

## **ELECTRONIC DOOR ACCESS CONTROL SYSTEM - UNL**

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**Application Requirements:** UNL has an extensive door access control system. The scope of electronic door access requirements are dictated by the type of project.

**Coordination of Design:** The FP&CP Access Control Engineer will complete the actual design of the access control system, including the selection of all components of the system. However, the design A/E shall coordinate design of the electronic door access control system with the FP&CP Project Manager and Access Control Engineer once project floor plans have been developed. This design coordination shall include: finish door hardware, details of door and frame factory preparation and installations. Refer to *HVAC Control, Access Control and Lighting Control Coordination Schedule* section within these *Design Standards* for a delineation of the responsibilities for procurement and installation of access control system components.

**Door Operating Force:** To ensure that the required exit doors will be able to be opened readily in the manual mode of operation, the closing mechanism of the electronic door access device shall be adjusted in accordance with the *Codes, Standards and Regulations* section of these *Design Standards*.

For delayed egress door hardware, special signage shall also be provided on the egress side of such doors. The sign shall be readily visible and use lettering of at least 1 inch height on a contrasting background to convey the following message: "IN EMERGENCY, PUSH TO OPEN or "EMERGENCY EXIT ONLY"

**Large Capital Construction Projects:** Provide the following categories of electronic door access in new building projects, major renovations and building additions:

- Exterior swing doors and large opening closures, such as rolling shutters or overhead panel doors
- Interior swing doors and large opening closures designated as security sensitive by users, by UNL administrative or Facilities, Planning & Capital Programs policy. Such spaces include: mechanical equipment rooms, telecommunications wiring closets, electrical closets and custodial rooms.
- At least one entrance door that is also automated and accessible per ADA requirements. The electronic door access control system and the ADA door automation systems shall be interfaced.

**Small Capital Construction Projects:** For small capital construction projects of limited scope, coordinate the requirements of electronic door access with the FP&CP Project Manager.

**Allowance for Future Access Control System Installations on Exterior Doors:**

To facilitate the future installation of electronic access control on exterior door openings, the following installation requirements should be incorporated:

- A power transfer rough-in (Von Duprin electric power transfer EPT-10) rough-in with cover plates for continuous hinge applications or future electrified center hinge for butt hinge applications and appropriately sized welded-in-frame mortar boxes with cover plates.
- Contractor installed 3/4" conduit from all appropriate components within the doorframe including card reader rough-in (See Design Detail 28 10 00-01) to the nearest accessible ceiling space above the secure side of the door. If no accessible ceiling space exists, provide access doors.

**Allowance for Future Access Control System Installations on Interior Doors:** To facilitate the future installation of electronic access control on interior door openings, the following installation requirements should be incorporated into selected new door openings:

- Welded-in-frame mortar boxes with cover plates.
- Contractor-installed 3/4" conduit from mortar boxes to an accessible ceiling space junction box on the secure side of the door.

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**This narrative pertains to University of Nebraska – Lincoln City and East campuses only.**

These requirements should be designed and specified for the openings separating the building corridor system from a suite of rooms and any other designated openings, which may become security-sensitive.

**Finish Hardware Overview:** Locking systems for access-controlled openings may include:

- Rim-type panic exit devices
- Mortise or cylindrical locksets with electric operation
- Standard mortise or cylindrical locksets with an electric strike
- Delayed egress panic exit devices (Von Duprin or Sargent) or electromagnetic locks.

Because certain types of electrified door hardware introduce inherent installation obstacles, are not generally as robust, have a higher failure rate or pose other functional or operational issues, we discourage the use of electromagnetic locks, electrified cylindrical locks and electric strikes. Instead, we encourage the use of electrified wide stile rim-type exit devices and mortise-type electrified locks because they are the most reliable door hardware types that can be scheduled and generally work best for our specific installations.

The selection of the appropriate locking systems should be based upon the function of the opening, the degree of security required and installation considerations. All selections should be coordinated with the FP&CP Access Control Engineer.

**Finish Hardware Items:**

- Panic Exit Devices: Provide Von Duprin 99 series, Sargent 80 series or UNL FP&CP approved equal, rim-type exit devices with hex dogging feature (if not fire rated) and request-to-exit option in proper size, handing and finish. Neither narrow stile exit hardware nor vertical-rod type devices (either concealed or surface-mounted), should be scheduled unless absolutely required by specific application.
- Mortise Lock Hardware: For security sensitive interior or exterior doors not requiring a rim exit device, select Schlage L909x series or Sargent 8200 series mortise lockset. Energy performance: these locksets should not exceed 500 milliamp peak current draw or 15 milliamp holding current draw. Locksets should be field convertible between fail-safe and fail-secure with modifiable handing without opening the lock body. Locksets should provide integral request-to-exit switch and latch-bolt-monitor circuits. Electrified locks shall have a 2-year limited warranty.
- Cylindrical Lock Hardware: For security sensitive interior or exterior doors in existing locations that have cylindrical locks, schedule Schlage Command CLN80 LEURH24 – Finish - REXWHO1, Sargent 28-RX-10G71LL less cylinder in proper handing and finish or UNL FP&CP approved equal if cylindrical-type locksets are required to match existing building hardware. Schedule fail-secure with the request-to-exit option and 24VDC operation. NFPA code may require some applications to be fail-safe rather than fail-secure.
- Electric Power Transfer with Butt Hinges: Schedule Marray TEF 2+4C electrified hinges in proper size, weight and finish or UNL FP&CP approved equal. Note that the Marray manufacturer has a lifetime warranty on their electrified hinges. Because of this warranty, there likely is no current equal.
- Electric Power Transfer with Continuous Hinge or Pivots: Schedule Von Duprin EPT-10 in appropriate finish or UNL FP&CP approved equal.
- Door Strikes: The appropriate electric strike manufacturer and model is dependent upon scheduled door hardware. Schedule Von Duprin 6200 series for cylindrical or mortise type locks and schedule HES 9600 series electric strikes for rim type panic exit devices - all to be ordered with latch bolt monitor option for use as legitimate request-to-exit function, FSE (fail secure if allowed by code) and 24 VDC operation – or FP&CP approved equal.

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- Electromagnetic Locks: The appropriate manufacturer and model is dependent upon application and installation considerations. Schedule SDC 350 Narrow Line EMLock or consider, Securitron M680BDX with integral adjustable PIR detection. Coordinate exact selection with FP&CP Access Engineer.

**Door and Frame Preparation:** Doors and Frames for all new construction shall be factory prepped according to door hardware schedule. Door and Frame preparation on existing door openings shall be done in the field (See Design Detail 28 10 00-01).

- Provide welded-in-place mortar box 1½" x 2½" x 2" in head of door frame, centered 6" from lock edge of frame for door position switch. Verify exact size of device to be used with UNL BSM. On frames not immediately receiving door position switch, mark location of back box with 1/8" diameter hole drilled in frame at center of back box. Run conduit from mortar box to common J box above the secure side of the door.
- Electric power transfer where continuous hinges are scheduled: Provide frame cutout and welded-in-place mortar box for Von Duprin EPT-10 electric power transfer where scheduled for installation on access-controlled openings. On frames not immediately receiving an EPT, provide flush cover plate held in place with machine screws.
- Provide welded-in-place mortar box the same footprint dimensions as the hinge, 1 ½" deep in frame jamb, behind the electrified hinge.
- Electric Strikes. Provide manufacturer's recommended standard frame preparation, with welded-in-place mortar box and necessary conduit run, on frames scheduled to receive electric strikes.

### **Card Access Raceway and Wire Pathways:**

The plans and specifications shall clearly convey that the electrical contractor is responsible for all electronic door access raceway and wire pathways between access control support panels and each access control component.

Card Access components include: card readers, door position switches, electrified lock sets, rim-type exit devices, electric strikes, electromagnetic locks, electrified hinges or other frame to door power transfer devices and door actuating devices for powered door operators. Refer to *HVAC Control, Access Control and Lighting Control Coordination Schedule* section within these *Design Standards* for more information.

All electronic door access system wiring requires a minimum 3/4" EMT conduit at door frame electrified components or card reader (See Design Detail 28 10 00-01). All conduits shall be continuous and be connected to a box or fitting (not stopped inside a wall or door frame).

All conduits shall be sized for 40% fill to allow for future fill capacity on the runs from each mortar box accommodating scheduled electrified door hardware or future door hardware to the J-box on the secure side of the door.

Drill/bore necessary wire pathway in hollow metal and wood doors for scheduled electrified hardware to provide for wire cable.

### **Additional Installation Requirements:**

- One (1) 120 VAC Emergency Power circuit for each access control support panel.
- A 8"X10"X4" (minimum) J-box above drop ceiling on secured side of door for card reader, door position switch, electric power transfer, request to exit, ADA push buttons and other low voltage wiring to door area. Provide a 1" conduit from this same J-box to nearest cable tray

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or if in inaccessible area, in conduit to nearest access control support panel location. (Coordinate with FP&CP Access Engineer).

- All systems shall be commissioned by the UNL BSM unless the FP&CP Access Engineer has stipulated that entire installation and commissioning are to be completely installed and performed by the Contractor.