

DIVISION 27 COMMUNICATIONS

SECTION 27 00 00 COMMUNICATIONS

1.01 Scope of Standard

- A. These guidelines identify and define Texas State University requirements and policies for designing and installing telecommunications infrastructure and substructure at all Texas State University facilities. Use of, and compliance with these guidelines is mandatory for Texas State University personnel, and for architects, engineers, and installation contractors working on Texas State University projects.

2.01 Design Guidelines

- A. The Texas State University Telecommunications Infrastructure Standards are based upon the code requirements and telecommunications industry standards contained in the following guidelines. These guidelines will not duplicate the information contained in those references, except where necessary to provide guidance, clarification or direction. It is imperative that Texas State University personnel, architects, engineers, and installation contractors working on Texas State University projects become familiar with these guidelines and the industry telecommunications standards referenced.
- B. In instances where several technical alternatives may be available to provide a design solution, these guidelines will identify the preferred solution to meet Texas State University needs. However, each facility and project is unique. Design for new construction will differ from design for retrofit of existing facilities. These guidelines will differentiate certain design approaches and solutions to be applied to new construction versus existing facilities, and different types of Texas State University facilities. However, designers and installers shall always use sound engineering judgment in order to comply with the requirements of the codes and standards identified in this section. Design or installation questions shall be referred to the Texas State University IT staff via Office of Campus Construction for resolution.

3.01 Reference Standards

- A. Adherence to, and compliance with, the codes and standards referenced, and Texas State University unique requirements and design solutions identified in the manual, is mandatory. Requests to deviate from the industry standards and design solutions prescribed in these guidelines may be submitted, on a case-by-case basis, in accordance with the instructions in the Policy and Procedures section of these guidelines. No deviation from the requirements of the National Electrical Code will be allowed.
- B. Architects, Consultants and Contractors shall always reference the most recent standards available. Most references listed below can be purchased directly from the individual standards organization, or from:

Global Engineering Documents

Inverness Way East

Englewood, CO 80112-5776

Telephone: (800) 854-7179 (303) 397-7956

Fax :(303) 397-2740

<http://www.global.ihs.com>

4.01 Codes, Standards, References, and Applicability

- A. ALWAYS REFER TO LATEST RELEASE OF ALL CODES, STANDARDS, AND RECERENCES
- B. NATIONAL ELECTRICAL CODE, NFPA 70
 - 1. The National Fire Protection Association has acted as the sponsor of the National Electrical Code (NEC) since 1911. The original Code was developed in 1897 as a result of the united efforts of various insurance, electrical, architectural, and allied interests. The purpose of the NEC is the practical safeguarding of persons and property from hazards arising from the use of electricity. The NEC provides the minimum code requirements for electrical safety. In telecommunications distribution design, the NEC must be used in concert with the ANSI/EIA/TIA standards identified below, which are intended to insure the performance of the telecommunications infrastructure.
- C. ANSI/TIA/EIA STANDARDS
 - 1. The Telecommunications Industry Association/Electronics Industry Association (TIA/EIA) engineering standards and publications are designed to serve the public interest through eliminating misunderstandings between manufacturers and purchasers. The standards facilitate interchangeability and improvement of products, and assist the purchaser in selecting and obtaining the proper product for his or her particular need.
 - 2. Applicable Standards include but are not limited to, the TIA/ EIA Collection- Telecommunications Building Wiring Standards: TIA-526-7, TIA-526-14, TIA/EIA-568, TIA-569, TIA-570, TIA-598, TIA/EIA-606, J-STD-607 and TIA-758
- D. FIBER OPTIC TEST STANDARDS, TIA/EIA-526 (SERIES)
 - 1. The TIA/EIA-455 series, together with its addenda, provides uniform test procedures for testing the fiber optic components intended for, or forming a part of, optical communications and data transmission systems. This series contains standard test procedures for optical fibers, cables, transducers, and connecting and terminating devices.
- E. CABLING STANDARD, ANSI/TIA/EIA-568 (SERIES)
 - 1. The ANSI/TIA/EIA-568-A (series) is the Commercial Building Telecommunications Cabling Standard. This standard defines a generic telecommunications wiring system for commercial buildings that will support a multi-product, multi-vendor environment. It also provides direction for the design of telecommunications products for commercial enterprise.

- a. The purpose of the standard is to enable planning and installation of building wiring with little knowledge of the telecommunications products that subsequently will be installed. Installation of wiring systems during building construction or renovation is significantly less expensive and less disruptive than after the building is occupied. TIA/EIA-568-A establishes performance and technical criteria for various wiring system configurations for interfacing and connecting their respective elements.
- F. PATHWAYS AND SPACES, ANSI/TIA/EIA-569-A (SERIES).
1. The ANSI/EIA/TIA-569-A (series) is the Commercial Building Standard for Telecommunications Pathways and Spaces. This standard will be followed for all low voltage systems in all Texas State University buildings. This standard encompasses telecommunications considerations both within and between buildings, and recognizes three fundamental concepts:
 - a. Buildings are dynamic. Over the life of a building, or campus, remodeling is more the rule than the exception. The standard recognizes that changes will take place.
 - b. Building telecommunications systems and media are dynamic. Over the life of a building, or campus, both telecommunications equipment and cabling change dramatically. The standard recognizes this fact by being as independent as possible from specific vendor equipment and media.
 - c. Telecommunications is more than just voice and data. Telecommunications also encompasses many building systems including environmental controls, security, audio, television, sensing, alarms and paging. Telecommunications includes all low voltage signal systems that convey information within or between buildings.
 2. In order to have a building, or campus, successfully designed, constructed, and provisioned for telecommunications, it is imperative that the telecommunications design be incorporated during the preliminary architectural design phase. To accomplish this, the architect must work closely with the designated IT staff member via office of campus construction.
- G. ADMINISTRATION STANDARD, ANSI/TIA/EIA-606 (SERIES)
1. The ANSI/TIA/EIA-606 (series) is the Administration Standard for the Telecommunications Infrastructure of Commercial Buildings. Administration of the telecommunications infrastructure includes documentation of cables, termination hardware, patching and cross-connection facilities, conduits, other cable pathways, telecommunications closets, and other telecommunications spaces. The purpose of this standard is to provide a uniform administration scheme that is independent of applications, which may change several times throughout the life of a building. Unless specified otherwise in these Texas State University Design and Construction Guidelines administration standard at all Texas State University facilities will be in compliance with TIA/EIA-606.
- H. GROUNDING AND BONDING, ANSI/TIA/EIA-607 (SERIES)

1. The ANSI/TIA/EIA-606 (series) is the Commercial Building Grounding and Bonding Requirements for Telecommunications. The National Electrical Code (NEC) provides grounding, bonding, and electrical protection requirements to ensure life safety. Modern telecommunications systems require an effective grounding infrastructure to insure optimum performance of the wide variety of electronic information transport systems that may be used throughout the life of a building. The grounding and bonding requirements of this standard are additional technical requirements for telecommunications that are beyond the scope of the NEC. These standards are intended to work in concert with the cabling topology specified in ANSI/TIA/EIA-568-A, and installed in the pathways and spaces designed in accordance with ANSI/TIA/EIA-569-A.
- I. CUSTOMER OWNED OUTSIDE PLANT (OSP), ANSI/TIA/EIA-758
 1. The ANSI/TIA/EIA-758 provides industry standards for the design and construction of customer owned OSP infrastructure. Unless specified otherwise in the Texas State University standard OSP designed and constructed at all Texas State University facilities will be in compliance with ANSI/TIA/EIA-758.
 - J. TRANSMISSION PERFORMANCE SPECIFICATIONS, TIA/EIA BULLETIN TSB67
 1. TSB67 is the Transmission Performance Specification for Field Testing of Unshielded Twisted-Pair (UTP) Cabling Systems. This bulletin specifies the electrical characteristics and performance requirements of field test instruments, test methods, and the minimum transmission requirements for UTP cabling. All testing of horizontal distribution cabling at Texas State University facilities will be performed with a TSB67 Level II test instrument.
 - K. ADDITIONAL HORIZONTAL CABLING PRACTICES FOR OPEN OFFICES, TIA/EIA BULLETIN TSB75
 1. This document specifies optional practices for open office environments, for any horizontal telecommunications cabling recognized in TIA/EIA-568. It specifies optional cabling schemes and topologies for horizontal cabling routed through modular office furniture or movable partitions, which are frequently reconfigured. These optional practices may be applied at Texas State University classrooms, offices and multipurpose rooms.
 - L. LOCAL AREA NETWORK ETHERNET STANDARD, IEEE 802.3 (SERIES)
 1. Texas State University utilizes the Ethernet LAN protocol at all facilities. All Texas State University telecommunications infrastructure must be designed to support the Institute of Electrical and Electronic Engineers (IEEE) Ethernet 802.3 standards, which define protocols and signaling technologies. All newly installed cabling must support 1000Base-X Gigabit Ethernet protocol based on the IEEE 802.3z standard.
 - M. THE BICSI TELECOMMUNICATIONS DISTRIBUTION METHODS MANUAL
 1. The Building Industry Consulting Service International, Inc. (BICSI) is a Telecommunications Association whose mission is to provide state-of-the-art

telecommunications knowledge to the industry, resulting in good service to the end user. BICSI develops and publishes the Telecommunications Distribution Methods Manual (TDMM). The TDMM is not a code or standard. The TDMM is an extensive volume of information on the various aspects of telecommunications systems and telecommunications distribution. The TDMM provides discussions and examples of various engineering methods and design solutions that can be selected and employed in order to meet the requirements of the NEC and ANSI/TIA/EIA standards. Designers and installers are encouraged to use the TDMM as an engineering tool, within the constraints of the unique requirements of the Texas State University Telecommunications Infrastructure Standards.

END OF SECTION 27 00 00