



State University
Construction Fund

Directive 27-1 Communications Systems

Responsible Office: Design & Construction

Last Revised Date: January 2023

SUMMARY

This Directive provides the consultants with the requirements of the State University Construction Fund for SUNY projects. The requirements detailed within are to be implemented into the project's specifications and/or drawings. The intent is not for the specifications or drawings to reference back to this document for compliance nor is it intended to override or amend the local or state codes where either is more stringent.

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Section 1 - SUMMARY

- A. The intent of this Directive is to provide the extent and quality of engineering services and communications system and infrastructure quality preferred by the Campus for the applicable project. The Fund and the State University of New York Telecommunications Officers Association (TOA) worked cooperatively to establish this Directive. Telecommunications staff on Campus should be engaged in the design process as early as possible.

Section 2 - OVERVIEW

- A. Prior to submitting a schematic report, consult with the Campus to identify its preferences regarding communications systems design when its preferences are not already detailed in the Campus program for the project and standards. The requirements in this Directive are examples of good engineering practice and design approaches that might be desirable for the applicable project. Variations from the requirements below are acceptable when described in the Campus program and standards or agreed to by the Campus. When programmed in the scope of work, provide the following:
1. Design of the complete pathway infrastructure for the communications systems.
 - a. Exterior communication infrastructure pathways shall generally be designed similar to power infrastructure pathways on Campus. Refer to Directive 26-1 Section 1(C) for pathway requirements.
 - 1) Conduit shall be a minimum of 4" schedule 80 PVC. Confirm conduit size and concrete encasement requirements with the Campus.
 - 2) Manholes shall be provided with a minimum interior clear work area of 6'Lx4'Wx6'T. Confirm dimensions with the Campus.
 2. Design of the communications system or components
 3. Communications systems may include cabling, equipment, etc. required for data, WIFI, voice, cable, internet, integrated audio / video and distributed communication systems. Distributed communication systems include distributed antenna systems for public safety and cellular RF communications, public address, access control and security, public address and intercom, sound, signage, clock and other electronic communication systems

Section 3 – RESPONSIBLITLY

- A. The Consultant provides the communications system design professional who provides the phase submissions, contract documents, including the drawings, specifications, and other information required for the communications systems. When preferred by the Campus, the communications system design professional shall be a Registered Communications Distribution Designer (RCDD). The communications system design professional shall have a minimum of five years' experience on projects similar to the construction work of this Project and be familiar with the applicable provisions of the latest recognized editions of the following Codes and Trade Standard Publications listed in this Directive. Upon request, submit qualifications for review and approval.

Section 4 - PROCEDURES

- A. General
1. The pathway infrastructure shall be shared by the communication system(s) programmed for the project. Do not provide separate pathway infrastructure for data & voice or other communications systems unless specifically requested by the Campus.
 2. Design adequate physical infrastructure for current and future needs. Infrastructure includes riser systems, conduit, cable trays, zone enclosures, and/or Telecommunications Rooms (TRs) and must be designed into all new and renovated structures.

- B. Applicable provisions of the latest recognized editions of the following Codes and Trade Standard Publications shall apply to the design, and made part of, the Contract Documents:
1. NFPA 70: National Electric Code
 2. Occupational Safety and Health Act (OSHA).
 3. National Electrical Safety Code (NESC).
 4. UL Listing of Communications Cabling and Hardware
 5. Building Industry Consulting Service International (BICSI) Telecommunications Distribution Methods Manual
 6. BICSI Outside Plant Design Reference Manual
 7. ANSI/TIA/EIA-526-7 - "Measurement of Optical Power Loss of Installed Single-mode Fiber Cable Plant."
 8. ANSI/TIA/EIA-526-14 - "Optical Power Loss Measurements of Installed Multimode Fiber Cable Plant."
 9. ANSI/TIA/EIA-568-D.0 - "Generic Telecommunications Cabling for Customer Premises".
 10. ANSI/TIA/EIA-568-D.1 - "Commercial Building Telecommunications Standard".
 11. ANSI/TIA/EIA 568-D.2 - "Commercial Balanced Twisted Pair Telecommunication Cabling and Components Standards"
 12. ANSI/TIA/EIA-568-D.3 - "Optical Fiber Cabling and Components Standards"
 13. ANSI/TIA/EIA-569-D - "Commercial Building Standard for Telecommunications Pathways and Spaces"
 14. ANSI/TIA/EIA-606-C - "Administration Standard for the Telecommunications Infrastructure of Commercial Buildings"
 15. ANSI/TIA/EIA-607-C - "Commercial Building Grounding and Bonding Requirements for Telecommunications"
 16. TIA/EIA-598 C - "Optical Fiber Cable Color Coding"
 17. FCC - Part 67, for Communications Interconnection Devices
 18. ANSI/TIA/EIA Telecommunications Systems Bulletin (TSB) 67 - "Transmission Performance Specifications for Field Testing of Unshielded Twisted-Pair Cabling Systems."
 19. ANSI/TIA/EIA Telecommunications Systems Bulletin (TSB) 75 - "Additional Horizontal Cabling Practices for Open Offices."
 20. IEC - International Electro-technical Commission
 21. New York State Building Code
- C. Design Phase
1. Review the list of systems and components in Part III D through G below with the Campus communications systems staff as early in the design process as possible.
 - a. In the Concept Phase Report, show significant communications spaces as required in Directive 1A-3 *Architectural Concept Phase*.
 - b. In the Schematic Phase Report, show and describe significant communications spaces, systems, related MEP support, and other related work, as required in Directive 1A-4 *Schematic Design Phase*.
 - c. In the Design Manual Phase Report, show and describe the extent of communications spaces, systems, related MEP support, and other related work, and the relationship of devices to furniture, fixtures and equipment, as required in Directive 1A-5 *Design Manual Phase*.
 - d. In the PreBid Report, show and specify the complete communications systems required for the Project, related MEP support, and other related work, as required in Directive 1A-6 *Construction Document (Pre-Bid) Phase*.
 2. Select and specify products and systems to fit multiple manufacturers and vendors. If the campus prefers naming a sole source, see Directive 1C-2 *Specification of Materials*.
 3. Project Manual should consolidate the communications related specifications into Division 27. Review the need for the following sections with the Campus Facilities Management Office and Campus RCDD or, in the absence of an RCDD, the relevant Campus service unit that maintains the campus communications

infrastructure. If the Campus has standard specifications, integrate them into the documents as described in Directive 1C-10 *Coordination with Individual Campus Standards*.

- a. 27 01 00 Operation and Maintenance of Communications Systems
 - b. 27 05 00 Common Work Results for Communications
 - c. 27 06 00 Schedules for Communications
 - d. 27 08 00 Commissioning of Communications
 - e. 27 10 00 Structured Cabling
 - f. 27 20 00 Data Communications
 - g. 27 30 00 Voice Communications
 - h. 27 40 00 Audio-Video Communications
 - i. 27 50 00 Distributed Communications and Monitoring Systems
4. Communications General
 - a. Communications life Cycle Activities
 - b. Common Materials & Methods for Communications
 - c. Communications System Commissioning (Discuss with the campus how Commissioning will occur, who will perform it, etc.)
 - d. Structured cabling and Enclosures
 - e. Communications Equipment Room Work
 - f. Interior Communications Pathway Requirements
 - g. Exterior Communications Pathway Requirements
 - h. Backbone Communications Cabling
 - i. Horizontal Communications Cabling
 - j. Connection Cords, Devices and Adapters
 5. Data Systems
 - a. Data Systems Life Cycle Activities
 - b. Common Data Systems Materials & Methods
 - c. Data System Commissioning
 - d. Data System Network Equipment
 - e. Data System Hardware
 - f. Data System Security
 - g. Peripheral Data Equipment
 - h. Data System Software
 - i. Data System Programming and Integration Services
 6. Voice Systems
 - a. Voice System Life Cycle Activities
 - b. Common Voice Systems Material & Methods
 - c. Voice System Commissioning
 - d. Voice System Instrumentation and Control
 - e. Switching and Routing Equipment
 - f. Telephone Sets and Faxes
 - g. Voice Messaging Systems
 - h. Dedicated 911 Systems / TTY Equipment
 - i. Call Accounting
 - j. ACD / Call Center
 7. Audio Video Communication Systems
 - a. Audio Video Systems Life Cycle Activities
 - b. Common Audio Video Systems Material & Methods
 - c. Audio Video System Commissioning

- d. Internet Access
 - e. Cable Service
 - f. Audio Video Systems Instrumentation and Control
 - g. Systems and Equipment
 - h. Production, Presentation, and Conferencing Systems
 - i. Architecturally Integrated Audio Video Equipment
 - j. Portable Audio Video Equipment
 - k. Intercom Systems
 - l. Dictation Equipment
 - m. Paging Systems
 - n. Public Address Systems
 - o. Other Systems
 - p. Sound Masking
 - q. Electronic / Digital Signage Systems
 - r. Tracking Systems
 - s. MATV and CATV
 - t. Internal Cellular
 - u. Healthcare Communications Systems
 - v. Nurse Call, Patient Monitoring
 - w. Hospitality and Entertainment Systems
 - x. Clock Systems
 - y. Coordination with Elevator Monitoring Systems
 - z. Coordination with Door Controls Systems
 - aa. Coordination with Security, Detection, and Alarm Systems
8. Relocation of Existing Systems and Equipment
- a. Where existing communications systems are required to be relocated, whether outdoors or within a building, Consultants are to proceed as follows:
 - 1) Utility Owned Equipment: Provide a letter to the utility company requesting a cost proposal for relocation of their systems and equipment; include in the letter a description of the work impacting their systems and equipment along with a project schedule.
 - 2) Campus Owned Equipment: The Consultant shall meet with the Campus communications system staff to determine the scope of work and whether it will be completed by the Project or by the Campus.
 - 3) Any utility company costs associated with their work shall be included within the Project Bid Documents as an Allowance.
- D. Construction Phase
- 1. Where communications systems are installed by the contractor, the Consultant's specification should require that installers be BICSI registered cabling technicians, National Institute for Certification in Engineering Technology (NICET) registered. The specification should also require that installers shall also be certified, as applicable, by the Original Equipment Manufacturer for installation of the product specified.
 - 2. System testing by the installer should include testing of 100% of all cabling, devices, equipment etc. Testing may occur in the presence of the relevant Campus service unit. Require a separate package of record drawings, operating instructions, approved shop drawings, etc. for the Campus telecommunications service unit.
- E. Coordination with Campus Installers
- 1. If the Campus is contracting independently for cabling and equipment, add the following to Division 1, General Requirements, Section 01 11 13 Coordination with Other Contracts:

2. The Campus will contract independently to install communications and data systems for the building. Cooperate with the Campus and their contractors for access to the work.
3. In accordance with Section 2.22 of the Agreement, the Contractor will complete communications infrastructure (cable trays, conduits and raceways throughout the Project or phase, and related electrical power wiring, door hardware, and other construction within the communications rooms and closets) approximately six months ahead of the substantial completion date for the Project or phase, at which time the Campus may take possession of the communication infrastructure and begin delivery and installation of their communications wiring, equipment and systems.
4. Prior taking possession of the communication infrastructure, the Consultant and Campus will perform an initial assessment and walkthrough of the telecommunications distribution system for compliance with the requirements of Division 27, and the Contractor shall perform all corrective work noted.
5. Lay in acoustical panels specified in Division 9, and other work identified by the Consultant that may hinder access to the communication infrastructure, shall not be installed until directed by the Consultant, which may not occur until four weeks ahead of the substantial completion date for the Project or phase.
6. The Campus' contractors will be given the opportunity to review and comment on the coordination drawings prepared by the Contractor, if such drawings are required by Division 1, General Requirements, Section 01 33 23 20 Coordination Drawings.
7. Reasonable storage of materials by the Campus' contractors shall be made available within the contract limit lines on each floor on an as needed basis.