

27 13 00 Communications Backbone Cabling

1.01 BACKBONE CABLING TO SUPPORT VOICE SYSTEMS

- A. Voice (telephone) backbone cable shall originate at the location of the campus telephone system or remotes. The backbone cables will route to the various buildings on the campus, and/or the various floors of the building to distribute telephone service to the telecommunications closets. Voice backbone cables shall meet the following requirements:
1. Inter-building outside plant backbone cables shall be Category 3 UTP cables with an overall metallic shield. (Please see Appendix I Equipment Specification)
 2. Voice backbone cables installed in underground conduits shall be jelly filled PIC cable to a termination point within the ER. The backbone cable shall then be tip spliced to an air core “tail” connecting the cable to the protected blocks. (Please see Appendix I Equipment Specification)
 3. All splice cases used in the multi pair voice backbone will be waterproof. (Please see Appendix I Equipment Specification)
 4. The shield of all inter-building backbone cables must be bonded to the ground lug on the primary protector panel. The protector panel must be bonded to the Telecommunications Main Grounding Busbar. The shield of all intra-building backbone cables must be bonded to the Telecommunications Main Grounding Busbar.
 5. Voice backbone cable pair count shall be sized to support one (1) pair per voice station, plus 50% growth. When calculating size, voice stations shall also include fax machines and dial-up modems. (Please see Appendix I Equipment Specification)
 6. Voice backbone cables shall have a minimum 10-foot service loop when terminated in the TC and ER, and at any splice points in telecommunications manholes.

2.01 BACKBONE CABLING TO SUPPORT DATA SYSTEMS

- A. All intra-building TCs will be fed from the ER utilizing fiber optic and UTP backbones. Required cables are as follows:
1. **6 strand single mode fiber**
 2. **24 strands 50 micron laser optimized multi-mode fiber optic cable**

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- B.** Texas State University IT Department’ goal is to prepare facilities for migration of networks to Gigabit and higher backbone speeds. Singlemode fiber optic cable will be required to support most Gigabit and higher applications in the longer distances encountered in Texas State University networks. Note that cable distances listed in this section refer to the terminated cable length from the patch panel in each TC to the patch panel in the main ER. Specific Texas State University requirements for fiber optic backbones are:
1. All newly installed fiber optic cable and components for LAN use must be rated and installed to comply with the IEEE 802.3z 1000Base-X Ethernet Gigabit Standard.
 2. All fiber optic backbone cables shall home-run through conduit from each individual TC to the Main Telecommunications Equipment Room (ER), which should be the location of the data switching equipment.
 3. The standard inter-building fiber optic backbone shall be to install singlemode fiber optic cable to all buildings. All fiber optic cable with loose tube construction installed underground shall be gel filled or be constructed of appropriate waterproofing compounds. (Please see Appendix I Equipment Specification)
 4. The standard cable size for inter-building fiber optic backbones is 24-strands of singlemode fiber optic cable. Strand count should be increased for specific buildings as required. All fiber optic backbones shall have a minimum of 20% spare capacity for all systems planned for use on the backbone. Where an Alternative Design has been approved to install fiber optic cable to small buildings such as utility buildings, no less than 6-strands singlemode fiber shall be installed.
 5. All newly installed fiber optic cable shall be placed inside fiber optic inner duct. Where space is limited in existing conduit systems and only where an Alternative Design has been approved per 27 01 00, inner duct may be omitted. Inner duct shall be used to segregate and identify fiber optic cables in all telecommunications manholes and at all locations where fiber optic cable is exposed.
 6. Fiber optic cables shall always have a minimum 20-foot service loop at the terminating ends and all approved splice points.
 7. All strands of a fiber optic cable must be terminated with connectors and tested per previously sited standards.
 8. Texas State University IT must design the interfaces on the LAN switch equipment based on the actual lengths of the backbone cable runs between

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the telecommunications closets. Texas State University IT must be given the estimated cable length between the fiber patch panels of each TC and the main ER fiber patch panel in the design phase, and the actual cable length as soon as possible in the construction and installation phase.

9. There shall be no splices in fiber optic cable unless specifically allowed in the Texas State University project design and specifications. Designers wishing to include fiber optic cable splices must request written approval following the “Approval for Alternative Design Solutions” process described in section 27 00 00. All splices approved by Texas State University IT must be fusion splices, and there shall never be more than one splice per cable run between the ER and TC.

3.01 BACKBONE CABLING TO SUPPORT OTHER LOW VOLTAGE SYSTEMS

- A. During planning for backbone cable installations, consideration shall be given to migrating other low voltage systems such as CATV, CCTV, fire alarm systems, EMS, emergency call boxes and facility control and monitoring systems to the common structured cabling system.
- B. CATV specifics will be provided by current service provider. Necessary contacts will be arranged via Texas State University Office of Telecommunications Services.

END OF SECTION 27 13 00