of all doors and frames for proper application of hardware.
 - 1. The Hardware Schedule shall list the actual product series numbers. Hardware supplier shall follow manufacturers' catalog requirement for the actual size of door closers, brackets and holders. Door opening sizes are as noted on the Door and Frame Schedule and all hardware shall be in strict accordance with requirements of height, width, and thickness.
- G. **Regulatory Requirements:** Comply with provisions of the following:
 - 1. Comply with all applicable codes. Comply with Americans with Disabilities Act (ADA), as follows:

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- a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - 1) Operable parts of such hardware shall be 34 inches minimum and 48 inches maximum above the finish floor or ground.
 - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
 - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
 - 2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - c. Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.
2. NFPA 101: Comply with the following for means of egress doors:
- a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
 - b. Delayed-Egress Locks: Lock releases within 15 seconds after applying a force not more than 15 lbf for not more than 3 seconds.
 - c. Door Closers: Not more than 30 lbf to set door in motion and not more than 15 lbf to open door to minimum required width.
 - d. Thresholds: Not more than 1/2 inch high.
3. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- H. Fire-Rated Door Assemblies: Provide door hardware for 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 at positive pressure according to NFPA 252.
1. Test Pressure: After 5 minutes into the test, neutral pressure level in furnace shall be established at 40 inches or less above the sill (Positive pressure).
- I. Keying Conference: Conduct conference directly with the Owner. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:
1. Function of building, flow of traffic, purpose of each area, degree of security required, and plans for future expansion.
 2. Requirements for key control system.
 3. Address for delivery of keys.
- J. Preinstallation Conference: Conduct conference at Project site with hardware supplier and hardware installer to comply with requirements in Division 01 Section "Project Management and Coordination." Review methods and procedures related to door hardware including, but not limited to, the following:
1. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.
 2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
 3. Review required testing, inspecting, and certifying procedures.
 4. Review proper installation procedures for locksets, exit devices and closers with Installer and Hardware Supplier.
 5. Coordinate job site meeting for locating wall stops and magnetic hold open devices for concealed blocking locations.

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6. Coordinate on site inspection of installed hardware, including proper installation of closers for degree of swing, allowing doors to open to door stops without binding.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- 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 keys to Owner by registered mail or overnight package service.

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 door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.
- B. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to fire alarm system.

1.7 WARRANTY

- A. General Warranty: 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. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
 1. Structural failures including excessive deflection, cracking, or breakage.
 2. Faulty operation of operators.
 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
- C. Warranty Period for Manual Closers: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this Section, and the Door Hardware Schedule at the end of Part 3.
 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturer's products.
 2. Sequence of Operation: Provide electrified door hardware function, sequence of operation, and interface with other building control systems indicated.
- B. Designations: Requirements for function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Schedule at the end of Part 3.

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2.2 HINGES AND PIVOTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Hinges:
 - a. Hager Companies.
 - b. McKinney Products Company; Div. of ESSEX Industries, Inc.
 - c. Stanley Commercial Hardware; Div. of The Stanley Works.

- B. Standards: Comply with the following:
1. Butts and Hinges: BHMA A156.1.
 2. Template Hinge Dimensions: BHMA A156.7.
 3. Self-Closing Hinges and Pivots: BHMA A156.17.

- C. Quantity: Provide the following, unless otherwise indicated:
1. Two Hinges: For doors with heights up to 60 inches.
 2. Three Hinges: For doors with heights 61 to 90 inches.
 3. Four Hinges: For doors with heights 91 to 120 inches.
 4. 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.
 5. Self-Closing Hinges: Provide two spring hinges per door leaf, with balance of hinges ball bearing type.

- D. Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

Maximum Door Size (inches)	Hinge Height (inches)	Metal Thickness (inches)	
		Standard Weight	Heavy Weight
40 and under by 1-3/4	4-1/2	0.134	0.180
Over 40 by 1-3/4	5	0.146	0.190

- E. Hinge Weight: Unless otherwise indicated, provide the following:
1. Entrance Doors: Heavy-weight hinges.
 2. Interior Doors with Closers: Antifriction-bearing hinges.
 3. Interior Doors:
 - a. General: Standard-weight hinges, oil-impregnated bearings unless specified otherwise.
 - b. Interior doors at Stairs: Shall be heavy weight hinges.
 - c. Interior Wide Throw Hinges: Shall be heavy weight bearing hinges.

- F. Hinge Base Metal: Unless otherwise indicated, provide the following:
1. Exterior Hinges: Stainless steel, with stainless-steel pin.
 2. Interior Hinges: Steel, with steel pin or stainless steel, with stainless-steel pin..
 3. Hinges for Fire-Rated Assemblies: Steel, with steel pin.

- G. Hinge Options: Comply with the following:
1. Nonremovable 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 following applications:
 - a. Outswinging exterior doors.

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- b. Outswinging interior doors with locks.
- 2. Corners: Square.

H. Fasteners: Comply with the following:

- 1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
- 2. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
- 3. Screws: Phillips flat-head screws; machine screws (drilled and tapped holes) for metal doors. Finish screw heads to match surface of hinges.
- 4. Stainless steel for stainless steel hinges.

2.3 LOCKS AND LATCHES

A. Bored Locks: BHMA A156.2, Grade 1 and Grade 2; Series 4000.

- 1. Falcon Lock Company, an Ingersal Rand Group company, of type and function scheduled.
- 2. T Series and W Series cylindrical lock and latchsets as scheduled.
 - a. Dane lever, 3-1/2 inch diameter rose..
 - b. 6 pin interchangeable cores.
 - c. 2-3/4 inch backset.

B. Auxiliary Locks: BHMA Grade 1.

C. Lock Trim: Comply with the following:

- 1. Lever: Forged or Cast.
- 2. Escutcheon (Rose): Wrought.
- 3. Dummy Trim: Match lock trim and escutcheons.

D. Lock Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:

- 1. Minimum 1/2-inch latchbolt throw.
- 2. Deadbolts: Minimum 1-inch bolt throw.

E. Backset: 2-3/4 inches, unless otherwise indicated.

2.4 DOOR BOLTS

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

- 1. Surface Bolts:
 - a. Glynn-Johnson; an Ingersoll-Rand Company.
 - b. Ives: H. B. Ives.
 - c. Rockwood Manufacturing Company.
- 2. Flush Bolts:
 - a. Door Controls International.
 - b. Glynn-Johnson; an Ingersoll-Rand Company .
 - c. Ives: H. B. Ives.
 - d. Rixson-Firemark, Inc.; Div. of Yale Security Inc.
 - e. Rockwood Manufacturing Company.

B. Standards: Comply with the following:

- 1. Surface Bolts: BHMA A156.16.
- 2. Automatic and Self-Latching Flush Bolts: BHMA A156.3.

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3. Manual Flush Bolts: BHMA A156.16.
- C. Surface Bolts: BHMA Grade 1.
 1. Flush Bolt Heads: Minimum of 1/2-inch- diameter rods of brass, bronze, or stainless steel with minimum 24-inch- long rod for doors up to 84 inches in height. Provide longer rods as necessary for doors exceeding 84 inches.
- D. Flush Bolts: BHMA Grade 1, designed for mortising into door edge.
- E. Bolt Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:
 1. Surface Bolts: Minimum 7/8-inch throw.
 2. Fire-Rated Surface Bolts: Minimum 1-inch throw; listed and labeled for fire-rated doors.
 3. Mortise Flush Bolts: Minimum 3/4-inch throw.
- F. Strikes: Provide matching strikes for heads of doors. Provide dust proof strikes at all floor locations.

2.5 EXIT DEVICES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 1. Precision Hardware, Inc.; Apex Series. Provide narrow design devices for doors scheduled.
 2. Sargent Manufacturing Company; 80 Series.
 - a. Sargent 80 Series. Provide narrow design devices for doors scheduled.
 3. Von Duprin; 98 Series. Provide narrow design devices for doors scheduled.
 4. At electric rooms, provide (Precision)Apex Series. Sargent 30 Series or Von Duprin 22 Series.
- B. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
 1. Non-rated exit devices shall have cylinder dogging.
- C. Fire Exit Devices: Complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.
- D. Outside Trim: Lever with cylinder; Cylinder at doors scheduled to receive pulls; material and finish to match locksets, unless otherwise indicated.
 1. Match design for locksets and latchsets, unless otherwise indicated.

2.6 CYLINDERS AND KEYING

- A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following. :
- B. Manufacturers: Subject to compliance with requirements, provide products by the following:
 1. Cylinders: Provide for exit devices, locksets, locks and latches, 6 pin removable core to match locksets.
- C. Standards: Comply with the following:

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1. Cylinders: BHMA A156.5.
- D. Cylinder Grade: BHMA Grade 1.
- E. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
1. Removable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.
- F. Construction Keying: Comply with the following:
1. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.
 - a. Replace construction cores with permanent cores at completion of project.
- G. Keying System: Unless otherwise indicated, provide a factory-registered keying system complying with the following requirements:
1. Master Key and/or Grand Master Key System: Cylinders are operated by a change key, a master key, and a grand master key.
 2. Master Keys shall be sent to the Owner by registered mail, return receipt required.
 3. Furnish manufacturer's job number to Architect and Owner.
- H. Keys: Provide nickel-silver keys complying with the following:
1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
 - a. Notation: "DO NOT DUPLICATE."
 2. Quantity: In addition to one extra blank key for each lock, provide the following:
 - a. Cylinder Change Keys: Three for each cylinder keyed differently; Six for each set keyed alike; Four for sets where only two cylinders are keyed alike.
 - b. Master Keys, Grand Master Keys: Six for each set.
- 2.7 STRIKES
- A. Manufacturers: Same manufacturer as lock, latch and device bolt engaging into strike.
- B. Standards: Comply with the following:
1. Strikes for Cylindrical Locks and Latches: BHMA A156.13.
 2. Strikes for Auxiliary Deadlocks: BHMA A156.5.
 3. Dustproof Strikes: BHMA A156.16.
- C. 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.
- D. Dustproof Strikes: BHMA Grade 1.
- 2.8 OPERATING TRIM
- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Burns Manufacturing Incorporated.
 2. NT Quality Hardware; an Ingersoll-Rand Company.
 3. Rockwood Manufacturing Company.

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- B. Standard: Comply with BHMA A156.6, solid bar.
- C. Materials: Fabricate from stainless steel, unless otherwise indicated.
 - 1. Door Pulls: 1inch diameter by 10 inches long, concealed mount.
 - Rockwood BF111
 - Burns BF26C
 - Quality BF163-10"
 - 2. Push/Pull Bars: 1inch diameter.
 - Rockwood BF11147 x T1006 Mounting
 - Burns BF26C x 442 x Sim. Mounting as Above
 - Quality BF482 x Sim. Mounting as Above

2.9 ACCESSORIES FOR PAIRS OF DOORS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Coordinators:
 - a. Door Controls International.
 - b. Glynn-Johnson; an Ingersoll-Rand Company.
 - c. Hager Companies.
 - d. Rockwood Manufacturing Company.
 - 2. Removable Mullions:
 - a. Von Duprin.
- B. Standards: Comply with the following:
 - 1. Coordinators: BHMA A156.3, Type #21.
 - a. Shall be provided at all pairs of label doors equipped with overlapping astragals or where improper closing sequence would interfere with proper operating of doors.
 - b. Furnish filler pieces to close opening between coordinator and jamb of frame. Provide mounting brackets as required for proper mounting of additional hardware.
 - c. Models: Hager 297D, Door Controls 600 Series, Glynn Johnson Series "COR", or Rockwood 1600 Series.
 - 2. Removable Mullions: BHMA A156.3, steel. Powder coat finish to match aluminum doors.
 - a. VonDuprin aluminum mullion 5654 with weatherstripping and back to back strikes, or equal.

2.10 CLOSERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Surface-Mounted Closers:
 - a. LCN Closers; an Ingersoll-Rand Company).
 - b. Sargent Manufacturing Company; an ASSA ABLOY Group company Div. of ESSEX Industries, Inc.
- B. Standards: Comply with the following:
 - 1. Closers: BHMA A156.4.
 - 2. Closer Holder Release Devices: BHMA A156.15.
- C. Surface Closers: BHMA Grade 1, cast-iron body.

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1. Door closers shall have fully hydraulic, full rack and pinion action. Cylinder body shall be 1-1/2" in diameter, and double heat treated pinion shall be 11/16" in diameter.
2. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for the physically handicapped. Hydraulic regulation shall be by tamper-proof, non-critical valves. Closers shall have separate adjustment for latch speed, general speed, and hydraulic back-check.
3. All closers shall have solid forged steel main arms (and forged forearms for parallel arm closers).
4. Closer arms shall have a powder coating finish.
5. Provide drop, mounting plates for aluminum doors and where required to conceal back of closer.
6. Do not locate closers on the side of doors facing corridors, passageways or similar type areas. Where it is necessary, due to certain conditions and approval of the Architect, to have closers in corridors, provide such closers with parallel arms.
7. Door closers shall be adjusted by the installer in accordance with the manufacturer's templates and written instructions. Closers with parallel arms shall have back-check features adjusted prior to installation.
8. Closers shall conform to all applicable code and law requirements relative to setting closing speeds for closers and maximum pressure for operating interior and exterior doors.
9. Provide closers with full plastic covers, painted to finish indicated.
10. Models:

	LCN	Sargent
Exterior	4111S-CUSH	281 - CPS
	4111S-H-CUSH	281 - CPSH
Interior	4011	281 - 0
	4111	281 - P10
	4111S-CUSH	281 - CPS
	4111S-H-CUSH	281 - CPSH
	4040SEL	2468
Interior- For Electric Room, Mechanical Room, Storage, Soiled Linen, Clean Linen	1461 Series	1431 Series

- D. Swing: Allow door to swing to the maximum degree opening allowable for the swing condition. Where doors with closers do not have a bumper stop, provide closer with CUSH-N-STOP feature. Do not allow leading edge of door to swing into the path of an adjacent door opening.
- E. Size of Units: Unless otherwise indicated, comply with manufacturer's written recommendations for size of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to meet field conditions and requirements for opening force.

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2.11 PROTECTIVE TRIM UNITS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Metal Protective Trim Units:
 - a. Burns Manufacturing Incorporated.
 - b. Don-Jo Mfg., Inc..
 - c. Rockwood Manufacturing Company.
- B. Standard: Comply with BHMA A156.6.
- C. Materials: Fabricate protection plates from the following:
 - 1. Stainless Steel: 0.050 inch thick; beveled top and 2 sides.
- D. Fasteners: Provide manufacturer's oval head exposed fasteners for door trim units consisting of either machine or self-tapping screws, for installation in counter sunk holes.
- E. Furnish protection plates sized 2 inches less than door width on push side by the following height:
 - 1. Armor Plates: 34 inches.
 - 2. Kick Plates: 8 inches
- F. Door Edge Protectors: InProCorp, 0.060 inch thick PVC 1-inch legs by door thickness, U-shape door edge protectors, full height of door, water based contact adhesive attachment. Color as selected by Architect.

2.12 STOPS AND HOLDERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Glynn-Johnson; an Ingersoll-Rand Company.
 - 2. Hager Companies.
 - 3. Ives: H. B. Ives.
 - 4. Rixson-Firemark, Inc.; Div. of Yale Security Inc. .
 - 5. Rockwood Manufacturing Company.
- B. Standards: Comply with the following:
 - 1. Stops and Bumpers: BHMA A156.16.
 - 2. Mechanical Door Holders: BHMA A156.16.
 - 3. Electromagnetic Door Holders: BHMA A156.15.
 - 4. Door Silencers: BHMA A156.16.
- C. Stops and Bumpers: BHMA Grade 1.
 - 1. Wall Stops: Convex with concealed mounting.
 - 2. Floor Stops: Dome stop, base thickness to accommodate flooring thickness.
- D. Combination Floor and Wall Stops and Holders: BHMA Grade 1.
 - 1. Cast floor stop with hook and eye.
- E. Electromagnetic Door Holders for Labeled Fire Door Assemblies: Coordinate with fire detectors and interface with fire alarm system and interface with access control system.

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Coordinate mounting and projection requirements to hold back door to the maximum swing possible.

1. Provide concealed wired units.
2. Provide device type and location that does not require the use of chain extensions.
 - a. Field verify location and conditions, and coordinate with the hardware schedule.

F. Wall Stops: For doors, unless floor or other type stops are scheduled or indicated. Do not mount floor stops where they will impede traffic.

1. Where floor or wall stops are not appropriate, provide heavy duty overhead holders.
 - a. Glynn-Johnson GJ90.
 - b. Sargent 590.

G. Silencers for Metal Door Frames: BHMA Grade 1; neoprene or rubber, minimum diameter 1/2 inch; fabricated for drilled-in application to frame.

2.13 SLIDING DOOR HARDWARE

A. Heavy Duty Pocket Door Sliding Hardware: Stanley PDF150FN, pocket door heavy duty hardware set. (No substitution of hardware capacity. Sizing based upon ease of operation, not door weight) Locate stops for proper clearance of door pulls.

1. Pulls: Rockwood 102, 5/8-inch diameter by 6 inch, 2 inch projection.

2.14 DOOR GASKETING

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

1. Door Gasketing and Door Bottoms:
 - a. National Guard Products, Inc..
 - b. Pemko Manufacturing Co., Inc.
 - c. Reese Enterprises, Inc.
 - d. Zero International, Inc.

B. General: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.

1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
2. Meeting Stile Gasketing: Fasten to meeting stiles, forming seal when doors are closed.
3. Door Bottoms: Flexible multi-fin, apply to bottom of door, forming seal with threshold when door is closed.

C. Weather-Strip Gasketing Models: Listed manufacturers with comparable models to the following:

Product	Pemko	Reese	NGP
Thresholds	as detailed		
Brush Seal	45062AP	970	A626A
Door Sweep	345AV	353	101AV (Sweeps provided in addition to door bottoms)
Set Astragals	Pemko 29310CPK, concealed fastener		
Rain Drip	346C	R201A	16AD
Door Bottom	234PK		

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Smoke Seals

Head and Jambs: Kerf gasketing specified in Division 08 Section "Hollow Metal Doors and Frames."

Set of Astragals: Surface applied with concealed fasteners, brush seal with aluminum retainer, equal to Pemko 29324CNB.

- D. Fire-Labeled and Smoke 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 10B or NFPA 252.
1. Head and Jambs: Kerf gasketing specified in Division 08 Section "Hollow Metal Doors and Frames."

2.15 THRESHOLDS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. National Guard Products, Inc.
 2. Pemko Manufacturing Co., Inc.
 3. Reese Enterprises, Inc.
 4. Zero International, Inc.
- B. Standard: Comply with BHMA A156.21.
- C. General: Extruded aluminum, depth as required for sill condition. Where thresholds extend out beyond face of frame, provide returned closed ends by miter cutting on a 45 degree angle and return to face of frame.
- D. Height: 1/2 inch ADA compliant.

2.16 FABRICATION

- A. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.
- B. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
 2. Steel Machine or Wood Screws: For the following fire-rated applications:
 - a. Mortise hinges to doors.
 - b. Strike plates to frames.
 - c. Closers to doors and frames.
 3. Spacers or Sex Bolts: For through bolting of hollow metal doors.

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4. Fasteners for Wood Doors: Comply with requirements of DHI WDHS.2, "Recommended Fasteners for Wood Doors."
5. Fasteners for exterior doors shall be stainless steel.

2.17 FINISHES

- A. Standard: Comply with BHMA A156.18.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.
- D. BHMA Designations: Comply with base material and finish requirements indicated by the following:
 1. BHMA 626 (US26D): Satin chromium plated over nickel, over brass or bronze base metal.
 2. BHMA 630 (US32D): Satin stainless steel, over stainless-steel base metal.
- E. With the exceptions of exit devices, door closers, plates, push bars, pulls, thresholds and weatherstripping, all hardware items shall be furnished in dull chrome finish 26D.
 1. Exceptions are as follows:

Exit Devices:	32D
Door Closers:	Sprayed Aluminum
Plates:	32D
Push Bars:	32D
Pulls:	32D
Thresholds:	Aluminum
Astragal Seals:	Anodized Aluminum
Hardware Mullion:	Powder coated to match door.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Contractor shall examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance. If errors in dimensions or preparation are encountered, they are to be corrected by the responsible parties prior to the installation of hardware.
- B. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

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3.2 PREPARATION

- A. Steel Doors and Frames: Comply with DHI A115 series.
 - 1. Surface-Applied Door Hardware: Drill and tap doors and frames according to SDI 107.
- B. Wood Doors: Comply with DHI A115-W series.

3.3 INSTALLATION

- A. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
 - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
 - 2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
 - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
 - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Exit devices shall be carefully installed so as to permit friction free operation of crossbar, touch bar and lever. Latching mechanism shall also operate freely without friction or binding. Verify vertical rods stay in the retracted positions and do not rub on the floor.
- D. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings. Verify location with Architect.
 - 1. At doors with local power supplies, provide the low voltage wire and connections from the power supply to the hinge.
 - 2. At electrified hardwired locks, provide the low voltage wiring and terminations within the door from the hinge to the lock.
- E. Magnetic Hold Open Devices: After installation of door frames in rough stud opening, meet with contractor and electrical subcontractor to verify door swing and mounting location for all magnetic hold open devices to assure proper device selection, attachment and function of magnetic hold opens without the use of extension chains.
- F. Door closers shall be installed in accordance with the manufacturer's instructions. Each door closer shall be carefully installed, on each door, at the degree of opening dictated by the frame condition relative to adjacent construction and clearances to permit full swing of the door to the door stops. Arm position shall be as shown on the instruction sheets.
- G. The adjustments for all door closers shall be the installer's responsibility and these adjustments shall be made at the time of installation of the door closer. The closing speed and the latching speed valves shall be adjusted individually to provide a smooth, continuous closing action without slamming. The delayed action feature or back check valve shall also be adjusted so as to permit the correct delayed action cycle or hydraulic back check cushioning of the door in the

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opening cycle. All valves shall be properly adjusted at the time of installation. Each door closer has adjustable spring power capable of being adjusted, in the field, from size 1 thru 6. It shall be the installer's responsibility to adjust the spring power for each door closer in exact accordance with the spring power adjustment chart illustrated in the door closer installation sheet packed with each door closer. Coordinate installation of hinges in wood doors to prevent requiring the removal and reinstallation of screws into the edges. Do not remove screws after they have been installed on fire rated doors. Provide proper torque on screws without over tightening and stripping.

- H. Thresholds: Set thresholds for exterior doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."
- I. Door Edge Protectors: Allow materials to acclimate to room temperature, but not less than 65 degrees F.
 - 1. Apply contact adhesive to fully coat edge of door, using care not to apply adhesive to door faces. Apply contact adhesive to fully coat back of U-channel, using care not to apply adhesive to channel legs. After contact adhesive has dried, apply edge protectors and pressure roll edge to assure material is fully set in adhesive. Top and bottom of protectors shall be cut square and be flush with top and bottom of doors.
- J. Prior to Substantial Completion, the installer, accompanied by representative of the supplier of latchsets and locksets, closers, door control devices, and other major hardware, shall perform the following work:
 - 1. Examine and re-adjust each item of door hardware as necessary to restore function of doors and hardware to comply with specified requirements. Review the location of door closers and verify door closers are properly installed for the degree of swing required to permit maximum opening range of the door without binding or stress that could damage doors and frames. Verify arm position is at proper location.
 - 2. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures.
 - 3. Replace hardware items that have deteriorated or failed due to faulty design, materials, or installation of hardware units.

3.4 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.
 - 1. Door Closers: Adjust sweep period so that, from an open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the leading edge of the door.
- B. Six-Month Adjustment: Approximately six months after date of Substantial Completion, Installer shall perform the following:
 - 1. Examine and readjust each item of door hardware as necessary to ensure function of doors, door hardware, and electrified door hardware.
 - 2. Consult with and instruct Owner's personnel on recommended maintenance procedures.
 - 3. Replace door hardware items that have deteriorated or failed due to faulty design, materials, or installation of door hardware units.

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3.5 CLEANING AND PROTECTION

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

3.6 DEMONSTRATION

- A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes.

3.7 DOOR HARDWARE SCHEDULE

- A. Each Hardware Set listed below represents the complete hardware requirements for one opening (single door or pair of doors). Furnish the quantities required for each set for the work.

HW 1

Exterior Stairs

Doors: 101B, 133B

Each Leaf Shall Have: Hinges, Rim Exit Device w/Cylinder Dogging/Exterior Cylinder, Pull, Closer Cush Stop , Kick Plate, Threshold, Sweep, Door Bottom, Cylinders

Note: Kerfed frames with weatherstripping specified in Section 081113 - Hollow Metal Doors and Frames.

Note: magnetic switch notification to nurses station by others.

HW 2

Exterior Dining

Door: 117A

Each Leaf Shall Have: Hinges, Rim Exit Device w/Cylinder Dogging/Exterior Cylinder, Pull, Closer Cush Stop , Kick Plate, Threshold, Sweep, Door Bottom, Cylinders

Note: Kerfed frames with weatherstripping specified in Section 081113 - Hollow Metal Doors and Frames.

Note: magnetic switch notification to nurses station by others

HW 3

Exterior Corridor – Aluminum Pair

Door: 119A

Each Opening Shall Have: Narrow Rim Exit Device /Cylinder Dogging/Exterior Cylinder, Aluminum Hardware Mullion w/Back to Back Strikes and Weatherstripping, Pulls, Closers Cush Stop w/Drop Plate, Cylinders

Note: Balance of door hardware provided in Section 084126 – Aluminum-Framed Entrances and Storefronts

Note: magnetic switch notification to nurses station by others

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HW 4

Exterior Sprinkler

Door: 173A

Each Leaf Shall Have: Hinges, Lockset (Storeroom Function T581), Closer Cush Stop w/H.O.Arm, Threshold, Sweep, Door Bottom, Cylinder

Note: Kerfed frames with weatherstripping specified in Section 081113 - Hollow Metal Doors and Frames.

HW 5

Exterior Roof Access

Door: 215B

Each Leaf Shall Have: Hinges, Latchset (Passage Function W101), Double Cylinder Deadlock, Closer Cush Stop w/H.O. Arm, Threshold, Sweep, Door Bottom, Cylinder

Note: Kerfed frames with weatherstripping specified in Section 081113 - Hollow Metal Doors and Frames.

HW 6

Rated –Stair

Door: 101A, 133A, 201A, 233A

Each Leaf Shall Have: Hinges, Narrow Exit Device w/Trim (Passage Function), Closer (Pull Side Mount), Kick Plate, Wall Stop

Note: Kerfed frames with smoke seals specified in 081113.

HW 7

Rated – Soiled Linen

Doors: 102A, 130A, 202A, 230A

Each Leaf Shall Have: Hinges, Lockset (Storeroom Function T581), Closer w/Delay Action Closing (Pull Side Mount), Kick Plate, Wall Stop

Note: Kerfed frames with smoke seals specified in 081113

HW 8

Bath Closet

Doors: 103A, 108A, 109A, 113A, 114A, 125A, 126A, 131A, 136A, 137A, 143A, 144A, 149A, 150A, 156A, 157A, 163A, 164A, 169A, 170A, 203A, 208A, 209A, 213A, 214A, 225A, 226A, 231A, 236A, 237A, 243A, 244A, 249A, 250A, 256A, 257A, 263A, 264A, 269A, 270A

Each Leaf Shall Have: Hinges, Latchset (Passage Function W101), Floor Stop, Silencers

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HW 9

Bathroom - Sliding

Doors: 104A, 107A, 110A, 124A, 127A, 132A, 135A, 138A, 142A, 145A, 148A, 151A, 155A, 158A, 162A, 165A, 168A, 171A, 204A, 207A, 210A, 224A, 227A, 232A, 235A, 238A, 242A, 245A, 248A, 251A, 255A, 258A, 262A, 265A, 268A, 271A

Each Leaf Shall Have: Pocket Sliding Door Hardware (Stop door with leading edge projecting 4" into opening), Pulls – 6" x 5/8" Concealed Mount (Provide 1-1/2" clearance between frame and pull), Full Height Door Edge Protector

HW 10

Resident Entry

Doors: 105A, 106A, 111A, 112A, 123A, 128A, 129A, 134A, 139A, 140A, 146A, 147A, 152A, 154A, 159A, 160A, 166A, 167A, 172A, 205A, 206A, 211A, 212A, 223A, 228A, 229A, 234A, 239A, 240A, 246A, 247A, 252A, 254A, 259A, 260A, 266A, 267A, 272A

Each Leaf Shall Have: Hinges, Latchset (Passage Function T101), Wall Stop

Note: Kerfed frames with smoke seals specified in 081113

HW 11

IT, Telcom, Corridor Closets, Storage

Doors: 116A, 118A, 120A, 178A, 178B,

Each Leaf Shall Have: Hinges, Lockset (Storeroom Function W581), Wall Stop

Note: Kerfed frames with smoke seals specified in 081113

HW 12

Rated – Dining to Corridor

Door: 117B

Each Opening Shall Have: Wide Throw Full Mortise BB Hinges (Provide 5 hinges to prevent sagging), Latchset (Passage Function T101), Closers – Wall Mount (LCN 4111 EDA-ST2456 180°), Magnetic Hold Opens (Door to hold open so face of door is flush with plane of wall), Automatic Flush Bolts, Coordinator, Astragal Smoke Seals (Mounted on pull side to be concealed when doors are held open)

Note: Kerfed frames with smoke seals specified in 081113. Door meeting stiles shall be beveled edge to provide swing clearance with the wide throw hinges.

Note: Coordinate hinge throw and wall pocket depth for flush installation with plane of wall in hold open position.

Note: Contractor to provide concealed 2 x 12 solid wood blocking in wall for full width of doors for mounting of closers and magnetic hold opens.

HW 13

Med Room

Doors: 121A, 221A

Each Leaf Shall Have: Hinges, Lockset (Storeroom Function T581), Wall Stop

Note: Kerfed frames with smoke seals specified in 081113

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HW 14

Clean Linen

Doors: 141A, 161A, 241A, 261A

Each Leaf Shall Have: Hinges, Lockset (Storeroom Function T581), Closer (Push Side Mount FB leaf Only), Automatic Flush Bolt (Head Only), Coordinator, Astragal Smoke Seals (Push Side Mount), Armor Plates, Wall Stops

Note: Kerfed frames with smoke seals specified in 081113

HW 15

Janitors

Doors: 177A, 220A

Each Leaf Shall Have: Hinges, Lockset (Storeroom Function T581), Armor Plate, Wall Stop

Note: Kerfed frames with smoke seals specified in 081113

HW 16

Nurse Station

Doors: 122A, 222A

Each Leaf Shall Have: Hinges, Latch set (Passage Function T101), Wall Stop, Silencers

HW 17

Rated – Mechanical, Storage

Doors: 215A, 217A

Each Leaf Shall Have: Hinge, Lockset (Storeroom Function – Concealed Tactile T581), Closer (Pull Side Mount), Kick Plate, Wall Stop

Note: Kerfed frames with smoke seals specified in 081113

Note: Concealed Tactile Door 215A

HW 18

Rated - EMR

Doors: 216A

Each Leaf Shall Have: 2 Spring Hinges, Hinge, Lockset (Storeroom Function W581), Kick Plate, Wall Stop

Note: Kerfed frames with smoke seals specified in 081113

HW 19

Rated - Electrical

Doors: 219A

Each Leaf Shall Have: Hinge, Exit Device w/Trim (Storeroom Function – Concealed Tactile), Closer w/Cush Stop (Push Side Mount), Kick Plate, Wall Stop

Note: Kerfed frames with smoke seals specified in 081113

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HW 20

Spa

Doors: 218A

Have: Hinges, Lockset (Privacy Function T3011), Wall Stop

Note: Kerfed frames with smoke seals specified in 081113

END OF SECTION 087100