



DIVISION 28 00 00 ELECTRONIC SAFETY AND SECURITY

SECTION 28 10 00 ELECTRONIC ACCESS CONTROL

1. GENERAL.

- A. Typical locations requiring access controls are:
 - 1. ADA entrance to building, at minimum.
 - 2. Areas requiring monitored, after-hours, access, i.e. computer labs. Special access control requirements will be coordinated through the design process with university stakeholders.
 - 3. Residence hall doors between public spaces and resident areas. Individual resident rooms in dormitories.
 - 4. For new construction, all exterior doors excluding egress-only alarmed doors
 - 5. For new construction, all classrooms, faculty offices, departmental offices and other spaces which would require the issuance of keys for access.
- B. All doors with electronic access controls shall have a key override for security, maintenance, and emergency access. Cylinder shall be small format (7) pin Best Access System; see section 08 70 00 HARDWARE.
- C. All conduit shall be installed in walls. In some renovations, surface mounted conduit may be pre-approved if existing conditions require.
- D. Verify with campus during design phase whether a wireless or hardwired system is desired for a particular project. Wi-Fi technology is preferred for wireless installations. All wireless installations must be based on a predictive survey for new construction, or Wi-Fi signal assessment for existing facilities and networks. Hardwired installations will require locations on plans.
 - a. TTU Information Technology Services will perform a predictive survey for signal quality based on current phase drawings during the Design Development phase.
 - b. Some doors may be identified during the predictive survey to be hardwired.
 - c. A unit price may be used to identify a hardwired price per door to allow for unforeseen signal quality. Unit prices should be identified for each wall-type in which hardwiring may be required. Conduit in walls will be required for both hardwired and wireless installations as detailed in the access control diagrams.
 - d. For installations where predictive mapping is inconclusive or limited, it is recommended to include the unit pricing or include hardwired paths in the project.
 - e. Confirmation of the initial survey will be performed during the Construction Document phase and TTU ITS will sign off on the plans.
- E. All access control systems shall be contact-less readers with smart card technology supporting MiFare Classic 1K and open-system panels and software.
- F. Components for emergency power shall be sized to support the desired amount of run time in hours.



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- G. Components for the access control system shall fail secure in the event of loss of power. Options and exceptions should be discussed during design phases of a project.
- H. Door hardware shall be set so that “dogging” functionality is key controlled to the Best Core System.
- I. Drawings and specifications for the access control system shall be included in the construction documents indicating the location and door label for all field devices.
 - a. A wiring plan should be included showing termination to termination wiring.
 - b. Coordinate access control system with the door schedule.
 - c. Comply with typical O&M requirements and submittals for the access control system components.
 - d. Wherever possible, discuss specific wiring system components for access control during design phases.

2. SUBMITTALS.

- A. The contractor shall be required to submit to the engineer for review the following items:
 - 1. Wire, shall be verified by TTU ITS for compatibility (other than 120 volt)

3. EXECUTION.

- A. The following equipment shall be supplied by Owner, the Contractor shall install as required:
 - 1. Card Reader
 - 2. I/O Controller and Enclosure Box
 - a. Each I/O Controller shall have a dedicated wire and power supply. The power supply (supplied by owner) shall be Von Duprin PS906 with a 900-8F 8 fused output distribution board, and 900BBK battery backup kit. The 120 volt circuit(s) feeding the power supply / battery backup shall be connected to the nearest generator panel. The power supply shall be labeled with the generator circuit number. The panel schedule shall be labeled with access door numbers.
 - 3. Door Controller
 - 4. Power Supply for Door Controller
 - 5. Owner will terminate all connections.
- B. The Contractor shall furnish and install all equipment, except as noted above, to make a complete, functional, and code compliant system.
 - 1. Junction boxes
 - 2. Conduit
 - 3. Wiring
 - a. Wiring type shall be verified through engineer and TTU IT
- C. Coordination and hardware review meetings will be held with the Designer, Installer/Contractor, and TTU IT representative prior to start-up of any access control project.



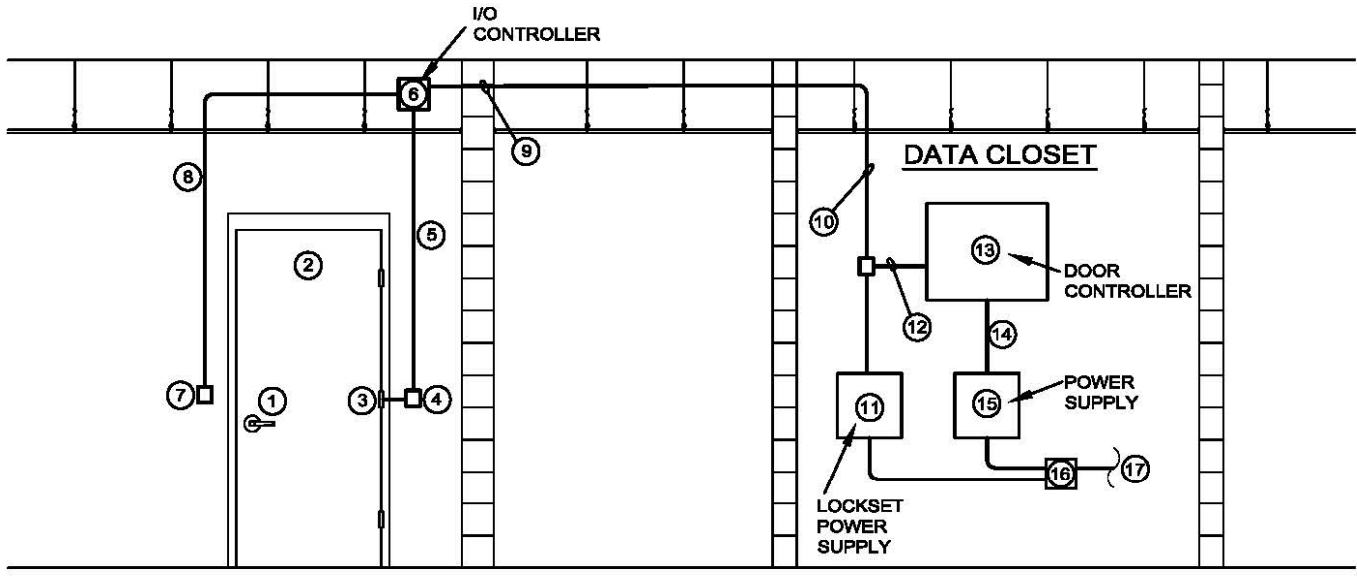
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- D. At the completion of the project, a final walkthrough will be performed with TTU, the Installer, and General Contractor where applicable.
- E. **INSTALLATION REQUIREMENTS:**
 - 1. Panel and any network device server will be wired through a dedicated power supply with battery backup.
 - 2. Access control panels are to be installed in network or electrical closets as approved by TTU ITS.
 - a. Each panel will be labeled and posted on the exterior of the door.
 - b. Each panel will have a list of card readers, named by university door numbers, connected to it posted on the interior of the door.
 - c. A detailed door and reader layout drawing shall be located on the inside panel door in an appropriate sleeve/envelope.
 - 3. Installation of network connection drops is to be coordinated through the TTU Information Technology Services Office.
 - 4. Field wiring must be one piece from source terminal to destination terminal. Splices in field wiring will NOT be allowed.
 - 5. Use tamper resistant screws to attach surface mounted components.



WIRED DOOR ACCESS CONTROL DIAGRAM

NOT TO SCALE



GENERAL NOTES

- ALL FINAL TERMINATIONS TO BE MADE BY OWNER.
CONDUIT TO BE RUN IN WALLS WHEREVER POSSIBLE. SURFACE MOUNTED CONDUIT WILL ONLY BE PERMITTED WITH PRIOR APPROVAL...

MATERIAL SUPPLY

CONTRACTOR

- ELECTRIFIED CYLINDRICAL LOCK
ELECTRIFIED HINGE
J-BOXES AND CONDUIT
DOOR LEAF W/PATHWAY
EMERGENCY POWER CONNECTION

OWNER

- I/O CONTROLLER & ENCLOSURE
CARD READER & DATA CABLE
DOOR CONTROLLER POWER SUPPLY
DOOR CONTROLLER
LOCKSET POWER SUPPLY
UPS

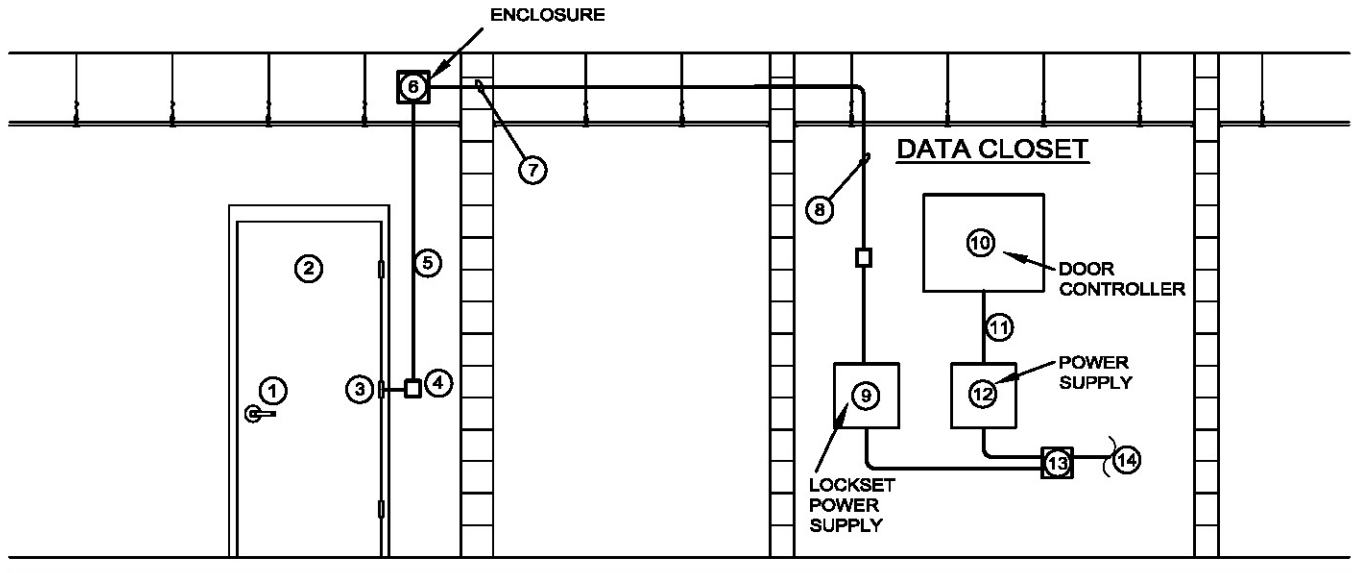
NUMBERED NOTES

- 1 SPECIFIED HARD-WIRED LOCK MECHANISM, WITH ELECTRIC CYLINDRICAL LOCK, SHALL BE SUPPLIED AND INSTALLED BY GENERAL CONTRACTOR...
2 CONTRACTOR SUPPLIED DOOR LEAF EQUIPPED WITH WIRE PATHWAY FROM PASS-THROUGH HINGE TO LOCKSET.
3 CONTRACTOR SUPPLIED ELECTRIFIED PASS-THROUGH HINGE...
4 J-BOX AT ELECTRIFIED PASS-THROUGH HINGE ON SECURE SIDE OF DOOR.
5 1/2" ELECTRICAL CONDUIT TO ELECTRIFY PASS-THROUGH HINGE SHALL BE INSTALLED AND WIRED BY CONTRACTOR.
6 I/O CONTROLLER AND ENCLOSURE SHALL BE SUPPLIED BY OWNER AND MOUNTED BY CONTRACTOR...
7 J-BOX AND CONDUIT SHALL BE INSTALLED BY CONTRACTOR. CARD READER AND DATA CABLE SHALL BE SUPPLIED, INSTALLED AND WIRED BY OWNER.
8 1/2" CONDUIT CONTAINING DATA CABLE TO CARD READER INSTALLED BY CONTRACTOR, WIRED BY OWNER.
9 CONTRACTOR SHALL BE RESPONSIBLE FOR SEALING ANY PENETRATIONS THROUGH FIRE RATED CEILING & WALLS...
10 1/2" CONDUIT WITH CONDUCTORS AND DATA TO I/O CONTROLLER SHALL BE INSTALLED BY CONTRACTOR.
11 LOCKSET POWER SUPPLY SHALL BE SUPPLIED BY OWNER. MOUNTED AND WIRED BY THE CONTRACTOR. EACH LOCKSET POWER SUPPLY MAY CONTROL UP TO EIGHT DOORS.
12 1/2" CONDUIT AND DATA CABLING. CONDUIT SHALL BE SUPPLIED AND INSTALLED BY CONTRACTOR. DATA CABLE SHALL BE PER ACCESS CONTROL SYSTEM REQUIREMENTS AND SUPPLIED AND INSTALLED BY OWNER.
13 DOOR CONTROLLER SHALL BE SUPPLIED AND INTERNALLY WIRED BY OWNER; MOUNTED BY CONTRACTOR.
14 1/2" ELECTRICAL CONDUIT SHALL BE SUPPLIED AND INSTALLED BY CONTRACTOR, WIRING BY OWNER.
15 DOOR CONTROLLER POWER SUPPLY SHALL BE SUPPLIED BY OWNER; SHALL BE MOUNTED AND WIRED (120 VOLT POWER) BY CONTRACTOR.
16 UPS
17 120 VOLT RECEPTACLE ON EMERGENCY POWER CIRCUIT.



WIRELESS DOOR ACCESS CONTROL DIAGRAM

NOT TO SCALE



GENERAL NOTES

- ALL FINAL TERMINATIONS TO BE MADE BY OWNER.
- CONDUIT TO BE RUN IN WALLS WHEREVER POSSIBLE. SURFACE MOUNTED CONDUIT WILL ONLY BE PERMITTED WITH PRIOR APPROVAL IN RENOVATION OR RETROFIT INSTANCES WHERE EXISTING WALLS CANNOT BE FISHED.

MATERIAL SUPPLY

CONTRACTOR

- ELECTRIFIED CYLINDRICAL LOCK
- ELECTRIFIED HINGE
- J-BOXES AND CONDUIT
- DOOR LEAF W/PATHWAY
- EMERGENCY POWER CONNECTION

OWNER

- ENCLOSURE
- DOOR CONTROLLER POWER SUPPLY
- DOOR CONTROLLER
- LOCKSET POWER SUPPLY
- UPS

NUMBERED NOTES

- ① SPECIFIED WI-FI LOCK MECHANISM, WITH ELECTRIC CYLINDRICAL LOCK, SHALL BE SUPPLIED AND INSTALLED BY GENERAL CONTRACTOR, TERMINATED BY OWNER.
- ② CONTRACTOR SUPPLIED DOOR LEAF EQUIPPED WITH WIRE PATHWAY FROM PASS-THROUGH HINGE TO LOCKSET.
- ③ CONTRACTOR SUPPLIED ELECTRIFIED PASS-THROUGH HINGE. DOOR FRAME TO HAVE A 1/2" MINIMUM THROUGH HOLE.
- ④ J-BOX AT ELECTRIFIED PASS-THROUGH HINGE ON SECURE SIDE OF DOOR.
- ⑤ 1/2" ELECTRICAL CONDUIT TO ELECTRIFY PASS-THROUGH HINGE SHALL BE INSTALLED AND WIRED BY CONTRACTOR.
- ⑥ ENCLOSURE SHALL BE SUPPLIED BY OWNER AND MOUNTED BY CONTRACTOR ON SECURE SIDE OF DOOR ABOVE CEILING. LOW VOLTAGE WIRING SHALL BE CONNECTED BY OWNER. SPACE ON WALL ABOVE CEILING FOR ENCLOSURE SHALL BE 8.5" HIGH x 11.5" WIDE, MINIMUM.
- ⑦ CONTRACTOR SHALL BE RESPONSIBLE FOR SEALING ANY PENETRATIONS THROUGH FIRE RATED CEILING & WALLS BY APPROVED METHODS PER CONTRACT DOCUMENTS.
- ⑧ 1/2" CONDUIT WITH CONDUCTORS SHALL BE INSTALLED BY CONTRACTOR.
- ⑨ LOCKSET POWER SUPPLY SHALL BE SUPPLIED BY OWNER. MOUNTED AND WIRED BY THE CONTRACTOR. EACH LOCKSET POWER SUPPLY MAY CONTROL UP TO EIGHT DOORS.
- ⑩ DOOR CONTROLLER SHALL BE SUPPLIED AND INTERNALLY WIRED BY OWNER; MOUNTED BY CONTRACTOR.
- ⑪ 1/2" ELECTRICAL CONDUIT SHALL BE SUPPLIED AND INSTALLED BY CONTRACTOR, WIRING BY OWNER.
- ⑫ DOOR CONTROLLER POWER SUPPLY SHALL BE SUPPLIED BY OWNER; SHALL BE MOUNTED AND WIRED (120 VOLT POWER) BY CONTRACTOR.
- ⑬ UPS
- ⑭ 120 VOLT RECEPTACLE ON EMERGENCY POWER CIRCUIT.