1.0 GENERAL

1.1 Related Work and UBC Guidelines

.1 Section 08 00 10 Openings – General Requirements
.2 Section 08 11 00 Metal Doors and Frames
.3 Section 08 14 00 Wood Doors
.4 Section 08 41 13 Aluminum Framed Entrances and Storefronts
.5 Section 08 44 13 Glazed Aluminum Curtain Walls
.6 Section 10 20 00 Interior Specialties
.7 Division 26
.8 Section 28 05 00 Electronic Security Systems: General Standards
.9 Section 28 13 00 Access Control

1.2 Related External Documents

1. Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).
2. American National Standards Institute (ANSI) / Builders Hardware Manufacturers Association (BHMA).

1.3 Description

1. Section includes door hardware including electrified hardware.

1.4 Coordination

1. The Guidelines apply to all work completed within buildings on both UBC Vancouver and UBC Okanagan campuses unless stated otherwise.
2. In instances where conflicts are found between these guidelines and provincial regulations or codes, please notify the UBCV Technical Review Team Architect.
3. These guidelines are intended to be read by design consultants and their content integrated into construction drawings and specifications. Construction documents are not to reference the technical guidelines directly.
4. The Coordinating Registered Professional (CRP) is required to coordinate these requirements with other disciplines.
5. In addition to coordination with the electrical consultant, the CRP is to coordinate door hardware (including electrified hardware) requirements with the following:
   .1 Architectural Hardware Consultant (AHC)
   .2 UBC Information Technology (UBC IT)
   .3 UBC Access Services & Locksmith Shop
   .4 UBC Technical Review Team Electrical Engineer

1.5 Submittals

.1 Submittals – Design phase
   .1 Provide the door and door hardware schedule for keying and hardware review and approval by UBC Access Services (including the Locksmith Shop).
   .2 A separate and detailed Keying Schedule to be submitted which indicates each lock/core, hardware heading and door number—allow sufficient type line spacing to allow UBC to insert keying information after each lock or cylinder.
   .3 A review package complete with a detailed Sequence of Operation for the electrified hardware, riser diagram, point to point wiring schematic and plan depicting the layout is to be provided by the AHC for acceptance by UBC Access Services, Locksmith Shop, UBC Technical Review Team Electrical Engineer prior to finalizing the hardware schedule. This package shall include functions of the Access Control system, any fire alarm activated hardware, accessibility functions, tie-ins to the ventilation system etc.
   .4 Flag for review any specialty hardware required by the project.
   .5 Door numbering for the hardware schedules must be coordinated with the final design drawings to ensure that the final door hardware schedules match the architectural room and door numbering system. The coordination must be made early in the design

process to ensure that UBC can program internal documentation for keys, access control, etc. that will match the record drawings.

.2 Submittals Review – Construction phase
- .1 Submit shop drawings and hardware schedule to UBC Access Services and Locksmith Shop for review.
- .2 Sequence of Operation is to be submitted for review by UBC Access Services and Locksmith Shop.
- .3 Requests for product substitutions must be made to the UBC Project Manager prior to closing of the tender submission for review by the AHC and UBC Access Services.
- .4 UBC Project Manager to facilitate and ensure final keyway selection and detailed keying is determined between the user group, Locksmith Shop and Abloy Canada Ltd.
- .5 Permanent lock cylinders shall be keyed according to UBC requirements.

.3 Submittals Review – Occupancy and Handover phases.
- .1 Provide formal and proper training to UBC Access Services and Locksmith Shop staff for the new equipment provided which should include: sequence of operation, troubleshooting, maintenance manual review, preventative maintenance requirements, and critical parts list.
- .2 A testing and commissioning schedule is required for all electrified hardware.
- .3 Provide a commissioning certificate for the purpose of identifying the start of the warranty period.
- .4 Provide details of the manufacturer's extended warranties for UBC's Access Services team review.
- .5 As-built and record drawings are required including the door hardware system wiring diagram, shop drawings or cut sheets of the electrified door hardware components, equipment and sensors, supplier and installer contact information, and warranty information for the installer and extended manufacturer warranties. This should be a dedicated section in the architectural section of the Operations & Maintenance Manual required at the time of building handover to UBC Facilities.

1.6 Quality Control and Assurance

.1 Quality Assurance
- .1 AHC to prepare detailed schedule of hardware and review for field compliance.
- .2 A hardware schedule to be prepared and hardware procured from a source of supply approved by the Consultant. Supplier to be a British Columbia distributor who is authorized by the manufacturer of the equipment. Supplier to employ one or more Architectural Hardware Consultants (AHC) who are in good standing with the Door and Hardware Institute (DHI) — the AHC must be responsible for the complete hardware subcontracts.

1.7 Warranty Requirements

.1 Manufacturers' warranties shall be from the date of Substantial Completion.

.2 The following minimum warranty periods are required:
- .1 Installation labour warranty: **1.5** years from Substantial Completion to allow time for building occupant fit out, and occupant general use to identify defects. Hardware defects usually become visible after 12 months of operation.
- .2 Door closers: 10 years.
- .3 Exit Devices: 5 years.
- .4 Mortise Locksets: 10 years.
- .5 Cylindrical Locksets: 7 years.
- .6 Power door operators: 2 years on electronics, 5 years on mechanical components.
- .7 Electrified Locksets: 2 years on electronics, 5 years on mechanical components.
- .8 Other electrified hardware components: 3 years.
- .9 Other mechanical hardware: 5 years

2.0 DESIGN AND PERFORMANCE REQUIREMENTS

2.1 Design Requirements

.1 Buildings are to be designed with card access in general accordance with Sections 28 05 00 and 28 13 00. The design team must employ an Architectural Hardware Consultant (AHC) with a minimum of five (5) years of experience in the design of electrified hardware systems solutions.

.2 Access systems and hardware must be scalable for future changes and additions. Provide a design solution which meets the project requirements and has the ability to meet the long-term requirements in accordance with Sections 28 05 00 and 28 13 00.

.3 Provide submittals for review at various project phases noted in paragraph 1.6 of this section.

.4 Exterior doors are subject to very high usage, inclement weather, wind driven rain, ice buildup, building air pressure, temperature fluctuations, and wind forces. The CRP must ensure that all exterior door hardware is selected to accommodate these variable conditions and be corrosion resistant. For aluminum framed entrances and curtain wall systems that incorporate doors, the CRP is to coordinate with suppliers of these systems to ensure that the factory supplied door hardware is appropriate.

.5 Door pivots are not acceptable.

.6 Avoid offset pulls due to maintenance problems resulting from torsion forces. If unavoidable, offset pulls must be through bolted.

.7 Keyed cylinder dogging is required on all panic devices unless prohibited by code.

.8 Keyed entry cylinders required on all doors equipped with card readers.

.9 Each building requires a key and card tube deposit. (See 3. Materials below).

.10 Spring loaded hinges are not to be used.

.11 Kick plates are to be installed on all high traffic or high usage doors and service doors. . Coordinate with Section 10 20 00 Interior Specialties, item 5.0.

.12 Where door closers are required by code, surface mounted door closers shall be used.

.13 Where magnetic hold opens are used, surface-mounted hold-opens are to be used.

2.2 Electrified Hardware

.1 Electrified hardware is an evolving technology which requires close coordination with Divisions 26 and 28. Please review Divisions 26 and 28 for further specifics regarding their respective components relating to electronic access equipment and standards.

.2 Division 28 includes diagrams showing “typical door installations”, the associated equipment, and a responsibility matrix indicating who is responsible for the various components of the installation. The CRP must ensure that the tender documents clearly identify the contractor’s scope of work, and what work will be performed by UBC Access Services.

.3 The AHC is to coordinate with UBC Access Services to identify pathway installation requirements for their equipment installation.

.4 Standard Pressed Steel & Aluminum Frames: Through hole for Door Contact (DC) shall be 25mm (1”) diameter and 38mm (1 ½”) minimum depth. Through hole for Power Transfer Hinge (PTH) shall be 13mm (1/2”) in diameter and 38mm (1 ½”) minimum depth. Both DC and PTH holes shall allow for concealed, non-abrasive pathways clear of frame fill materials from said device to Div 26 pathways.

.5 Standard Metal, Aluminum & Wood Doors: Top of door shall be prepped as such to allow for UBC Access Services installation of 25 mm (1”) wide by 38mm (1 ½”) deep magnet assembly without affecting door rating. Pathway (wire chase) within the door for Electrified Hardware shall be 13mm (1/2”) cored hole and shall allow for concealed, non-abrasive pathway clear of door fill material, from the PTH to the electrified lockset device, without affecting the door rating. Wire chase shall allow for free and easy removal and reinstallation of cable without affecting door structure.

2.3 Performance Requirements/Standards

.1 CSA for Heavy Duty.
.2 All hardware to be Grade 1.

3.0 MATERIALS

3.1 Product Selection

.1 Materials
- .1 Lock Cylinders
  - .1 Abloy of Canada Cylinders – no substitutions allowed.
- .2 Hinges
  - .1 Stanley/ Monthard/ Hager/ McKinney.
- .3 Pivots – (Only if needed as this is not UBC preferred hardware).
  - .1 Dorma.
  - .2 Yale - Corbin (Rixson).
- .4 Door Stops, Swing Stops, and Holders
  - .1 Rixson/ Dorma/ Hagar/ Gallery/ Ives/ Glynn – Johnson/ Rockwood.
  - .2 Install overhead stops, wall stops, or floor stops where required to prevent damage from door contacting a wall or another door; and provide controlled swing/stop.
- .5 Flush Bolts
  - .1 Trimco/ Ives/ Glynn-Johnson/ Gallery/ Rockwood.
  - .2 Automatic flush bolts are not to be used due to maintenance problems.
- .6 Mortise Locks and Trim
  - .1 Corbin ML2000 series with LWA lever.
  - .2 Schlage L9000 series with 03B lever.
  - .3 Sargent 8200 series with LNJ lever.
- .7 Cylindrical Locks
  - .1 Corbin CL3300 series
  - .2 Schlage ND series with Vandlguard
  - .3 Sargent 10 line
  - .4 LSDA-800 series Grade 2 levers.
- .8 Push Button Code Locks
  - .1 Schlage CO 100 x less cylinder x KP x 626
  - .2 Sargent KP Series
- .9 Alarm Locks
  - .1 Stand-alone systems: Detex EAX500 or Alarm Lock Pilfergard PG21
  - .2 Panic Bar Style (must re-latch): Sargent, Von Duprin, Corbin, Alarm Lock, Detex
- .10 Dead Bolt Locks
  - .1 Mortise: Corbin DL4000 series, Sargent 4800 series, Schlage L600 series.
  - .2 Cylindrical: ILCO 4514.25.1.04.04.5
- .11 Magnetic Locks
  - .1 Magnetic locks are not acceptable and should only be used when required by code.
  - .2 Securitron M Series (if required)
- .12 Exit Devices
  - .1 Von Duprin 98XP and 99XP series, and 33A series.
  - .2 Sargent 8000 series.
  - .3 Corbin ED5000 series
- .13 Door Closers
  - .1 LCN 4040XP Series x 689 finish.
  - .2 Sargent 351
  - .3 Corbin 6200 / Norton 7700

.4 Floor closers are “not” acceptable at UBC.

.14 Power Operators and Electrified Closers
- .1 LCN 4630/4640 Series - "Auto Equalizer" x 689 finish.
- .2 Record-8100 Series and Record-Simple Swing units.
- .3 No substitutions allowed.

.15 Automatic Door Opener Push Plates
- .1 Camden or BEA.
- .2 36" tall vertical actuation bar, high and low push plate.
- .3 Hardwired with 'push to open' text.

.16 Push Plates, Pulls and Protective Plates
- .1 Trimco/CBH/Gallery.

.17 Thresholds and Weather-Stripping
- .1 Pemko/Crowder/Zero.

.18 Station Controls and Key Switches
- .1 Von Duprin/ LCN/ RCI/ Securitron
- .2 Camden CM-1030-7224 SPDT with red & green LED

.19 Power Supplies,
- .1 Use power supplies to match manufacturers’ equipment when required.
- .2 Power supplies require battery backup.
- .3 Locknetic / Folger-Adams, Securitron, Von Duprin, Yale / Corbin

.20 Electrified Strikes
- .1 HES/ RCI/ Adams Rite

.21 Transfer Hinges –12 wire standard
- .1 McKinney with electro lynx, Stanley, Hager

.22 Hard Wired Electrified Locksets
- .1 Manufacturers: Schlage, Corbin, Sargent [Manufacturers are currently under review
- .2 Integral magnetic position indicator.
- .3 Handle integrated request to exit function
- .4 Integrated card / FOB reader (I-Class compatible)

.23 Wireless Electrified Locksets
- .1 [Manufacturers are currently under review]
- .2 Non-proprietary battery supply only
- .3 Minimum 50,000 cycles per battery supply
- .4 Hard-wired power source option preferred
- .5 Dedicated Wireless network hardware or encrypted Wi-Fi

.24 Electrified Exit Devices
- .1 Corbin/ Sargent / Von Duprin (QEL series)
- .2 Electrified dogging required unless prohibited by code.

.25 Electrified Hold-Open Devices
- .1 Simplex RSG series or Edwards 1500 series.
- .2 Install hold-open devices for fire separation doors in corridors and other high use areas where occupants will likely use door stops to hold the doors open, thereby compromising the fire rating of the opening.
- .3 Concealed hold-opens within door closers are not acceptable.
- .4 Coordinate location of surface-mounted hold-opens with the supplier to ensure sufficient wall and floor clearances are maintained.

.26 Electrified Lock Boxes
- .1 ProxSafe flex key management system

.27 Electrified Hardware Communications Equipment Infrastructure
- .1 Supplied and installed by UBC Access and Security Services.
- .2 Contractor to supply and install power, pathways, and cabling as indicated on the drawings.
- .3 Open source communication protocol only.

.28 Request to Exit Device

.1 Supplied and installed by UBC Access and Security Services where not integrated into the lockset.

.29 Card Strikes / FOB Readers
- .1 Supplied and installed by UBC Access and Security Services where not integrated into the lockset.
- .2 Contractor to supply and install pathway installation only as indicated on drawings.
- .3 I-Class compatible

.30 Fire Department Key and Card Tube Deposit Lockbox.
- .1 All new buildings to have a tube-shaped Fire Department lockbox installed close to the main entrance. The lockbox lid is to be installed flush with the exterior wall surface.
- .2 Lockboxes shall be cored into concrete, installed horizontally and epoxied into place. A free-standing externally-located square-faced concrete post can be used if there is no adequate location on the exterior wall surface.
- .3 Construction of key-deposit housing to be steel.
- .4 Cylinder housing to be hardened steel.
- .5 Sleeve size to be: 180 mm long x 63 mm diameter or 7 inches long x 2.5 inches diameter.
- .6 Manufacturer to be Abloy Key and Card Tube Deposit Lockbox – Abloy Protec.

.2 Finish
- .1 Brushed stainless steel.

4.0 EXECUTION

4.1 Prescriptive Requirements

.1 Only UBC's Locksmith Shop shall install permanent cylinders to ensure precise coordination of lock cylinder locations with the User's requirements.

.2 All locks and cylinders shall be supplied with temporary construction cylinders. The Contractor is to supply and install temporary construction cylinders complete with keys for all construction locks; until UBC's Locksmiths Shop can supply and install permanent cylinders on the UBC key system. This will ensure that equipment and furniture is secured behind a locked door at all times.

.3 Temporary construction cylinders shall be returned to the distributor on a Construction Office project. For new projects and renovations, if the Contractor has pre-ordered and supplied keyed-alike construction cylinders, the UBC Locksmith Shop shall return construction cylinders to the Contractor at the time of the permanent cylinder installation.

.4 The Division 08 Subcontractor is responsible for the installation of all door hardware, electrified door hardware control panels, power supplies, low voltage cables, and low voltage raceways. The Division 08 subcontractor is also responsible for all 110 volt supply raceways, wiring, and dedicated circuit breakers unless they are specifically indicated on the electrical design drawings as being done by Division 26 (example: power supply required as part of a design-build electrified door hardware system installation).

.5 All electrified openings must have a dedicated power supply circuit, and the circuit number shall be identified on the door hardware power supply and as-built drawings.

5.0 LESSONS LEARNED AND COMMON MISSES ON UBC PROJECTS

Items in this section are lessons learned, and may be code or industry best practices which have been missed on past projects. If not applicable to a project, a variance is not required.

.1 Requests for having black hardware finish will not be accepted as confirmed by the Locksmith Shop, UBC Access Services - the reason being that there have been instances where a dark brown finish (likely an oil-rubbed bronze finish) has been used on campus, and which looks really bad after only a few years of installation. The finish starts coming off after repeated use and becomes even worse for door pulls.

.2 Our review indicates that no matter how the hardware has been finished, whether electroplated, oxidized or powder coated, the black or dark bronze colour will fade over time if not properly maintained. There are a number of long-term issues that were identified as follows:

- .1 The black or dark bronze finish is prone to damage if not handled carefully during installation and the level of damage increases when in use.
- .2 When it comes to replacement, lead time for the standard hardware finish is 1-2 weeks, and for the black hardware is approx. 12 weeks as this finish type is not a stock item.
- .3 It will also show up dust more and therefore need to be cleaned regularly.
- .4 All core buildings on campus have the same level of maintenance, so an increased level of care for the hardware would not be possible for any particular project.

*****END OF SECTION*****