



UNIVERSITY
OF KENTUCKY

Purchasing Division

**UK
087100S09
Main Campus
Access Control and Door Hardware
Standard
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The following reflects standard door hardware and electronic access control preferences for UK new construction projects. Variations required for additions and partial renovations should be discussed and recorded during the access control and door hardware design meeting.

I. List of Abbreviations / Definitions:

A. ADA: Americans with Disabilities Act

B. DPS: Door Position Switch. Sometimes called a "door contact", typically mounted in the top jamb for swinging doors and on the floor or sill for overhead doors or shutters.

C. LX: Latch Monitoring. A switch in the lockset or exit device which identifies for the access control system whether or not the latchbolt is extended. Combined with a door position switch, this makes known whether the door is actually secure, meaning both closed and locked.

D. MEP: Mechanical/Electrical/Plumbing.

E. RX: Request-to-Exit Monitoring. A switch in the lockset or exit device which identifies for the access control system that the inside lockset lever has been turned or the exit device touchpad has been pushed in. An explanation of how a door's 'security' is determined is needed to explain why this feature is needed. When the access control system receives a signal from a door position switch that a door has been opened, there are three possibilities: 1) someone has used a valid card; this is not an alarm condition, 2) someone on the inside is exiting - this would be identified by the RX feature and is not an alarm condition, 3) someone has either used a mechanical key or has forced the door open; this is an alarm condition. If an access control system did not employ the RX feature, then it would have to ignore alarms every time a person exited through a door; with all those ignored alarms there is no longer much of a security aspect to the access control system. The RX feature is also commonly identified as "REX" or "RQE".

F. UKPD: University of Kentucky Police Department.

II. No proprietary access control door hardware or mechanical door hardware is permitted other than as follows:

A. Door pairs with exit devices will have two rim exit devices with a key removable mullion, except that loading dock doors and other doors which frequently require a width greater than 2'10" for moving large objects will have Von Duprin concealed vertical cable exit devices (no substitutes allowed).

B. Card Readers, Retinal Scanners and Head-end System will be specified by CMTA. For new construction and for all lockable doors other than residence hall individual suite entrance doors, the readers will not be integral to the locking devices, but will be separate units mounted on the walls or door frames. CMTA will write their specifications and the CM will organize the bid packages, so that all opening-related hardware and electronic equipment and electrical work and materials is provided by one Supplier.

C. Key Cylinders: Permanent key cylinder cores will be Stanley Best Cormax, seven pin; furnished and installed by the UK Keyshop. The locking devices that are to have cylinder override (not many) will be specified to have cylinder housings, compatible with

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those cores, installed into the locking devices by the Contractor. Contract is to include keyed brass construction cores for key cylinders. Some buildings may require Yale key cylinder cores; consult UK Key shop Supervisor for direction.

- III. Door Hardware Manufacturers and Applications (typical finish is US26D and US32D (satin chrome and satin stainless steel) :
- A. Hinges: Bommer, Hager, Ives, McKinney, Stanley. Basis of Design: Hager. For wood and hollow metal doors. Three knuckle, concealed bearing. 5" x 4.5" heavyweight for hollow metal and wood doors with exit devices or automatic operators, or over 3'6" in width. Stainless steel for exterior out swinging doors and in-swinging restroom doors. Brass base metal hinges are not permitted.
 - B. Continuous Hinges: Bommer, Hager, Ives, McKinney, Pemko, Select, Stanley. Basis of Design: Select SL24HD. Recommended for doors 4'0" wide and doors subject to impacts along the hinge edge of the door, such as at loading docks.
 - C. Pivots: Ives, Rixson. Basis of Design: Rixson 195 x M19. Recommended for aluminum storefront doors. Top pivots for doors with automatic operators shall employ needle bearings: Basis of Design: Rixson H180.
 - D. Jamb-to-door Power Transfers: ABH, Hager, Securitron, Security Door Controls, Von Duprin. Basis of Design: Von Duprin EPT-10.
 - E. Lock Cylinder Housings (warranted for use with Best cores): Sargent, Schlage, Best, and Hager. Basis of Design: Schlage.
 - F. Mortise Locksets: Best 45H series, Sargent 8700 series, Schlage L9000 series, and Hager 3800 series. Basis of Design: Schlage L9000 series with lever and rose/escutcheon as chosen by Architect.
 - G. Electric Mortise Locksets: Basis of Design for non-cylinder fail secure single-sided locking application: Schlage L9090EU x RX x LX x DPS. Allowable equals by Best, Hager, and Sargent.
 - H. Electric Strikes for use with Mortise Locksets: Trine 4100 series, HES 1006 series, SDC 55 series, Von Duprin 6000 series. Basis of Design: Trine 4100 series.
 - I. Exit Devices other than Concealed Vertical Cable Exit Devices: Precision 2000 series, Sargent 80 series, Von Duprin 33A and 99 series, Detex Advantex series. Basis of Design: Von Duprin 33A and 99 series.
 - J. Concealed Vertical Cable Exit Devices: Von Duprin 9949 and 9950 series (no substitutes allowed).
 - K. Rack and Pinion Closers: LCN 4040XP series, Sargent 281 series, Stanley D4550 series, Hager 5100 series Basis of Design: LCN 4040XP series. For exterior out-swinging doors and out-swinging doors used by students or given hard usage provide spring-stop arms. For out-swinging aluminum doors provide spacer blocks and angle brackets for securing the closer arm brackets to the top jambs.

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- L. Automatic Door Operators: LCN Senior Swing, Stanley Magic Force, Besam SW200i. Operators employed in smoke evacuation applications shall have integral door position contacts that indicate when the door makes it to 90 degrees of opening. Automatic Door Operators are to be furnished and installed by AAADM certified companies; certificates required during submittal process.
 - M. Overhead Stops: Do not mount surface overhead stops on corridor side of doors. Do not use surface overhead stops on doors that would tend to be left open. Concealed overhead stops to have adjustable degree of opening. ABH, Glynn-Johnson, Rixson, Sargent. Basis of Design: Glynn-Johnson.
 - N. Operating Trim: 4" x 16". Push Plates: 0.125" thick with 1/4" radius rounded corners; centered 45" AFF. Pull plates: 0.050" with 8"CTC 1" diameter half-moon grip. Pulls as chosen by Architect (1" grips are recommended); 5/16" minimum concealed riv-nut fasteners for aluminum doors; 5/16" minimum through-bolt fasteners for wood and hollow metal doors. Exit device manufacturer's standard pull plates for areas of less aesthetic concern: Basis of Design: Von Duprin 697 or Von Duprin 996 series as applicable.
 - O. Protective Plates: 0.050" thick, beveled all four edges, countersunk for bevel-headed screws.
 - P. Wall Stops: Cast brass/bronze retaining rings with convex rubber inserts; located so as to be centered on lockset lever spindles; wood wall blocking provided where mounted on drywall. Burns, Hager, Ives, Rockwood, Trimco. Basis of Design: Trimco 1270CX.
 - Q. Floor Stops: Limited applications. Use for in-swinging MEP room doors where equipment might be along the walls and the expense of a concealed overhead stop would be unwise. Where used, located at least 1/2 of the door width out from the hinge edge of the door and so as not to be a trip hazard.
 - R. Wall Stop/holders: Self-compensating for door sag up to 1/4", heavy cast bronze base metal, adjustable holding force, adjustable degree of opening, provided with factory shims as required for clearance. Basis of Design: Trimco 1283-6S. 1" Shims as required: Trimco Z900.00.
 - S. Electromagnetic Door Holders: Single-gang flush-mount with factory extensions as required for clearance. ABH, Edwards, Hager. Closer/holder/release units are not permitted without explicit permission of UKPD designee. Basis of Design: ABH 2100 series.
 - T. Door Gasketing: Vinyl is not permitted. Neoprene, polyprene, Pemkoprene or polyurethane are recommended. ADA compliant thresholds. Out-swinging exterior doors: Basis of Design: NGP 896NA. In-swinging exterior doors 1/4" x 5" saddle threshold with door bottom: Basis of Design: NGP 513A x Pemko 216APK; delete drip if door is adequately sheltered. Threshold shall be 1/4" high heavy cast saddle version where rolled over with heavy objects.
- IV. Access Control Hardware Applications - The following recommendations help keep down unnecessary electrical and hardware costs. During the design phase, an access control

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and hardware meeting shall be held including the future building manager, UK project manager, construction manager (if applicable), architect, architect's hardware specification consultant, electrical engineer, and UKPD security and access control and hardware designees to determine and record requirements at each opening.

A. Exterior Doors

1. Choose two remotely located exterior doors to receive mechanical key cylinder access. Also, those doors with direct MEP access shall have mechanical key cylinder access. No other exterior doors will be accessible by key cylinders.
2. Decide which exterior entrances are to be **ADA Entrances**. These openings will include:
 - a. Long Range Proximity Card Reader on exterior. These will unlock the exterior door and enable the exterior operator actuator.
 - b. Full height operator actuators that can be pressed at the normal 36" AFF height but also can be tapped by wheelchair footrests:
 - 1) One exterior that is enabled to open the exterior door only when the door is unlocked by card or through access control schedule.
 - 2) Two inside the vestibule: one opens exterior door and one opens interior door.
 - 3) One inside the lobby that opens the interior door for exiting.
3. Other doors may require card readers but no automatic door operators.
4. Doors must either be incapable of being left in an unlocked condition or if capable of being left in an unlocked condition must have fail-secure electronic locking devices that can be remotely locked by power failure or signal from UKPD. Electronic locking of doors with exit devices shall be motorized latch retraction, 24VDC, 1.0Amp or less inrush, warranted for use with other manufacturer's power supplies that are 24VDC filtered and regulated.
5. Exterior doors are to have monitoring contacts for door position (DPS), latch position (LX), and for request-to-exit (RX). LX and RX contacts should be concealed inside of the exit devices where possible. Door position switches should be mortised type that are attached with screws. Overhead doors are to have floor-mounted door position switches but no LX or RX.

B. Interior Doors

1. No locking. This might include doors that have push and pull plates on multi-use restroom doors or just passage sets on storage rooms inside offices.
2. All lockable doors shall be secured with card readers.
3. Key access. Key cylinders are only to be specified for doors on or in the path leading up to MEP room doors for emergency access only. A minimum number of

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other doors deemed as 'critical access' may be selected during the design meeting to have key access, subject to approval by UKPD designee.

4. Lower Security Card Access with no security monitoring. An example might be office doors where the desire is to get rid of keys, but where it doesn't matter if a professor leaves their door standing open or not, and there is not much concern about break-ins. Consider the use of a mechanical storeroom function lockset with an electric strike with the reader on the strike jamb to minimize wiring costs by having all wires come to one side jamb. A small security step up could be to have door position switches on that same side jamb.
5. High Security Card or Biometric Access with security monitoring. All doors on the space's perimeter would have LX, RX and DPS. One or more doors on a space would have a card reader, electronic locking, LX, RX and DPS; other doors on that space would be exit only with no ingress. Bring wires to two points only: to the reader (mounted on the wall or the side jamb) and to a power transfer mounted on the side jamb.
 - a. Doors requiring Exit Devices: specify motorized electric latch retraction. Provide with power transfers similar to Von Duprin EPT-10. Bring wires to the reader (mounted on the wall or the side jamb), to the power transfer on the hinge side jamb, and a door position switch on the top jamb.
 - b. Doors not requiring Exit Devices: Specify electric mortise locksets with on-board 24VDC lock/unlock, RX, LX and DPS (security monitoring of the auxiliary dead latch is acceptable in lieu of on-board DPS). Provide with power transfer with ten conductors. Bring wires to two points only: to the reader (mounted on the wall or the side jamb) and to the through-wire hinge on the side jamb.
6. Local Dogging of Exit Devices on Exterior Doors: Sometimes it is desired to be able to locally dog down an exit device on an exterior door. Key cylinder dogging is not permitted as the door could not then be secured by signal from UKPD. Localized electric dogging of exit devices is permitted with the use of a keyswitch (Basis of Design: SDC Model 705U x L2, configured for jamb or wall mounting as required) wired to function as follows: "System Function: Free egress at all times. Panic device latch can be retracted or extended upon signal from access control system. Latch can also be held retracted by local key switch during business hours. Regardless of the state of the system, signal from UKPD cuts power to exit device and door locks against ingress. Wire key switch LED's so that green indicates unlocked door status; red indicated locked status."
7. Multi-use Restroom Doors: Where serpentine wall configurations are not employed provide automatic door operators with full-height actuators.
8. Single-use Restroom Doors away from public corridors shall have privacy function locksets with occupancy indicators and closers. Basis of Design: Schlage L9040 x L283- 722.

V. Door Hardware Related Door Considerations

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- A. No exterior door leaf shall be over 3'0" wide x 8'0" tall unless specially required for the loading of large equipment.
 - B. No doors shall be specified which cannot comply with these door hardware standards.
 - C. The use of door singles rather than pairs is recommended wherever a pair is not required for the moving of large objects.
 - D. Multi-use Restroom Doors: The use of serpentine wall configurations with adequate wheelchair maneuvering clearance and with no doors is recommended. If this is not possible then swinging doors with automatic door operators and full-height actuators shall be used.
- VI. Door Hardware Inspection Services - Paragraph 087100-3.4 shall be included in the 087100 Door Hardware Specification as follows:

3.4 FIELD QUALITY CONTROL

- A. Provide Door Hardware Inspection Services and Field Quality Report as indicated below.
- B. Door Hardware Inspection Services
 - 1. Scope:
 - a. Door Hardware Inspection Services for the project shall be performed by the Inspector as a sub-consultant of the Architect.
 - b. Inspection of all swinging pedestrian doors and door hardware immediately following substantial completion of all hardware in entire project.
 - c. Inspector to furnish a Field Inspection Report, itemized per each individual opening, to the Architect, and to UK Chief of Police within 7 days of the inspection, including:
 - 1) deficiencies in workmanship and standard industry practices,
 - 2) use of allowable products,
 - 3) use of manufacturer recommended fasteners,
 - 4) compliance with the ADA,
 - 5) proper door/frame/hardware clearances,
 - 6) problems related to function, security, aesthetics or maintenance.
 - 2. Inspector: Calvert Independent Hardware Specifications, LLC. (Calvert IHS, LLC.) Shall perform all inspections and re-inspections required by this specification. Contact info: Joseph D. (Joe) Calvert CSI CDT AHC SCIP, 307 Oakwood Circle, Vine Grove, KY 40175, 502-930-2039, joe@hardware-specs.com, www.hardware-specs.com.
 - 3. Initial Inspection and Re-inspections:
 - a. An initial inspection shall be performed as directed by the UK Police Department when notified by the contractor.

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- b. Re-inspections are required until all items listed in the initial punch list report are approved by the Reviewer as corrected.
 - 1) Any subsequent review required beyond the initial back check of the punch list shall be paid for by the Contractor.
 - 2) Additional visits required by the Consultant to review work not completed by the first back check review shall be reimbursed directly by the Contractor by check or money order (due net 10 days from date of each additional visit) at a rate of \$150.00 per hour for extra trips required to complete the final punch lists.

4. Fees and Payment:

- a. The cost of the initial inspection at substantial completion shall be included in the design fee paid by the Owner to the Architect at the rate of \$10.00 per opening.
- b. Additional visits required by the Consultant to review work not completed by the first back check review shall be reimbursed directly by the Contractor by check or money order (due net 10 days from date of each additional visit) at a rate of \$150.00 per hour for extra trips required to complete the final punch lists.

VII. Door Hardware Specification Consultant - The Architect shall obtain the services of an Architectural Hardware Consultant as directed by UKPD to attend the access control and door hardware meeting, coordinate with the UK security consultant, write the Section 087100 Door Hardware specification, perform work on post-bid documents, check the door hardware submittal, and perform door hardware inspections. The hardware schedule is to be written using the model numbers of those products listed above as "Basis of Design".

VIII. Miscellaneous Hardware Considerations:

- A. This document does not replace but is in addition to other published UK Access Control standards.
- B. Elevator Accessibility: Elevators are outside of the scope of this document, but the use of full-actuators for call buttons and floor buttons should be discussed with the UK Accessibility Office.
- C. Degree of Opening: Closers and overhead stops shall be mounted for the maximum degree of opening before the door encounters an obstruction. They shall be mounted so that doors can function properly with hardware such as wall stops, holders, etc. Closer arms should never fully extend or bottom out. Properly locating closers is in all cases the Installer's responsibility.

END OF UK ACCESS CONTROL AND DOOR HARDWARE STANDARDS