

**SECTION 27 11 00**

**COMMUNICATIONS EQUIPMENT ROOM FITTINGS**

**PART 1 – GENERAL**

1.1 PURPOSE

- A. This guideline is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. PSP is to apply the principles of this section such that the University of Texas at Arlington (UTA) may achieve a level of quality and consistency in the design and construction of their facilities. Deviations from these guidelines must be approved by UTA and may require justification through Life Cycle Cost (LCC) analysis and submitted to UTA for approval.

1.2 LESSONS LEARNED AND DESIGN CONSIDERATIONS

- A. **Telecommunications Contractor shall review and adhere to all of University of Texas at Arlington Standards of Installation for Network Cabling.**

1.3 SUMMARY/OVERVIEW

- A. This section includes underground communications duct banks, hand-holes and maintenance holes.
- B. Related Sections
  - 1. Section 27 00 00 – Communications
  - 2. Section 27 05 26 – Grounding and Bonding for Communications Systems
  - 3. Section 27 05 28 – Pathways for Communications Systems
  - 4. Section 27 05 43 – Underground Ducts and Raceways for Communications Systems
  - 5. Section 27 13 00 – Communications Backbone Cabling
  - 6. Section 27 15 00 – Communications Horizontal Cabling

1.4 REFERENCES

- A. The publications listed below form a part of this specification. The publications are referred to in the text by basic designation only.
- B. Specific reference in specifications to codes, rules, regulations, standards, manufacturer’s instructions, or requirements of regulatory agencies shall mean the latest printed edition of each in effect at the date of contract unless the document is shown dated.
- C. Conflicts
  - 1. Refer to Section 27 00 00.
- D. Codes and Standards:
  - 1. Telecommunications Industry Association/Electronic Industries Association: ANSI/TIA/EIA-569-A Commercial Building Standard for Telecommunications Pathways and Spaces.
  - 2. ANSI/TIA/EIA-606-A Administration Standard for the Telecommunications Infrastructure of Commercial Buildings.
  - 3. ANSI/NECA/BICSI-607 Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications.
  - 4. National Electrical Code (NEC)
  - 5. Building Industry Consulting Services International (BICSI) Telecommunications Distribution Methods Manual (TDMM).
  - 6. Local, county, state and federal regulations and codes in effect as of date of installation.
  - 7. Equipment of foreign manufacture must meet U.S. codes and standards. It shall be indicated in the proposal the components that may be of foreign manufacture, if any, and the country of origin.

1.5 COMMUNICATIONS ROOMS

- A. Communications rooms must be dedicated to designated equipment and services only:
  - 1. Space shall not be used for storage of equipment not related to designated equipment and services.
  - 2. Hazardous or corrosive materials shall not be stored in the space.
  - 3. Piping, ductwork and distribution of power, not related to designated equipment and services shall not pass through or be located within the space.

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4. With the exception of fire sprinklers, all water pipes shall be routed around communications rooms.
- B. Each communication room shall be equipped with fire detection, fire-extinguishing system and prevention devices. Connect detection devices to base building fire alarm system. A minimum of one (1) smoke detector shall be installed in each communications room.
- C. The A/E shall ensure that foreign piping such as water pipes, steam pipes, soil pipes, sanitary drains, storm drains, A/C ducts, and other unrelated systems utilized for or containing liquids, or gases are not installed or pass through telecommunication rooms. Sprinkler piping shall not pass through the telecommunications space to serve other areas. Sprinkler piping serving only telecommunications spaces shall not be considered foreign to the telecommunications installation.
- D. Walls shall be covered with .75 inch x 4 foot x 8 foot AC-grade plywood backboard from 12 inches AFF (smooth side to interior of room mounted vertically), capable of supporting mounted hardware and equipment. Plywood shall be affixed to the studs in the walls with screws that penetrate the studs a minimum of 1 inch, are spaced not greater than 18 inches apart in each stud, and with screws one inch from the top and bottom of plywood. Plywood shall be sealed against the wall and painted on all exposed sides with two coats of flat white non-reflective paint. Fire-treatment verification stamps on plywood shall be left unpainted to be readable.
- E. Communications room walls shall extend from floor slab to ceiling deck, with a minimum height of 8 feet-6 inches, and with no drop ceilings installed.
- F. Cable tray or ladder rack should be used to distribute cables between rooms through finished wall penetrations.
- G. To reduce static, floors should not have carpet, but be sealed concrete to prevent concrete dust from forming.
- H. Communications rooms shall have only one lockable entrance door, 36 inches wide and 80 inches in height, that opens towards the outside of the room, and does not open into another room.
  1. Doors shall be provided with a lockset for the appropriate technology key with pinned hinges and anti-pry guards.
  2. Doors should have no windows or door seals.
  3. Communications rooms should have no exterior identifying markings.
- I. Mechanical:
  1. Install monitoring sensors with dedicated environmental controls operating 24 hours a day, 365 days a year in the communications rooms.
  2. Provide ventilation in the communications rooms to dissipate heat generated by active devices.
  3. Temperature and Humidity requirements:
    - a. Maintain communication rooms at an average of 60°F to 70°F, with a relative non- condensing humidity of 30% to 50%.
    - b. The temperature range should be maintained within  $\pm 9^\circ$ .
- J. Plumbing:
  1. If “wet” fire suppression is used, install wire cages on sprinkler heads to prevent accidental operation.
  2. Do not place sprinkler heads over equipment or cabling. In the event of a leak this will protect the equipment and cabling.
  3. Drainage troughs are also recommended for leakage protection.
- K. Electrical:
  1. One manufacturer’s product is recommended for each type of installation. Mixing of different manufacturer products for one item is not acceptable.
  2. No electrical feeders/branch circuits shall be placed in or run through any communications room except as required to service those rooms.
  3. The Contractor shall:
    - a. Install a slot (a UL-approved fire-rated assembly) to accommodate cable runway entry from corridor and a fire-retardant system (bricks, boards, mechanical, etc). The formed slot shall have no burrs or sharp edges. This opening in the wall will be used to pass data and voice cabling from the corridor cable tray into the communications room.
    - b. Provide uniform illumination of at least 50 foot-candles (fc) 3 feet AFF for communications rooms located a minimum of 8 feet-6 inches AFF.
      - 1). Light fixtures in communications rooms are to be positioned for maximum lighting. Do not install over cable tray, ladder rack, or 19” standing racks.
      - 2). Provide enough power receptacles to support equipment and service. Coordinate power

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requirements of active equipment with electrical designer.

- L. Relay Racks/Cabinets:
  - 1. 19-inch by 84-inch relay racks are to be used for mounting and termination of inter- building and intra- building fiber optic/ copper cables and components.
    - a. The racks shall have adequate horizontal and vertical cable management for the 8P8C patch panels and switches.
    - b. Racks with active electronics shall have rack mounted power strips.
  - 2. Cabinets shall be 42" D x 31.5" W and 84" H.
    - a. Provide vertical wire management on both sides.
    - b. Provide locking door, top and all sides.
    - c. Provide rack mounted power strips for each cabinet.
    - d. Coordinate color with Owner.

### 1.6 SUBMITTALS

- A. Refer to Section 27 00 00.

### 1.7 QUALITY ASSURANCE

- A. Refer to Section 27 00 00.
- B. Product Standards:
  - 1. Equipment and materials shall be standard products of a manufacturer regularly engaged in the manufacture of telecommunications cabling products and shall be the manufacturer's latest standard design in satisfactory use for at least one year prior to bid opening.
  - 2. Items of the same classification shall be identical. This requirement includes equipment, modules, assemblies, parts, and components.

### 1.8 DELIVERY, STORAGE, AND HANDLING

- A. Refer to Section 27 00 00.
- B. Coordinate layout and installation of equipment with owner's communications and LAN equipment and service suppliers. Coordinate service entrance arrangement with local exchange carrier.

### 1.9 PROJECT/SITE CONDITIONS

- A. Refer to Section 27 00 00.

### 1.10 WARRANTY

- A. Refer to Section 27 00 00.

## PART 2 - PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURERS

- A. 19" Floor-Mounted Equipment Racks and Support Components:
  - 1. Chatsworth
  - 2. Owner approved alternate.
- B. Horizontal Runway and Support Components:
  - 1. Chatsworth
  - 2. B-Line
  - 3. Owner approved alternate.
- C. Horizontal Rack-Mount Cable Management:
  - 1. Chatsworth (Evolution CPI 30530-719 - 2RU)
  - 2. Owner approved alternate.
- D. Vertical Rack-Mount Cable Management:
  - 1. Chatsworth (Evolution CPI 30096-703 - 10" W) – between Racks
  - 2. Chatsworth (Evolution CPI 30095-703 - 6" W) – beginning/end of Rack Rows
  - 3. Owner approved alternate.
- E. Equipment Cabinet, Floor-Mounted:
  - 1. Chatsworth
  - 2. B-Line
  - 3. Owner approved alternate.

F. Equipment Cabinet, Wall-Mounted:

1. Chatsworth
2. B-Line
3. Owner approved alternate.

G. Raised Floor Rack Support:

1. Chatsworth
2. B-Line
3. Owner approved alternate.

H. Labeling:

1. Refer to section 27 00 00.

I. Firestopping:

1. Refer to section 27 00 00.

2.2 ACCESSORIES

A. Rack-mounted Uninterruptible Power Supply (UPS if shown on drawings).

1. The UPS shall have an output capacity sufficient to support all equipment housed in the relay rack plus growth.
2. The UPS interface port shall have an RS-232 communications port and a 10 Base-T Ethernet for LAN management.
3. The control panel shall have a LED status display for load and battery bar graphs in addition to replace battery and overload indicators.
  - a. Rack-mounted surge suppression shall be vertically mounted and made for this orientation.

**PART 3 – EXECUTION**

3.1 EXAMINATION

- A. Refer to section 27 00 00.

3.2 PREPARATION

- A. Refer to section 27 00 00.
- B. Meet jointly with telecommunications and LAN equipment suppliers, local exchange carrier representatives, and Owner to exchange information and agree on details of equipment arrangements and installation interfaces.
- C. Adjust arrangements and locations of equipment with distribution frames, cross-connects, and patch panels of cabling systems of other communications, electronic safety and security, and related systems that share space in the equipment room.
- D. Coordinate location of power raceways and receptacles with locations of communications equipment requiring electrical power to operate.

3.3 INSTALLATION

- A. Refer to section 27 00 00.

3.4 FIELD QUALITY CONTROL

- B. Refer to section 27 00 00.

3.5 CLEANING

- C. Refer to section 27 00 00.

3.6 ACCEPTANCE

- A. Refer to section 27 00 00.

END OF SECTION