



**Office of Capital Planning
and Project Management**

DIVISION 27

COMMUNICATIONS

This Article on Codes, Regulation and Standards shall apply
to all Divisions of the Building Standards

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27 00 00 TELECOMMUNICATIONS

- Refer to the UIC Academic Computing and Communication Center Telecommunication Building Standards, accessible from their web page at

<http://acc.uic.edu/policy/telecom-standards>

27 11 13 COMMUNICATIONS ENTRANCE PROTECTION

- The system will include card readers at entrance doors, electric hardware and monitoring at each door, microprocessor based intelligent controllers, dual reader controllers wiring between controllers in a building, software, hardware, and firmware for the microprocessor based controllers and the host computer.
- The requirements for the Card Access system will be included in a project's Program Statement. Upon consultation with the building's occupants, University Police, and Facilities Management, the requirements shall be refined during the project's design phase. In order to completely integrate this system into a construction project the details shall be developed for inclusion to the 50% design review.
- Acceptable Manufacturers
 1. Lenel Systems International (www.lenel.com).
 2. Best Access Systems (www.bestaccess.com).
 3. Radionics, Inc. (www.radionicsinc.com).
 4. RS2 Technologies (www.rs2tech.com).
- All hardware, firmware, and software furnished shall be the manufacturer's latest revision or product version, at the time of final acceptance.
- All material and equipment shall be new and unused.
- Security System Controller:
 1. The card access controller shall have the following characteristics:
 - a. Capability to control two access controlled doors with hardware and software to accomplish the following within a distance of 500 feet from the controller:
 - i. Two card readers
 - ii. Two latch position switches
 - iii. Two electric strikes
 - iv. Two door position switches
 - v. Two sets of panic hardware
 - b. The unit shall have the following electrical characteristics:
 - i. Normal 120 volt A.C. power supply. 2. 12 volt batteries for two hours of standby operation. 3. 12 volt D.C., fused at one amp, for control of electric strikes.
 - c. The system shall operate and allow controlled card access without connection to the host computer. It shall have a memory capacity to handle 2000 cards in this non communicating mode of operation.
- Modems:
 1. Modems shall be furnished and installed to connect the intelligent controllers to the host computer when the total wire distance between units is over 4000 feet. Two modems shall be furnished and installed: one at the intelligent controller; and one at the host computer site.
 2. The modems shall be furnished as part of the hardware/software/firmware package to insure system compatibility.
- Security System Boxes:
 1. Refer to [Section 26 05 33](#). Individual outlet boxes shall consist of a standard four inch square outlet box with appropriate plaster rings where required in walls. Mounting height shall be as indicated on drawings.
 2. Cover plates: The contractor shall provide a blank stainless steel cover plate for all outlet boxes.
- Pull String:
 1. A nylon pull string shall be installed in all future or empty conduits installed for the card access control system.
- Raceway:

1. See Section 26 05 33. Raceway shall be EMT and shall be sized as shown on the contract documents. Minimum size of conduit shall be 3/4. Use only compression couplings designed specifically for the type of conduit or raceway utilized. Use 1/2 inch minimum flexible metallic conduit when running conduit in door frames. Provide insulated bushings at conduit termination.
- Install interior raceway system with maximum of 270 degrees of total bends, or 150 feet of total distance, between outlets or junction boxes. Raceways for the card access system shall not share raceways or cable trays with other systems such as power, telecommunications, fire alarm., or department operated network systems.
 - Install conduit at the location shown on the drawings. Where plywood backboard is shown, stub conduit up to a level two inches above bottom of backboard and secure to backboard.
 - Extend raceway from each security wall outlet directly to the serving Diebold 1000 card access controller.
 - All security conduits shall be concealed and all boxes flush mounted.
 - See contract documents and shop drawings for mounting heights of devices and equipment. This contractor shall be assigned the responsibility to coordinate the mounting heights and details of the components of the card access system. No surface mounted raceways shall be allowed unless specifically defined in the contract documents.
 - Conduit Sizing:
 1. Conduit sizes are shown on the drawings, however, all conduit sizes shall be verified with the Architect/Engineer before rough in for proper size.
 - Boxes:
 1. Install one box for each security outlet and junction point. All Boxes shall be flush mounted. This contractor shall be assigned the responsibility to coordinate the mounting heights and details of the components of the card access system. No surface mounted boxes shall be allowed unless specifically defined in the contract documents.
 - Equipment Mounting and Location:
 1. The card access controller shall be mounted in electrical closets as indicated on the contract documents. All mounting locations shall be readily accessible and within locked spaces. Mounting above ceilings and other inaccessible spaces shall not be allowed.
 2. Control and other panels shall be mounted with sufficient clearance for observation and testing. All security system junction boxes shall be clearly marked. All wiring shall be in conduit.
 - Card Access Controller Firmware:
 1. All firmware necessary for a complete and fully functioning system shall be furnished. Including firmware for complete communication with the Host computer.
 - Host Computer Software:
 1. All software necessary for configuring this new system to the University of Illinois at Chicago's' existing system for complete and fully functioning system shall be provided.
 - Card Readers:
 1. Card readers shall be furnished and installed by the contractor. The exact quantity and type shall be determined during the project's preliminary design phase. The final configuration for card readers shall be determined after consultation with the occupying department, University Police, and Facilities Management.
 2. Do not install in the direct path of egress. Install in a secured location, i.e., electrical closet, as approved by the University.
 - Wiring:
 1. All wiring shall be shielded per manufacturer direction, checked and testing to insure that there are no grounds, opens, or shorts.
 2. No wiring other than that directly associated with card access system or its auxiliary functions shall be in card access system conduits. Wiring splices shall be avoided to the extent possible, and if needed they shall be made only in junction boxes, and enclosed by plastic wire nut type connectors.

Transposing or changing color coding of wires shall not be permitted. All conductors in conduit containing more than one wire shall be labeled on each end, in all junction boxes, and at each device with "E-Z Markers" or equivalent. Conductors in cabinets shall be carefully formed and harnessed so that each drops off directly opposite to its terminal. Cabinet terminals shall be numbered and coded, and no un-terminated conductors are permitted in cabinets or control panels. All controls, function switches, etc., shall be clearly labeled on all equipment panels.

3. Provide, as required, audible suppression devices for interference-free and properly operational system and that both audible and multiplex wiring be run in same raceway.
- Final Test
 1. Tests:
 - a. The contractor shall perform all electrical, software, hardware, and mechanical tests required by the equipment manufacturer's standard check out procedure.
 - b. The system final test shall be conducted under the direction of a technician certified by the manufacturer.
 2. Required Submissions:
 - a. At the time the system is tested, the Contractor shall supply the following items to the University before the test is started:
 - i. Drawings showing the floor plan of the building, all device locations, and device addresses, Card Access Controller locations, wiring between the units, and the location of the modem.
 3. Scheduling and Sequencing of Tests:
 - a. Final testing of the system shall not occur until the entire system is 100% complete and fully functioning. In the event that phased construction schedules require partial system operation, portions of the system may be tested. However, the entire system must be operating and fully functional before final testing, final acceptance and substantial completion shall be allowed to occur.
 - b. The final test shall be scheduled so that it may be witnessed by the Architect/Engineer and University personnel. This shall require notifying the above referenced groups, in writing, a minimum of seven working days in advance of the final test.
 4. Final Report Contents:
 - a. The report shall include:
 - i. A complete list of equipment installed and wired
 - ii. Indication and demonstration that all equipment is properly installed and functions and conforms with these specifications
 - iii. Tests of each individual device
 - iv. Voltage and current settings for each device while in operation or in each state (such as open or closed)
 - v. Demonstration of communication, alarm transmission, monitoring, and remote programming of the local units from the Host Computer
 - vi. Technician's name, address, telephone, FAX, ID Number, and date
 - b. After completion of all the tests and adjustments listed above, the contractor shall submit the following information to the architect and the Facilities Management:
 - i. "As-built" conduit layout diagrams including wire color code and/or tag number
 - ii. Complete "as-built" wiring diagrams.
 - iii. Detailed catalog data on all installed system components.
 - iv. Copy of the final test report.
 - v. Drawings showing the floor plan of the building, device locations, and device addresses.

- c. Final tests and inspection shall be held in the presence of Architect, University Project Management and Facilities Management Representative and conducted to their satisfaction. The contractor shall supply personnel and required auxiliary equipment for this test without additional cost. Any problems identified during system testing must be corrected by reprogramming or other corrective work. After the reprogramming or other work is complete, the Contractor shall submit corrected documentation to the University.
- d. The completed access control system shall be demonstrated to insure its proper operation. This demonstration shall consist of activating the installed system and all its features. The card access system shall be demonstrated with a several cards, all door monitoring functions shall also be demonstrated. The test shall include observation of all host software functions and their accurate reporting of the field conditions. The test must include accessing the system software in the existing Host Computer. The contractor shall furnish all system passwords, communication software, and system software to demonstrate. The software and passwords shall remain with the University for use in the continuing operation and maintenance of the system.
- Final Acceptance:
 1. Final Acceptance of the system shall also require a demonstration of the stability of the system. This shall be adequately demonstrated if the system operates for a 90-day test period without any unwarranted or false alarms. Should an unwarranted or false alarm occur, the contractor shall readjust or replace the faulty component and begin another 90-day test period. As required by the Architect/Engineer, the contractor shall recheck and retest the replaced components after each readjustment or replacement. This test shall not start until the owner has obtained beneficial use of the building under test.
 2. Before final acceptance of work, the contractor shall deliver five copies of a composite "Operating and Shop Maintenance Manual". Each manual shall contain a statement of guarantee including date of termination and name and phone number of the person to be called in the event of equipment failure, including individual factory issued manuals containing all technical information on each piece of equipment installed. In the event such manuals are not obtainable from the factory it shall be the responsibility of the contractor to compile and include them. Advertising brochures or operational instructions shall not be used it lieu of the required technical manuals.
- Training:
 1. Training shall be included in the testing phase of the system installation. The manufacturer's technician shall instruct the University personnel in all aspects of the system. The manufacturer's technician shall be available to answer all questions and provide explanations as requested by the University personnel.
 2. Provide three, three-hour training sessions, with one session per day for three consecutive days, for campus Electrical Department personnel. Also, provide one four-hour session of training in operation and maintenance. Training times indicated are actual times exclusive of travel.

27 50 00 DISTRIBUTED COMMUNICATIONS AND MONITORING SYSTEMS

- Coordinate with the UIC Campus Police Department.

27 53 13 CLOCK SYSTEMS

- Room Clocks
 1. Description: 12" wireless synchronized analog with aluminum frame and glass and wireless clock system.

2. Clock Model and Manufacturer: Model VP-CLK-1231 12" Wireless Analog Clock by FRANKLIN or approved equal
 - a. Power: AA Lithium Battery
 - b. Wireless Receiver: 10uV/M
 3. Clock System Model and Manufacturer: Model VS2800 GPS Wireless Clock System by FRANKLIN or approved equal
 - a. Power 12VDC
 - b. GPS interface: 12 parallel receiver
 - c. Transmitter: Expandable with 400W power amplifier
 4. For each project verify if the Clock System is already in the building, and if so, if additional clocks can be added
- Installation
 1. Locate Transmitter in the Electrical Room at an accessible location
 2. Install clocks and wireless clock system per manufacturer's installation instructions

**This section of the Building Standards establishes minimum requirements only.
It should not be used as a complete specification**