

SECTION 16905  
COMMUNICATIONS SYSTEM  
(Data and Voice)

PART 1 GENERAL

1.1 SECTION INCLUDES

- A. Cable path guidelines.
- B. Supportive equipment such as grounding and plywood backboards.
- C. Communication room setup and design.
- D. Communication outlets.
- E. Testing and certification of the communication systems.
- F. Power requirements.
- G. Cooling requirements.

1.2 REFERENCES

- A. NFPA: National Fire Protection Association.
- B. ANSI: American National Standards Institute.
- C. TIA: Telecommunication Industry Association.
- D. EIA: Electronic Industries Association.
- E. ISO: International Organization for Standardization.
- F. IEC: International Electro-technical Commission.
- G. NEC: National Electrical Code (NFPA 70).
- H. UL: Underwriters Laboratories.
- I. NEMA: National Electrical Manufacturer's Association.
- J. Section 02310 – Earthwork, for all underground installations.

1.3 SYSTEMS DESCRIPTION

- A. The primary communication room shall be the entry point for communication cables coming into the facility and the origination point of the communication systems in the facility.
- B. A communication distribution node will be a communication room which is used to feed several other buildings.
- C. Provide materials and labor for complete cable paths and power distribution; including conduits, pull strings, junction boxes, empty outlet boxes, backboards, power receptacles, and grounding for communication systems.
- D. Provide materials and labor for installation and testing of the fiber optic cables, twisted pair cables, CAT6, termination racks, communication outlets, and final terminations of cables.
- E. Provide materials and labor for installation of panic system dialers and emergency phones.
- F. Provide labor for installation of Wi-Fi access points at locations and in quantity as specified by the Wi-Fi heat map, created by Florida Tech IT - Networks

O. There shall be

communication rack. 7

- G. Coax F connectors shall be Siemon Model MX-F-FA-02 (White).
- H. Communication outlet faceplates shall be Siemon Model MX-FP-S(x)-02 (White) where x is replaced by 1, 2, 4, or 6 for the port count.
- I. Communication outlet surface mount boxes shall be Siemon Model MX-SMZ(x)-02 (White) where x is replaced by 1, 2, 4, or 6 for the port count.
- J. Blank inserts for unused communication outlet ports shall be Siemon Model MX-BL-02 (White).
- K. CAT6 Indoor Ethernet cable shall be Siemon Category 6 CMR (Gray) or CMP (White), depending on environment. (9C6X4-E2-02-RXA).
- L. CAT6 Outdoor and underground cable shall be Siemon Outside Plant (9C6O4-E1).
- M. Coax cable shall be RG-6 rated.
- N. Surge Protectors for twisted pair copper between buildings shall be Circa Model 1880ECA and shall be fully equipped with Circa Model 4B1FS-240 surge protection modules.
- O. Surge Protectors for underground Ethernet cables, traveling more than 5' underground away from

- Florida Tech IT - Telecommunications Department.
- C. All abandoned cable shall be removed.
  - D. All conduit shall be concealed in walls and ceilings. No conduit shall be visible outside of utility, mechanical, Electrical, and communication rooms.
  - E. Emergency phone locations shall be installed in key areas identified by Florida Tech Security. The phones shall be wired using CAT6 or CAT6A and connected to a patch panel in the communication room.
  - F. Panic system pull stations shall be installed in key areas identified by Florida Tech Security.
  - G. Panic system pull stations shall be wired using CAT3 or higher rated cable and connected to 66 type blocks within the cross connect field in each communication room.
  - H. Panic system dialers shall be installed on the backboards in each communication room. The quantity of dialers is based on the number of panic pull station locations divided by 8. The connection terminals for each panic system dialer shall be connected to 66 type blocks within the cross connect field.
  - I. Support conduits, backboards, wiring gutters, J-Hooks, ladder rack, and communication outlets under provisions of Sections 16190.
  - J. All communication conduits leaving the perimeter of the building shall have a locate wire installed. Copper communication cable and Fiber which has an integrated locate wire, traversing the entire conduit, can be considered as meeting this specification.
  - K. All outdoor Communication Vaults and Hand Holes shall be labeled as "Communications".
  - L. Hand Holes shall have a gravel bed and shall be installed in straight sections of conduits.

### 3.2 COMMUNICATION ROOM - GENERAL

- A. Size of all communication rooms shall adequate to allow for 36" of clearance in front, behind, and to one side of each rack/row of racks. The actual size of each room will be determined by the number of racks being installed.
- B. Any room acting as a central distribution node for the University will require coordination with Florida Tech IT – Networks/Telecommunications to determine exactly what equipment will be installed.
- C. Each floor shall have one or more communication closets for distribution throughout the floor.
- D. Each communication room shall be connected to the primary communication closet with 6 strands of fiber and a 25 twisted pair cable.
- E. Each communication rack, section of ladder rack, and surge protector shall be bonded and home run connected to the main grounding bus bar using a #6 AWG stranded copper insulated grounding conductor.
- F. All 120 volts, NEMA 5-15/20 receptacles designated for communication racks shall be dedicated circuits with dedicated neutrals. See Section 16141 for wiring devices.
- G. Receptacles for communication rooms shall be on separate circuits from other loads with maximum of two dual receptacles on each branch circuit. Each receptacle shall be labeled to indicate the circuit number and electrical panel where the breaker can be found.
- H. Electrical needs for a communication distribution node must be coordinated with Florida Tech IT – Networks/Telecommunications.
- I. Each cable in the communication room shall be labeled for identification via the use of luggage tags or written markings on the insulation.
- J. Each fiber termination can, fiber port, patch panel, Ethernet port, surge protector, and 66 block shall be labeled for identification.
- K. Coax cables should be routed to the backboard, individually labeled, and left with a 10' of excess cabled neatly coiled.
- L. Conduit installations shall meet the requirements of Section 16111.
- M. Provide smooth plastic bushings on all conduits at all locations including sleeves used for

penetrations.

### 3.3 COMMUNICATION ROOM - RACKS

- A. Fiber termination cans shall be installed at the top of communication racks.
- B.

- than 2 or more communication outlets shall be installed not more than 12” apart from each other.
- F. Each jack shall be labeled on the communication outlet.
- G. Each cable feeding a communication outlet shall be labeled for identification on its insulation.
- H. Communication outlets installed above drop ceilings for Wi-Fi access points shall be installed using surface mount boxes and have 10’ of excess cable coiled neatly above the ceiling.
- I. Communication outlets installed above ceiling shall be labeled at the outlet and on the drop ceiling grid.

3.6 CABLE PATHS

- A. The maximum cable path distance from the Communication Room to the outlet shall be 100 feet.