Anytown Central School District

Division 27: Telecommunications Infrastructure

Technology Systems Design Standards

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D27 Telecommunications Infrastructure Design Standards

Introduction

Purpose

To ensure all the District's Telecommunications Infrastructure Systems are designed to the same industry best practices, system technology, and manufacturer-specific standards.

Audiences

These Design Standards shall be used by the following involved parties in the design, procurement, or installation of technology systems and/or devices:

- Architectural/Engineering firms
- Design professionals
- System integrators/vendors
- Tradespeople

Sections and Subsections

Each section focusing on a technology infrastructure system includes the following subsections:

- **Overview** describing the major functional requirements of the system.
- **Product Standards** to use when purchasing products from vendors.
- **Implementation Standards** to use when designing, installing and deploying these systems.
- **Documentation Standards** to use for Design and As-Built documentation for these subsystems.

Contents

Telecommunications Infrastructure Overview

Systems

Telecommunications Infrastructure includes:

- Telecommunications Rooms (TRs) and Spaces
- Pathways
- Cabling
- Communications Outlet types and configurations
- Systems and Equipment

Applicable Industry Standards

- Americans with Disabilities Act
- ANSI/BICSI 005-2103 Electronic Safety and Security (ESS) System Design and Implementation Best Practices
- ANSI/TIA-568-C
- ANSI/TIA-569-C
- ANSI/TIA-606-B
- ANSI/TIA-758-B
- ANSI/NECA/BICSI 568
- ANSI/TIA-862-B Building Automations Systems
- ANSI/
- Building Code of New York State
- BICSI Telecommunications Distribution Methods Manual
- BICSI Customer-Owned Outside Plant Design Manual
- Federal Communications Commission
- Federal Occupational Safety and Health Administration
- Institute of Electrical and Electronics Engineers, Inc. (IEEE)
- Insulated Cable Engineers Association
- ISO/IEC 11801-International Organization for Standardization
- National Life Safety Code, NFPA 101
- National Electrical Code, NFPA 70 (NEC)
- NYS State Education Department (NYSED), Office of Facilities Planning - Manual of Planning Standards for school buildings
- New York State Department of Labor Rules and Regulations
- New York State Department of Health
- National Electrical Safety Code (NESC)
- National Fire Protection Association (NFPA)
- OSHA (Standards-29 CRF) Telecommunications –1910.268
- TIA/EIA-J-STD-037
- Underwriters Laboratory

Telecommunications Rooms (TRs) and Spaces

Overview

Telecommunications Rooms (TRs) contain Network, Voice, Access Control, Intrusion Detection, Video Surveillance and Public Address (PA) equipment and cabling. There are several types of these rooms which are described below along with their functions and requirements. The terms and definitions are specific to the ACSD IT Department.

Telecommunications Room (TR)

These are rooms that contain equipment and cabling for systems such as Network, Voice, PA, Access control and Video surveillance. Each TR provides a connection point between the work-area outlets and edge devices of each system and the network in a predetermined serving zone. Each building must have at at least one TR but most buildings have several. The number of TRs a building has depends on the several factors such as:

- Design limitations of the Horizontal cabling
- Connected device counts
- Building construction

Because of their function TRs are specialized rooms that have unique requirements that need to be considered during the Design such as;

- Security
- Environmental control
- Backup Power/ Emergency Power
- Telecommunications Grounding Backbone

TRs are grouped into two categories:

- Main Telecommunications Rooms(MTR) and;
- Intermediate Telecommunications Rooms (ITRs).

An MTR connects all ITRs via Intra-building backbone cabling and pathways. The MTR is also the location where the building Network equipment connects to the Inter-building Outside Plant Cabling (OSP) cabling of the District's CORE Networks.

Entrance Facilities (EF)

Entrance Facilities (EF) are communications spaces that provide a Transition Point between the Outside Plant cabling and the ISP cabling. EFs can be located within a TR but, due to code considerations with respect to OSP cabling, these are often separate spaces near the point where the OSP cabling enters the building. Entrance Facilities also provide a Demarc location between Outside Service Providers where the district can connect to the Services.

Server Rooms

Server Rooms are communications spaces that contain Network Equipment such as routers controllers and Firewalls. These spaces also contain Application and Storage Servers. These rooms are the core of the District's Data Network . These rooms shall be redundantly connected both physically and logically to the Districts Backbone network. Because of their function Server Rooms need to be carefully designed with redundancies especially with respect to the HVAC and Electrical utilities.