

## **DIVISION 8 - DOORS AND WINDOWS**

### **Section 08710 - Finish Hardware**

#### **Introduction**

The University of Arizona has determined that, based on its experience with the performance and durability of the products described in this Section, and based on the benefits of limiting the range of repair parts which must be maintained in inventory, a proprietary specification is in the best interest of the University.

Specify all hardware required for a fully functioning, secure, weatherproof installation for all swinging, sliding, and folding doors.

Include unique door or frame dependent hardware in those sections.

Include cabinet hardware in the appropriate Division 6 section.

Comply with prevailing codes, standards and accessibility standards for project location.

In renovation projects, specify hardware which matches the existing hardware type for function, appearance, trim, and finish, except where other overriding considerations such as handicapped accessibility require deviations. The Consultant must determine the existing conditions and specify materials which match those conditions. Requiring the Contractor to "match existing as required" is unacceptable.

In special cases, hardware different from those items described below may be required. In all such cases, secure specific permission of the Project Coordinator. These cases may include:

Alarmed exit devices

Electronic security access

Matching "period" hardware in historic buildings

Include on the drawings a schedule indicating which specific hardware group applies to each individual door. Pay particular attention to identifying the desired function of each door lockset.

Finish Hardware Specifications shall be written by a certified Architectural Hardware Consultant familiar with the requirements of the University of Arizona. A local consultant and manufacturer's representative that has rendered assistance with the UA DSS Manual that could be available to assist, is listed below:

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#### **Part 1 - General**

- Require submittal of a complete hardware schedule, submitted in a DHI Vertical Format, describing each door and each hardware group, including technical data for each item.
- Require that the supplier of finish hardware have as a full-time employee a regular member of the Door & Hardware Institute (DHI), and that the hardware schedule be prepared by a certified Architectural Hardware Consultant (AHC).
- Require delivery to the UA FM Lock Shop upon Substantial Completion all adjusting tools, keys, dogging keys, and other maintenance materials (specific to pieces of hardware).
- All hardware to be installed with mounting hardware supplied by the hardware manufacturer.
- Hardware Supplier shall be a stocking dealer physically located in the United States of America.
  - Hardware supplier, UA FM Lock Shop and complete project team should participate in submittal phase coordination meetings as needed to complete coordination with all other trades (doors, frames, electrical) and vendors (Amer-X).

- Hardware supplier, UA FM Lock Shop and complete project team should participate in a pre-installation meeting prior to hardware installation and conduct a post installation review and adjustment of all hardware 3-6 months after occupancy.

## Part 2 - Products

- Butts (Hinges);
  - Pre-qualified manufacturers are:
    - Hager
    - McKinney
    - Ives
  - Follow hinge manufacturer's recommendations for size, type, metal and quantity. Minimum 1-1/2 pair per door
  - Preference is for ball bearing five-knuckle hinges, with non-removable pins and a lifetime warranty for all openings. Same is a requirement for all openings with door closers.
  - Comply with NFPA-80 at rated openings.
- Locksets and Latches;
  - Pre-qualified manufacturer and lockset series is:
    - Schlage Lock, L Series, UNIVERSITY STANDARD
    - Locksets shall accept non-interchangeable core Medeco cylinders.
    - Permanent cylinders will be provided by UA FM Lock Shop.
    - All Schlage lock and latch sets shall be purchased through an authorized, stocking, Allegion Dealer physically located in the United States.
    - On building renovation and expansion projects verify with FM lock shop for manufacturer and type of locksets required
- Mortise;
  - Use L Series, labeled, mortise locks, less cylinders, at heavy duty applications such as those listed below. For additional information, see cylinder and keying section below.
    - As general rule the UNIVERSITY STANDARD is for full mortise locksets in all University buildings. Consult with UA FM Lock Shop for any exceptions. Mortise locksets are especially crucial in high use heavy duty applications such as laboratories, classrooms, stairwells, main entries, etc.
    - Use "06A" rose and lever for trim design selection
  - Use ND Series, non-interchangeable core, cylindrical locksets less cylinders for any general or low use applications subject to FM Lock Shop approval. Medeco Throw Members to be provided by the UA FM Lock Shop for their use installing permanent cylinders. For additional information, see cylinder and keying section below.
    - Use "Rhodes (RHO) and lever trim design selection.
  - Generally use the following functions in the noted applications. Use of other functions may be required by User and UA FM Lock Shop.
    - Passage
      - Interior closets or non-locking doors
      - Schlage Mortise Function: L9010S 06A
      - Schlage Cylindrical Function: ND10S RHO

- Privacy
  - Single person toilet rooms.
  - Schlage Mortise Function: L9040S 06 w/ occupancy indicator
  - Schlage Cylindrical Function: ND40S RHO
- Storeroom  
(Always Locked)
  - Restricted interior applications (animal quarters, bio-hazard labs, radio-hazard labs, etc.) and all interior and exterior service spaces (mechanical rooms, equipment rooms, telecomm rooms, always locked storage rooms, custodial closets, etc.) and ground level stairwell exit doors that do not require panics.
  - Schlage Mortise Function: L9080 L 06A
  - Schlage Electrical Mortise Function: L9092 LEU 06A (EL at fail safe applications) New construction to be 24 VDC. Verify with UA FM Lock Shop for existing voltage.
  - Schlage Cylindrical Function: ND80LD RHO
  - Schlage Electrical Cylindrical Function: ND80LD RHO DEU (DEL at fail safe applications) at access controlled doors. New construction to be 24VDC. Verify with UA FM Lock Shop for existing voltage.
- Office
  - All "assigned" interior applications (offices, laboratories, etc.)
  - Schlage Mortise Function: L9050L 06A
  - Schlage Cylindrical Function: ND53LD RHO
- Classroom (key)
  - All "shared" interior applications (classrooms, lecture halls, etc.)
  - Schlage Mortise Function: L9070L 06A
  - Schlage Cylindrical Function: ND70LD RHO (Classroom security function is not utilized)
- Auxiliary Deadlock
  - Corridor toilet rooms
  - Schlage Mortise Deadbolt: L463 classroom function at multiple user restrooms. Use with push/pulls.

- Vandalguard is not utilized.
- 2-3/4" backset typical. Exception: Where conflict may exist with sound or other seals conflicting with lock rose.
- Only 4-7/8" "ASA" type strikes with no filing or other modifications to make fit.
- Cylindrical latch throw to be 1/2" minimum or 3/4" or as required by opening fire label testing.
- Provide extended lip strikes where required to protect frame or trim. Lip shall not extend more than 1/8" beyond frame or door (at pairs) or trim.
- In renovation applications, comply with these requirements regardless of the style of existing locks and latches unless directed otherwise by Project Manager.
- Door hardware and handles shall comply with all applicable code and accessibility requirements for the project.
- Provide latch protectors at ALL exterior outswinging doors and at any interior locked, outswinging doors that require additional security.
- Where both Mortise Type and Cylindrical locks are used in the same project care shall be taken to assure levers align when installed. Projects in existing construction shall require field verification of existing lever locations and care taken to match existing height on new installations.
- Provide wrought boxes at strikes at wood frames or pairs of wood doors.

- Digital Locksets;
  - For digital lockset needs (keyless entry) please refer to UA FM Lock Shop.
- Hospital Type Push/Pull Latches;
  - Use only Glynn Johnson HL-6 with a 5" backset. Push and Pull Paddles both down. Mount Centerline at

42" Above Finished Floor (AFF).

- Where locking is required at the push/pull latch use only a Glynn Johnson HL-6 series with a Schalgel L series lock chassis. 2-3/4" backset and a 4-7/8" ASA strike. Push and Pull Paddles both down.
- Padlocks;
  - Padlocks shall be provided and keyed by the UA FM Lock Shop, where required.
- Cylinders and Keying;
  - Specify that all locks and latches be shipped without permanent cylinders unless required by the Contractor for temporary access, security and installation fit up.
  - The University will install all permanent cylinders and perform all keying.
  - Contractor to provide and install temporary construction cylinders for site security and for hardware installation, alignment and "testing".
  - Interchangeable or removable core cylinders are not employed by the University system and are not acceptable.
- Exit Devices;
  - Pre-qualified manufacturers are:
    - Von Duprin 98 or 99 series, 98-F or 99-F at Rated Openings, 33 or 35 33-F or 35-F for narrow stile. OWNER'S STANDARD, Device shall accept non-interchangeable core Medeco cylinders. Permanent cylinders will be provided by UA Facilities Management Lock Shop
  - Use the following functions and trim in the noted applications; use no other functions or trim. Cylinder dogging is not preferred and non-standard, refer to FM Lockshop.
 

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| <ul style="list-style-type: none"> <li>• Exit Only</li> <li>• Exterior (key)</li> <li>• Exterior/Interior (key)</li> <li>• Exterior (key)</li> <li>• Corridor fire door</li> </ul> | <ul style="list-style-type: none"> <li>Interior double-egress doors or other exit only doors (less dogging).               <ul style="list-style-type: none"> <li>• Von Duprin 99EO(-F)</li> </ul> </li> <li>Doors required to be locked at all times. Vandal resistant pull on exterior. No dogging at perimeter doors               <ul style="list-style-type: none"> <li>• Von Duprin 99NL (-F) x VR Pull</li> </ul> </li> <li>Classroom function. Key in trim locks or unlocks lever at interior exit doors from assembly spaces.               <ul style="list-style-type: none"> <li>• Von Duprin 99L(-F) x 996L-R/V</li> </ul> </li> <li>Entrance or doors required to be locked at all times with lever pull handle. No dogging at emergency exits.               <ul style="list-style-type: none"> <li>• Von Duprin 99L-NL (-F) x VR Pull</li> </ul> </li> <li>Passage function, use with electronic hold open devices               <ul style="list-style-type: none"> <li>• Von Duprin 99L-BE(-F)</li> </ul> </li> </ul> |
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- Use only rim devices. Size push pad portion of device to meet code requirements for Fire & Life Safety.
- Do not use exposed or concealed vertical rod devices. Must have approval of the UA Planning, Design and Construction Project Manager where other options are not practical.
- All exit devices must comply with applicable code and accessibility standards & requirements for the project.
- At "Night Latch" function doors use anti-vandal type pull trim at exterior applications where needed.
- Provide "Less Dogging" where no dogging is desired. No manual dogging allowed at rated openings. Electrified Latch Retraction devices must be tied into the life safety alarm system and release/latch upon alarm.
- Removable mullions are to be the keyed type, Von Duprin KR\_\_54 as appropriate for the application. At

fire rated openings mullions are to be UL listed for fire, up to 3 hours.

- At Exit Devices provide temporary construction cylinders and cores to assure proper functioning at the time of installation.
- At pairs of doors use only one pull handle on the exterior and mount device flush to the door (no gaps). This is to limit the ability to tie leaves together either by school or non-authorized personnel
- Where Access Control is required, use the HES 9600 series strike or Von Duprin 6300 as the first option with exit devices.
- Where electric latch retraction is required, use the Von Duprin Quiet Latch Retraction (QEL) device
- At fire rated doors use exit device manufacturer's electrified handled trim, 24VDC at new construction, verify voltage at existing buildings.
- Electrified Applications for access control;
  - The University preference is to use electric strikes in low or medium use applications. Use Von Duprin 6211 for mortise and cylindrical lockset applications.
  - Use HES 9600 or Von Duprin 6300 for surface mount exit device applications.
  - Extended lip strikes should be avoided. Resolve frame issues when installed in frames with surface applied trim or facings
  - Where areas require quiet hardware operation utilize the QEL exit devices or electrified mortise or cylindrical locksets.
- At pairs of doors utilizing locksets or fire rated doors requiring 24/7 latching provide electrified locksets as listed in lockset section above.
- REX switches are typically not integrated in the hardware. Motion REX is provided by the University's security vendor.
- MAGNETIC LOCKS are generally not used on UA Arizona projects.
- The Contractor providing and installing electrified hardware (electrified trim, electric latch retraction, electrified levers and similar ) on the door is responsible for providing and connecting wiring on door side from wired hinge or wired transfer to electrified hardware on door using the required CON connectors."
- "Amer-x is responsible for providing and connecting wiring from hinge or transfer on frame side to power supplies, conduit within frame and for electric strikes using the required CON connectors."
- For Amer-X provide 18/6 wire for all wire pulls to ensure connectivity in the event of damage or future expansion.
- For Amer-X provide two 2" conduit for camera and keyless access, unless wire tray is used or to the wire tray.
- Wiring in place at the time of installation for all exterior elevators to have card readers or for future placement of cat cards. (Covid 19 inspired).
- Door Closers;
  - Use only Rixson Series 27 floor closer, with top and intermediate pivots, at all public exterior doors. Do not specify non hold open Suffix "A". Okay to specify with selective hold open Suffix "S". UNIVERSITY STANDARD. NO SUBSTITUTIONS without UA FM Lock Shop approval.
  - Use LCN 4040/4041 XP, full cover, overhead closers at all other applications. UNIVERSITY STANDARD.
    - Take advantage of available arm options where appropriate for various situations. (Hold open, cushion stop, 180 degree, delayed action, etc.)
      - Extra duty arms at reverse bevel doors.
      - SCush arms at reverse bevel doors where floor stops may create a tripping hazard.
    - Provide necessary spacers, brackets, drop plates or accessories to avoid mounting conflicts with overhead stops, seals or other hardware.
    - Provide Closers at all classroom doors.
    - Require through-bolt installation at wood and non-reinforced metal doors and surface-applied installation at metal door frames. Preferred installation is on the door. If jamb mounting is necessary, all holes to be drilled and tapped. See Section 081100 for preparation and reinforcing of metal doors and frames.

- 30 year warranty.
- All closers must comply with ADA requirements. Door closers shall be adjusted so that from an open position of 90 degrees, the time required to move the door to an open position of 12 degrees shall be 5 seconds minimum. The force for pulling or pushing open interior hinged doors shall be 5.0 pounds maximum. Exception: Fire Doors shall have the minimum opening force allowable by appropriate administrative authority.
- Use only wall-mounted hold open devices where doors with closers are intended to be normally open. Coordinate with Division 16 or 26, Electrical.
- Specialty Hardware;
  - Glass Doors: Use only standard and readily available hardware elements that accept standard UA Medeco cylinders. Secure approval of UA FM Lock Shop for all glass door and hardware applications. Use Blumcraft PA series bars for glass doors.
  - Use AdamsRite locksets for limited applications and light duty narrow style aluminum doors.
  - For roof hatches and secure access doors use UA FM Lock Shop approved Yale rim type latch or Yale rim type bolt where padlock type locking is not provided.
  - All specialty hardware must accept UNIVERSITY STANDARD Medeco cylinders.
  - Camden switches for any key operated device, fire curtain, rolling gate, large bay type doors, roll down shutters etc.
- Miscellaneous Hardware;
  - Specify all required miscellaneous hardware, including:
    - Stops (wall-type are preferred. Blocking must be coordinated, in walls, with other spec sections )
    - Kick plates on heavy traffic doors (classrooms, conference rooms, laboratories, etc.) and all wood doors with closers. Protective plates shall be a minimum of .050" thick, Beveled 4 sides and provided/installed with manufacturers standard countersunk screws. Kickplates shall be 1" Less Door Width (LDW) at pairs without mullions and 2" LDW at singles and pairs with mullions. Mop Plates shall be 1" LDW. Where armor plates are required to protect fire rated doors, they shall carry an engraved UL label.
    - Thresholds, door bottoms, and weatherstripping on all exterior doors.
    - Interior smoke and door seals surface mounted or adhesive backed. Provide frame mounted intumescent seals only where required by the door manufacturers label requirements for each opening.
    - Knox Box: Coordinate with UA Risk Management Services for proper selection of and location of Knox Box. Recess where possible.
- Double Doors;
  - Refer to Section 08000 for additional information.
  - Avoid vertical rod exit devices. Use removable mullions in most instances and only when either required for additional opening width or where the "door bank" principle cannot be applied. U of A prior approval is required.
  - At pairs of doors, where the inactive leaf is not required for egress, UA Risk Management has approved, and desires, the use of surface bolts with no door knob/lever or other surface, or mortised, hardware that would indicate this leaf is to be used for exiting. Mortised flush bolts are not to be used. Where self-latching or automatic bolts are required by code at fire rated openings this is to be reviewed with UA Risk Management for final approval. Use dust-proof strikes equivalent to Ives DP-2 where required to go into floor.
  - Where surface bolts are used they should be Ives SB360 or equal.
  - Avoid use of automatic flush bolts, except as required by code or local Authority Having Jurisdiction.
  - Avoid use of coordinators; where unavoidable, use full width units, with closer brackets, in lieu of gravity arm.

- Where required, use only T-type astragals, provide 7/8' flat lip strike, do not notch around the strike.
- Finish;
  - BHMA 626/652 (US 26D), satin chrome plate, uncoated
  - BHMA 630 (US 32D), satin stainless steel, uncoated
- Hardware Schedule;
  - Include a specific hardware group schedule, with group designations to be used on the drawings.
- **Part 3 - Execution**
- Coordinate with other trades (Division 6 and Division 9) location of backing required for surface applied hardware. Review finishes and floor coverings for affect to door hardware or undercuts.
- Make sure that installation is specifically described, here or in the appropriate Division 6 section.
- Install all fire door hardware to comply with the requirements of NFPA-80-2007, Chapter 5.
- Coordinate sealing of exterior thresholds and raindrips with Division 7 – Moisture Protection.
- Coordinate Electrified Hardware with Division 16 or 26 – Electrical and Tab C-6 – Keyless Access and Security. Other affected trades for getting and installing power, j-boxes, wiring, conduit, connectors and connections to the opening or hardware whether through the walls, concrete slabs, etc. shall be coordinated in the appropriate specification sections. Division of labor and materials of final electrified assembly by affected trades, for proper functionality shall be clearly defined.
- To avoid damage, impact drivers are not to be used for door hardware installation.
- Require that all hardware including temporary test cylinders be installed, and all doors tested and adjusted for proper operation, prior to Substantial Completion.
- All door closers shall be readjusted after the air balance is complete.
- Latches shall be centered in strikes, i.e. filing of strikes is strictly prohibited.
- Demolition: All door hardware, including cylinders and cores, that are removed from existing openings shall remain the property of the University of Arizona and shall be turned over to the UA Facilities Management (FM) Lock Shop in an orderly fashion. Lock and Door Hardware removals shall be coordinated with the UA FM Lock Shop Supervisor (520) 626-1858

**End of Section 08710**