SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes door hardware.

NOTE: All door hardware for public rest rooms will be stainless steel.

1.2 SUBMITTALS

A. Product Data: Submit product data including installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Samples: Submit samples of exposed door hardware for each type indicated below, in specified finish. Tag with full description for coordination with the Door Hardware Schedule.

1. Door Hardware: As follows:
   a. Locks and latches.
   b. Operating trim.
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.

C. Door Hardware Schedule: Submit door hardware schedule prepared by or under the supervision of door hardware supplier. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware. The Architect's review of schedule shall neither be construed as a complete check nor shall it relieve the Contractor of responsibility for errors, deviations, or omissions from the specified requirements to provide complete door hardware for the project.

1. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.
2. 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. Supply templates to door and frame manufacturer(s) to enable proper and accurate sizing and locations of cutouts

for hardware. Detail conditions requiring custom extended lip strikes, or other special or custom conditions.

g. Door and frame sizes and materials.

h. Description of each electrified door hardware function, including location, sequence of operation, and interface with other building control systems.

(1) Sequence of Operation: Include description of component functions that occur in the following situations: authorized person wants to enter; authorized person wants to exit; unauthorized person wants to enter; unauthorized person wants to exit.

D. Keying Schedule: Submit keying schedule prepared 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.

E. Warranties: Submit special warranties specified in this Section.

F. Fire-Rated Door Assembly Testing: Submit a written record of each fire door assembly to LAWA and to the LADBS for future building inspections.

NOTE: Perform a field survey of each opening prior to submitting shop drawings. Verify the appropriateness of the assigned hardware group for the designated opening.

1.3 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, who has completed a minimum of three (3) projects over the last 5 years which were similar in material, design and extent to that indicated for the project and which have resulted in construction with a record of successful in service performance, 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. Scheduling Responsibility: Preparation of door hardware and keying schedules.

C. Source Limitations: Obtain each type of door hardware from a single manufacturer, unless otherwise indicated.

D. Regulatory Requirements: Comply with the following:

1. Provide hardware items complying with the applicable provisions for accessibility and usability by the disabled and handicapped in compliance with Americans with Disabilities Act (ADA) Accessibility Guidelines (ADAAG) for Buildings and Facilities.

2. NFPA 101: Comply with applicable provisions for means of egress doors.

3. Electrified Door Hardware: Listed and classified by Underwriter's Laboratories, Inc. or by a testing agency acceptable to authorities having jurisdiction, as suitable for the purpose indicated.

4. LADBS requirements.

E. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by Underwriter's Laboratories, Inc. for fire ratings indicated, based on testing according to NFPA 252. Provide only door hardware items that are identical to items tested by UL for the types and sizes of doors required. In case of conflict between type of hardware specified and type required for accessibility or fire protection, furnish type required by NFPA and UL. Doors indicated in fire rated partitions and walls shall be positive latching and self-closing, with smoke gaskets where required by applicable codes.

1. Wherever exit device hardware is required on doors, comply with UL 305. Furnish hardware to door manufacturer for installation at factory. Provide supplementary label, "Fire Exit Hardware", on each exit device to certify that panic hardware has been panic load tested with door.

F. Keying Conference: Conduct conference at Project site to comply with LAWA requirements. Incorporate keying conference decisions into final keying schedule after reviewing door hardware keying system including, but not limited to, the following:

1. The degree of security required,

2. Preliminary key system schematic diagram.

3. LAWA Requirements for key control system.

4. Address for delivery of keys to LAWA.

G. Pre-Installation Conference: Conduct conference at Project site to comply with LAWA keying and security requirements. Review methods and procedures related to electrified 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 sequence of operation for each type of electrified door hardware.

3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

4. Review required testing, inspecting, and certifying procedures.

1.4 DELIVERY, STORAGE, AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site. 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.

1.5 COORDINATION

A. Templates: Furnish templates and door hardware schedules, coordinated for the application of door hardware items with door and frame details, to door opening fabricators and trades performing door opening work to permit the preparation of doors and frames to receive the specified door hardware. Where the door hardware item scheduled is not adaptable to the finished size of door opening members requiring door hardware, submit an item having a similar operation and quality to the Architect for review. Each door hardware item shall be fabricated to templates.

NOTE: Coordinate the layout and installation of electrified door hardware with connections to power supplies, fire alarms systems and detection devices, access control system, security system and the building control system.

B. Existing Openings: Where hardware components are scheduled for application to existing construction or where modifications to existing door hardware are required, field verify existing conditions and coordinate installation of door hardware to suit opening conditions and to provide proper door operation.

1.6 WARRANTY

A. 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. Faulty operation of door hardware.
2. Deterioration of metals, metal finishes, and other materials beyond normal use.

B. Warranty Period for Electromagnetic Locks: Five years from date of Substantial Completion.

C. Warranty Period for Manual Closers: Ten years from date of Substantial Completion.

D. Warranty Period for Concealed Floor Closers: Five years from date of Substantial Completion.

E. Warranty Period for Exit Devices: Five years from date of Substantial Completion.

F. Warranty Period for Other Hardware: Two years from date of Substantial Completion.

G. Warranty for Mortised Mechanical Lock and Latch-sets: Ten years from date of Substantial Completion.

H. Warranty for Heavy Duty Cylindrical Mechanical Lock and Latch-sets: Seven 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, door hardware sets are keyed to each scheduled door in the door and frame schedule, and the Door Hardware Schedule.

1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturer's products.

2. The hardware supplier shall review each hardware set and compare it with the door types, details, and sizes as shown and verify each hardware item for function, hand, backset, and method of fastening through shop drawing submittals.

ITEM	MANUFACTURER	ACCEPTABLE SUB
Hinges and Electric Hinges	(STN) Stanley	Hager, Zero, Select
Key System	(SCH) Schlage	Owner's Standard
Locks	(SCH) Schlage	Owner's Standard
Exit Devices	(VON) Von Duprin	Owner's Standard
Flush Bolts/Dust Proof Strike	(IVE) Ives	
Coordinator	(IVE) Ives	
Closers	(LCN) LCN	Owner's Standard
Push & Pull Plates	(IVE) Ives	Rockwood, Trimco
Kickplates/Moplates	(IVE) Ives	Rockwood, Trimco
Magnetic Catches	(ROC) Rockwood	
Magnetic Holder	(RIX) Rixson	Or Equal
Stops & Holders	(IVE) Ives	Rockwood, Trimco
Power Supply	(VON) Von Duprin	
Power Transfer	(VON) Von Duprin	
Thresholds	(PEM) Pemko	Zero, NGP,
Astragals/Seals/ Bottoms	(PEM) Pemko	Zero, NGP
Silencers	(IVE) Ives	
Decals	(VON) Von Duprin	
Door Contacts	(GES) General Electric Security	Flair
Electric Strike	(FAS) Folger Adam Security	Von Duprin
Cyberlock Cylinder	(VID) Videx Key System	
Bottom Rail Lock	(ARC) Adams Rite	
Floor Stop & Miscellaneous	(TRM) Trimco	Rockwood

NOTE: Nursing Rooms, Family Restrooms and Pet Relief Rooms will have indicator thumbturn hardware. Model will be Schlage (SCH) L9496J-06A-626 with optional L583-363 ADA thumbturn.

2.2 HINGING METHODS

A. Conventional Hinges: **High strength stainless steel** pins with concealed bearings.

2.3 LOCKS AND LATCHES

A. Mortise Lock and Latch Sets: Heavy duty, commercial, mortise bodies complying with BHMA A156.13 Series 1000, Grade 1, with through-bolted lever trim. Furnish mortise type, field reversible without disassembly, field multifunctional without opening lock cases, lock and latch sets with 1 or 2 piece anti-friction deadlocking stainless steel latchbolts having a minimum 3/4 inch (19 mm) throw, 2-3/4 inches (70 mm) backset, and UL listed for 3 hour doors. All lock and latch sets, to be furnished complete with heavy 0.109 inch (2.77 mm) (12 gage) wrought steel zinc dichromate or chrome plated case, trim, adjustable beveled square cornered armored fronts, cold forged steel or stainless steel hubs, and 6 pin cylinders. Conceal fastenings, washers and bushings. Provide formed metal or black plastic box strikes for each lock and latch set. Provide brass, bronze or stainless steel strikes with curved lips of sufficient length to protect frames. Provide solid forged or cast levers with wrought roses. Where electro-mechanical locksets are scheduled provide transformers properly sized for conversion of power supply to the power characteristics of the electromechanical locksets. Where electro-mechanical locksets are scheduled provide request to exit (REX) monitoring feature.

1. Chassis: cold-rolled steel, handing field-changeable without disassembly.
2. Latchbolts: 3/4 inch throw stainless steel anti-friction type.
3. Lever Trim: through-bolted, accessible design, cast lever or solid extruded bar type levers as scheduled. Filled hollow tube design unacceptable. Provide security design independent breakaway spindles. Breakage of outside lever shall not allow access to inside lever's hubworks to gain wrongful entry.
4. Thumbturns: accessible design not requiring pinching or twisting motions to operate.
5. Deadbolts: stainless steel 1-inch throw.
6. Electric operation: Manufacturer-installed continuous duty solenoid.
7. Strikes: 16 gage curved steel, bronze or brass with 1 inch deep box construction, lips of sufficient length to clear trim and protect clothing.
8. Scheduled Lock Series and Design: Schlage L series, 03A design.
9. Certifications:
   a) ANSI A156.13, 1994, Grade 1 Operational, Grade 1 Security.
   b) ANSI/ASTM F476-84 Grade 31 UL Listed.

2.4 EXIT DEVICES

A. Exit Devices: Exit devices and exit device accessories shall conform to BHMA A156.3, Grade 1. Trim shall be wrought construction and commercial plain design with straight, beveled or smoothly rounded sides, corners and edges. Keyed devices shall be furnished less cylinders. Cylinders shall be as herein specified keyed to building system.

B. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to the LADBS, for panic protection, based on testing according to UL 305.

1. Independent lab-tested 1,000,000 cycles.

2. Push-through push-pad design. No exposed push-pad fasteners, no exposed cavities when operated. Return stroke fluid dampeners and rubber bottoming

dampeners, plus anti-rattle devices.

3. 0.75-inch throw deadlocking latchbolts.
4. End caps: impact-resistant, flush-mounted. No raised edges or lips to catch carts or other equipment.
5. No exposed screws to show through glass doors.
6. Non-handed basic device design with center case interchangeable with all functions, no extra parts required to effect change of function.
7. Releasable in normal operation with 15-lb. maximum operating force per UBC Standard 10-4, and with 32 lb. maximum pressure under 250-lb. load to the door.
8. Flush end cap design as opposed to typical "bottle-cap" design end cap.
9. Comply with CBC Section 1003.3.1.9.

C. Specific features:

1. Non-Fire Rated Devices: cylinder dogging.
2. Lever Trim: Breakaway type, forged brass or bronze escutcheon min 0.130" thickness, compression spring drive, match lockset lever design.
3. Rod and latch guards with sloped full-width kick plates for doors fitted with surface vertical rod devices with bottom latches.
4. Fire-Labeled Devices: UL label indicating "Fire Exit Hardware". Vertical rod devices less bottom rod (LBR) unless otherwise scheduled.
5. Delayed Egress Devices: Function achieved within single exit device component, including latch, delayed locking device, request-to-exit switch, nuisance alarm, remote alarm, key switch, indicator lamp, relay, internal horn, door position input, external inhibit input plus fire alarm input. NFPA 101 "Special Locking Arrangement" compliant.
6. Electrically Operated Devices: Single manufacturer source for electric latch retraction devices, electrically controlled trim, power transfers, power supplies, monitoring switches and controls.

2.5 CYLINDERS AND KEYING

A. Cores for Bored Cylindrical Locksets: Provide key-in lever 6 pin cores for all bored cylindrical locksets, keyed into base building system, as manufactured by the bored lockset manufacturer.

B. Cylinders: Full faced, interchangeable cylinders with square shouldered (not tapered) compression rings, 6 pin cylinders, standard threaded, keyed into building system, with cams to suit lock functions. Provide cylinders for installation into all locks.

1. 1100 Series Flexible Head Mortise Cylinder; Corbin Russwin Architectural Hardware (CR).
2. Series 40 Adjustable Front Cylinder; Sargent Manufacturing Company (SGT).

3. 30-001 full-faced mortised cylinder with 36-083 compression rings; Schlage Lock Company (SCH).

C. Keying System: Final keying to determine lock cylinders, keyed alike sets, level of keying, master key groups, grandmaster keying system shall be as directed by the LAWA. Supplier and Contractor shall meet with the LAWA and obtain final instructions in writing. Provide 2 nickel silver keys for each lock, and 6 keys for each grandmaster and master key system. Provide 2 blank keys for each lock for the LAWA's convenience in making additional keys.

1. Temporary Cylinders: Provide temporary cylinders in locks during construction and as may be necessary for security or as may be requested by the LAWA. All temporary cylinders shall be individually keyed as required and subject to a single master key.

D. Key Control System: Furnish a key control system with complete accessories including key gathering envelopes, labels, reserve pattern key tags with self-locking key clips, key receipt forms, key receipt holders, 3 way visible card index, temporary key markers and permanent key markers.

2.6 STRIKES

A. Strikes for Locks and Latches: All strikes for locks and latches shall be provided by the lock and latch manufacturer unless otherwise specified or scheduled, refer to Article 'Locks and Latches'.

B. Dustproof Floor Strikes: Complying with BHMA A156.16, Type L04251, L04021 or L14021, one of the following:

1. No. 80; Door Controls International.
2. DP2; H.B. Ives.
3. 3910; Triangle Brass Manufacturing Company, Inc. (TBM or Trimco).
4. 570; Rockwood Manufacturing Company (RM).

C. Electric Strikes: Complying with BHMA A156.5, Grade 1. Mortised type for devices mounted in hollow metal frames. Unless otherwise required to interphase with the security access system furnish in 24 volt DC continuous voltage for silent operation. Provide each strike with extended lips as required to suit jamb conditions and fail secure function. Remote electrical control from card reader or control panel will unlock strike jaw, releasing latchbolt of the deadlatch, so door can be opened without operating latch by key cylinders from outside of secured room. Electric strikes shall be UL listed for up to 3 hour fire door assemblies.

1. 6200 Series Electric Strikes; Von Duprin.

2.7 CLOSERS

A. Surface-Mounted Closers: Closers shall be certified by ETL laboratories and the manufacturer to a minimum of 8,000,000 cycles and meet BHMA A156.4, Grade 1. Closers used in conjunction with overhead stops and holders shall be templated and coordinated to function properly. Properly detail closers to meet application requirements by providing drop plates, brackets, etc. to meet application and installation requirements as indicated. Comply with manufacturer's recommendations for size of door closer depending on size of door, stack pressure conditions, and anticipated frequency of use. Closers shall have adjustable spring power, full rack and pinion, independent closing speed and latch regulating V-slotted valves, fully hydraulic with a high strength cast iron cylinder and solid forged steel arms, bore diameter of 1-1/2 inches (38.1 mm), pinion shaft diameter of 5/8 inches (15.87 mm), adjustable back check, cushion and built-in stop feature where scheduled, hold open arms where scheduled, delayed action where scheduled, arm finish to match closer cover finish scheduled. Provide metal covers of clean line design with plated or primed for paint finish as scheduled and that require removal in order to make adjustments to closer.

1. Full rack-and-pinion type cylinder with removable non-ferrous cover and cast iron body. Double heat-treated pinion shaft, single piece forged piston, chrome-silicon steel spring.
2. ISO 2000 certified. Units stamped with date-of-manufacture code.
3. Independent lab-tested 10,000,000 cycles.
4. Non-sized, non-handed, and adjustable. Place closer inside building, stairs, and rooms.
5. Plates, brackets and special templating when needed for interface with particular header, door and wall conditions and neighboring hardware.
6. Adjustable to open with not more than 5 lbs pressure to open at exterior doors and 5 lbs at interior doors. As allowed per California Building Code, Section 1133B.2.5, local authority may increase the allowable pressure for fire doors to achieve positive latching, but not to exceed 15 lbs.
7. Separate adjusting valves for closing speed, latching speed and backcheck, fourth valve for delayed action where scheduled.
8. Extra-duty arms (EDA) at exterior doors scheduled with parallel arm units.
9. Exterior door closers: tested to 100 hours of ASTM B117 salt spray test, furnish data on request.
10. Exterior doors do not require seasonal adjustments in temperatures from 120^{o} F to -30^{o} F, furnish data on request.
11. Non-flaming fluid, will not fuel door or floor covering fires.
12. Pressure Relief Valves (PRV): unsafe, not permitted.

2.8 PROTECTIVE TRIM UNITS

A. Kick and Armor Plates: Fabricate protection plates from minimum 0.050 inch (1.3 mm) thick **stainless steel**, beveled top and 2 sides (B3E), square corners, complying with BHMA A156.6, and fastened with oval head Phillips fasteners countersunk into plate surface.

1. Series 8400; H. B. Ives (IVS).
2. K1050 Doorplate Series; Rockwood Manufacturing Company (RM).
3. KA050-2 Armor Plate and KOO50 for Kick Plates; Triangle Brass Manufacturing Company, Inc. (TBM or Trimco).

B. Size: Furnish kick and armor plates sized 2 inches (51 mm) less than door width. Furnish kickplates 12 inches (305 mm) high, furnish armor plates 48 inches (1219 mm) high unless otherwise indicated. Provide protective plates with cutouts for locks, louvers and windows to the extent indicated. Mount protective plates flush with bottom of door.

2.9 OTHER HARDWARE

A. Automatic Flush Bolts: Low operating force design, “LBR” type where scheduled.

B. Overhead Stops: **Stainless steel** (100 series). Non-plastic mechanisms and finished metal end caps. Field-changeable hold-open, friction and stop-only functions.

C. Door Stops: Provide stops to protect walls, casework or other hardware.

1. Unless otherwise noted in Hardware Sets, provide wall type with appropriate fasteners. Where wall type cannot be used, provide floor type. If neither can be used, provide overhead type.
2. Locate overhead stops for maximum possible opening. Consult with Owner for furniture locations. Minimum: 90^{o} stop / 95^{o} deadstop. Note degree of opening in submittal.

D. Seals: Finished to match adjacent frame color. Resilient seal material: polypropylene, nylon brush, or solid high-grade neoprene. UL label applied to seals on rated doors. Substitute products: certify that the products equal or exceed specified material’s thickness and durability. Proposed substitutions: submit for approval.

1. Solid neoprene: MIL Spec. R6855-CL III, Grade 40.
2. Non-corroding fasteners at in-swinging exterior doors.
3. Fire-rated Doors, Resilient Seals: UL10C / UBC Standard 7-2 compliant. Coordinate with selected door manufacturers' and selected frame manufacturers' requirements. Where rigid housed resilient seals are scheduled in this section and the selected door manufacturer only requires an adhesive-mounted resilient seal, furnish rigid housed seal at minimum, or both the rigid housed seal plus the adhesive applied seal. Adhesive applied seals alone are deemed insufficient for this project where rigid housed seals are scheduled.

E. Thresholds: Comply with CBC Section 1133B.2.4.1.

1. Exteriors: Seal perimeter to exclude water and vermin. Use butyl-rubber or polyisobutylene sealant complying with requirements in Division 7 "Thermal and Moisture Protection". Non-ferrous 1/4inch fasteners and lead expansion shield anchors, or Red-Head #SFS-1420 (or approved equivalent) Flat Head Sleeve Anchors (SS/FHSL).
2. Fire-rated openings, 90 min or less duration: use thresholds to interrupt floor covering material under the door where that material has a critical radiant flux value less than 0.22 watts per square centimeter, per NFPA 253. Use threshold unit as scheduled. If none scheduled, request direction from Architect.
3. Fire-rated openings, 3hour duration: Thresholds, where scheduled, to extend full jamb depth.
4. Plastic plugs with wood or sheet metal screws are not an acceptable substitute for specified fastening methods.

F. Fasteners: Generally, exposed screws to be Phillips or Robertson drive. Pinned TORX drive at high security areas. Flat head sleeve anchors (FHSL) may be slotted drive. Sheet metal and wood screws: full-thread. Sleeve nuts: full length to prevent door compression.

G. Silencers: Interior hollow metal frames, 3 for single doors, 4 for pairs of doors. Omit where adhesive mounted seal occurs. Leave no unfilled/uncovered pre-punched silencer holes.

2.10 FABRICATION

A. Manufacturer's Nameplate: Provide each door hardware item without exposed manufacturers labels, names, or designs.

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 oval-head screws with finished heads to match surface of door hardware item being attached. Machine screws and expansion shields shall be used for attaching hardware to concrete and masonry. Use through bolts for renovation work only where existing door blocking and reinforcements are unknown.

1. Concealed Fasteners: All new doors and door frames have been specified with adequate blocking and reinforcement provisions to eliminate exposed through bolting of hardware items. Doors installed with exposed through bolts will be rejected and replaced by the Contractor at no cost to the Owner. Where through bolts are used on existing doors provide sleeves for each through bolt.

2.11 FINISHES

A. Designations: The abbreviations used to schedule hardware finishes are generally BHMA (Federal Standards where indicated in parenthesis) designations. Comply with base material and finish requirements indicated by the following:

1. BHMA 600 (USP): Primed for painting.
2. BHMA 626 (US26D): Satin chromium plated.
3. BHMA 630 (US32D): Satin stainless steel.

PART 3 - EXECUTION

3.1 PREPARATION

A. Hardware for fire door assemblies shall be installed in accordance with NFPA 80. Hardware for smoke and draft control door assemblies shall be installed in accordance with NFPA 105. Install hardware for non-labeled and non-smoke and draft door assemblies in accordance with BHMA A156.115 for steel doors and frames, BHMA A156.115-W series for wood doors, and hardware manufacturers installation instructions for doors and frames fabricated from other than steel or wood.

1. All modifications to fire doors and frame for electric and mortised hardware shall be made by the respective door and frame manufacturers.

B. Smoke Seals at S Labeled Door Assemblies: Provide and install smoke seals at S labeled doors in accordance with door manufacturer's instructions.

3.2 INSTALLATION

A. Mounting Heights: Mount door hardware units at the following heights, unless specifically indicated on the drawings or required to comply with LADBS regulations:

1. Locate levers, key cylinders, t-turn pieces, touchbars and other operable portions of latching hardware between 30 inches to 44 inches above the finished floor, per CBC Section 1133B.2.5.1.
2. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.

B. Install each door hardware item to comply with manufacturer's written instructions. Install overhead surface closers for maximum degree of opening obtainable. Place on room side of corridor doors, stair side of stair doors, and secondary corridor side of doors between corridors. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be finished, coordinate removal, storage, and reinstallation of surface protective trim units. Do not install surface-mounted items until finishes have been completed on substrates involved.

C. Existing frames and doors scheduled to receive new hardware: carefully remove existing hardware, tag and bag, and turn over to LAWA.

1. Metal doors/frames: Weld or fasten with screws: filler pieces in existing hardware cut-outs and mortises not scheduled for re-use by new hardware. Leave surfaces smooth - - no applied patches.
2. Remove unused existing floor closers; fill empty floor closer cavities with

concrete.

D. Do not install permanent key cylinders in locks until the time of preliminary acceptance by the Owner. At the time of preliminary acceptance, and in the presence of LAWA, permanent key all lock cylinders. Record and file all keys in the key control system, and turn system over to LAWA for sole possession and control.

E. Key control storage system shall be installed where directed by the LAWA.

3.3 ADJUSTING

A. Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every hardware component. Replace hardware components that cannot be adjusted to operate as intended. Adjust door control devices to compensate for building stack pressures, final operation of forced air mechanical equipment and to comply with referenced accessibility requirements.

1. Test each electrical hardware item to determine if devices are properly functioning. Wiring shall be tested for correct voltage, current carrying capacity, and proper grounding. Stray voltages in wiring shall be eliminated.

2. Coordinate with electrical installation for interface and connection with life safety and security systems.

B. Fire-Rated Door Assembly Testing: Upon completion of the installation, test each fire door assembly in the project to confirm proper operation of its closing device and that it meets all criteria of a fire door assembly as per NFPA 80 2007 Edition. The inspection of the fire doors is to be performed by individuals with knowledge and understanding of the operation components of the type of door being subjected to testing. A written record shall be maintained and transmitted to LAWA and be made available to the LADBS. The record shall list each fire door assembly throughout the project, and include each door number, an itemized list of hardware set components at each door opening, and each door location in the facility.

3.4 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation. Clean hardware components as necessary to restore proper finish. Provide protection during the progress of the work and maintain conditions that ensure door hardware is in perfect working order and without damage or deterioration at time of Substantial Completion.

END OF SECTION 08 71 00