

**SECTION 2**  
**DIVISION 28**  
**ELECTRONIC SAFETY AND SECURITY**

## **DIVISION 28 – ELECTRONIC SAFETY AND SECURITY**

**Note: This is a guide for Designers only. Contents shall not be used in lieu of specifications as part of the Designer’s contract documents.**

### **SECTION 28 0100 - ELECTRONIC SAFETY AND SECURITY GENERAL**

#### **PART 1 - GENERAL**

##### **1.1 SUMMARY**

- A. The following information is provided to ensure compatibility of card readers for use with UNC Charlotte’s ID Card.

#### **PART 2 - PRODUCTS**

##### **2.1 CARD READER REQUIREMENTS**

- A. All card readers and supporting systems proposed for any building at UNC Charlotte must comply with the following ID Card Standards and be 100A% compatible with the existing University equipment.
- B. The UNC Charlotte’s ID Card uses a standard ABA accepted CR-80 colored card stock, size 2.12 inches high by 3.375 inches long, a card thickness of 0.030 inches, and the radius of corners .125 inches. The card meets ISO standards 7810 and 7813. The stripe is a three-track ABA stripe meeting ISO specifications 7811/2, 7811/4 and 7813. The ABA stripe provided employs high coercivity encoding. Card holder information is encoded on Track II of the ABA magnetic stripe.
- C. Card Reader Preferred Features:
  - 1. Card readers should be specifically designed for the college and university environment, and be made of rugged, rustproof metal. Readers should not have plastic casings or moving parts which are subject to frequent replacement due to shattering and breakage.
  - 2. Card readers should feature contactless reader which will read BlackBoard Mifaire Desfire EV1 and EV2 format. These can be any of the available manufacturers that support this format.
  - 3. Card readers should be programmable from administrative workstations linked to its access control system by authorized operators only. No card reader programming shall be done at the reader.
  - 4. In the event of a communication disruption between the reader and its access control system, readers should be able to store a history of at least 4,000 transactions while offline, and automatically upload these transactions to the access control system when communication is restored.
  - 5. Card readers should have their control electronics mounted remotely within the interior of the secured area.
  - 6. Card readers should be protected against power line disturbances (i.e., have power line filter and watchdog timer circuitry).
  - 7. It is desirable for card readers and their supporting system to:
  - 8. Provide some sort of visual indication if card entry is valid, denied, or the card must be reinserted. (For security reasons, access control card readers should not visually indicate an offline condition.)

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9. Be able to support a high security option that allows use of a downloaded cardholder privilege database for offline authorization.
10. Be able to support an optional Personal Identification Number (PIN) pad.
11. Be capable of interfacing with proximity card recognition devices and other types of door opening systems and hardware.
12. Be able to support multiple alarm inputs/outputs that will activate other types of peripheral equipment (lights, video camera, sirens, etc.)

**SECTION 28 3000 - FIRE ALARM SYSTEM**

**PART 1 - GENERAL**

**1.1 REQUIREMENTS**

- A. Each installation shall be an addressable system with battery backup, graphic annunciator and voice evacuation.
- B. Provide audiovisual speaker and light alarm devices throughout the building. Provide ceiling mounted horn/strobe whenever possible to avoid wall mounted locations.
- C. Provide addressable smoke detectors in the storage spaces, equipment rooms, fire alarm control panel locations and corridors. Addressable duct mounted smoke detectors will be provided for the central air handlers. Addressable heat detectors will be provided where there is cooking equipment and inside the boiler rooms.
- D. If smoke detectors are installed within 10 feet of a restroom door opening or within 10 feet from vanity/sink area, the smoke detectors shall be programmed as “verified” smoke detectors.
- E. Provide addressable fire alarm pull stations at the egress doors. Additional pull stations will be provided in the mechanical rooms.
- F. All work shall be in accordance with the recommendations of the N.C. Department of Insurance Guidelines for Fire Detection and Alarm Systems.
- G. Sprinkler System Interconnect: Flow switches shall be connected to energize the system and operate all speakers and visuals in the entire building. Valve tamper switches shall be connected to annunciate trouble signal only, both audibly and visibly.
- H. All clean agent releasing systems, pre-action sprinkler systems and/or special hazard systems shall be integrated with the building system fire alarm control panel if the fire alarm control panel is UL listed for those purposes.
- I. Digital Communicator: Provide complete digital communicator that is directly compatible without translators to the existing Simplex campus fire alarm monitoring system.
- J. Power fire alarm system with generator backed life safety circuit if available.
- K. Isolation relays (relays indirectly controlled by fire alarm system components) or 8 amp rated fire alarm system component relays shall be used whenever 120VAC (or greater) is switched by relay contracts to control auxiliary functions.
- L. Line voltage (120VAC transient) suppressors providing surge protection to the fire alarm control panel shall have dry contacts for remote monitoring of transient suppressor integrity. These contacts shall be monitored by the fire alarm control panel to indicate a trouble condition when the operating ability of the suppressor is lost.
- M. Fiber Optic cabling used for fire alarm network communications shall be 62.5/125 Micron Multi-mode cable. It shall also be red in color from any patched connection point to the fire alarm control panel.

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- N. Provide a landline connection adjacent to each fire alarm control panel.

**PART 2 - EXECUTION**

**2.1 INSTALLATION**

- A. All wiring shall be in metal raceway.
- B. Access doors in ducts for duct detectors shall be installed by the mechanical contractor. Fire alarm contractor to coordinate installation with mechanical contractor.
- C. Final testing of the system shall be under the direct supervision of the manufacturer's representative. The Fire Alarm System shall be fully tested and certified in accordance with NFPA 72. When manufacturer's testing is complete, a letter of certification including the NFPA 72 Record of certification shall be sent to the Owner (State Construction Office) with a copy to the Engineer stating that the system has been tested and functions as intended by all applicable Codes and these plans and specifications.
- D. A demonstration of the entire system shall be provided for the Owner and Engineer upon completion of the project. Manufacturer's field engineer or technician shall be present for these demonstrations and shall assist the Contractor in performing the demonstration. Prior to the demonstration and inspection by the Engineer, the installing contractor shall submit to the Engineer the NFPA 72 signed certification of completion seven days in advance of this requested final inspection date. Once system is operational and accepted by the Owner and Engineer, Contractor shall be prepared for a complete demonstration of the system for the State Construction Office during their inspection. The manufacturer's field engineer or technician shall also be present for this demonstration. Contractor shall arrange to have the necessary number of people, radios, etc. including the manufacturer's representative on hand for these demonstrations of the system. Again, demonstrations shall use approved smoke methods and smoke "bombs", not magnets. Contractor shall furnish all smoke and smoke "bombs."
- E. Any modification of an existing fire alarm system requires a new certification and graphics system update.
- F. All connections to the FACU and the system's programming shall be done only by the manufacturer, or by an authorized distributor that stocks a full complement of spare parts for the system. The technicians who do this are required to be trained and individually certified by the manufacturer, for the FACU model/series being installed. This training and certification must have occurred within the most recent 24 months. Copies of the technician's certifications must be part of the Shop Drawing submittal to the engineer, prior to installation. The submittal cannot be approved without this info.
- G. Separate walk test groups for all fire sprinkler devices shall be programmed into the fire alarm system.
- H. Duct Smoke Detectors shall be configured to report as Supervisory Alarms instead of Fire Alarms. They shall be configured to operate all necessary ancillary functions associated with smoke control such as air handler shutdown, damper activation, and smoke evacuation fans as required.

**2.2 SUBMITTALS**

- A. Contractor shall submit for approval complete data on all proposed system components, along with detailed wiring diagrams showing color coding and wire identification, terminal numbers, raceway sizes, number of conductors, etc.