8 Openings

NOTE: Significant revisions or additions to the previous standards are highlighted in italics.

GENERAL

Designers shall verify that all applicable portions of these standards are incorporated into the project's design, drawings, specifications and final construction. Requests for variances from these standards shall be submitted in writing to the FPD Project Manager, using the KU Standards Variance Request Form found in Appendix A1.1, for review and written approval or rejection as indicated on the form.

RELATED DOCUMENTS & REQUIREMENTS

Refer to the following for requirements that also apply to work of this section.

- ❑ Division 1 - General Requirements
- ❑ KU Policy Library may be found at Policy Admin Client Portal Home
  - ❑ "Key and Electronic Lock Policy". This policy affects electronic access control systems, such as CBORD systems, that are installed on exterior entrances and on selected interior doors where desired.
  - ❑ "Video Technologies for Safety and Security Purposes, Policy on Implementation and Use of". This policy affects closed-circuit TV (CCTV) systems that are often installed in conjunction with access control systems.

DOORS AND WINDOWS – DESIGN GUIDELINES

Windows: University buildings shall provide operable windows where required by code.

- ❑ Frames: All exterior windows shall have thermal-break frames, insulating glass units and a prefinished frame.
- ❑ Glazing: Exterior windows are recommended to be tinted bronze and have a low-E coating. Verify specific criteria for each project with FPD.
- ❑ Window Screens: Operable windows shall NOT receive window screens, due to problems the University has had retaining them in-place and in undamaged condition.
  - ❑ Exception: Projects for the Dept. of Student Housing typically include screens on operable windows. Verify with FPD for each project.
- ❑ Window Locking Devices: Provide more than one locking device on windows that are more than 3' wide.
- ❑ Fire-Rated Locations: Designers shall verify and clearly indicate all window locations which are to be fire-rated and shall schedule appropriate window frames and glazing systems.

Doors and Frames: Exterior building entry doors and frames shall be heavyweight, wide stile, pre-finished aluminum units, due to lower maintenance requirements than painted hollow metal frames or narrow stile doors.

- ❑ Power-assisted or automatic doors shall be provided at the primary building entrance(s).
  - ❑ In vestibules, provide door operators on both the interior and exterior door in the same path of travel, independently operable from each side and from within the vestibule.
  - ❑ Exterior Service Entry Doors: Specify to be 18 gauge steel face materials, insulated core doors in 16 gauge steel frames.
- ❑ Magnetic Hold-Opens: High-traffic interior doors and doors on stairs or elevator door openings should be held open with magnetic hold-open devices.
- ❑ Kickplates: Provide on all doors into janitor closets, mechanical/electrical rooms, storage rooms, kitchens, loading dock doors and other spaces where equipment may be wheeled in and out through doors. Depending on equipment expected to move through and potentially damage doors, Designers shall consider the provision of taller armor plates to protect door surfaces.
- ❑ Pairs of Doors: The use of removable center mullions is discouraged, especially within corridors, at fire-rated door locations or other high-traffic areas.
- ❑ Hardware Schedule: At entrances with multiple doors ganged together, only one door shall be keyed from the exterior. Other doors in multiple gangs shall be pull only, with key-dogging on interior panic devices.
  - ❑ *Doors that are electronically access-controlled shall omit cylinder dogging. If only one (1) door in a bank of doors is electronically access-controlled, that door shall be the one that receives a cylinder.* Omit dogging on fire-rated doors.
- ❑ *Interior doors shall be at least 1-3/4" thick. Residential grade doors are prohibited.*
- ❑ *Except for doors that will receive panic or fire exit hardware, all doors in academic buildings that receive a lockset shall be factory prepped with an ANSI 86 edge prep to accept a mortise lock. Holes for trim may be drilled at time of installation in accordance with manufacturer's instructions. Cylindrical locks shall not be used in academic buildings.*
  - ❑ *For doors that will be receiving a Schlage electrified mortise lockset, please refer to Schlage Door Preparation Template L1 for dimensions of hole to store excess wiring.*
  - ❑ *For doors that will be receiving a Sargent electrified mortise lockset, please refer to Sargent "ELECTRIFIED MORTISE LOCK DOOR TEMPLATE" #7065. This document contains the proper raceway dimensions*
  - ❑ *Install transfer hinges in the centermost hinge prep. If an even number of hinge preps exist, you may use either of the center hinges. Wire holes shall be drilled to the dimensions specified by the manufacturer. All wire holes made in metal shall be deburred.*
- ❑ *Except for doors that will receive panic or fire exit hardware, all doors in Department of Student Housing (DSH) buildings that receive a lockset shall be factory prepped with an ANSI 161 prep. If a door is also factory-prepped for thru-bolts, the thru holes shall be drilled in accordance with the template for a Best 9K series lockset (refer to Best template # K09-T56053).*

- ❑ Humid Environments: Consultants shall carefully review environmental criteria for door and window units in humid environments and select units capable of withstanding those conditions for long periods of times.
- ❑ Accordion Folding Fire Doors: Doors of this type are strictly PROHIBITED, such as doors provided by Won-Doors and similar vendors.

ACCESS DOORS – DESIGN GUIDELINES

General: Bid documents shall show location and size of all wall or ceiling access doors that are required to access mechanical/electrical equipment, devices or plumbing lines for maintenance or initial balancing.

- ❑ Minimum Wall Size: 24" wide x 36" high, to facilitate entry into tight spaces by maintenance personnel.
- ❑ Minimum Ceiling Size: 24" wide x 24" deep.
- ❑ Other door sizes may be acceptable if existing conditions dictate otherwise, or if provided for hand access to valves and similar elements. Confirm with FPD and FS.
- ❑ Designers should note that KU typically prefers acoustical lay-in ceilings over drywall ceilings with access doors, for ceiling areas that require access to equipment above ceilings.
- ❑ Locking Mechanism: Keyed locks are preferred in spaces accessible to the public. Cam locks may be used in service or maintenance spaces.
- ❑ Ceiling Access Doors: In lieu of traditional metal, piano hinge models, KU's preferred models are glass fiber reinforced gypsum (GFRG) panels similar to the "Stealth Access Panel", by Wind-lock.

FLUSH WOOD DOORS – 081416

General: In existing building partial remodels or additions, match species and finish of existing wood doors.

- ❑ Interior Doors: Solid core construction.
- ❑ Jamb edges of wood doors shall be hardwood to match the door’s face material species.

ALUMINUM ENTRANCES AND STOREFRONTS – 084113

Aluminum Frames: Provide in thermal-break construction. Colors & Finishes shall be as follows:

- ❑ New Construction or Total Renovations: Medium Bronze Anodized, unless otherwise approved or directed by FPD and University Architect.
- ❑ Additions or Partial Renovations: Match existing, unless otherwise approved or directed by FPD and University Architect.

Glazing: Refer to Section 088000 – Glazing requirements.

UNIT SKYLIGHTS – 086200

General: All skylights shall be required to have thermal-break frames and double glazing. Verify frame finish colors with FPD.

DOOR HARDWARE – 087100

Hardware Finishes:

- ❑ New Construction or Total Renovations: Satin Brass or Satin Chrome, as selected with FPD and University Architect. Note: Bright Brass, dark bronze or polished Finishes are discouraged, due to University experience with poor long-term durability and high maintenance demands.
- ❑ Additions or Partial Renovations: Match existing, unless otherwise approved or directed by FPD and University Architect.

Lockset Manufacturers: Facilities Services stocks replacement parts for the following makes and models. For maintenance reasons, the University will allow the provision of products by one of the following acceptable manufacturers only:

- ❑ Schlage *L series (preferred) or Sargent 8200 series for mortise locks (ANSI 86 edge prep)*
- ❑ Von Duprin *99 series for panic hardware and fire exit hardware*
- ❑ *Von Duprin 33 series for panic hardware and fire exit hardware may ONLY be used when the door stile is too narrow to accommodate a Von Duprin 99 series device*
- ❑ Best *9k series for cylindrical locks (ANSI 161 prep)*
  - ❑ Dept. of Student Housing (DSH) projects only; not to be used on other campus buildings.
- ❑ *Schlage ND series for cylindrical locks (ANSI 161 prep)*
  - ❑ *ONLY use when upgrading an existing door with a 161 prep. Except for DSH projects, new doors shall be installed with mortise locks only*
- ❑ *Hanchett Entry Systems (HES) 1006, 9600 & 9400 series electric strikes. Electric strikes shall ONLY be permitted when called out by the University. Electrified locksets are preferable.*
- ❑ *Sargent 88 series for delayed egress exit devices ONLY*
  - ❑ *These shall ONLY be installed after the Authority Having Jurisdiction (AHJ) has reviewed the code footprint and approved the installation*
- ❑ All locksets & cylinder housings shall be ordered prepped to accept an Accentra (formerly Yale) 6-pin Large Format Interchangeable Core (LFIC). Do not use any other type of LFIC (e.g. Sargent, Schlage, etc.) as these will not work with our locking cylinders. Where dimensions do not permit use of an Accentra 6-pin LFIC housing, a fixed cylinder shall be used.
- ❑ All locksets & cylinder housings for DSH projects shall be ordered prepped for a Small Format Interchangeable Core (SFIC)

Replacement Locksets: New locksets replacing existing locksets shall be required to match the manufacturer, model, style and finish of the unit being replaced. *If an existing lockset does not reflect the current KU standard and/or is no longer produced, please consult with the project manager.*

Locksets in Additions or Partial Renovations: The University prefers that locksets installed within each building be limited to only one manufacturer, for ease of maintenance and continuity of appearance. Specs shall require new locksets to match the manufacturer, model, style and finish of the units predominant in the areas adjacent to the area to be remodeled. Verify with FPD.

Lockset Grade of Construction: Heavy-duty; not less than the following.

- ❑ Bored: ANSI 156.2, Grade 1.
- ❑ Mortise: ANSI 156.13, Series 1000, Grade 1.

Lockset Functions: Review and verify operation of door locks with the University's user group, FPD Project Manager & Architectural Support personnel, and KU Lock Shop representatives. The following are typical functions to be used

- ❑ *Corridors and non-lockable openings: Schlage L9010 – Passage Function, or equal*
- ❑ *Single-Use Restrooms, Lactation Rooms: Schlage L9044 with OS-OCC escutcheon outside indicator trim – Privacy Function. Do not substitute an equivalent*
- ❑ *Multi-Use Restrooms: Schlage L463 – Classroom function, or equal*
- ❑ Mechanical Rooms, Janitor Closets and Telecom Rooms: *Schlage L9080* - Storeroom Function, or equal; with rigid outside lever handle.
- ❑ *Classrooms*: *Schlage L9050 with IS-LOC escutcheon inside indicator trim – Office function. Do not substitute an equivalent*
- ❑ *Offices: Schlage L9050* - Office Function, or equal.

Lockset Trim Styles:

- ❑ Partial Renovations or Additions: Lockset handles, roses and finishes shall match those in existing buildings.
- ❑ New Construction or Total Renovation: Tapered lever handle with continuous curved return to door face, OR round wire lever handles with a radiused, perpendicular return to door.
  - ❑ Schlage Style #17 (curved) *or 06 (standard)*
  - ❑ Best Style 14D (DSH buildings only)
  - ❑ Others only as approved or requested by FPD and University Architect.
  - ❑ Straight lever handles that do not return to within ½" of door face are NOT acceptable, since they can more easily catch and damage clothing, backpacks, etc.
    - ❑ *Examples of levers that are NOT acceptable include, but are not limited to the following:*
      - ❑ *Best lever style 16*
      - ❑ *Schlage lever styles 01, 02, 05, 07, 12, & 18*

Panic Devices *and Fire Exit Hardware*:

- ❑ **Manufacturers:** Due to maintenance requirements, the University will only allow the provision of products by one of the following: Von Duprin *(see Lockset Manufacturers section for allowed series)*
  - *When a lever is needed, use 996L trim*

- *For Von Durpin 996L trim, provide and install a spacer collar that allows the cylinder to sit flush with the face of the trim (typically 1/8" but wll vary depending on cylinder/housing). Spacer collar shall match the finish of the trim as best as possible*

- ❑ **Functions:**
  - ❑ Keyed Exterior Doors: *Von Duprin 990NL* or equal; key retracts latchbolt on exterior.
    - *On Von Duprin 990NL trim, provide shrouded spacer collar to protect cylinder. Do not use cylinder collar provided with the trim*
  - ❑ Non-Keyed Doors *Exterior Doors: Von Duprin 990DT or no trim.*
  - ❑ Motion detection panic devices are not allowed by the State Fire Marshal.
  - ❑ Locally alarmed and/or delay egress panic devices are not allowed, unless specifically approved by the AHJ.
- ❑ **Trim Style:** Pull devices with round, ¾" nominal diameter pulls and standard width plates are preferred.
- ❑ **Pairs of Doors**: Where pairs of doors at exits or stairwells are required and individual doors within frames cannot be used, rim-type exit devices which are center-locking should be installed with a removable mullion.
  - ❑ Astragals for pairs of fire doors that do not have a center mullion shall be fiber type, NOT a metal overlapping astragal with coordinators.
- ❑ **Vertical Rod Panic Devices** shall only be used where called for by the FPD project manager**:** *Surface-mounted* vertical rod panic devices *(e.g. Von Duprin 9927)* shall omit the bottom rod, per the ADA Accessibility Guidelines and due to KU maintenance problems. *Concealed vertical rod and concealed vertical cable exit devices shall be installed with both top and bottom latches*

Electronic Access Control Components*: Some interior and exterior openings may need to be electronically controlled. The University has standardized the following products:*

- ❑ *Request-to-exit sensors: Bosch DS160*
- ❑ *Motorized latch retraction kit: Von Duprin QEL or Command Access MLRK1-VD*
- ❑ *Electrified mortise locks: Schlage L9092 or Command Access ML80EU/ML80EL; Sargent 8270/8271 or Command Access ML370/ML371*
- ❑ *Electrified exit trim: Von Duprin M996L*
- ❑ *Recessed power transfer: Von Duprin EPT series*
- ❑ *Transfer hinge: Command Access ETH transfer hinge*
- ❑ *If an electrified lock is to be tied into the building's fire alarm system (e.g. stairwell applications), that lock shall be ordered for FAIL SAFE operation (unlocks when power is removed)*

Magnetic Hold-Open Devices: These are to be specified and provided as part of the fire alarm system work.

- ❑ Project Designers shall provide magnetic hold-open devices on all fire-rated doors with closers into exit stairs and lobbies, to facilitate an open environment and easy pedestrian flow through the building.

Closers: LCN 4040XP Series, Super Smoothee is preferred KU model, or approved equal. Provide with parallel arm, to greatest extent possible.

Hinges: Provide not less than 3 per door, heavy-duty type, mortised. Provide continuous "Roton"-type hinges in high-abuse or high-wind locations; confirm locations with FPD.

- ❑ Continuous "Roton"-type hinges are typically required on exterior doors and on interior doors wider than a 3' opening.

Silencers: Provide 3 minimum per door, unless the door is to receive weatherstripping.

Door Stops: Provide one wall stop per door. If walls stop are infeasible, provide a floor stop unless it may be a hazard to walking. If a floor stop is infeasible, provide an overhead stop.

Installation of Locksets and Door Hardware:

- ❑ *All hardware shall be installed per the manufacturer's instructions and with the fasteners provided*

Keying:

- ❑ Cylinders: Lockset cylinders shall ONLY be provided with a high-security Medeco keyway corresponding with the University of Kansas system.
  - ❑ Exception: The Department of Student Housing (DSH) only uses Best cylinders
  - ❑ Please reach out to the University Lock Shop directly for information regarding approved cylinder models and keyways.
- ❑ Construction Keying: Required on all University projects. The final lockset keys shall not be used during construction, and shall not be delivered to the jobsite, or stored in an unsecured manner.
- ❑ *Delivery of Keys: Any and all keys to University systems shall be delivered directly to the University Lock Shop. Keying schedules and/or key bitting information shall be provided to the lock shop electronically by the manufacturer. Under no circumstances shall any keys or keying records be delivered to the job site.*
- ❑ Keying Conference: Within 30 days after execution of the contract, the Contractor shall initiate a keying conference between the Hardware Subcontractor, representatives of Facilities Services and FPD, and representatives of the building occupants.
- ❑ Hardware Delivery Confirmation: As soon as hardware is ordered, the Hardware Subcontractor shall send the factory order number and the factory shipping date to the University Lockshop.
- ❑ Refer to Division One for criteria regarding temporary keys for access to existing spaces.

Weatherstripping: Provide in complete sets, on all four sides of exterior door openings.

- ❑ Provide acoustical weatherstripping on all four sides of interior doors where required to acoustically isolate a room, including but not limited to staff or unisex/family/gender-neutral restrooms, music practice or performance rooms, and similar spaces.

Peepholes: When provided, such as in housing units, peepholes in doors shall be mounted at 60" AFF, to accommodate shorter persons. If provided in accessible units, mount a second peephole at an accessible height for wheelchair users.

Coat Hooks: Heavy-duty hooks for coats and hats shall be provided within each office or office area, in sufficient quantity to accommodate the anticipated number of occupants within each space.

- ❑ At least one coat hook shall be provided within each private office, typically located on the wall behind the office door in the open position.
- ❑ In lieu of coat hooks, a coat closet or free-standing coat rack may be preferable within office suites or open office areas. Review and confirm with FPD and building occupants.

AUTOMATIC DOOR OPERATORS – 087113

Acceptable Manufacturers/Models: Besam "Easy Swing" or equal.

Operation: Provide over-sized push pads, that display the universal symbol of accessibility on 4” +/-square or 6" diameter round pads, to actuate door operation.

- ❑ Mount a push pad on the interior and exterior side of each power-operated door at 36” AFF to actuate operation.
- ❑ Mount push pads on sidewalls or free-standing posts at the outer edge of power-operated doors when they are in the open position, being certain that disabled persons will not be within the door swing path when actuating the door operation.
- ❑ Specify operators to come with an automatic shut-off to disengage motor when door is activated but is locked in the closed position.
- ❑ Identify each door equipped with an operator by adhering decal to the exterior door face.
- ❑ If an operator is installed on a door that has electronic access control, the installer shall ensure that an appropriate door sequencer is installed. Activating the inside input should always unlock the door, provide a short delay, then start the opening sequence. The outside input should only function when the door is unlocked.

GLAZING – 088000

Exterior Locations:

- ❑ **Construction**: Double-pane insulating glass units.
- ❑ **Color/Tint**:
  - ❑ New Construction or Total Renovations: Bronze tint or high-performance clear glass, unless otherwise approved or directed by FPD and University Architect.
  - ❑ Additions or Partial Renovations: Match existing, unless otherwise approved or directed by FPD and University Architect.
- ❑ **Low-E Coating**: Include on all exterior insulating glass, on the #3 surface.

End of Document: G:\STAFF\Design Stds\Div-08_Openings\Current Version\Stds_Div-08-Openings_04.doc