SECTION 087100 - DOOR HARDWARE

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. The work of this section shall include all labor, materials, equipment and services necessary to furnish and install all finish hardware as indicated and specified. All finish hardware component parts required for a complete, functioning building, whether specifically specified or not, shall be provided.

B. Finish hardware noted elsewhere in the contract documents as being a component part of an assembly or item furnished as part of that work is not included with the work of this section.

C. SRP uses a proprietary key system. SRP will provide all permanent cores. No alternates will be accepted.

1.02 REFERENCES

Reference to standards and/or specifications herein shall be interpreted to mean the latest revision unless noted otherwise. The following abbreviations appear in the specifications:

A. BHMA - Builders Hardware Manufacturers Association
B. NBHA - National Builders Hardware Association
C. DHI - Door & Hardware Institute

1.03 SUBMITTALS

A. Submit Product Data Sheets, shop drawings, material manufacturer's installation instructions, and cleaning and maintenance procedures.

1. Include a report that the product supplied meets the requirements of this specification, OSHA, and ADA.

2. The shop drawings shall show the direction of swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of the door movement as shown.

3. Furnish hardware templates with machine screws for use on all doors and frames. Supply all necessary template information to the Contractor for the various manufacturers in a timely manner.

B. Finish Hardware Schedule

1. The Hardware Supplier shall prepare and submit to the SRP Project Manager a complete schedule of all finish hardware required.

2. Based on finish hardware specified or indicated on the drawings, organize the hardware schedule into hardware sets indicating complete designations of every item required for each door opening. Include the following information:

a. Type, style, function and finish of each hardware item.

b. Name and manufacturer of each item.

c. Fastenings and other pertinent information.

d. Location of hardware set cross-referenced to door and frame schedule.

e. Explanation of abbreviations, symbols, codes, etc. contained in schedule.

f. Mounting locations for hardware.

g. Door and frame sizes and materials.

3. Hardware Schedule to be in vertical written type format with Groups indicated by name and number.

C. Provide copies of cutsheets for each product or schedule.

D. Contractor shall use same door, frame and opening designations on Shop Drawings, to indicate hardware locations, as is indicated on the Contract Documents, with provision for cross-reference of Shop Drawings to Construction Documents.
E. Items of hardware not specified but required for completion of work - Furnish such items of type and quality suitable to the service required and comparable to adjacent hardware.
F. Provide the Basis of Design or pre-approved equal for each hardware component. Any deviations from this requirement is considered a Substitution and the Contractor must follow the procedures prescribed in Section 012500 Substitution Procedures.

1.04 QUALITY ASSURANCE

A. Obtain all closures from only one manufacturer.
B. Hardware Supplier shall be a recognized builders' hardware supplier who has been furnishing specified hardware in the project's immediate vicinity for a minimum of five years, and who is, or employs on a full time basis, a registered member of the American Society of Architectural Hardware Consultants to properly detail work, order materials, and supervise installation.
C. The firm proposing to supply Finish Hardware for this project must be a regular stocking distributor of the hardware it proposes to furnish.
D. The Hardware Supplier shall make periodic inspections of project (upon receipt of hardware at project, during installation and at completion of installation) so that at completion of the installation, he can certify to the SRP Project Manager that said hardware is properly installed according to manufacturer's printed instructions. Hardware Supplier is to provide two copies of certification to the SRP Project Manager within two weeks after installation of all hardware.
E. Provide hardware for fire-rated openings in compliance with NFPA Standard No. 80. Provide only hardware which has been tested and listed by UL for types and sizes of doors required and complies with requirements of door and door frame labels.
F. Where emergency exit devices are required on fire-rated doors (with supplementary marking on doors' UL label for each door indicating "Fire Door to be Equipped with Fire Exit Hardware") provide UL label on exit devices indicating "Fire Exit Hardware."

1.05 DELIVERY, STORAGE AND HANDLING

A. Package each item of hardware and each lock separately in individual containers, complete with necessary screws, keys, instructions and installation templates for spotting mortising tools. Mark each container with heading number and number corresponding to Finish Hardware Schedule.
B. Inventory hardware jointly with representatives of the Hardware Supplier and the Hardware Installer until each is satisfied that the count is correct.
C. Store finish hardware in a suitable, secure (lockable) storage space.

PART 2 PRODUCTS

2.01 MATERIALS

Produce hardware units of the basic metal and forming method indicated, using the manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for the applicable hardware units by FS FF-H-106, FS FG-G-111, FS FF-H-116, and FS FF-H-121. Do not furnish "optional" materials or forming methods for those indicated, except as otherwise specified.

2.02 MANUFACTURED UNITS

A. Locksets
   1. Cylindrical Series. Base Manufacturer is to be Schlage Lock Company. "ND" Series (heavy duty), trim design shall be Rhodes. All locks to be equipped with "Figure 8" removable core, 6-pin tumblers. Backset to be 2-3/4" unless otherwise
noted. Furnish all strike plates with wrought boxes, WBX. Furnish the following functions:

Schlage

a. Passage doors Latchset D10S
b. Unisex Toilet doors Privacy D0S
c. Office doors Locking D53RD
d. Storage, Custodial, Classroom doors Locking D80RD
e. Interior Mechanical/Electrical doors Locking D80RD

2. Mortise Series. Base Manufacturer shall be Schlage Lock Company. "L" Series (extra heavy duty) lever design to be 06 to match Rhodes, Roses to be "B" (2-9/16") size. All locksets to be equipped with 30-016 housing, temporary brass construction cores "Figure 8" removable core, 6-pin tumblers. Furnish WBX for all locksets. Spec-Rite series not approved.

a. Mechanical/Electrical doors Locking L9080R

3. Tubular Deadlocks. Base Manufacturer shall be Schlage Lock Company. "L400" Series (heavy duty), furnish 2-3/4" backset. All locks to be equipped with "Figure 8" removable core, 6-pin tumblers. Furnish WBX for all locksets.

a. Single Cylinder B60R
b. Double Cylinder B62R

4. Deadbolts. Base manufacturer shall be Schlage Lock Company. B600 Series in full size interchangeable core. Restroom door deadbolts shall have occupied (red)/unoccupied (green) indicator.

B. Rim Cylinders and Padlocks. Base Manufacturer shall be Schlage Lock Company. All cylinders to be equipped with "Figure 8" removable core, 6-pin tumblers.

1. Rim Cylinder 20-079
2. Padlock 5-101

C. Exit Devices - To be rim type with lever and cylinder for outside operation. Exit devices to be listed with UL under Life Safety Section. Acceptable Manufacturer: Von Duprin 99L. All exit devices to comply with ADA. Von Duprin- 99L-F-2 series rim Exit Devices in fire rated openings with 996L Break away levers. (*Note- Preferred double door openings to be rim devices with KR9954 key removable mullion or option 9949 Concealed Vertical Cable device and no mullion. Electric latch retraction units to be 99 or 9949 "QEL"-quiet electric latch retraction.)

D. Door Closures - All to have a cast iron body with finish and equipped with three operation valves. All closures sized by the Installing Contractor. All wood doors to be equipped with sex nuts and bolts.

Acceptable Manufacturers:

Manual Closers: LCN 4040XP heavy duty surface mounted with proper arm function. No hold open, CUSH arm, or fusible link without prior approval.

Automatic Closers: Horton 4000 series for exterior use where exposed to weather. Horton 7000 series on building exit/entrance doors. Horton 7000 or Record 8000 series for interior doors.

Color to match specified hardware. Wireless transmitter/receiver unless otherwise indicated. Push/pull installation as indicated.

E. Kickplates - All kickplates to be 16 inches high by 1-1/2 inches L.D.W. for single doors, 16 inches high by one inch L.D.W. on all pairs of doors. Materials to be S.S., .050 thick, beveled 4 sides. Ives 8400 series.
F. Push/Pull Plates – Ives 8200 or 8300 Series, 4 inches by 16 inches; 0.050 inches thick, bevel edge.


H. Stops:
   1. Interior:
      a. Wall – Ives 406 or 407, concave or convex, forged aluminum, concealed screw with wall plate.
      b. Floor – Ives 400 Series, 1/2 dome type, 1 5/8 overall height, cast. Ives R435 or R437 risers as needed.
      c. Overhead - Glynn-Johnson- 900 or 450 series surface mounted overhead stops or holders
   2. Exterior: Floor - Ives FS444 heavy duty.
   3. Overhead: Glynn-Johnson 900 or 450 Series surface mounted.

I. Thresholds:
   1. Architectural Aluminum Doors - Reese Enterprises Model No. S39D, finish to match finish of architectural aluminum. Other acceptable manufacturers are Pemko or National Guard Products.
   2. All Other Doors - RE1, Reese Enterprises, Model S39A, brushed aluminum finish, or Pemko.
   3. Provide vinyl reducer where threshold is installed at VCT.

J. Door Sweeps shall be Pemko 315 or 321.

K. Weather stripping shall be provided at head and jams.
   Single leaf openings 30" x 70" or smaller shall be Pemko 303 or 2891 – color as specified.
   Single leaf openings larger than 30" x 70" shall be Pemko 2891 – color as specified.
   All double leaf door openings shall be Pemko 2891 – color as specified.

L. Silencers – Ives SR64 for hollow metal doors, Ives SR65 for wood jams. All frames to receive three each silencers for single door frames and two each for pairs of doors.

M. Hinges shall to be ball bearing, Ives 5BB1 HW heavy weight or standard weight as required, with non-removable pin (NRP) at locking doors, full mortise at rated doors and at all exterior main entry and other high use areas. Provide 1-1/2 pairs for all doors, sized per manufacturer’s recommendations or as follows. Manufacturers: Stanley FBB179 Series; Ives, Pemko, or Hager Series.
   1. Doors 1-3/4" thick and up to 36" wide to have 4-1/2" butts.
   2. Doors 1-3/4" thick, 42" to 48" wide to have 5" butts.
   3. All butts finish sized in width to clear all trim.
   4. Provide Ives- 224HD geared continuous hinge-UL type. Acceptable alternate Reese and Select geared hinges when required and approved by owner

N. Automatic Door Bottom - To be fully mortised, commercial medium duty series, minimum 3/4inch drop with neoprene insert and satin aluminum body. Sized for door in accordance with manufacturer’s recommendations. Acceptable Manufacturer. Surface mounted to be Reese series 521 or Pemko series 4301 pkl.

O. Flush Bolt - Manual, with spring loaded snap action lever for bolt retraction, with 1/2 inch rod; recessed, or Ives 454 surface mounted when needed or Glynn-Johnson FB7/FB8 and Ives FB31.

P. Latch Guard – Ives LG10.

Q. Astragal – Reese 183SP or Hager 835S, steel

R. Door Holder - Ives, Model FS452 or FS452155, 5 inches, brass.

S. Touch Sensor Bar - Securetron Model TSB-1

T. Pivots - Ives- 7226 heavy duty pivots with 7226 INT intermediate pivot when required.

U. Coordinators – Ives COR7G gravity type

V. Smoke Seals: Pemko S88 Pemko S44

W. Floor Strike: Ives DP2, dustproof.

X. Manual Flush Bolts: Ives FB458 or ASSA ABLOY 555

Y. Meeting Stile Brush/Sweeps: Pemko 18061 or 18062

2.03 FINISHES
A. All hardware shall be US26D, 626, or required to match existing.
B. Provide matching finishes for hardware units at each door or opening, to the greatest extent possible, and except as otherwise indicated.
   1. Reduce differences in color and textures as much as commercially possible where the basic metal or metal forming process is different for individual units of hardware exposed at the same door or opening.
   2. In general, match items to the manufacturer’s standard finish for the latch and locket (or push-pull units if no latch locksets) for color and texture.
C. Provide finishes which match those established by the BHMA.
D. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer’s standard, but in no case less than specified for the applicable units of hardware by referenced standards.
E. The designations used in schedules and elsewhere to indicate hardware finishes are those listed in “Materials and Finishes Standard 1301” by the BHMA, including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.

2.04 KEYING

A. Contractor will provide cylinders of function as indicated on by the Contract Documents. Key all locks to lllll bit keyed to site using 6, 7, or 8 keyways. Contact SRP Project Manager for proper keyway information.
B. All locks are to be provided with two original factory change keys (nickel silver), unless noted otherwise. All keying requirements will be provided by the SRP Project Manager to the Contractor. All cylinders are to be construction keyed, furnish six each construction keys to the Contractor for his use. Construction key is to be voided by use of a permanent change key, Master key or extractor. All cut change keys, Master keys, or Grandmaster keys are to be delivered to the SRP Project Manager via UPS, USPS with signed receipt request, or hand-delivered for personal signature. The keys and cylinder faces (cylinder barrel) to have key symbol (change key) embossed on them for ease of identification.

2.05 COMPONENTS

A. Hardware to conform to the published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.
B. Furnish screws for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (under any condition) screws to match the hardware finish, or if exposed in surfaces of other work, to match the finish of such other work as closely as possible, including “prepared for paint” in surfaces to receive painted finish.
C. Provide concealed fasteners for hardware units which are exposed when the door is closed, except to the extent no standard units of the type specified are available with concealed fasteners. Do not use through bolts for installation where the bolt head or the nut on the opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work.
D. Use only manufacturer’s fasteners for installation.

2.06 MAINTENANCE TOOLS

Furnish a complete set of specialized tools as needed for Owner’s continued adjustment, maintenance and removal and replacement of builders’ hardware.

PART 3 EXECUTION

3.01 INSTALLATION
A. Mount hardware units at heights indicated in "Recommended Locations Builders Hardware for Standard Steel Doors and Frames," by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by the Architect/Engineer.

B. Install each hardware item in compliance with the manufacturer's instructions and recommendations.
   1. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be painted or finished in another way, coordinate removal, storage and reapplication or reinstallation or application of surface protections with finishing work specified by the contract documents.
   2. Do not install surface mounted items until finishes have been completed on the substrate.

C. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

E. Install all hardware without marring or damaging hardware or other work. Replace all marred or damaged work. Adjust for easy operation.

F. Install closures, stops and other hardware as scheduled.
   1. Provide extra support blocking for all interior and exterior applied hardware.
   2. Do not install surface mounted items until finishes have been completed on the substrate.

G. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.

H. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.

I. Install all hardware without marring or damaging hardware or other work. Replace all marred or damaged work. Adjust for easy operation.

J. Install closures, stops and other hardware as scheduled.
   1. Provide extra support blocking for all interior and exterior applied hardware.
   2. All hardware shall be installed by workmen skilled in this type of work, and the installation of the hardware shall in no manner detract from the appearance of the doors. Faulty workmanship shall be cause for rejecting the doors.
   3. Where manufacturers specify certain requirements in installing doors, these requirements shall be called to the attention of, and be followed by the workmen.

3.02 ADJUSTING

A. Adjust each operating item of hardware and each door, to ensure the proper operation or function of each unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.

B. Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, make final check and adjustment of all hardware items in such space or area.

C. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

D. Instruct Owner's personnel in proper adjustment and maintenance of hardware and hardware finishes during the final adjustment of hardware.

3.03 CLEANING

Clean operating items as necessary to restore proper function and finish of hardware and doors.

3.04 FIELD QUALITY CONTROL
A. Approximately six months after the acceptance of hardware, perform Maintenance Services. The Installer, accompanied by the Representative of the latch and lock manufacturer, shall return to the project and readjust every item of hardware.

B. Consult with and instruct Owner’s personnel in any recommended additions to the maintenance procedures.

C. Replace hardware items which have deteriorated or failed due to faulty design, materials or installation of hardware units.

D. Prepare a written report of current and predictable problems (of substantial nature) in the performance of the hardware within two weeks after the service maintenance is complete.

3.05 HARDWARE SCHEDULE

A. INTERIOR HARDWARE GROUPS:
   Group 1: Office, and/or Work Room
   1. 1 1/2 pr. Hinges
   2. 1 Passage Set
   3. 1 Stop (Wall)
   4. 3 Silencers

Group 2: Darkroom Door
   1. 1 1/2 pr. Hinges
   2. 1 Lockset, single key
   3. 1 Closer
   4. 1 Stop (Wall)
   5. 1 set Light seals
   6. 1 Automatic door bottom
   7. 3 Silencers

Group 3: Meeting, Conference, Crew and Break Rooms
   1. 1 1/2 pr. Hinges
   2. 1 Passage Set
   3. 1 Closer
   4. 1 Stop (Wall)
   5. 3 Silencers

Group 3A: Meeting, Conference, Crew and Break Rooms
   1. 1 1/2 pr. Hinges
   2. 1 set Push/ Pulls
   3. 1 Closer
   4. 1 Stop (Wall)
   5. 3 Silencers

Group 4: Electrical, Mechanical, Custodial, and Storage Rooms
   1. 1 1/2 pr. Hinges
   2. 1 Lockset, single key
   3. 1 Closer
   4. 1 Stop (Wall)
   5. 3 Silencers
   6. *Double Doors
      *Provide the following additional hardware
      1 1/2 pr. Hinges
      1 Stop (Drop Arm)
      3 Silencers
      1 pr. Recessed Flush Bolts (Top and Bottom) Inactive Leaf
1 Door Hold Open, Surface, Inactive Leaf

**Group 5: Typical Restroom**
1. 1 1/2 pr. Hinges
2. 1 set Push/Pull
3. 1 Closer
4. 3 Silencers
5. 1 Stop (Wall)

**Group 6: Unisex Toilet**
1. 1 1/2 pr. Butts
2. 1 Privacy lock set
3. 1 Closer
4. 3 Silencers
5. 1 Stop (Wall)

**Group 7: Corridor**
1. 1 1/2 pr. Hinges
2. 1 Passage Set
3. 1 Closer
4. 3 Silencers
5. 1 Stop (Wall)
6. *Double Doors
   *Provide the following additional hardware
   1 1/2 pr. Hinges
   1 Stop (Wall)
   3 Silencers
   2 pr. Push Pulls in lieu of passage hardware

**Group 7A: Corridor (Single)**
1. 1 1/2 pr. Hinges
2. 1 Lock Set
3. 1 Closer
4. 3 Silencers
5. 1 Stop (Wall)
6. *Double Doors
   *Provide the following additional hardware
   1 1/2 pr. Hinges
   1 Stop (Wall)
   3 Silencers
   2 Pr. Push/Pull in lieu of lockset
   1 Pr. Recessed Flush Bolts (Top and Bottom) Inactive Leaf
   1 Dead Bolt Keyed (Active Leaf)
   1 Closer

**Group 7B: Corridor (Double Door Entrance)**
1. 3 pr. Hinges
2. 2 pr. Push/Pulls
3. 2 Closers
4. 2 Dead Bolts
5. 6 Silencers

**Group 7C: Card Keyed Access Doors**
1. 1 1/2 pr. Hinges
2. 1 Closer
3. 1 Touch Sensor Bar, Provided by SRP
4. 1 Pull
5. 1 Door Stop (Wall)
6. 3 Silencers
7. * Double Doors
   *Provide the following additional hardware:
   1 1/2 pr. Hinges
   1 Stop (Wall)
   3 Silencers
   1 Touch Sensor Bar, Provided By SRP
   1 Pull
   1 Closer

B. EXTERIOR HARDWARE GROUPS:

Group 8: Aluminum Storefront Doors
1. 1 Cylinder for locks provided with doors.
2. All other hardware provided by storefront manufacturer.
3. 1 Sign (“This Door shall remain unlocked during business hours”)

Group 9: Exit Door
1. 1 1/2 pr. Hinges
2. 1 Lockset, single key
3. 1 Closer
4. 1 Threshold
5. 1 Door Sweep
6. 1 set Weatherstrip
7. 3 Silencers
8. 1 Latch Guard

Group 9A: Exit Door/Card Key Access
1. 1 1/2 pr. Hinges
2. 1 Touch Sensor Bar, Provided by SRP
3. 1 Door Pull
4. 1 Closure
5. 1 Threshold (width of door or doors)
6. 1 Door Sweep (width of door or doors)
7. 1 set Weatherstrip
8. 3 Silencers
9. 1 Latch Guard
10. * Double Doors
    *Provide the following additional hardware:
    1 1/2 pr. Hinges
    1 Touch Sensor Bar, provided by SRP
    1 Closure
    3 Silencers
    1 Door Pull
    1 set Weatherstrip

Group 10: Mechanical, Electrical, Communications, and Storage Rooms
1. 1 1/2 pr. Hinges
2. 1 Lockset, single key
3. 1 Closer
4. 1 Stop (Wall)
5. 1 set Weatherstrip
6. 1 Threshold (Width of door or doors)
7. 1 Door Bottom (Width of door or doors)
8. 1 Silencers
9. 1 Latch Guard
10. *Double Doors
*Provide the following additional hardware
  1 1/2 pr. Hinges
  1 Door Hold Open, Surface (Inactive Leaf)
  1 pr. Recessed Flush Bolts (Inactive Leaf)
  1 Astragal

END SECTION