

SECTION 08711

FINISH HARDWARE FOR ADDITIONS, RENOVATIONS, AND REMODELINGS

PART 1 GENERAL

1.01 SUMMARY

A. Provide finish hardware including necessary accessories.

B. Related Sections:

1. 06100 - Carpentry.
2. 08110 - Steel Doors and Frames.
3. 08210 - Wood Doors.
4. 16721 - Fire Alarm and Detection System.

NOTE TO SPECIFIER: Provide the following items if a Card Access Control System is part of Work.

5. 13851 - Card Access Control System.
6. Division 16 - Electrical.

1.02 SUBMITTALS

A. Exterior Door Certification: Miami-Dade County product approval single listing with specified door, door frame, and hardware, demonstrating compliance with Florida Building Code missile impact criteria.

1. Comply with calculations, signed and sealed by a Florida registered professional engineer, establishing wind velocity pressure values for the specific project according to American Society of Civil Engineers (ASCE) 7-98 using a wind speed of 146 mph, exposure category "C", and a wind load importance factor of 1.15.

B. Hardware Schedule:

1. Comply with the format outlined in the M-DCPS Design Criteria Division 8.
2. Consult with M-DCPS Facilities Operations - Central Lock Shop before Phase 3 submittal for specific hardware requirements to include lock manufacturer, series, design, and finish.
3. Submit plans, specifications, and tentative hardware schedule to Central Lock Shop at least 4 weeks before

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- Phase 3 submittal.
4. Hardware schedules with M-DCPS review comments shall be resubmitted with corrections.
 5. Approval of Hardware Schedule shall not relieve the A/E or Contractor of the cost and responsibility to furnish all necessary and required hardware for this project.
 6. Three weeks before ordering hardware, submit 2 copies of Hardware Schedule covering all items required for entire project to M-DCPS Central Lock Department.
 7. Identify manufacturer of each item with type, numbers, and finish symbols.
 8. Indicate door numbers at individual hardware set numbers.
 9. Indicate doors with card readers.
 10. Include a separate index, listing all doors in the project sorted numerically and with appropriate hardware set number next to each door number with building numbers.
 11. Horizontal type schedules are not acceptable.
- C. Catalog Cuts: Submit 2 sets of catalog cuts for each piece of hardware furnished.
- D. Templates: Furnish suitable templates, with approved Hardware Schedule, to respective trades and suppliers as required to insure accurate setting, reinforcing, and fitting of finish hardware specified.
- E. Keying:
1. Provide cylinders keyed alike to a change key, 4 bitted.
 2. All keys for this project shall be turned over to M-DCPS Central Lock Department. Do not pack keys with locksets. Key blanks are not required.
 3. Hardware Supplier shall provide Contractor with 5 each, cut change keys, 4 bitted for use during construction. Obtain a receipt. There will be no other keys in Contractor's possession.
 4. M-DCPS Central Lock Department will rekey cylinders upon final acceptance of project.
 5. The keyway for the lock cylinders to be used on this project, shall be selected by the M-DCPS Central Lock Department at (305) 995-4027.
 6. Key Bows: M-DCPS Central Lock Department will determine the key bow to be used.
- F. Miscellaneous Keys:

1. Mark and tag keys to electric panels, access panels, built-in cabinets, and any other miscellaneous keys with description and room number or location.
2. Turn all keys over to M-DCPS Central Lock Department representative upon acceptance of project and obtain a receipt. Do not leave at the facility without obtaining receipt.

1.03 QUALITY ASSURANCE

- A. Florida Department of Education, Office of Educational Facilities - State Requirements for Educational Facilities 1999 (SREF).
- B. Florida Building Code (FBC).
- C. Americans with Disabilities Act and Accessibility Guidelines (ADA).
- D. National Fire Protection Association.
 1. NFPA 80 - Standard for Fire Doors and Windows.
 2. NFPA 101 - Life Safety Code.
- E. State and local Fire Safety Codes.

1.04 DELIVERY, STORAGE, AND HANDLING

- A. Properly package and mark hardware according to the Hardware Schedule, complete with necessary screws, special tools, instructions, and installation templates.
- B. Keys: Do not package keys with the individual hardware sets.
- C. Store hardware in a secured area.

PART 2 PRODUCTS

2.01 MANUFACTURERS - List all approved manufacturers.

2.02 COMPONENTS

- A. Substitutions will not be considered for any of the following listed manufacturers of hinges (hinges), locksets, door closer, or exit devices.
 1. Lock Cylinders: Six pin and single ring only.

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Restricted keyway will be selected by M-DCPS Central Lock Department.

- a. Special restricted keyways shall be required by the Board and may be of different manufacturer than the lock hardware manufacturer.
 - b. A letter of authorization shall be required from the Board, before ordering restricted materials for this project. Contact M-DCPS Central Lock Department for this authorization.
2. Locksets: Obtain lock information from M-DCPS Central Lock Department during the Design Phase. Locksets shall be one of the following according to M-DCPS Central Lock Department:
- a. Schlage D Series Rhodes: Heavy-duty lever handle locksets (Vandlgard) x 26D x thru-bolts. Thru-bolts required for wood and steel doors, regardless of manufacturer's recommendations.
 - b. Marks 195 Survivor Series: Heavy-duty lever handle locksets (American Design) x 26D.
 - c. _____ Series by _____ to match existing facility.
 - d. Example:

<u>Function</u>	<u>Description</u>	<u>Part Number</u>	
		<u>Schlage</u>	<u>Marks</u>
Classroom	Student occupied Spaces	D94	195S
Office	Individual Admin. offices	D92	195AB
Exit Lock	Exit Only	D25	195NB
Storeroom*	Mech., Elec., and Custodial Storerooms	D96	195F
Hotel/Motel	Individual Staff Toilets	D85	195H
Privacy	Individual Classroom Toilets	D40S	195L
Passage	Passage Only	D10	195N
Communicate	Communicating (Restricted Usage)	D66	195DC

*Knurled outside levers required for Mechanical, Electrical, Custodial, and Hazardous areas.

3. Hinges: By Hager, McKinney, or M-DCPS Central Lock Department accepted equivalent.
 - a. Interior hollow metal doors:
 - 1) Hager BB1168 x ss pin 4-1/2 x 4-1/2 USP.
 - b. Interior wood doors:
 - 1) Hager BB1279 4-1/2 x 4-1/2 USP.
 - c. Exterior doors:
 - 1) Hager AB933 4-1/2 x 4-1/2 US32D.
 - 2) Accepted equivalent with stainless steel oil-impregnated bearings and stainless steel hinge pins.
 - d. Interior High Security Doors:
 - 1) Hager AB930 4-1/2 x 4-1/2 USP.
 - 2) Accepted equivalent with stainless steel oil-impregnated bearings and stainless steel hinge pins.
4. Exit Devices:
 - a. Comply with ADA requirements and shall be by the same manufacturer.
 - b. Comply with M-DCPS Design Criteria and M-DCPS Central Lock Department for high security areas to receive exit devices.
 - c. Precision 1100 Series or M-DCPS Central Lock Department accepted equivalent.
 - 1) Non-labeled: Pairs of doors shall have outside door pull on RHR door only. Provide "exit only" device on LHR door.
 - 2) Labeled: Interior labeled doors requiring exit devices, shall have outside lever trim on RHR door. Provide "exit only" device on LHR door.
 - d. Exterior and Courtyard Non-Labeled Openings:
 - 1) Entry Doors:
 - a) Precision 1103 x US32D x SNB x less trim x cylinder x door pull x SNB.

- 2) Exit Only Doors:
 - a) Precision 1101 x less trim x less cylinder x US32D x SNB.
- e. Interior, Exterior, and Courtyard Labeled Openings:
 - 1) Entry Doors:
 - a) Precision FL1108-V39-L x cylinder.
 - 2) Exit Only Doors:
 - a) Precision FL1101 less trim and less cylinder.
 - 3) Card Access Doors:
 - a) SS1103 x US32D less trim x SNB with Hager H4G door pull and cylinder.
- f. Special Labeled Exterior Entry Doors.
 - 1) Flammable storage rooms used for the storage and lawn equipment: Precision FL-1103 x US32D x less trim x SNB with Hager H4G door pull and cylinder.
 - 2) Card Access Doors with Restricted Access and Exterior Doors: Precision SS FL-1103 x US32D x less trim x SNB with Hager H4G door pull and cylinder.
 - 3) Card Access Doors with Continuous Access and Interior Doors: Precision SS FL-1108 x 9LA.
 - 4) Mount manufacturer's cylinders to the door and not through the body of the exit device.
- 5. 5. Vertical Rod Exit Devices: Vertical Rod Exit Devices are not acceptable.
- 6. Bore-In Deadbolt Locks (Used at non-labeled exterior group toilets, custodian rooms, and mechanical rooms: Marks or Schlage. Other than exterior group toilets, deadbolt locks shall not be used on labeled doors or any student occupied area.):
 - a. Marks 130S/26D with door pull Hager H4G for classroom function deadbolt.
 - b. Marks 130K/26D with door pull Hager H4G for non-labeled doors.

7. Surface Mounted Head/Foot Bolts.
 - a. Use at labeled and non-labeled doors on telephone closets, mechanical rooms, electrical rooms, flammable storage, and interior storage rooms at the LHR door of a pair of doors without a center mullion. Comply with NFPA-80 2.8-2.5.
 - b. Do not use at student occupied areas.
 - c. Left Hand Reverse (LHR) leaf.
 - 1) Exterior Labeled: Hager 275D (UL).
 - d. Right Hand Reverse (RHR) leaf.
 - 1) Exterior Labeled: Exit device x door pull and cylinder.
 - 2) Exterior Non-Labeled: Deadbolt x door pull and cylinder.
 - 3) Interior: Storage function cylindrical lever lock, knurled outside.
8. Removable Hardware Mullion:
 - a. For exterior pair of doors except at non-occupied spaces.
 - 1) Labeled openings: Precision FL822.
 - 2) Non-labeled openings: Precision 822.
9. Weather Stripping, Thresholds, Door Bottoms, and Astragals.
 - a. Accepted Manufacturers: Baldwin, Brookline, Cipco, Corbin, Glynn Johnson, Hager, Ives, National Guard Products, Quality, Pemko, Reese, Russwin, Trimco, Rockwood, or Zero.
 - b. Stop applied sound seals or weather stripping shall not exceed more than 5/16" thickness.
 - c. Kitchen receiving doors require brush weather stripping, applied at the bottom, exterior surface of door. Do not specify a threshold for this door. Other doors entering into food service areas, that do not require thresholds for weather protection, shall have automatic door bottoms to provide vermin protection.
 - d. Provide rain drips for all exterior doors not having over head roof protection.
 - e. Provide rigid door weatherstripping for head and jamb legs at kitchen receiving areas, exterior

- electric rooms, food service areas, home economics classrooms, and exterior doors to media centers.
- f. Soundseals and automatic door bottoms shall be used at perimeter doors to band rooms, media centers, music suites and at interior doors of music rooms, CCTV rooms, mechanical rooms, and other sound sensitive rooms. Use bumper type thresholds for exterior doors and saddle type thresholds for interior doors.
 - g. Thresholds:
 - 1) Panic Type Thresholds (For exterior and sound control use):
 - a) Hager 520SAS: 5" wide x 1/2" high.
 - 2) Saddle Type Thresholds (Only for interior use at change of floor finishes):
 - a) Hager 418SA: 3" wide x 1/4" high.
 - b) Hager 413SA: 5" wide x 1/4" high.
 - 3) Marble Thresholds: For toilet rooms, wet mop areas adjacent to other spaces and sink or mop receptor equipped custodial closets.
 - 4) Thresholds shall comply with ADA Requirements.
 - h. Door Bottoms.
 - 1) Automatic Door Bottoms: Hager 747S.
 - i. Weatherstrip/Soundseals:
 - 1) Rigid Weatherstrip: Hager 891SAS.
 - 2) Press on Weatherstrip: Hager 736.
 - 3) Brush Weatherstrip: Hager 801S.
 - 4) Soundproofing: Hager 862SXN or SDN.
 - 5) Silencers: Hager 307D.
 - 6) Overhead Rain Drip: Hager 810S.
 - j. Astragals:
 - 1) Hager 837SAV.
 - 2) Use only at a pair of doors with head and foot bolts.
10. Auxiliary Hardware: Push Plates, Kick Plates, Doorstops and Holds, and Doorstops.

- a. Accepted Manufacturers: Architectural Builders Hardware (ABH), Baldwin, Brookline, Cipco, Corbin, Glynn Johnson, Hager, Ives, National Guard Products, Quality, Pemko, Reese, Russwin, Trimco, Rockwood, or Zero.
- b. Push-Plates: Hager 60S PK, hard black plastic with beveled edges.
 - 1) Provide push plates at non-labeled doors with exit devices or deadbolts, and at toilet room doors.
 - 2) Omit push plates at doors with lever handle cylindrical locksets.
 - 3) Provide 2 push plates and 2 kick plates on double acting doors.
 - 4) Do not use push-plates on fire labeled doors.
 - 5) 16 inches x 16 inches x 1/8", black plastic.
 - a) 4 inches x 16 inches x 1/8" on doors with vision panels.
 - 6) Clear plastic push-plates are not acceptable.
- c. Kick Plates: Hager 214SBL.
 - 1) Provide at all doors except to individual offices at administration areas.
 - 2) 16 inches x 1/8" thick x less 2 inches the width of door, hard black plastic with beveled edges. At louvered doors, provide 16 inch height maximum or to bottom of louver.
 - 3) Clear plastic kick plates are not acceptable.
 - 4) Kick plates for labeled doors shall be UL labeled.
- d. Doorstops and Holds:
 - 1) Wall mounted doorstop and holds: Hager 254W x US26D.
 - a) At custodial, electrical, and mechanical non-labeled spaces and exterior non-labeled access to corridors.
 - 2) Floor mounted door holders: Hager 258F x US26D.

- a) At non-labeled doors only if doorstop and holds cannot be used and cush-n-stop closers at labeled doors.
 - 3) Door holds at labeled doors with closers shall be magnetic hold open devices connected to the fire alarm system.
- e. Doorstops:
- 1) Wall mounted doorstops: At non-labeled wood doors to administrative individual offices, conference rooms, storage rooms, and work rooms and at all labeled doors. Install on solid concrete or masonry walls or at drywall or plaster applications with adequate backing reinforcement.
 - a) Convex type for doors not having push button locksets: Hager 230W.
 - b) Concave type for doors having office function or push-button locksets, locate on button side of door: Hager 234W.
 - 2) Floor mounted doorstops: At labeled doors only if wall mounted stops cannot be used.
 - 3) Provide doorstops or other door control devices at doors if stop and holds are not specified.
- f. Door Pulls, Cast aluminum: Hager H4G.

11. Fasteners:

- a. Hollow Metal Doors: Accepted machine.
- b. Kick Plates: O.H. Phillips recess Type A SMS.
- c. Thresholds: Hager FHSL 25-1/4 x 1/4-20 x 2" cadmium plated expansion screw in one unit or accepted equivalent.
- d. Brush Weatherstripping: As recommended by manufacturer.
- e. Finish: Match finish of surfaces to which they are applied.

12. Door Closer:

- a. For hollow metal doors, doors exposed to wind conditions, labeled doors, and doors to student occupied spaces.

- b. Pairs of doors shall require closer.
 - c. Do not provide a closer on a leaf with head and foot bolts.
 - d. LCN Series 4111-N AVB x EDA x TB, parallel arm only.
 - e. 4111-N DEL x AVB x AL x EDA x TB (Special delay action closer, do not provide at doors opening 180 degrees or greater).
 - f. 4111-N Spring Cush AVB x AL x EDA x TB.
 - g. 4116-N AVB x AL x EDA x TB (oversize doors only, verify with manufacturer).
 - h. 4111-N Cush-n-stop x AVB x EDA x TB. Provide where 180 degree swing is obstructed or where a wall stop is not practical.
13. Overhead Stop and Hold:
- a. 3324-US26D, surface mounted, by ABH.
14. Electromagnetic Holder/Release:
- a. Hold open devices specified for fire rated doors shall be electromagnetic type. Holder shall be wired to fire alarm system and shall release in the event of fire. Coordinate with Section 16721 - Fire Alarm and Detection System.
 - b. 900 Series by Firemark or 2210-US28 Mag Holder Recessed Wall Mount by ABH.
 - c. M-DCPS Central Lock Department will not consider other manufacturers as "accepted equivalent" unless the mounting and the mounting hole patterns are identical to Firemark. This alone will not be the sole basis of being "equivalent".
15. Electromagnetic Lock: Locknetics or accepted equivalent.
- a. Labeled and non-labeled doors:
 - 1) Locknetics Series 390 x MBS x L1 x ATD x FSE x US28. Minimum holding force shall be 1500 pounds.
 - 2) Signal Switch (SS): Internally mounted switch to monitor the use of the touch bar.
 - 3) Exit Device, labeled: SS FL1108 x 39LA
 - 4) Exit Device, non-labeled: SS 1103 x door pull.
 - 5) Hinge: AB850 x 4.5" x 4/5" x US32D x ETW-4.
 - 6) Motion Detector: ScanII B.

16. Viewfinder (peephole).
 - a. 1755 x 26D Hager.
17. Key Cabinet: At elementary, middle, and high schools.
 - 1) Tel-kee AWC 250.
18. Sliding Glass Door Locks for display cabinets etc. using only 1/4" thick, solid sliding safety glazing glass doors: By Wonder Lock.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Do not proceed with the work of this section until conditions detrimental to the proper installation and protection of hardware have been performed.

3.02 INSTALLATION

- A. Door hardware locations shall be as follows:
 1. Pushplates: 1 inch above pushpad and 1 inch from exit device head.
 2. Pushplates with a Vision Panel: 1 inch above exit device between vision panel and edge of door.
 3. Exit Device: 40-5/16" from door bottom or 34 inches as required for children's accessibility.
 4. Lever Lockset: 38 inches from door bottom or 34 inches as required for children's accessibility.
 5. Deadbolt: 48 inches from door bottom.
 6. Kickplate: 1 inch from door bottom or 1/2" from top of surface mounted automatic door bottom.
 7. Viewport: 60 inches from door bottom.
- B. Do not install finish hardware until operations causing dampness have been completed.
- C. Door Closers:
 1. Install with closer manufacturer's thru bolts and adjust for proper operation.
 2. Location: Locate closer on door as if door were to swing 180 degrees, regardless of the actual swing of the door. When using Cush-n-stop, mount for 90 degree swing.
 3. Do not allow closer to act as a stop.

4. Closer Foot: Install with 5 screws for wood jambs or 5 stove bolts for metal jambs. Provide an accepted spacer (if required by the width of stop) for fifth fastener.
 - a. Use of screw type fasteners are not allowed for metal frames.
- D. Exit Devices: Install with thru bolts.
- E. Door Pulls: Top hole of door pull shall be 2 inches above bottom of exit device casing at casing centerline.
- F. Stop and Hold, Wall Mounted: Install at top outside corner of door, with thru bolts or grommet nuts.
 1. Install wall portion according to manufacturer's recommendations and based on field conditions to withstand 100 lbs. shear pressure.
- G. Stop and Hold, Floor Mounted: Install at bottom outside corner of door, with thru bolts or grommet nuts.
 1. Install floor portion according to manufacturer's recommendations, after finish floor covering has been installed. Secure to subfloor using full size spacer if necessary to keep bottom flush with finish flooring, i.e. carpet.
- H. Surface Bolts (Head and Foot): Install with thru bolts or grommet nuts.
- I. Thresholds at Exterior Doors Exposed to Weather:
 1. Set in full bed of sealant.
 2. If threshold is saddle type, then door bottom shall seat against threshold. Threshold shall not exceed 1/4" in height.
- J. Brush Weatherstripping: Install according to manufacturer's recommendations and after final finish has been applied to door and frame.
- K. Push Plate:
 1. 1 inch above push pad and 1 inch from exit device head
 2. With vision panel, 1 inch above exit device head between vision panel and edge of door.

3.03 FIELD QUALITY CONTROL

- A. At final acceptance, hardware shall be clean and free from disfigurement, paint, and other foreign matter.

3.04 HARDWARE SCHEDULE

NOTE TO SPECIFIER: Provide the A/E's Tentative Hardware Schedule here. Refer to M-DCPS Design Criteria for additional information regarding Tentative Hardware Schedule requirements. The Phase Three - 100 hundred percent Revised Hardware Schedule, along with plans and specifications shall be resubmitted to Central Lock Department for review, at least 3 weeks before invitation to bid date.

- A. The Contractor's hardware schedule and related shop drawings shall be sent to Central Lock Department for review as specified for submittals.
- B. Do not include single doors and pairs of doors within the same hardware set.
- C. Incorporate in the Door Schedule, located in the Drawings, corresponding with the Hardware Set numbers as shown in the project Finish Hardware section.
- D. List every door required for each Hardware Set.
- E. The following Hardware Set No.1 is a recommended format for pairs of doors.

Hardware Set No.1: HM x HM Doors 101, 102.

Pair of doors: 3'-0" x 7'-0" x 1-3/4", labeled.

(Interior x exit device x closer x wall bumper, convex).

3 pr hinges	BB1168 4-1/2 x 4-1/2 USP
1 ea exit device	FL1108 x US32D x 39LA x Trim x SNB RHR DOOR
1 ea exit device	FL1111 x US32D LHR DOOR
1 ea cylinder	20-022 x 26D RHR DOOR
2 ea closer	4111N AVB x AL x TB
2 ea kick plates	BLK Plastic 16 x 2" LWD x 1/8
3 ea silencers	307D
2 ea wall bumper	23OW

- F. The following Hardware Set No.2 is a recommended format for single doors.

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Hardware Set No.2: HM x HM Doors 105, 106.

3'-0" x 7'-0" x 1-3/4".

(Exterior x exit device x closer x wall bumper, convex).

1-1/2 pr hinges	AB933 4-1/2 x 4-1/2 US32D
1 ea exit device	1103 x US32D x SNB
1 ea closer	4111N AVB x AL x TB
1 ea kick plate	BLK Plastic 16 x 2" LWD x 1/8
3 ea silencers	307D
1 ea wall bumper	23OW
1 ea door pull	H4G x US28
1 ea push plate	16" x 16" x 4BE x BLK
1 ea cylinder	20-022 x 26D

END OF SECTION