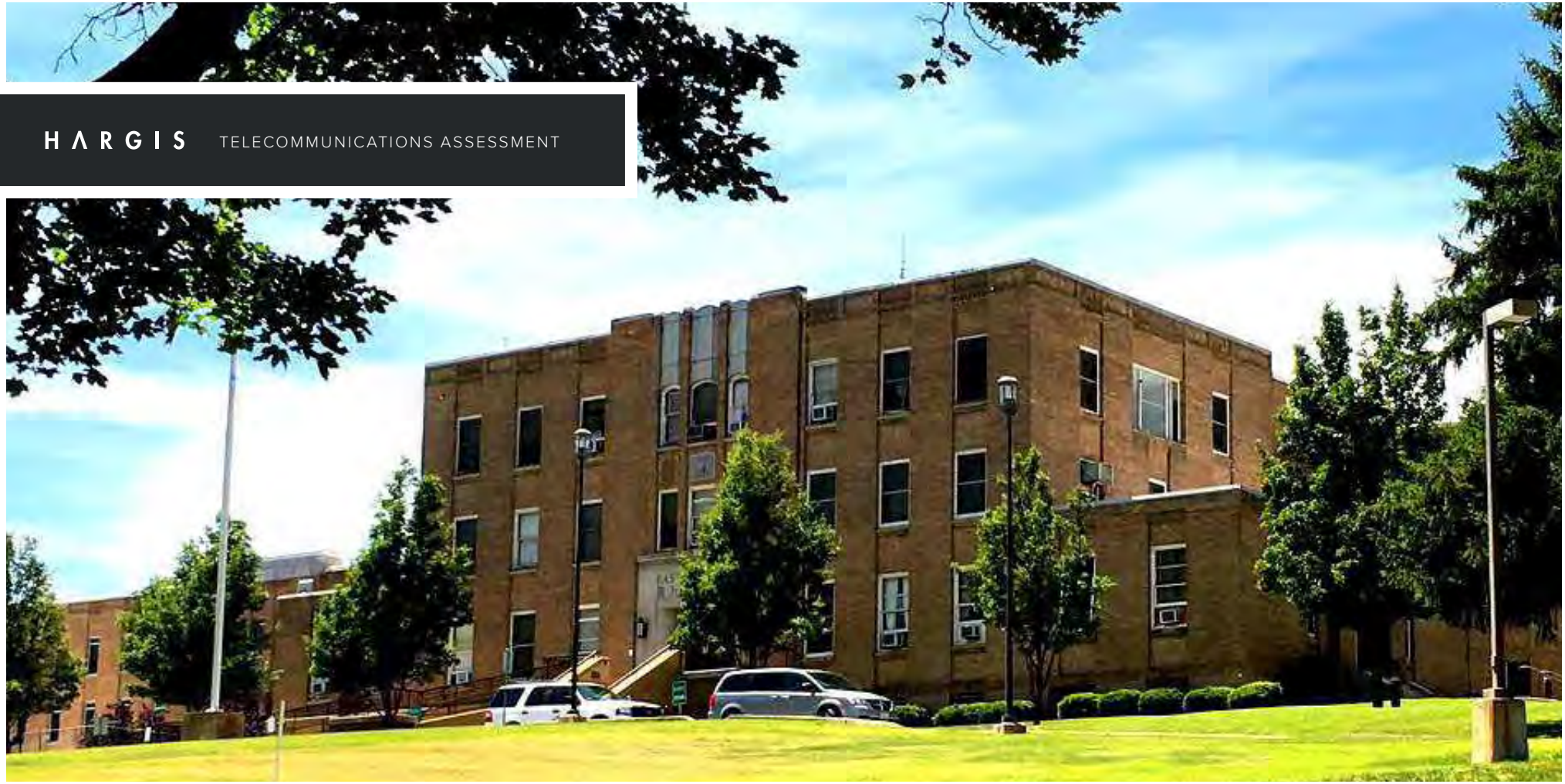
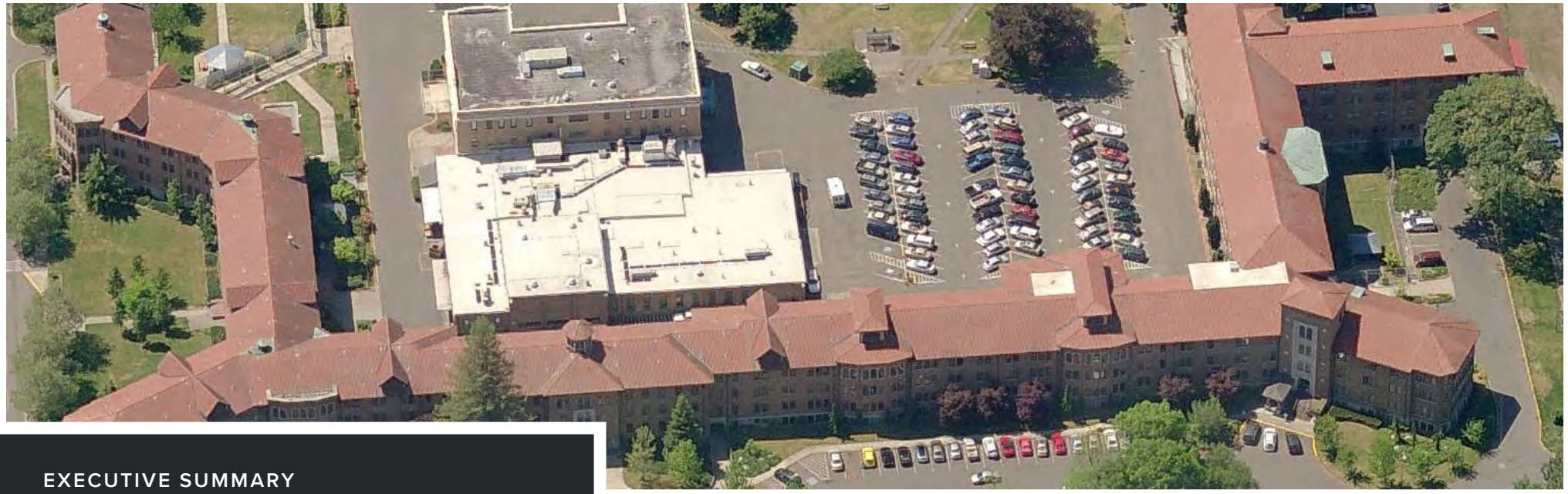
HARGIS TELECOMMUNICATIONS ASSESSMENT



DSHS

EASTERN STATE HOSPITAL

WA STATE PROJECT NUMBER: 2024-429 C (3)



EXECUTIVE SUMMARY

OVERVIEW

Eastern State Hospital (ESH), established in 1891, is a 367-bed inpatient psychiatric hospital located in the city of Medical Lake. It is part of the Behavioral Health Administration (BHA) of the Department of Social and Health Services (DSHS). The campus includes an Adult Psychiatric Unit (APU) that provides inpatient hospitalization, a Geropsychiatric Unit (GPU) that provides psychiatric evaluations, and a Forensic Services Unit (FSU) that provides pre-trial evaluation and treatment services. The facility is split into two sections: Eastlake Buildings and Westlake Building. The APU and FSU are located within Eastlake and the GPU is located within Westlake. The ESH facility also comprises a large portion of the overall Medical Lake Campus.

The Medical Lake Campus collectively consists of ESH, Lakeland Village, and Pine Lodge. Lakeland Village and Pine Lodge, though interconnected, will be addressed within separate reports.

The ESH – Eastlake buildings (Eastlake) includes administration, housing, pharmacy, therapy, treatment, kitchen, dining spaces, maintenance, motor pool, and additional support spaces.

The ESH – Westlake Building (Westlake) includes housing, admin, pharmacy, therapy, treatment, kitchen, and dining spaces.

CONSULTING TEAM

Hargis Engineers, Inc.

Seattle, WA 98101

Patrick Shannon, RCDD, PMP

Principal

Ben Helms, PE, RCDD

Associate

Hargis Engineers was retained to provide an assessment of the current Information Technology Network Infrastructure and develop recommendations for network improvements. The objective of the assessment was to review and evaluate the current campus backbone distribution system, the condition of horizontal cabling, telecommunications grounding, existing physical media types, physical pathways, physical spaces, and supporting electrical and mechanical systems and compare the existing conditions to current industry standards specific to this facility type. Excluded from the assessment were electronic systems, applications, and hardware, such as the network switches and servers. Buildings that have been planned for demolition or that have been decommissioned or included potential hazards have also been excluded from the assessment.

The existing campus telecommunications cabling backbone infrastructure includes inter-building optical fiber cabling and twisted-pair copper backbone cabling installed from the Admin Building. The existing backbone cabling has been installed and modified several times over a period of years. In most areas, the twisted-pair copper backbone cabling is antiquated and is not able to support the deployment of new technologies nor does it comply with current industry standards. At several buildings, there is no optical fiber backbone. The twisted-pair copper backbone is rated for traditional telephony service.

The existing horizontal cabling within buildings includes unshielded twisted-pair copper cabling to provide connectivity to computers, telephones, printers, and other devices. Like the backbone cabling, the horizontal cabling has been installed over time and the condition of the cabling varies. The horizontal cabling is a blend of non-category rated cabling, Category 3 cabling, and Category 5 cabling, which does not meet current industry infrastructure standards. There are also several unmanaged “dumb” switches dispersed throughout the facility which have been used to allow for more devices to connect when the existing infrastructure was not available or sufficient.

Based on physical inspection and review of existing documentation, it is the determination of the team that the existing IT infrastructure does not comply with any of the current industry standards and that it will not support evolutions to modern and/or future technologies. The existing optical fiber infrastructure is obsolete, consisting mostly of OM1 62.5-micron multi-mode optical fiber cable. Improving the IP backbone connectivity will be a fundamental component to creating an environment that will permit ESH and DSHS to identify, adapt, and implement new technologies that contribute to safety and operational improvements.

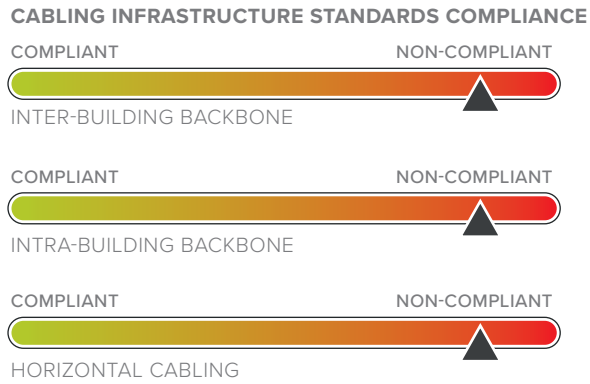
Existing horizontal cabling is not compliant with current TIA standards for this facility type. Upgrading category cabling requires a replacement of the complete channel to include horizontal cabling, patch cords, patch panels, and work area outlets. At ESH, this upgrade also requires installation of additional cabling to be compliant with port density requirements defined in TIA-1179.

In addition to the cabling noted above, the existing telecommunications spaces do not meet industry standards. Per TIA-1179 a dedicated telecommunications room is required on every floor to support the horizontal cabling infrastructure. Complying with the standard will require new/additional telecommunications rooms to be built on floors that do not currently have a telecommunication room. The additional telecommunications rooms will need to be equipped with supporting systems to include grounding, conduit sleeves, temperature control, and physical security of the space.

OBJECTIVES

The project objectives are as follows:

- Inventory and document the condition of the existing telecommunications infrastructure, including telecommunications spaces, pathways, backbone, and cabling.
- Identify current deficiencies.
- Recommend infrastructure improvements to bring the campus infrastructure into compliance with current codes and standards.
- Provide As-built drawings, documenting current conditions.
- Provide a ROM cost opinion for infrastructure improvements.



PROJECT APPROACH

Hargis conducted a site visit to review existing conditions including:

- Type of backbone cabling
- Overall architecture of backbone connectivity
- Supporting spaces and systems, including interior and exterior pathways and spaces (telecommunications vaults and rooms)
- Quantity, age, vintage, and condition of the horizontal cabling in each building.

The site review was limited by accessibility. Only what could be seen from plain view was evaluated, the team did not move furniture to look behind, and ceiling access was limited to minimize impact to the facility. Where cabling disappeared in walls and pathways, a certain level of deduction was used to determine the termination point, for example, we can assume that cabling for voice ports terminate at the voice cross connect on their respective floor.

As part of the assessment, the team recorded the existing conditions and the locations of voice and data ports for the purpose of creating as-built documentation. The as-builts include floor plans, enlarged telecom room plans, telecom rack elevations, butterfly diagrams, and a backbone cabling one-line diagram.

The team sought input from the stakeholder team and consulted current industry standards and best practices. Results from the assessment were analyzed and evaluated and a set of recommendations were developed to aid DSHS and YVS stakeholders in planning future network improvement projects, budget requests, and establishing priorities. Those recommendations were analyzed to determine a possible project sequence for constructability while limiting downtime for the facility, understanding that the facility will need to remain in operation during any project.

STANDARDS & CODES

- TIA-1179-B Healthcare Facility Telecommunications Infrastructure Standard
- TIA-5017 Telecommunications Physical Network Security Standard
- TIA-569 Telecommunications Pathways and Spaces
- BICSI Telecommunications Distribution Methods Manual, 14th Edition
- Health Insurance Portability and Accountability Act (HIPAA)

PROJECT APPROACH

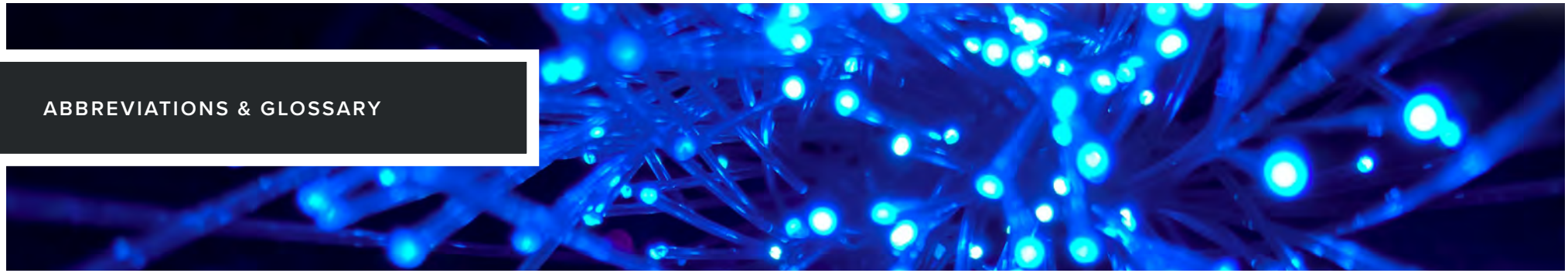
Review, assess and evaluate systems in each building

Identify the capabilities, deficiencies and vulnerabilities of each system

Provide recommendations for capital improvements to introduce, enhance, expand, or replace security system components as necessary

Develop a rough order of magnitude for the recommended improvement

Chart a migration path to optimize capital investments



ABBREVIATIONS & GLOSSARY

BEP **Building Entrance Protection**
Surge protective device used to mitigate risk of damage to equipment from conductive cabling exiting the building envelope.

BICSI **Building Industry Consulting Service International**
BICSI is a professional association supporting the advancement of information and communications technology (ICT) profession. They publish the Telecommunications Distribution Methods Manual (TDMM) and other Telecommunications standards.

EF **Entrance Facility**
An environmentally controlled centralized space for telecommunications equipment that usually houses a main or intermediate cross-connect. (TIA)

ER **Equipment Room**
A room in a building where public and private network services can enter the building and be consolidated.

HC **Horizontal Cross-Connect**
A cross-connect of horizontal cabling to other cabling, e.g., horizontal or backbone equipment.

IC **Intermediate Cross-Connect**
A cross-connect between first-level and second-level backbone cabling. This secondary cross-connect in the backbone cabling is used to mechanically terminate and administer backbone cabling between the main cross-connect and horizontal cross-connect (station cables).

IDF **Intermediate Distribution Facility**
Legacy term (no longer used) for what is now defined as the TR-HC or TR-IC

IP **Internet Protocol**
A standard addressing scheme and message routing protocol for communication between nodes of a data network.

ISP **Internet Service Provider**
A company that provides subscribers with access to the internet.

IT **Information Technology**
Use of any computers, storage, networking, and other physical devices, infrastructure, and processes to create, process, store, secure, and exchange all forms of electronic data.

LAN **Local Area Network**
Collection of devices connected together in one physical location, such as a building, office, or home. A LAN can be small or large, ranging from a home network with one user to an enterprise network with thousands of users and devices in an office or school.

MC **Main Cross-Connect**
The centralized portion of the backbone cabling used to mechanically terminate and administer the backbone cabling; this provides connectivity between equipment rooms, entrance facilities, horizontal cross-connects and intermediate cross-connects.

MDF **Main Distribution Frame**
Legacy term (no longer used) for what is now defined as the TR-MC and/or TR-MER

MER **Main Equipment Room**
Acts as the main IT location for a building. It is the transition point for all the voice and data cabling that enters the building, and we connect it further to the other equipment rooms.

MM **Multi-mode**
Type of optical fiber designed to carry multiple light rays or modes simultaneously, each at a marginally different reflection angle inside the optical fiber core.

OFC **Optical Fiber Cable**
An optical fiber cable is a type of cable that has a number of optical fibers bundled together, which are normally covered in their individual protective plastic covers. Optical cables are used to transfer digital data signals in the form of light up to distances of hundreds of miles with higher throughput rates than those achievable via electrical communication cables. All optical fibers use a core of hair-like transparent silicon covered with less refractive indexed cladding to avoid light leakage to the surroundings. Due to the extreme sensitivity of the optical fiber, it is normally covered with a high-strength, lightweight protective material like Kevlar.

OMX **Optical Mode**
(X represents the multi-mode fiber classification)
Optical Fiber Classification identifying the fiber type, core size, and properties for multi-mode optical fiber. Currently, OM1-5 are on the market. See Table 1 for more information.

OSX **Optical Single-mode**
(X represents the fiber construction)
Optical Fiber Classification identifying the fiber type and properties for single-mode optical fiber. Currently, OS1 and 2 are on the market. See Table 1 for more information.

OSP **Outside Plant Cabling**
Outside plant refers to all of the physical cablings and supporting infrastructure (such as conduit, cabinets, towers, or poles), as well as any associated hardware, placed between a demarcation point in one switching facility and another switching center or customer premises.

RMFC **Rack Mount Fiber Cabinet**
Also know as an LIU or Fiber Patch Panel. Enclosure mounted in a network rack to allow optical fiber to be terminated and cross-connected.

SM **Single-mode**
Common type of optical fiber that is used to transmit over longer distances. A single-mode fiber is a single glass fiber strand used to transmit a single mode or ray of light.

TIA **Telecommunications Industry Association**
Professional organization providing industry standards, professional certifications, and product standards to further the information communications technology industry.

TR **Telecommunications Room (previously known as IDF)**
An enclosed architectural space designed to contain telecommunications equipment, cable terminations, or cross-connect cabling.

VoIP **Voice over IP**
A technique that allows voice to be carried in a portion of the bandwidth of an Ethernet signal that is carrying IP traffic.

WAP **Wireless Access Point**
» A wireless access point (WAP) is a hardware device or configured node on a local area network (LAN) that allows wireless capable devices and wired networks to connect through a wireless standard, including Wi-Fi or Bluetooth. WAPs feature radio transmitters and antennae, which facilitate connectivity between devices and the Internet or a network.

» A WAP is also known as a hotspot.

SEQUENCING & RECOMMENDATIONS			
Phase	*Prerequisites*	*Scope*	*ROM Cost Opinion*
PHYSICAL CONSTRUCTION OF NEW TELECOMMUNICATIONS			
1	N/A	» Retrofit Telecommunications Rooms In Buildings 1, 2, 3, 7, 20, 27, And 74. - Demolish any obsolete or non-operational existing equipment to make space. - Provide Electrical Infrastructure (Grounding, UPS, Convenience Receptacles, Equipment Receptacles, Power Distribution Units [PDUs]) - Provide a dedicated 3-ton ductless split system cooling unitin the MDF and dedicated 1-ton ductless split system cooling unit for TRs. - Expand existing Access Control, add card reader and electrically locking hardware. - Install Supporting Equipment (Racks, Patch Panels, Cable Management, Rack Mount Fiber Cabinets (RMFC), Adaptor plates, Ladder Rack, etc.) - Install Ventilated Rack and Supporting Equipment (Patch Panels, Cable Management, Rack Mount Fiber Cabinets, Adaptor plates, etc.)	$2,280,000
INSTALL BACKBONE OFC TO NEW TELECOM SPACES			
2	N/A	» Pull 12 st OS2 and 12 st OM4 OFC from basement MER-009A of Building 1 to each telecom room in buildings 1, 2, 3, 7, 20, 27, and 74. - Terminate OFC Cabling if RMFC is installed.	$1,882,000
INSTALL HORISONTAL CABLING TO NEW TELECOMMUNICATIONS OUTLETS			
3	1	» Install Back boxes and pathway at new telecommunications outlet locations - Existing jacks will need to be maintained in operation. - Install Category 6A cabling and terminate for new telecommunications outlets.	$3,451,000
OWNER COORDINATION REQUIRED			
4	1-3	» Install new Ethernet Switches » Install Patch cables for active ports. » Cut over Existing workstations to the new infrastructure to allow demolition of existing telecommunications outlets. » Deploy system on new telecommunications infrastructure.	By Owner
INSTALL HORIZONTAL CABLING TO EXISTING TELECOMMUNICATIONS OUTLETS			
5	1-4	» Install Category 6A using existing pathway to existing telecommunications outlets and terminate. - Demolish existing horizontal cabling to existing telecommunications outlets.	$2,200,000
DEMOLISH DEFUNCT INFRASTRUCTURE			
6	1-5	» Demolish OSP cable. - Demolish OM1 Multi-mode OSP OFC to from MER-009A to buildings 1, 2, 3, 7, 20, 27, and 74. - Demolish Copper twisted pair OSP Backbone cabling from MER-009A to buildings 1, 2, 3, 7, 20, 27, and 74. » Demolish Building 1 backbone cabling - Demolish OM1 Multi-mode OFC between MER and TRs. - Demolish Copper twisted pair cabling between MER and TRs. » Demolish Building 2 backbone cabling - Demolish OM3 Multi-mode OFC between TRs. - Demolish Copper twisted pair cabling between TRs. » Demolish Building 20 backbone cabling - Demolish OM3 Multi-mode OFC between TRs. - Demolish Copper twisted pair cabling between TRs. » Demolish Building 27 backbone cabling - Demolish OM3 Multi-mode OFC between TRs. - Demolish Copper twisted pair cabling between TRs. » Demolish Defunct telecommmunications rooms. - Remove any salvageable equipment from TR's. - Remove the remaining equipment and dispose of it.	$113,000

EXISTING COMMUNICATIONS INFRASTRUCTURE

BACKBONE CABLING

Service Provider Connections

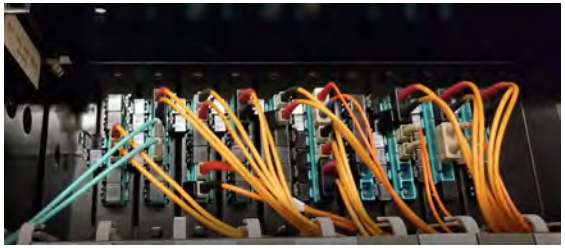
Existing telecommunications services connect into TR ER-009A within the Administration building. Existing voice service comes from the service provider through the vault system in a twisted-pair copper backbone cable. The twisted-pair copper terminates on building entrance protection and then on 66 blocks, where it is patched to the building lines.

The existing Internet Service Provider (ISP) connection is provided by Lumen (formerly CenturyLink) to the Administration Building MER. The service is provided by optical fiber cable into TR ER-009A in the Administration Building.

Service Provider Connection

OPTICAL FIBER COMPARISON

Fiber Mode	Fiber Type	Jacket Color	Core Size	Data Rate	Distance	Application	Notes
Multi-mode	OM1	Orange	62.5 µm	1 Gb @ 850 nm wavelength	Up to 300 m	Short-haul networks, Local Area Networks (LANs), & Private networks	None
	OM2	Orange	50 µm	1 Gb @ 850 nm wavelength	Up to 600 m	Short-haul networks, Local Area Networks (LANs), & Private networks	Generally used for shorter distances. Has twice the distance as OM1.
	OM3	Aqua	50 µm	10 Gb @ 850 nm wavelength	Up to 300 m	Larger Private Networks	Able to run 40 GB or 100 GB up to 100 meters utilizing an MPO Connector.
	OM4	Aqua	50 µm	Up to 100 G	Up to 400 m	High-Speed Networks, Data Centers, Financial Centers, and Corporate Campuses	Able to run 100 GB up to 150 meters utilizing an MPO connector.
	OM5	Lime Green	50 µm	Up to 100 G	Up to 500 m	High Speed Networks and Data Centers that require greater link distances and higher speeds.	Designed to support Short Wavelength Division Multiplexing (SWDM)
Single-mode	OS1	Yellow	8-9 µm	Up to 10 G	Up to 6 mi	Moderate distance telecom links, LANs, buildings, factories, office parks, or campuses.	Tight Buffered Cable
	OS2	Yellow	8-9 µm	Up to 100 G	up to 124 mi	High Fiber count, long distance telco backbones, direct bury applications.	Loose Tube Cable



Existing Fiber Patching Mismatch.

Existing Interbuilding Voice Backbone.

Existing Interbuilding Backbone Cabling.

INTER-BUILDING/CAMPUS BACKBONE CABLING

The existing communications infrastructure connecting to the facility and to the campus is provided by a variety of different fiber optic cables. Currently the backbone is composed of both MM and SM cabling. Inter campus to Pine Lodge is provided by a 72 Strand SM cable and connection to Lakeland Village is provided by a 24 Strand SM cable. The backbone originates at TR ER-009A within the Administration building.

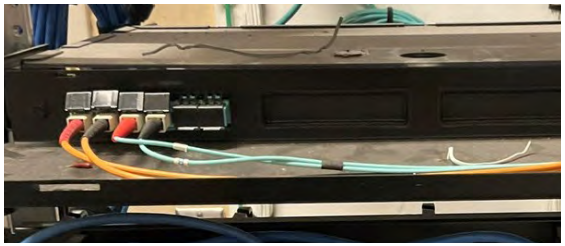
The facility is also connected via legacy twisted-pair copper backbone cabling. Much of which has been abandoned over time or has limited connectivity.

The existing ethernet network is supported by multi-mode optical fiber backbones between buildings and telecommunication rooms. The current OM1 fiber backbone is extremely limited in bandwidth and data speeds. OM1 fiber is obsolete, is not readily available through distribution, and is not being manufactured in great quantity. TIA standards for healthcare facilities dictate the use of single-mode optical fiber or a minimum of OM4 rated multi-mode fiber. To allow future network expansion, technology growth, and meet current standards, it is recommended that the existing OM1 optical fiber backbone be replaced with an optical fiber backbone utilizing a minimum of 12-strands of OS2 single-mode outside plant optical fiber cable and a minimum of 12-strands of OM4 multi-mode outside plant optical fiber cable supporting each Cottage. The existing OM1 optical fiber backbone cabling should be demolished.

INTRA-BUILDING BACKBONE CABLING

Category 3 twisted-pair copper backbone cabling is utilized throughout the campus which originates from the Admin Building TR-MER. The cabling is then patched to the 110 blocks where the outlet cabling coming from the workstation terminates. The voice network should be collapsed to a single converged IP based network, and the existing Category 3 cabling should be demolished to align with current standards.

The Eastlake buildings are supported by a mixture of 6-strand, 12 strand, and 24 strand OM1 multi-mode optical fiber cables are provided between the MER and TR rooms within each building. There are locations where the existing fiber is patched with mismatched fiber, typically OM3 and OM1 patched to each other. The two fiber types have different diameters, leading to signal loss from light reflection. To meet TIA standards, the backbone fiber cabling should be upgraded to a minimum of OM4 multi-mode and augmented with the addition of single-mode optical fiber cable. Providing 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber cables will provide an optical fiber backbone that is compliant with current industry standards.

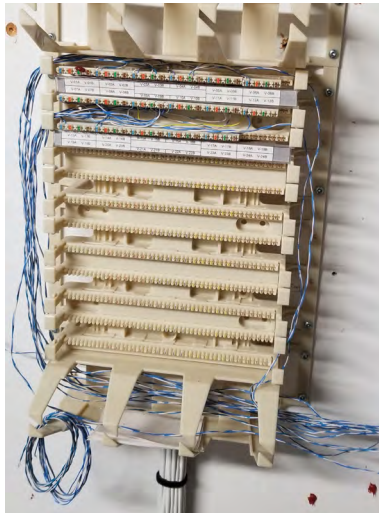


Existing Intrabuilding Backbone Fiber Patching Mismatch.

HORIZONTAL CABLING

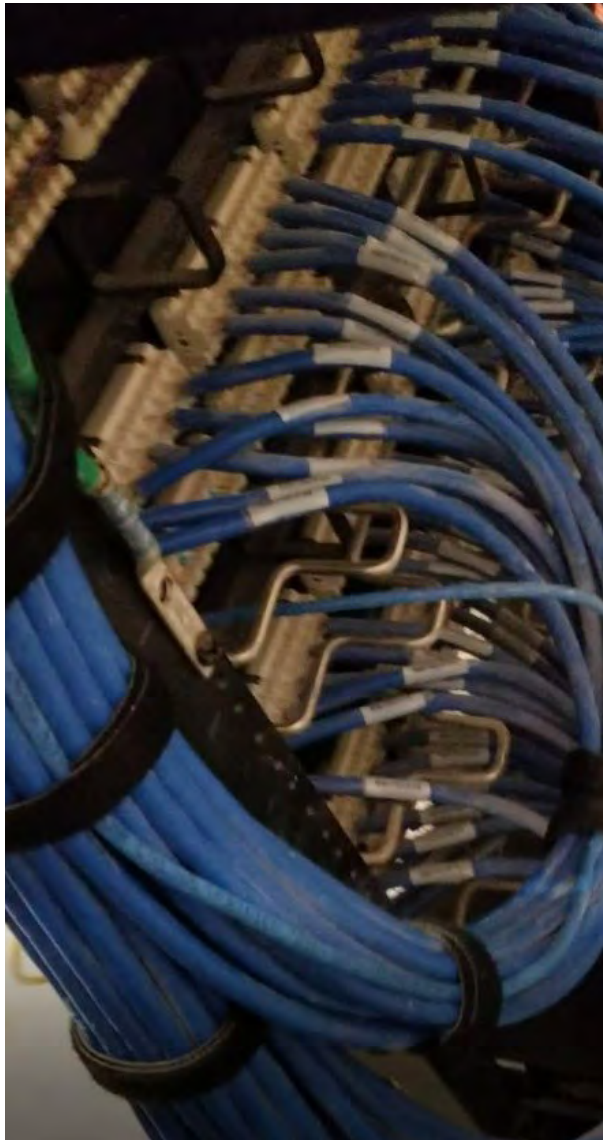
CATEGORY CABLE COMPARISON				
Category	**Max. Data Rate**	**Bandwidth**	**Max. Distance**	**Usage**
Category 1	1 Mbps	0.4 MHz		Telephone and modem lines
Category 2	4 Mbps	4 MHz		LocalTalk & Telephone
Category 3	10 Mbps	16 MHz	100 m (328 ft.)	Telephone & 10BaseT Ethernet
Category 4	16 Mbps	20 MHz	100 m (328 ft.)	Token Ring
Category 5	100 Mbps	100 MHz	100 m (328 ft.)	100BaseT Ethernet
Category 5e	1 Gbps	100 MHz	100 m (328 ft.)	100BaseT Ethernet, Residential Homes
Category 6	1 Gbps	250 MHz	100 m (328 ft.) 10 Gb at 37 m (121 ft.)	Gigabit Ethernet, Commercial Buildings
Category 6A	10 Gbps	500 MHz	100 m (328 ft.)	Gigabit Ethernet in Data Centers & Commercial Buildings
Category 7	10 Gbps	600 MHz	100 m (328 ft.)	10 Gbps Core Infrastructure
Category 7A	10 Gbps	1000 MHz	100 m (328 ft.) 40 Gb at 50 m (164 ft.)	10 Gbps Core Infrastructure
Category 8	25 Gbps (Cat8.1) 40 Gbps (Cat8.2)	2000 MHz	30 m (98ft.)	25 Gbps/40 Gbps Core Infrastructure

Source: https://tripplite.eaton.com/products/ethernet-cable-types



Existing Voice Patching.

Existing Condition.



Existing Category 5e Cabling.

VOICE HORIZONTAL CABLING

Upon review of the voice infrastructure, it was found to be inadequate to serve the current and future needs of YVS. The current phone system utilizes Category 3 cabling, patched at multiple points to provide phone service to the user. 66 and 110 blocks are used to patch the cable. 66 and 110 blocks are types of cable termination blocks used to interconnect runs of on-premises wiring in a structured cabling system. The service enters each of the buildings, patches on building entrance protectors, then patches again from 66 blocks to 110 blocks to be distributed to the appropriate floor. Once on the respective floor, the cable is patched again on 110 blocks to the workstation cabling.

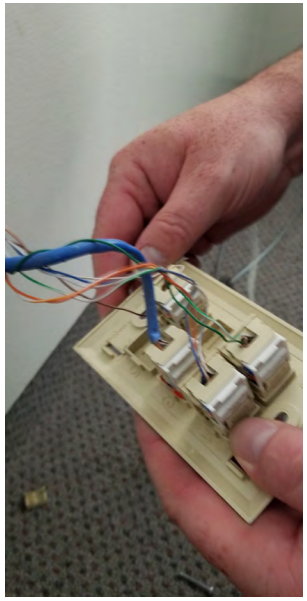
At the workstation, many of the Category 3 cabling was split to serve two phone jacks, with each phone outlet getting two conductor pairs. Splitting pairs like that works fine for traditional analog phones but does not support PoE or Ethernet, which rely on all four conductor pairs to work properly.

The overall effect of the multiple patches is a degradation of the signal and introduction of noise, resulting in grainy, poor-quality audio.

Category 3 cabling does not meet TIA-1179-A standards for horizontal cabling. Industry wide, its use has been on a rapid decline for years as it is not manufactured to meet current bandwidth or data rate standards. The existing voice cabling is in such poor condition that it is barely supporting the existing phone system. After years of modifications and multiple generations of cabling it is nearly impossible to maintain. It is recommended that all Category 3 cabling be removed, and the voice network be collapsed onto a converged network infrastructure utilizing standards compliant Category 6A cabling.

MICROSOFT TEAMS BANDWIDTH REQUIREMENTS PER ENDPOINT						
	MINIMUM		RECOMMENDED		BEST PERFORMANCE	
	Download	*Upload*	*Download*	*Upload*	*Download*	*Upload*
AUDIO						
One-to-One	10 kbps	10 kbps	58 kbps	58 kbps	76 kbps	76 kbps
Meetings	10 kbps	10 kbps	58 kbps	58 kbps	76 kbps	76 kbps
VIDEO						
One-to-One	150 kbps	150 kbps	1.5 Mbps	1.5 Mbps	4 Mbps	4 Mbps
Meetings	150 kbps	200 kbps	2.5 Mbps	4 Mbps	4 Mbps	4 Mbps
SCREEN SHARING						
One-to-One	200 kbps	200 kbps	1.5 Mbps	1.5 Mbps	4 Mbps	4 Mbps
Meetings	250 kbps	250 kbps	2.5 Mbps	2.5 Mbps	4 Mbps	4 Mbps
TOGETHER MODE						
Meetings	1 Mbps	1.5 Mbps	1.5 Mbps	2.5 Mbps	2.5 Mbps	4 Mbps

Source: https://learn.microsoft.com/en-us/microsoftteams/prepare-network



Split Pair Voice Line

ETHERNET HORIZONTAL CABLING

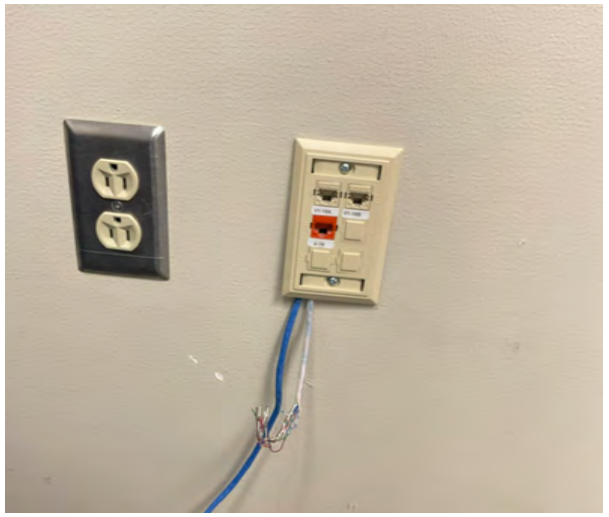
The existing ethernet network is comprised of Category 5, Category 5e, and Category 6 cabling. As can be seen in the Category Cable Comparison, Category 5 cabling is limited to 100 Mbps and is no longer recognized by the standards bodies as a viable infrastructure. The existing patch panels, connectors, and patch panels meet Category 5e standards. Limited wireless access point deployment has occurred throughout the facility with only a select few buildings.

The existing Category 3, and Category 5 infrastructure is not adequate to meet the current and future needs of EHS. The Category 5 cabling is not in compliance with TIA standards for infrastructure. It is recommended that the existing cabling infrastructure be replaced with a new Category 6A cabling infrastructure.

Meeting TIA-1179 standards will require the entire channel to be Category 6A certified. Meeting this requirement will require all new patch panels, modular jacks, and wall outlets comprising a replacement of the entire infrastructure. Existing Category 5, Category 5e, and Category 6 patch panels will be removed in favor of the Category 6A infrastructure. See sequencing and recommendations for sequencing of the project to minimize down time while the infrastructure is replaced.

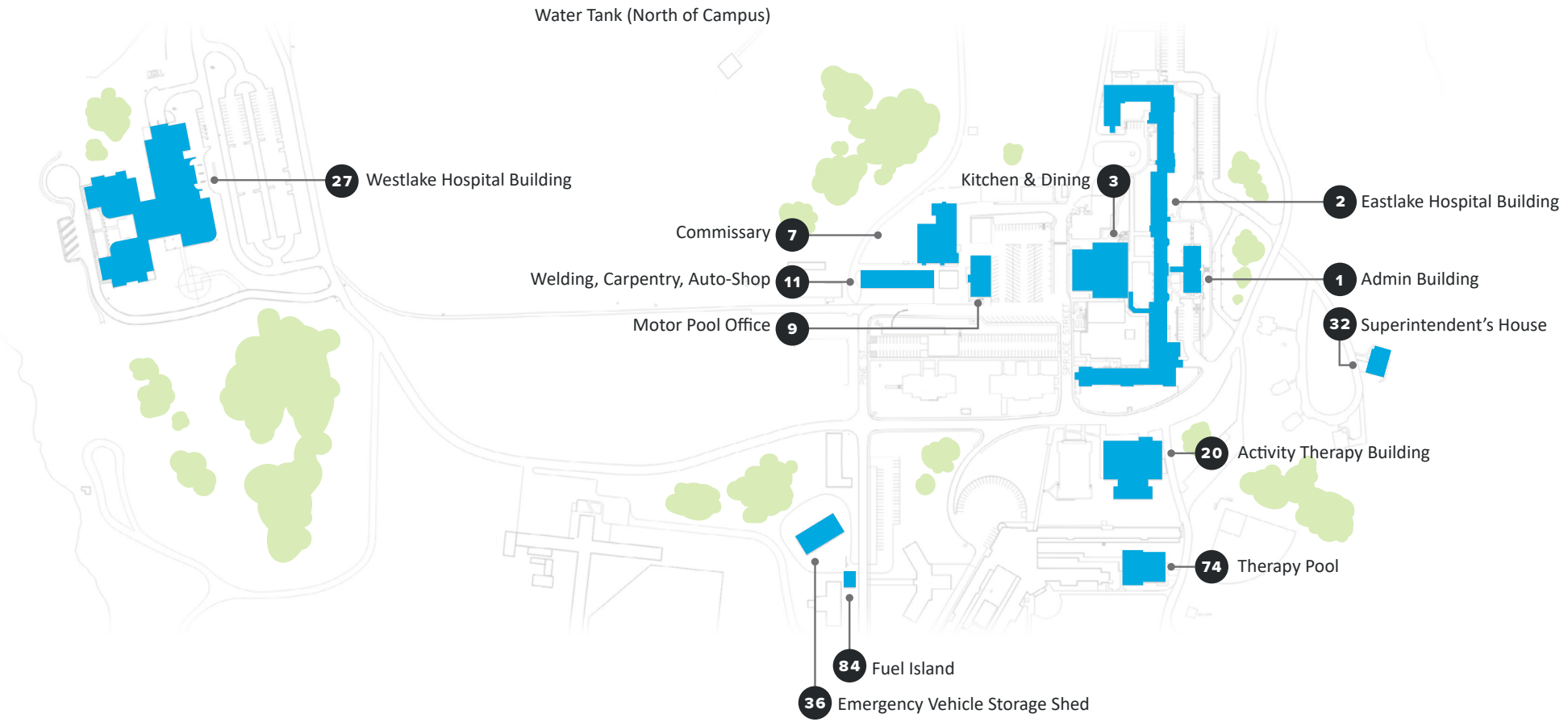
Existing Wireless Access Point.

Existing Condition.



Existing Voice and Data Outlet.

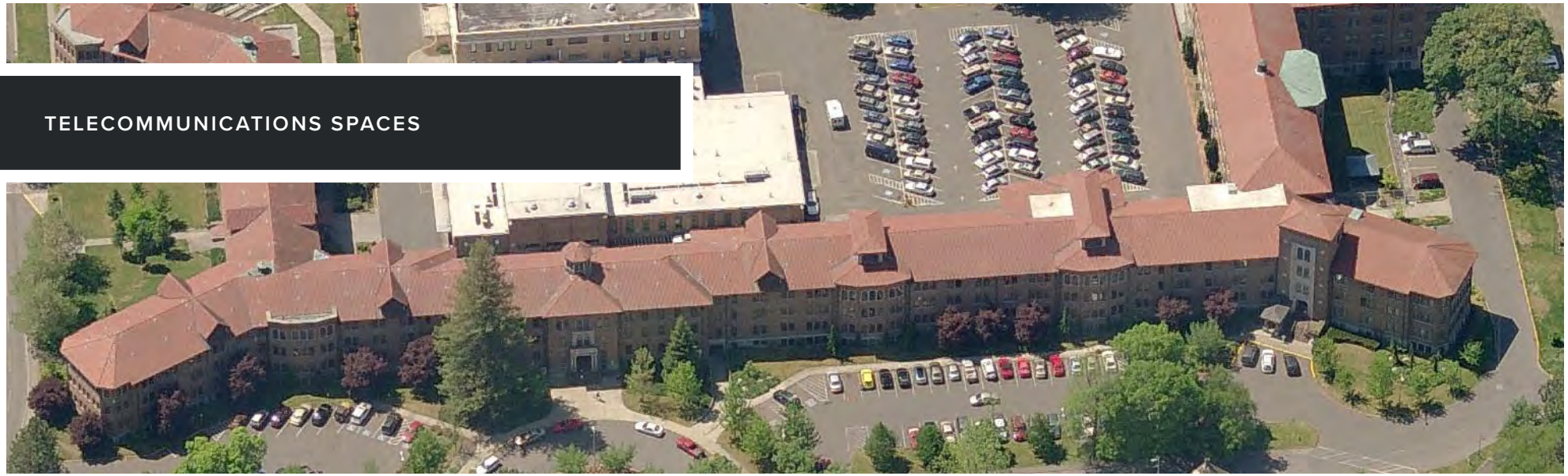
CAMPUS MAP



HARGIS

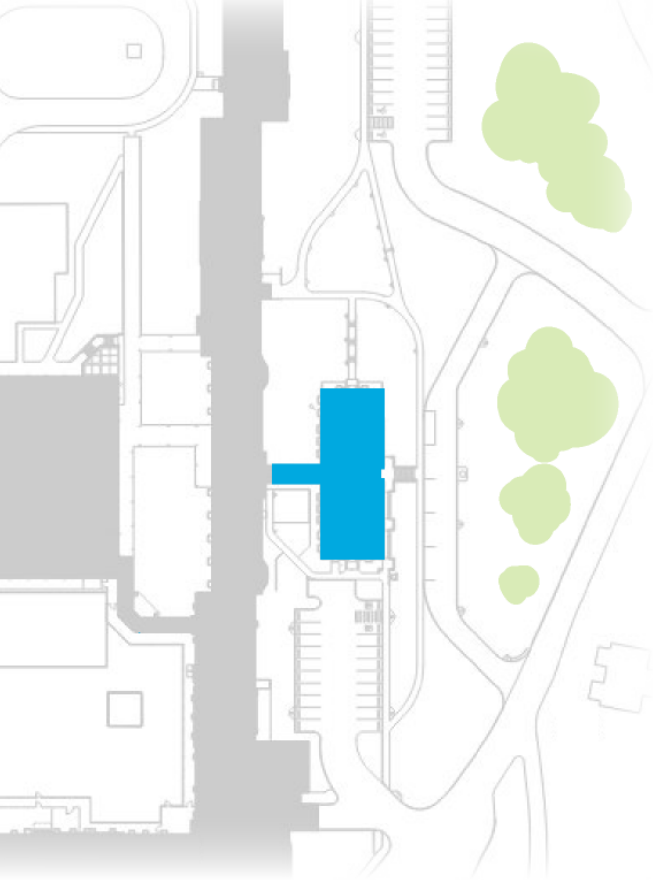
EVALUATION CRITERIA FOR TELECOMMUNICATIONS ROOMS		
Room/Space	»	Quantity, Location, and Size of Telecommunications Room.
	»	Available space to install and terminate new cabling and rack space to mount new equipment
	»	Adequate working clearances to access and maintain additional equipment and cabling
	»	Space is dedicated to telecommunications
	»	Space is secured to prevent unauthorized access.
Racks	»	Equipment racks with available space for new rack mounted network equipment required to support programs housed in building or area
Grounding & Bonding	»	Grounding bus bar bonded to NEC recognized grounding systems
	»	Equipment and cabling bonded to ground
UPS	»	Uninterruptable Power Supply (UPS) in place and operational to provide backup power in case of power failure
	»	UPS sized to provide adequate run time to support new network equipment
Cooling	»	Dedicated cooling equipment for equipment housed in space
	»	Expected life span of existing equipment
	»	Adequate capacity to support new equipment
Backbone Cabling	»	Existing fiber backbone with bandwidth and capacity to support current and future applications
	»	Minimum of 12 single-mode and 12 multi-mode optical fiber cables.
Cable Management	»	Cable trays and wall mounted support systems
	»	Rack-mounted vertical and horizontal cable management systems
Pathway	»	Dedicated telecommunications standard compliant pathways
	»	Spare conduits available with capacity for new cabling

TELECOMMUNICATIONS SPACES



To support future expanded infrastructure and meet industry standards, it is recommended to build dedicated telecommunications rooms throughout the facility. Creating telecommunications rooms in these spaces will require power upgrades to provide convenience receptacles, and dedicated equipment receptacles. Many of the existing TRs are located within closets or severely constrained on available space that may be needed for expansion. The majority of the existing spaces are also without any dedicated environmental controls and may only have passive ventilation into the general space to control temperature. Beyond the environmental issues the majority of the spaces are also shared with electrical equipment which may introduce different and varying requirements which may be more stringent for safety than telecommunication spaces.

While a large portion of the TR spaces included Uninterruptible Power Supplies (UPS) several spaces lacked UPS support or the size of the UPS may not be sufficient to provide the required power output and or run time duration The vast majority of telecommunications spaces supporting the facility also include only key controls for the space with no identity verification, tracking, or authentication in order to gain access to space. To comply with the Health Insurance Portability and Accountability Act (HIPAA) and meet telecommunications standards, access to the space will need to be provided to limit access to authorized staff. Access control can be accomplished using different methods, including, keys and locks or an electronic access control system. Per HIPAA security requirements, the entity must “Implement procedures to control and validate a person’s access to facilities based on their role or function…” Electronic access control systems have this capability built in. This capability can be accomplished for keys and locks through the use of third-party key control systems like Keywatcher or other manual processes of controlling the physical keys, which allows keys to be checked out after entering a code or some other means of identifying information to validate a person’s access to the telecommunications spaces. See room summaries later in this document.



ADMINISTRATION BUILDING

TELECOMMUNICATIONS ROOM – ER-009A

This primary TR-MER for the facility is located within the basement of the Admin Building (Building 1). This room appears to be adequately sized and includes proper temperature controls and primary power battery backup located within the room. This room centralizes most of the facility fiber optic backbone and switching for the facility network. Connections to the other facilities within the campus also originate within this room.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

Deficiencies:

» Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.

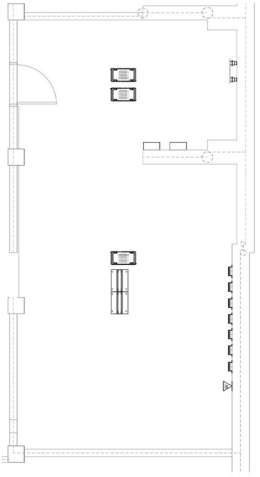
» Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.

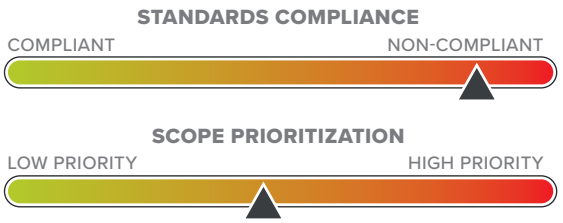
Recommendations:

» Provide labels for all new cabling and existing cables to remain.

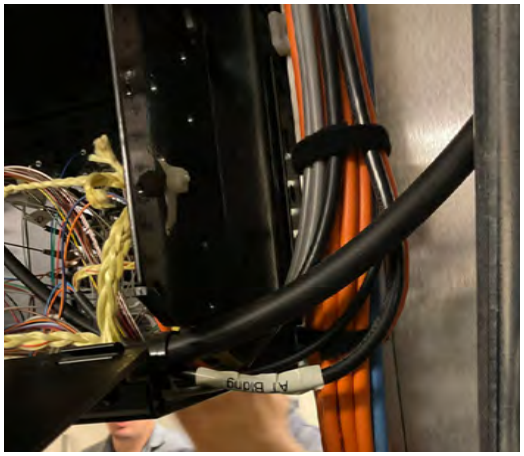
» Upgrade existing port locations to Category 6A.

» Add additional Category 6A 8P8C RJ45 ports to meet standards.

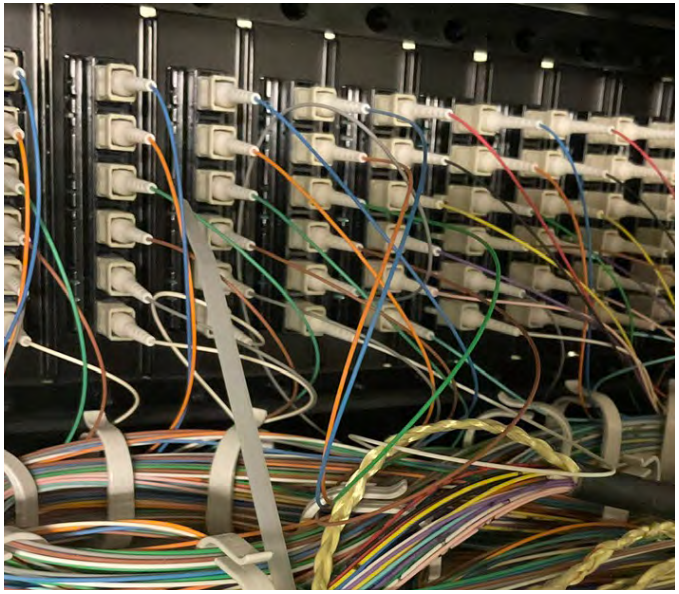




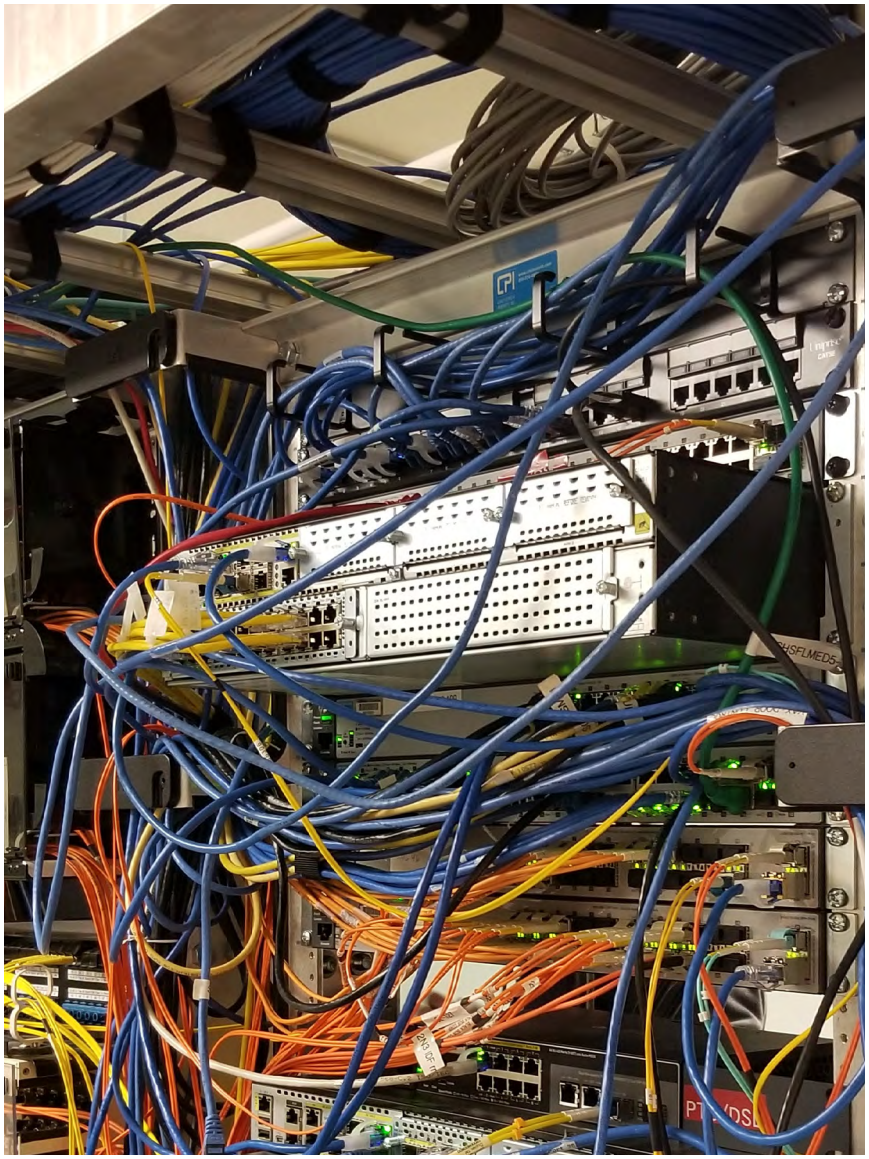
ADMINISTRATION BUILDING



Existing Backbone and Horizontal Cabling.



Existing Fiber Cabinet.



Existing Telecom Rack.

TELECOMMUNICATIONS CLOSET – TR-101

Centrally located on the second floor this telecom closet provides for the horizontal cabling serving this level. Local UPS provides battery backup. Heat mitigation is provided by small vents into the common space.

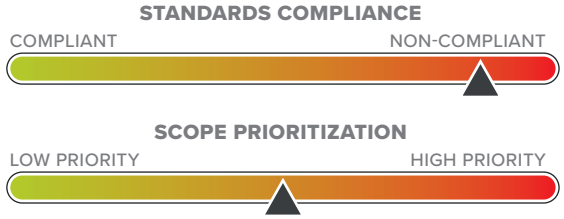
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports are required to meet standards. Dedicated cooling is required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

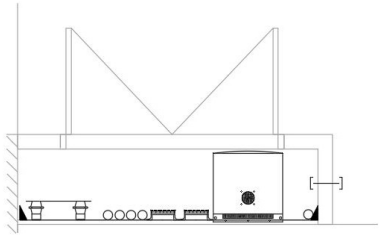
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- No dedicated cooling system to maintain temperature of equipment.
- No identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from WSH MER in Admin Building.
- Add cable management as needed.
- Add ductless split-system cooling unit or connect to building environmental system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.



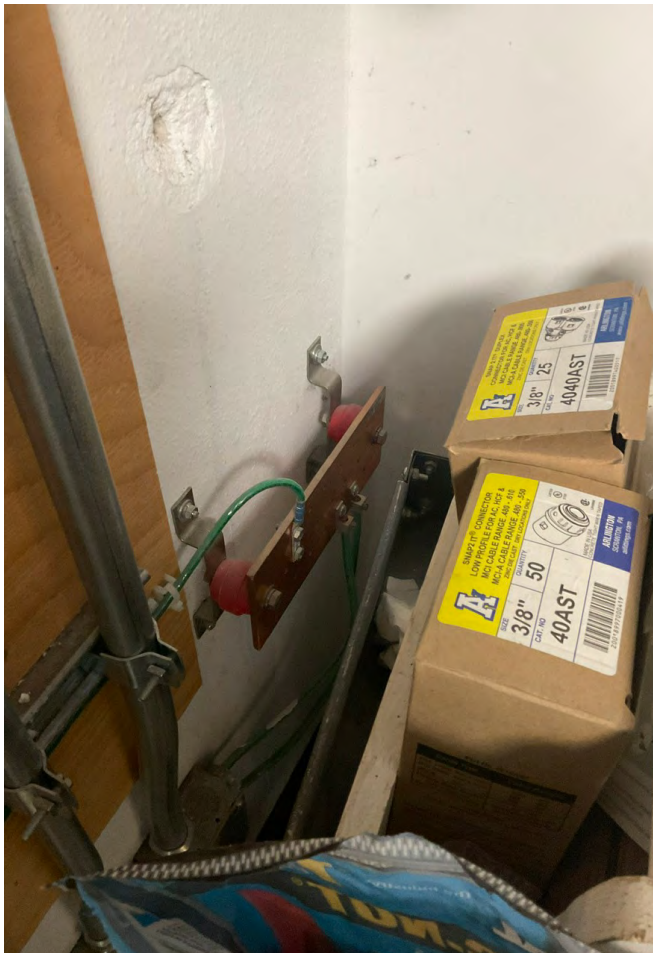


Existing Telecom Rack.

Existing Voice Backbone.

TELECOMMUNICATIONS CLOSET – TR-101

Existing Voice Patching.

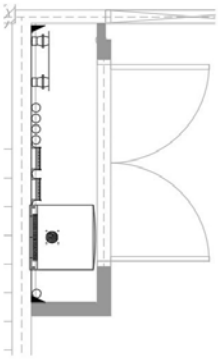


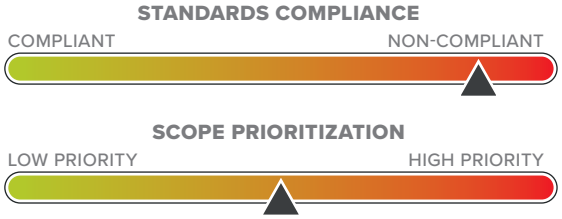
Existing Grounding.

TELECOMMUNICATIONS CLOSET – TR-201

Centrally located on the second floor this telecom closet provides for the horizontal cabling serving this level. Local UPS provides battery backup. Heat mitigation is provided by small vents into the common space.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports are required to meet standards. Dedicated cooling is required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.





Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- No dedicated cooling system to maintain temperature of equipment.
- No identity verification.

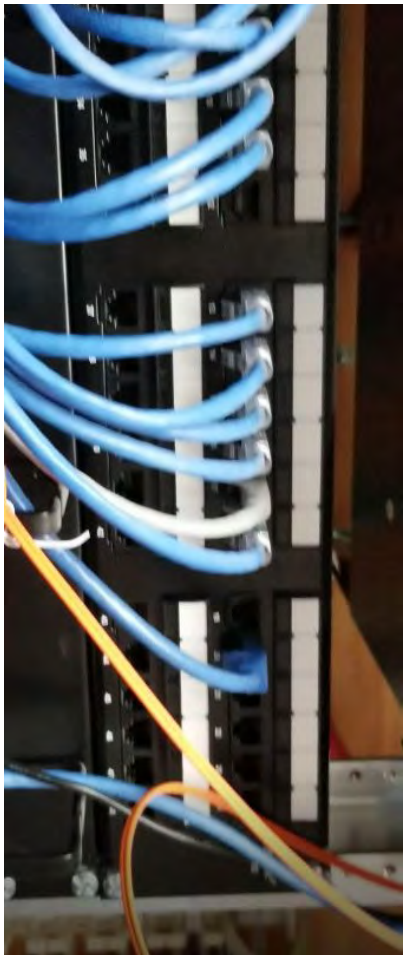
Recommendations:

- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add cable management as needed.
- Add ductless split-system cooling unit or connect to building environmental system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

Existing Voice Patching.

Existing Telecom Rack.

TELECOMMUNICATIONS CLOSET – TR-201



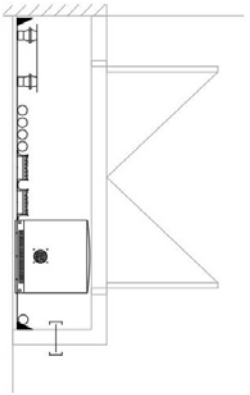
Existing Data Patching.

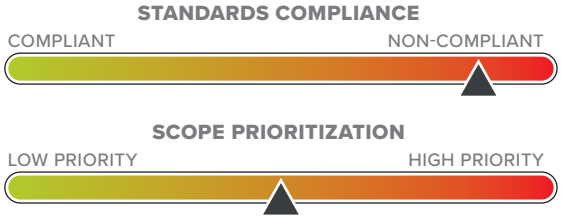
Existing Grounding.

TELECOMMUNICATIONS CLOSET – TR-301

Centrally located on the third floor this telecom closet provides for the horizontal cabling serving this level. Local UPS provides battery backup. Heat mitigation is provided by small vents into the common space.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. It is also recommended to provide a telecommunications grounding busbar to create a consistent potential across all components. Dedicated cooling, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.





Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- No dedicated cooling system to maintain temperature of equipment.
- Uncontrolled access to space with no identity verification.

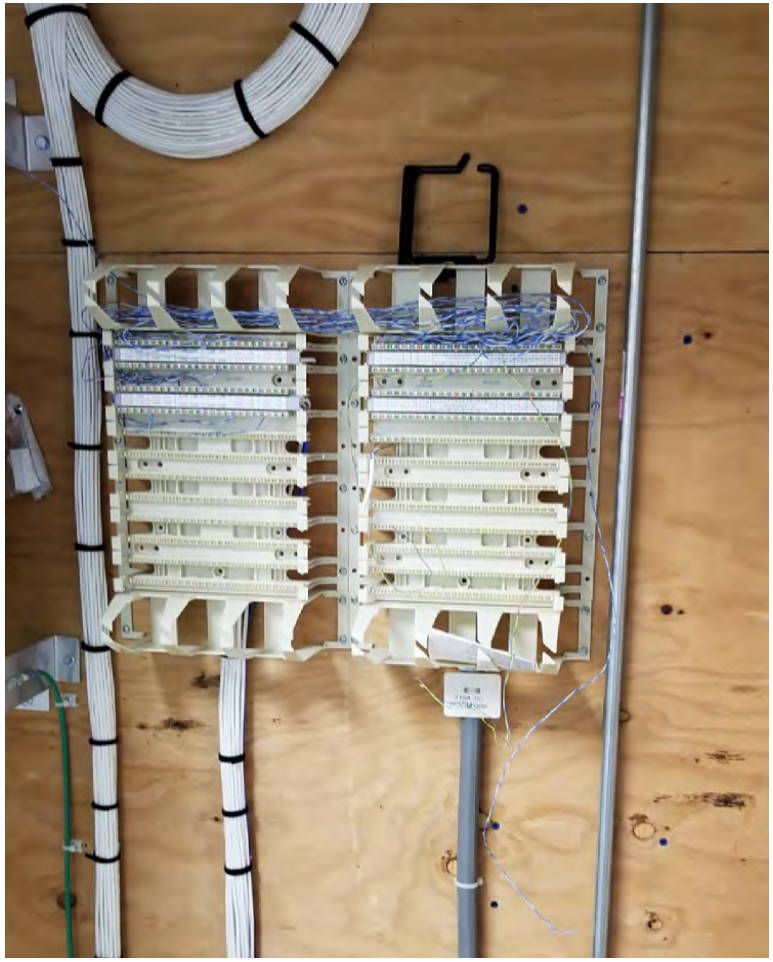
Recommendations:

- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add cable management as needed.
- Add ductless split-system cooling unit or connect to building environmental system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

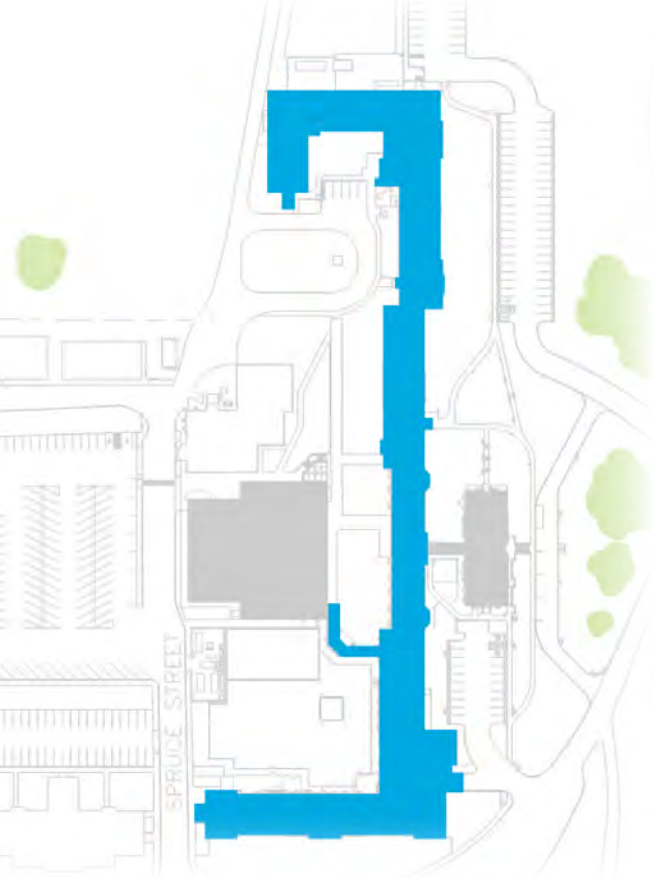
Existing Horizontal Cabling.

TELECOMMUNICATIONS CLOSET – TR-301

Existing Grounding.



Existing Voice Patching.



EASTLAKE HOSPITAL BUILDING

TELECOMMUNICATIONS ROOMS

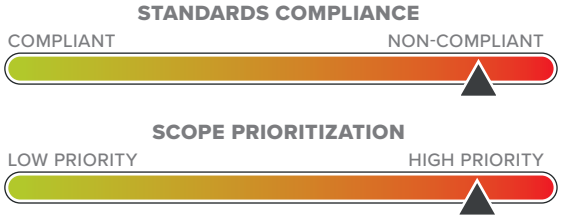
Eastlake Hospital is organized into the following sections (Segments): South 1 (S1), South 2 (S2), Admin, North 1 (N1), North 2 (N2), and North 3 (N3). Each section includes a basement (Level 0), 1st Floor (Level 1), 2nd Floor (Level 2), and 3rd Floor (Level 3).

Each level of each section of the building has a telecommunications space with the exception of the basement level telecommunications room in section North 1 (0N1 – Level 0, North 1) and the 2nd level in North 3 (2N3).

The TRs vary in compliance with most of the rooms sharing space with electrical equipment. Most of the rooms did not have environmental control system to maintain required temperature and humidity. Grounding was present at most locations.

TELECOMMUNICATIONS ROOM – S2-013

The S2-013 telecommunications space is located on the basement floor within the South 2 area and is in a space shared with electrical. There are two small racks in the telecom space, a lower small two post rack and a wall mounted cabinet above. The upper cabinet contains the rack mounted fiber cabinet and the copper patch panels. The lower two post rack contains the ethernet switches and the UPS. Connectivity is provided by a 6-strand multi-mode OM1 OFC. There is a telecommunications grounding bar installed. There are no dedicated environmental controls. A UPS provides back-up power to the equipment.



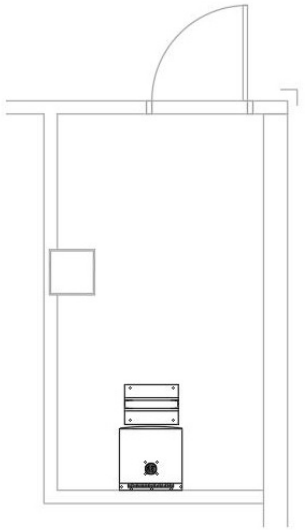
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

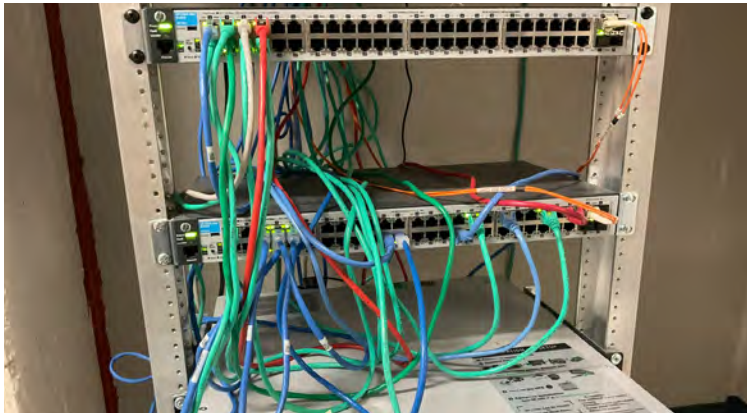
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the MER in the Admin Building basement.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.



TELECOMMUNICATIONS ROOM – S2-013

Existing Data Patching.

Existing Horizontal Cabling.

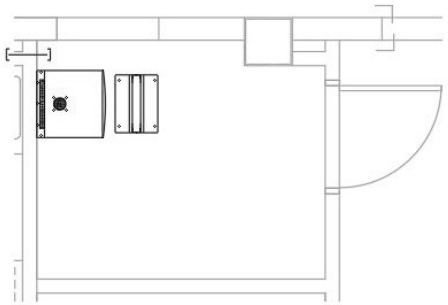


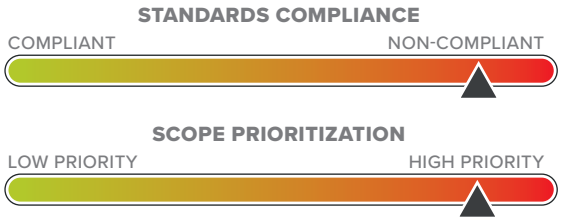
Existing Telecom Rack.

TELECOMMUNICATIONS ROOM – S1-008

The S1-008 telecommunications space is located on the basement floor within the South 1 area and is a space shared with electrical. There are two small racks in the telecom space, a lower small two post rack and a wall mounted cabinet above. The upper cabinet contains the rack mounted fiber cabinet and the copper patch panels. The lower two post rack contains the ethernet switches and the UPS. Connectivity is provided by a 6-strand multi-mode OM1 OFC. There is a telecommunications grounding bar installed. There are no dedicated environmental controls. A UPS provides back-up power to the equipment.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.



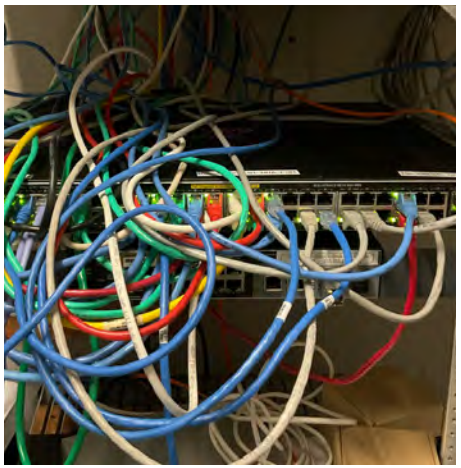


Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the MER in the Admin Building basement.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

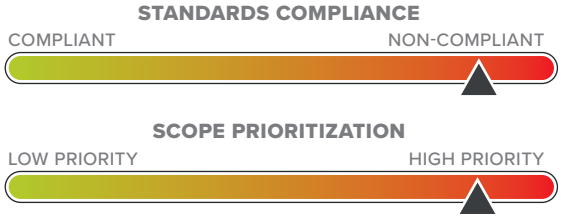


Existing Telecom Rack.

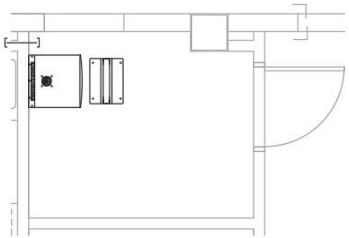
Existing Horizontal Cabling.

TELECOMMUNICATIONS ROOM – S1-001

The S1-001 telecommunications space is located on the basement floor within the South 1 area S1-001 – Within 0S1 – CCTV TR – Full height locked cabinet with network video recorders, switches, UPS, and patch panels dedicated to CCTV. Two switches are located in the upper section of the rack with the top switch providing fiber optic communications connections. There are 4 fiber optic connections which appear to be dedicated to the CCTV network. There is also a fiber connection to the primary network.



To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.



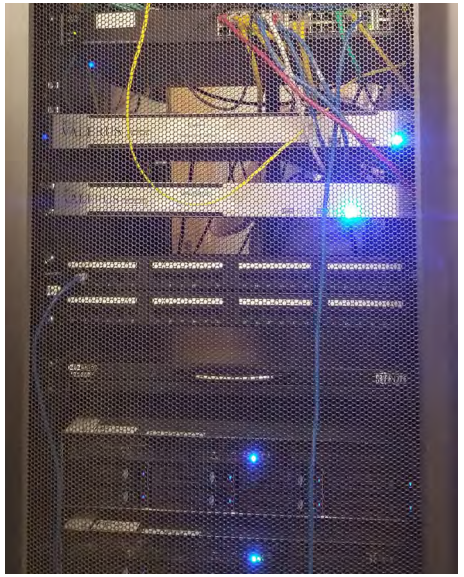
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the MER in the Admin Building basement.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

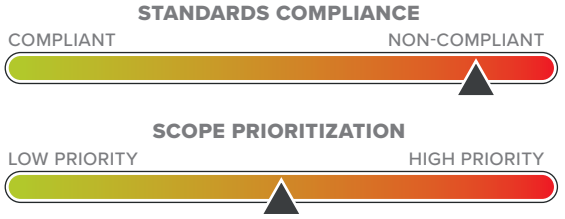
Existing Twisted-Pair Copper And OFC



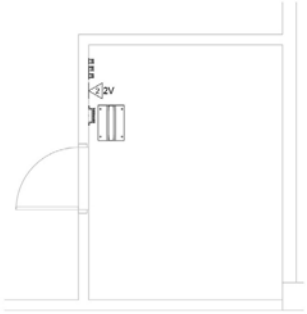
Existing CCTV Rack.

TELECOMMUNICATIONS ROOM – N2-012A

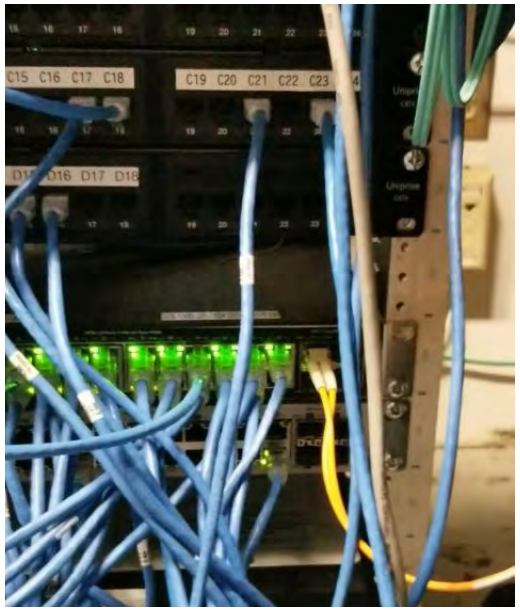
The N2-012A telecommunications space is located on the basement floor within the North 2 area and is a space shared with electrical. There is a lower small two post rack with wall mounted 66 blocks for copper twisted-pair cable patching. The rack contains the rack mounted fiber cabinet, the copper patch panels, ethernet switches, and a UPS. Connectivity is provided by a 24-strand OM3 multi-mode OFC from the MER. Four OM3 multi-mode OFC cables connect from N2-012A to other telecom rooms; a six strand to N2-319A, a 12 strand to S1-001, a 6 strand to N2-119A, and a 12 strand to N2-219A. There is a telecommunications grounding bar installed. There are no dedicated environmental controls.



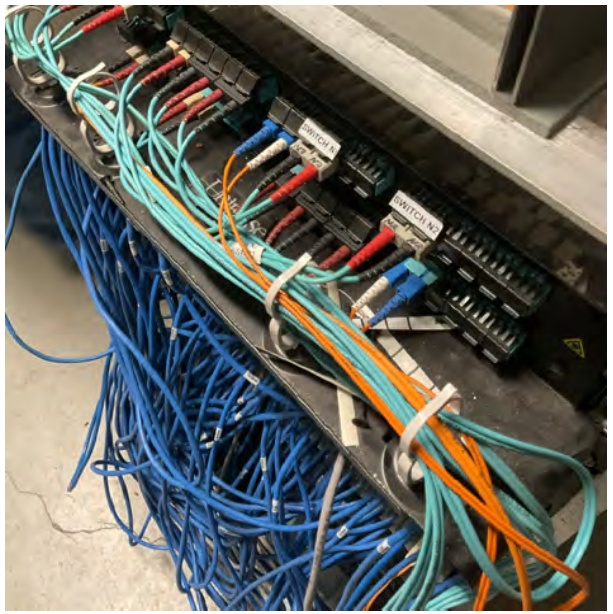
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.



Existing Voice Patching.



Existing Data Patching.



Existing Fiber Cabinet.

BASEMENT

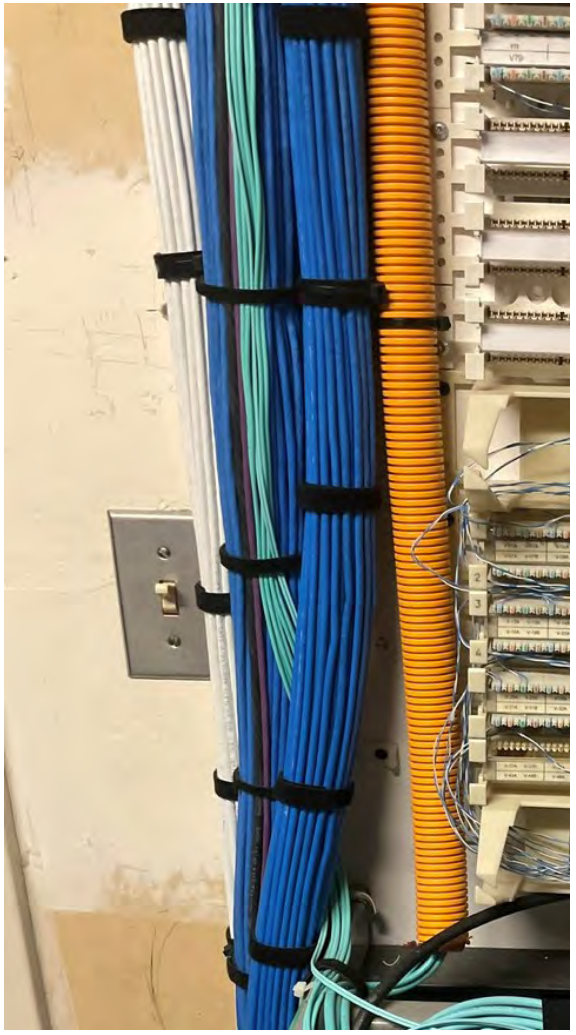
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the MER in the Admin Building basement.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

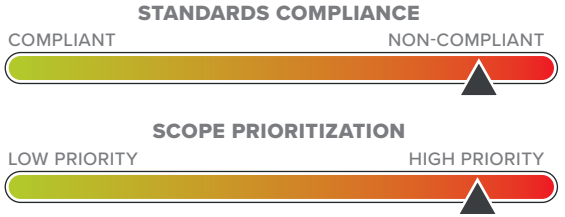
Existing Voice Backbone.



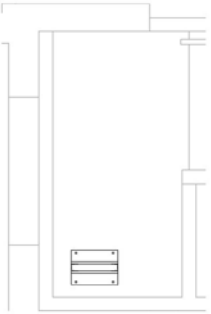
Existing Horizontal Cabling.

TELECOMMUNICATIONS ROOM – N3-S002

N3-S002 – Within 0N3 – Outside Electrical room N3-027. Includes a full height two post rack which from top to bottom includes a rack mount fiber cabinet at the top of the rack, cable management, copper patch panels, network switch, a small shelf includes some Metasys equipment, and a small UPS. No dedicated environmental controls. Within N3-027- wall mounted telephone punch down blocks and a compact wall mount fiber cabinet. Within the Electrical room N3-027 the 66 and 110 blocks associated with the location are wall mounted to plywood. A small wall mount fiber cabinet is also included and connected to the fire system.



To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. It is also recommended to provide a telecommunications grounding busbar to create a consistent potential across all components. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.



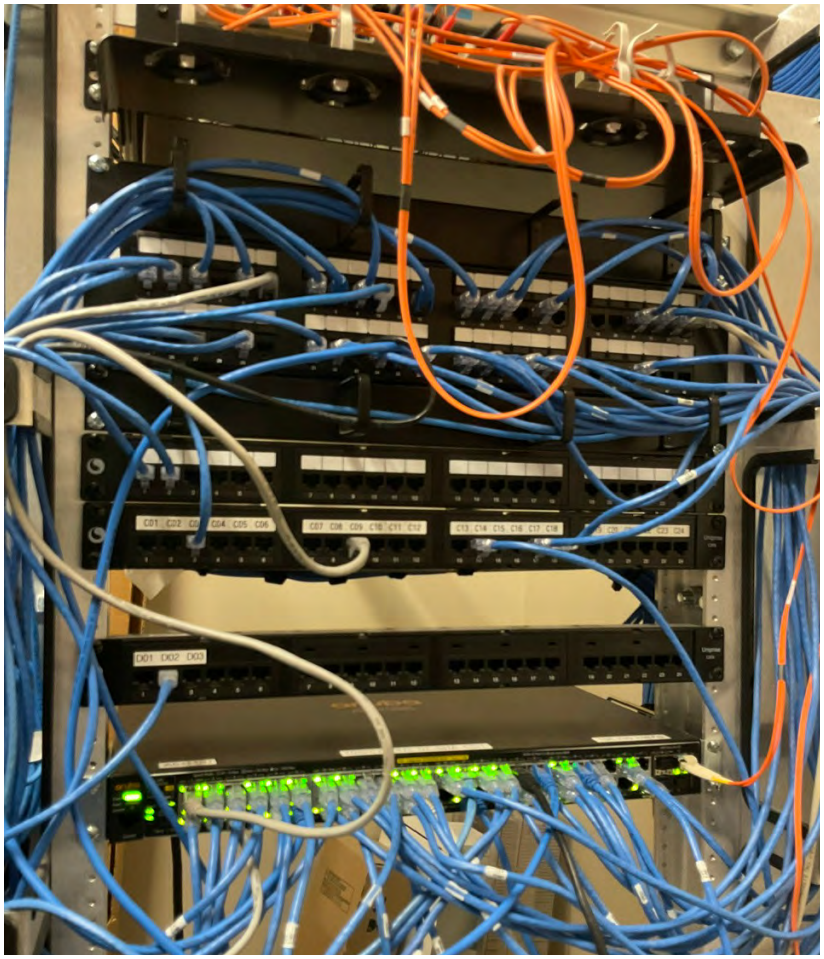
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No grounding busbar for the telecommunications equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

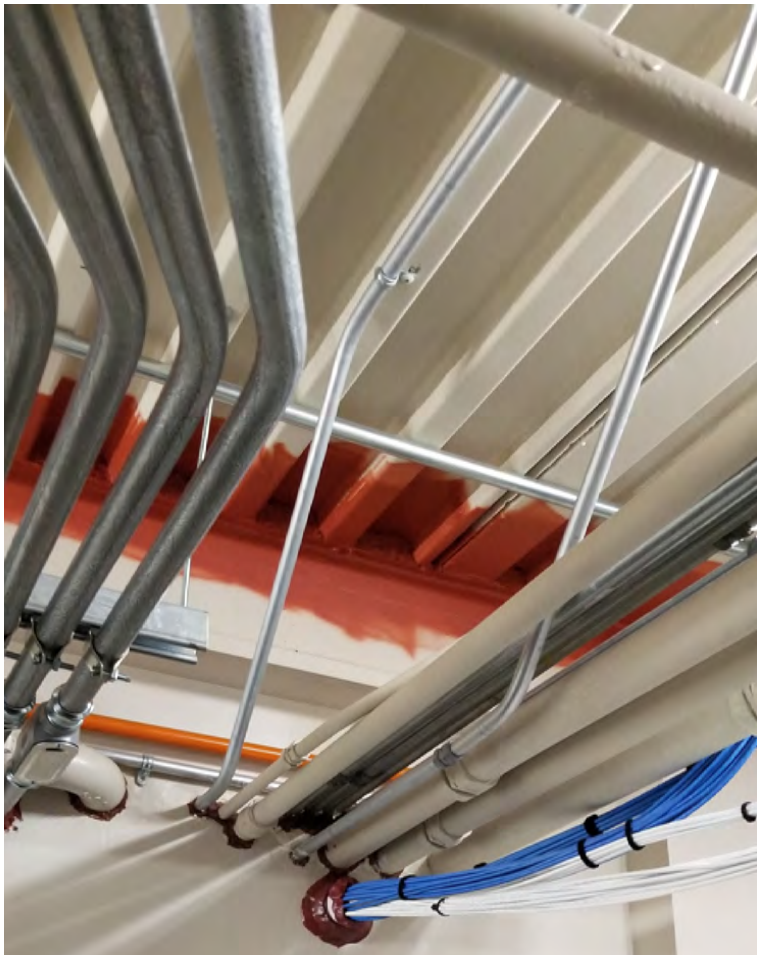
Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – N3-S002



Existing Telecom Rack.



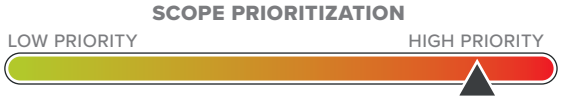
Existing Horizontal Cabling.

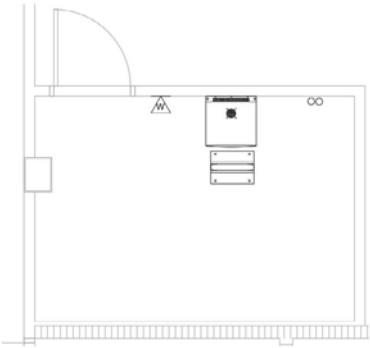
LEVEL 1

TELECOMMUNICATIONS ROOM – S2-125 – WITHIN 1S2

This TR is shared with electrical equipment. A floor mounted two post half rack includes from top to bottom a the network switch, a rack mounted fiber cabinet, an unused network switch, another network switch, and a UPS. Above the two post rack a wall mounted equipment cabinet is installed which includes a rack mounted fiber cabinet at the top, a compact rack mounted fiber cabinet on the back plane and several copper patch panels and associated cable management. No dedicated environmental controls.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.





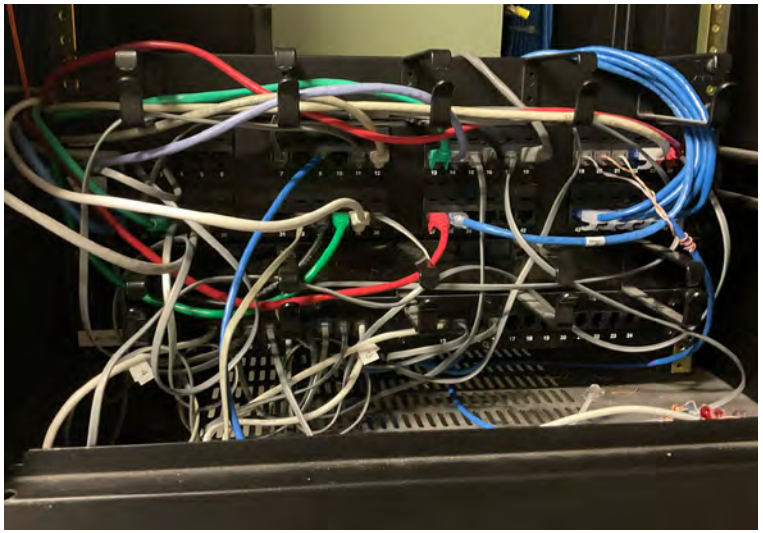
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

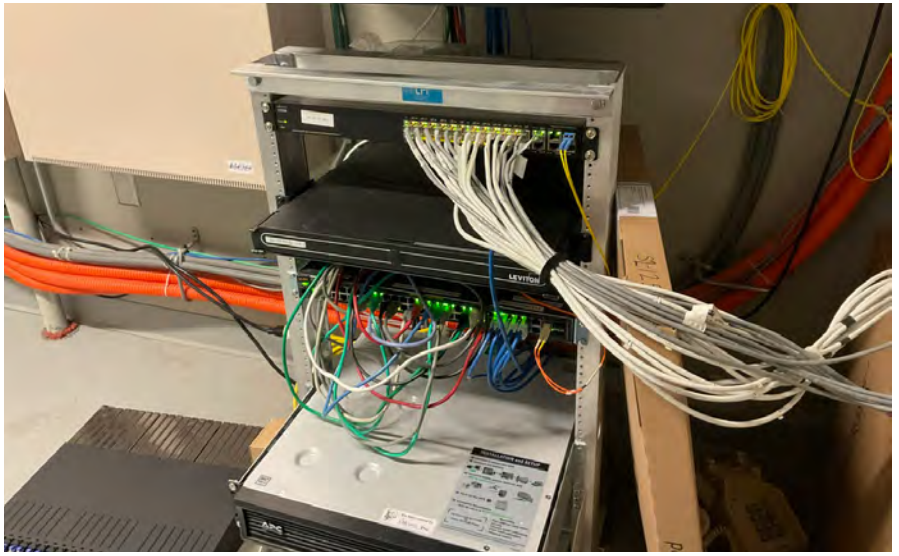
TELECOMMUNICATIONS ROOM – S2-125 – WITHIN 1S2



Existing Data Patching.

Existing Fiber and Copper Cabling.

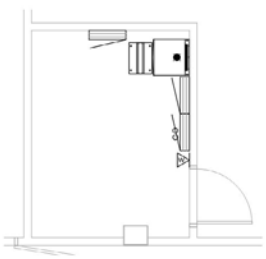
Existing Telecom Enclosure.

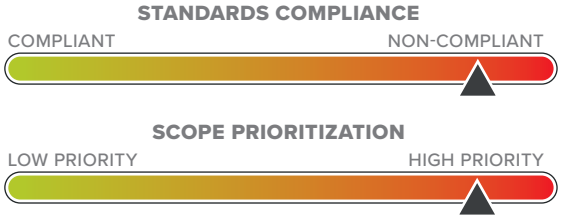


Existing Telecom Rack.

TELECOMMUNICATIONS ROOM – S1-105 – WITHIN 1S1

This TR is shared with electrical equipment. A floor mounted two post half rack includes from top to bottom a network switch, a rack mounted fiber cabinet, an unused network switch, another network switch, and a UPS. Above the two post rack a wall mounted equipment cabinet is installed which includes a rack mounted fiber cabinet at the top, a compact rack mounted fiber cabinet on the back plane and several copper patch panels and associated cable management. No dedicated environmental controls are present within the room.





To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

Existing Fiber Cabinet.

Existing Telecom Enclosure.

Existing Horizontal Cabling.

Existing Telecom Rack.

TELECOMMUNICATIONS ROOM – A-104A – WITHIN 1A (CENTRAL SECTION CONNECTED TO ADMIN)

Full height two post rack with wall mounted telephone punch down blocks. Two post rack includes a rack mount fiber cabinet, multiple copper patch panels and associated cable management, and two network switches. 110 blocks are present on the wall behind the rack. No dedicated environmental controls for this room.

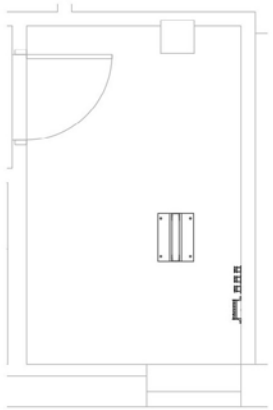
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

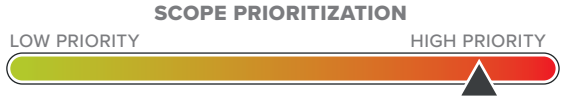
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.





Existing Telecom Rack.

Existing Horizontal Cabling.

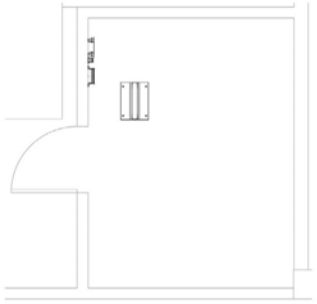
Existing Voice Patching.

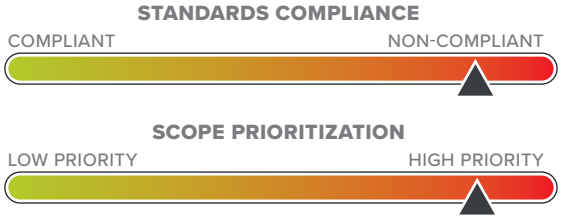
Existing Data Patching.

TELECOMMUNICATIONS ROOM – N2-119A – WITHIN 1N2

This room is shared with electrical equipment. A floor mounted two post rack half rack is present and includes a rack mount fiber cabinet, copper patch panel and cable management, along with the network switch and a small UPS. On the wall behind the rack the 110 blocks are installed. No dedicated environmental controls are present for the room.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.



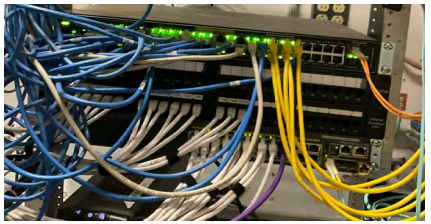


Deficiencies:

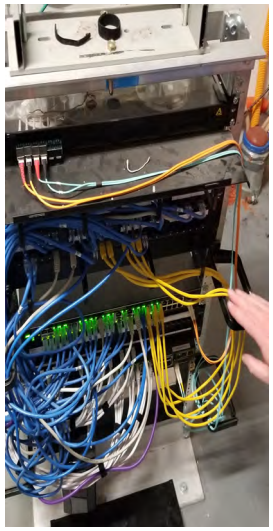
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

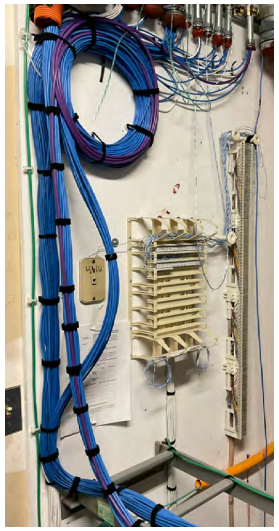
- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.



Existing Data Patching.



Existing Telecom Rack.



Existing Voice Patching.

Existing Grounding.

TELECOMMUNICATIONS ROOM – TR-153 – WITHIN 1N3

This room is shared with electrical equipment. A floor mounted two post rack half rack is present and includes a rack mount fiber cabinet, copper patch panel and cable management, along with the network switch and a UPS. On the wall behind the rack the 110 blocks are installed. No dedicated environmental controls present for the room. An intercom full height rack is outside the TR within room N3-141.

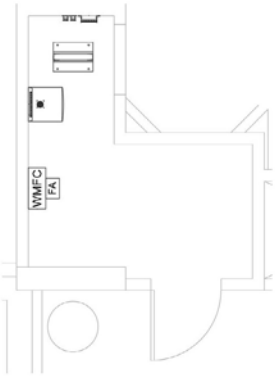
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. It is also recommended to provide a telecommunications grounding busbar to create a consistent potential across all components. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

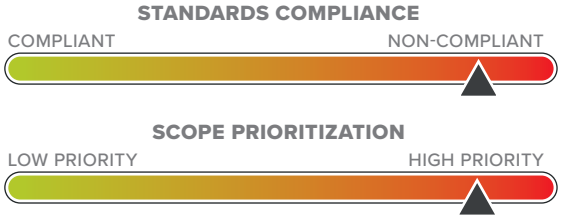
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

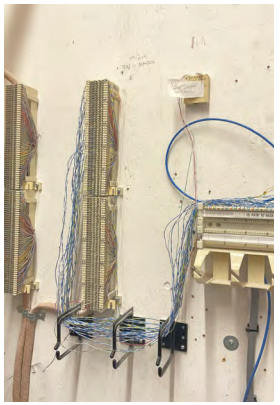
Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

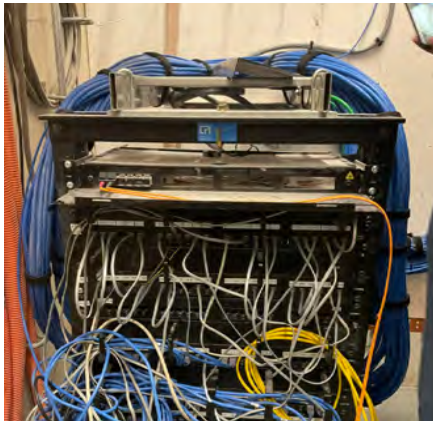




Existing Grounding.



Existing Voice Patching.



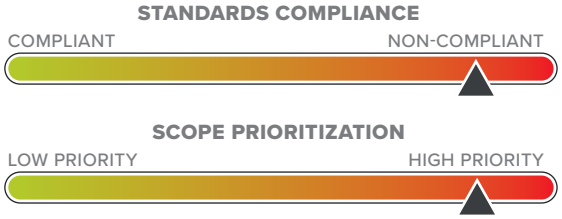
Existing Telecom Rack.

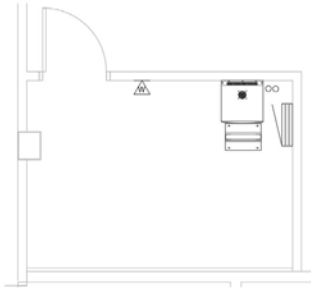
Existing Fire Alarm Fiber.

TELECOMMUNICATIONS ROOM – S2-225 – WITHIN 2S2

This room is shared with electrical equipment. A floor mounted two post half rack is present and includes network switches, a rack mount fiber cabinet and the UPS. Above the rack a wall mounted equipment cabinet is present and includes a rack mount fiber cabinet on the rack rails along with a rack mount fiber cabinet mounted on the back plane of the cabinet and copper patch panels with cable management. No dedicated environmental controls present for the room. Outside the room within S2-227 a full height equipment cabinet is floor mounted that includes intercom equipment.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. It is also recommended to provide a telecommunications grounding busbar to create a consistent potential across all components. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.





Deficiencies:

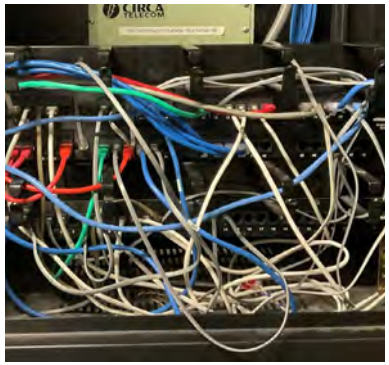
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

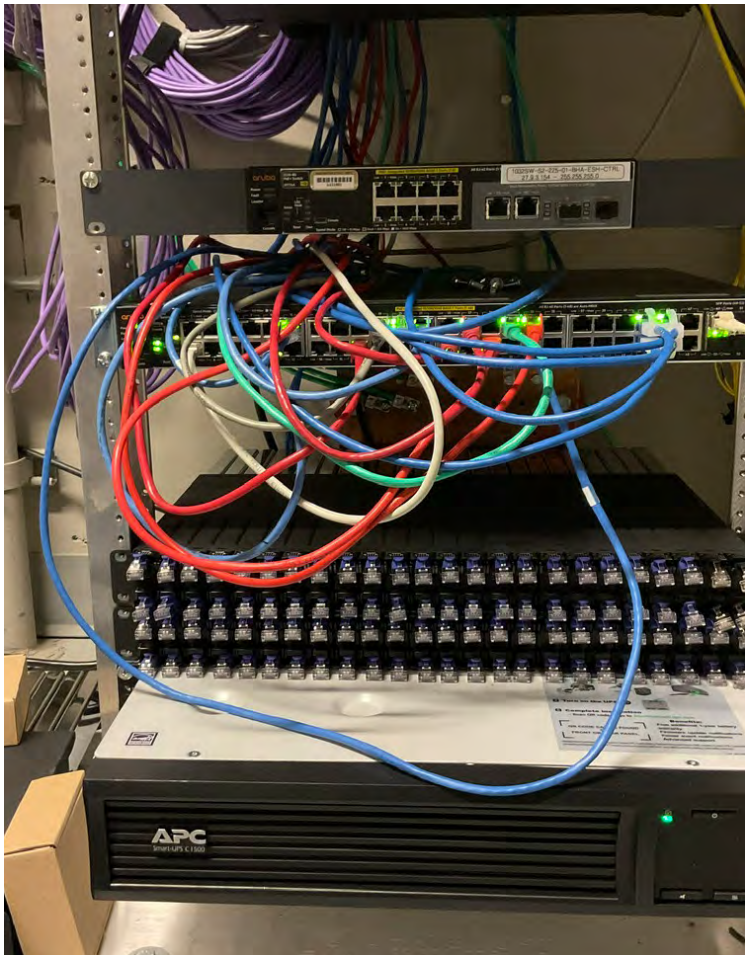
TELECOMMUNICATIONS ROOM – S2-225 – WITHIN 2S2

Existing Voice Backbone.



Existing Data Patching.

Existing Telecom Enclosure.

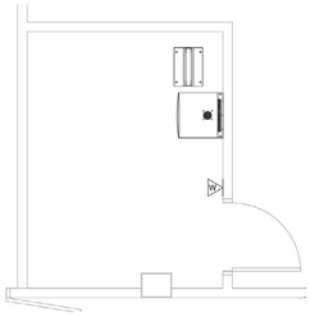


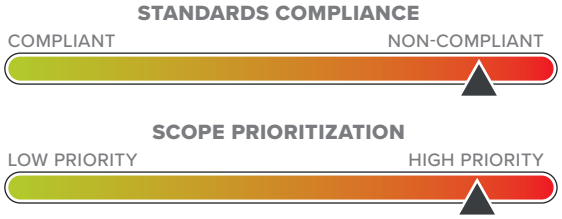
Existing Telecom Rack.

LEVEL 2

TELECOMMUNICATIONS ROOM – S1-205 – WITHIN 2S1

This room is shared with electrical equipment. A floor mounted two post half rack is present and includes network switches, a rack mount fiber cabinet(s) and the UPS. Above the rack a wall mounted equipment cabinet is present and includes two rack mount fiber cabinet(s) on the rack rails along with a rack mount fiber cabinet(s) mounted on the back plane of the cabinet and copper patch panels with cable management. No dedicated environmental controls present for the room. Outside the room within S1-203 a full height equipment cabinet is floor mounted that includes intercom equipment.





To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. It is also recommended to provide a telecommunications grounding busbar to create a consistent potential across all components. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

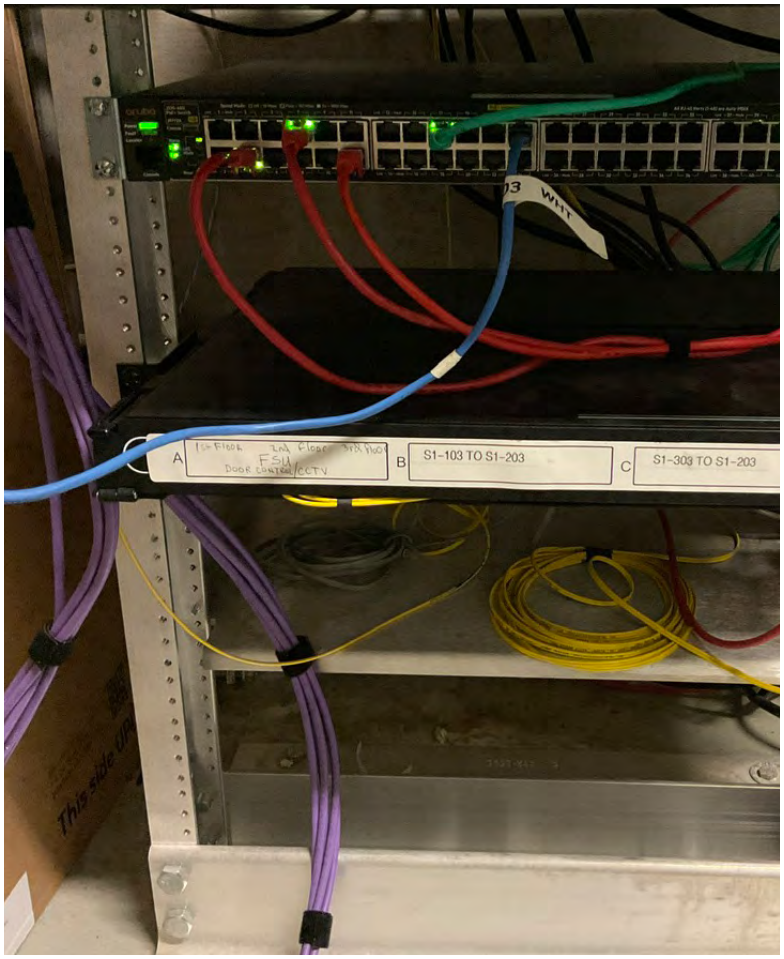
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

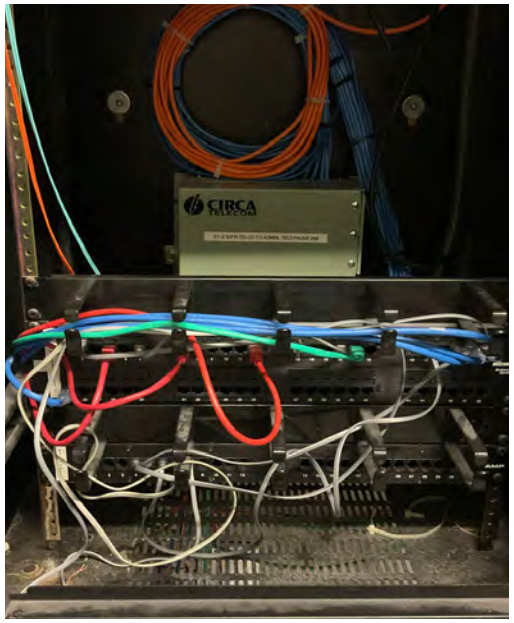
- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – S1-205 – WITHIN 2S1



Existing Telecom Rack.

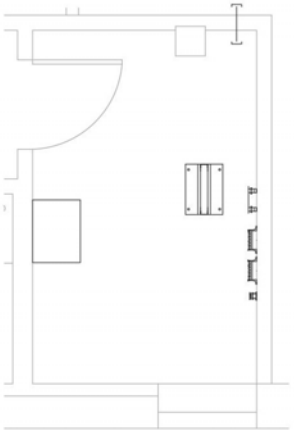
Existing Fiber Patching.

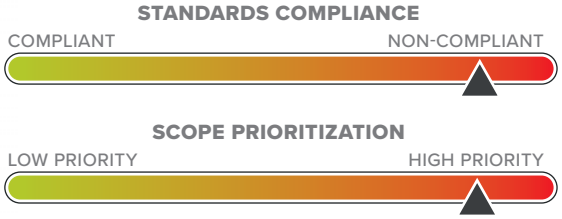


Existing Telecom Enclosure.

TELECOMMUNICATIONS ROOM – A-204A – WITHIN 2A (CENTRAL SECTION CONNECTED TO ADMIN)

This room is shared with electrical equipment. A floor mounted two post half rack is present and includes network switches, a rack mount fiber cabinet(s) and the UPS. Above the rack a wall mounted equipment cabinet is present and includes two rack mount fiber cabinet(s) on the rack rails along with a rack mount fiber cabinet(s) mounted on the back plane of the cabinet and copper patch panels with cable management. No dedicated environmental controls present for the room. Outside the room within S1-203 a full height equipment cabinet is floor mounted that includes intercom equipment.





To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

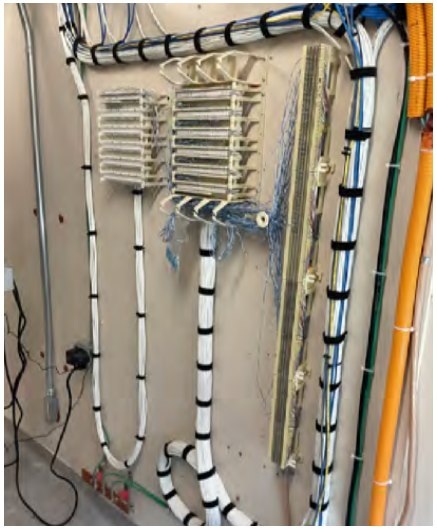
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.

Existing Fiber and Data Patching.

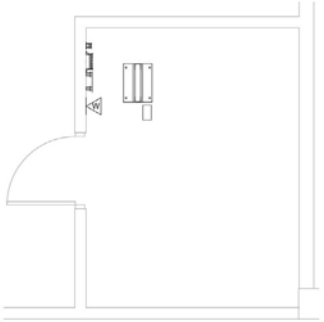


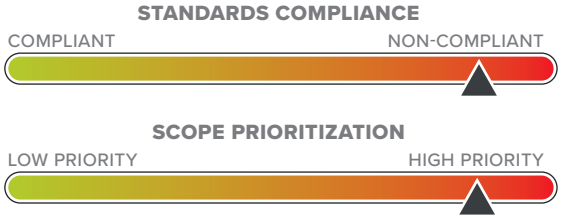
Existing Voice Patching.

Existing Telecom Rack.

TELECOMMUNICATIONS ROOM – N2-219A – WITHIN 2N2

This room is shared with electrical equipment. A floor mounted two post half rack is present and includes a rack mount fiber cabinet(s), copper patch panels with cable management, network switches and a small UPS. Behind the rack on the wall are the 110 blocks. This room has no dedicated environmental controls.





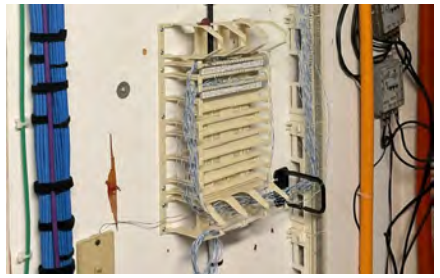
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.



Existing Voice Patching.

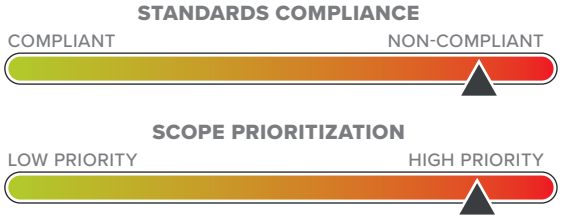
Existing Fire Alarm Fiber.

Existing Telecom Rack.

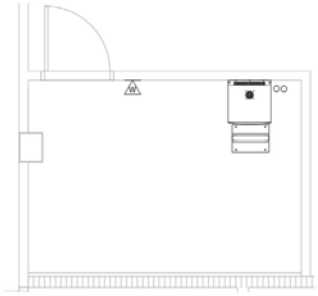
LEVEL 3

TELECOMMUNICATIONS ROOM – S2-325 – WITHIN 3S2

This room is shared with electrical equipment. A floor mounted two post half rack is present and includes network switches, a rack mount fiber cabinet and the UPS. Above the rack a wall mounted equipment cabinet is present and includes a rack mount fiber cabinet on the rack rails along with a rack mount fiber cabinet mounted on the back plane of the cabinet and copper patch panels with cable management. No dedicated environmental controls present for the room.



To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.



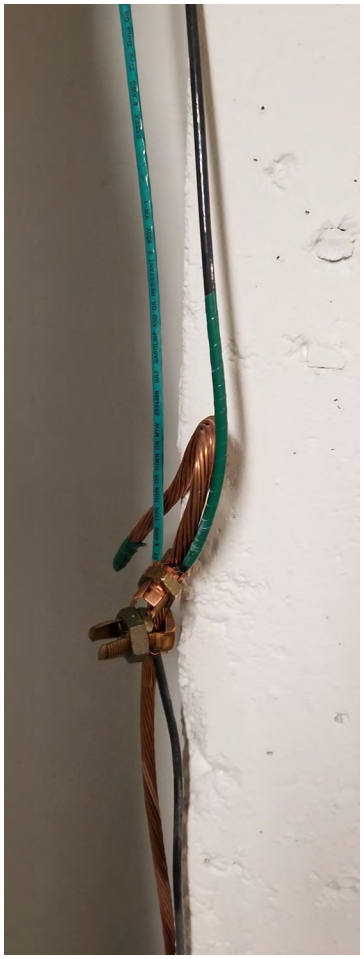
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

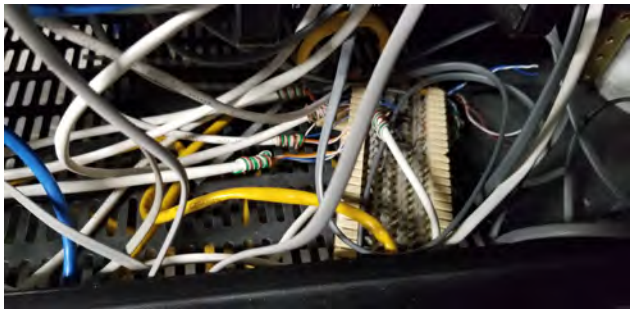
Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.

TELECOMMUNICATIONS ROOM – S1-205 – WITHIN 2S1

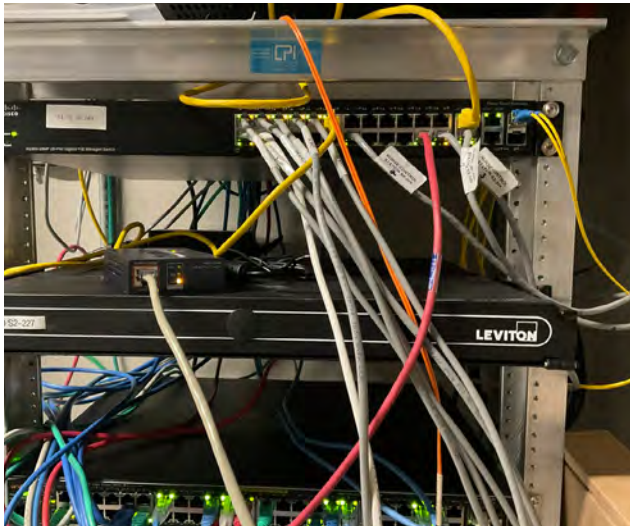


Existing Bonding.



Existing Voice Patching.

Existing OFC and Category 5e Cabling.



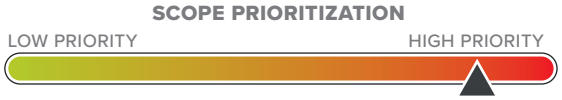
Existing Telecom Rack.

Existing Telecom Enclosure.

TELECOMMUNICATIONS ROOM – S1-305 – WITHIN 3S1

This room is shared with electrical equipment. A floor mounted two post half rack is present and includes network switches, a rack mount fiber cabinet and the UPS. Above the rack a wall mounted equipment cabinet is present and includes a rack mount fiber cabinet on the rack rails along with a rack mount fiber cabinet mounted on the back plane of the cabinet and copper patch panels with cable management. No dedicated environmental controls present for the room.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.



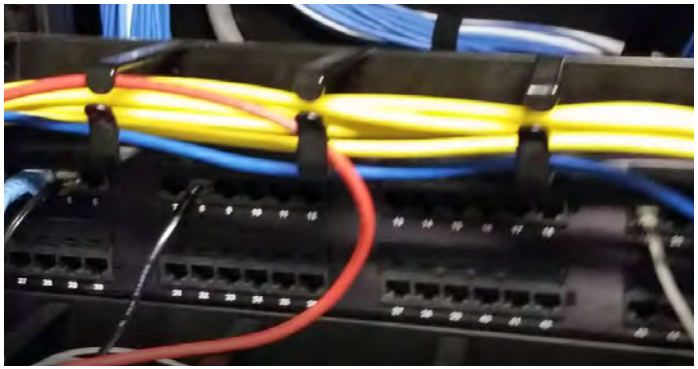
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

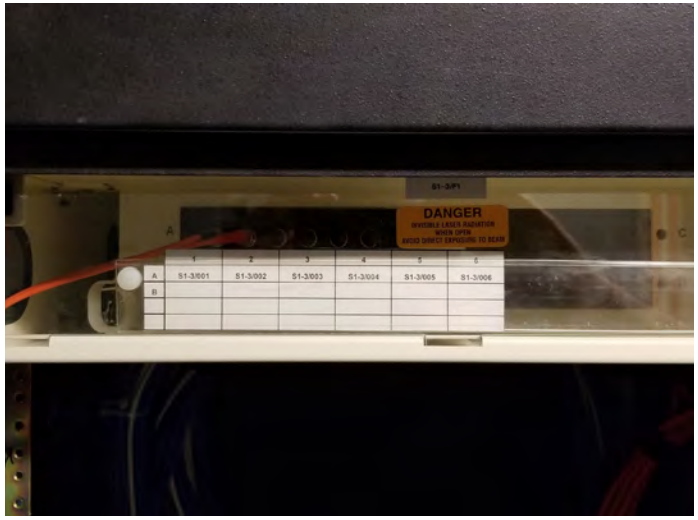
Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.

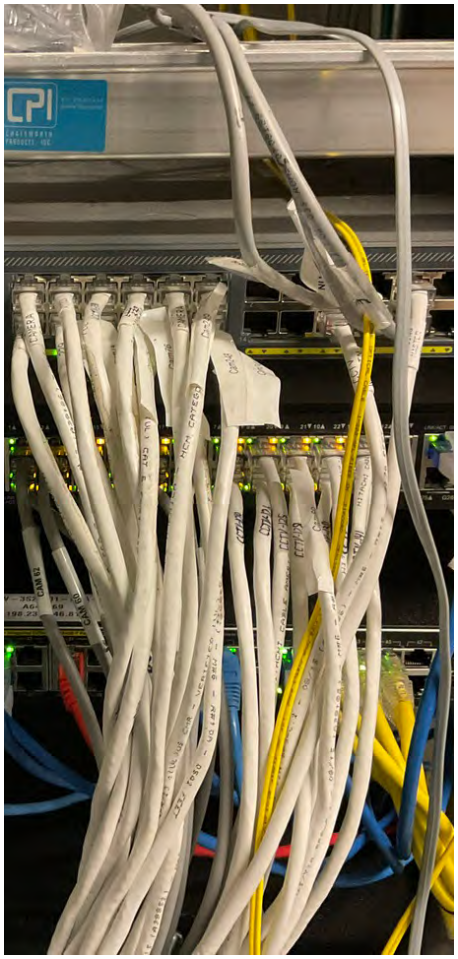
TELECOMMUNICATIONS ROOM – S1-305 – WITHIN 3S1



Existing Data Patching.

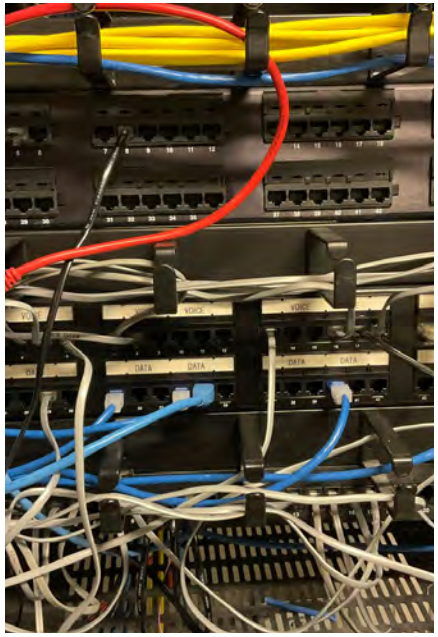


Existing Fiber Cabinet.



Existing Telecom Rack.

Existing Cabling.



Existing Telecom Enclosure.

TELECOMMUNICATIONS ROOM – A-304A – WITHIN 3A (CENTRAL SECTION CONNECTED TO ADMIN)

Floor mounted full height two post rack is present and includes a rack mount fiber cabinet and copper patch panel with cable management along with the network switch and UPS. Behind the rack on plywood are wall mounted 110 blocks. This room does not include dedicated environmental controls.

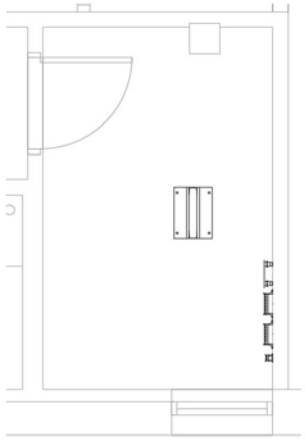
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

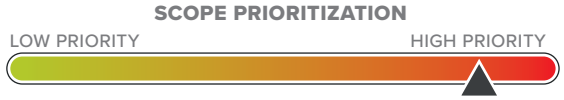
Deficiencies:

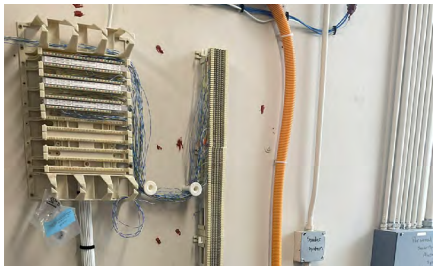
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.







Existing Voice Patching.

Existing Grounding.

Existing Data Patching.

Existing Telecom Rack.

TELECOMMUNICATIONS ROOM – N2-319A – WITHIN 3N2

This room is shared with electrical equipment. A floor mounted two post half rack is present and includes a rack mount fiber cabinet, copper patch panels with cable management, network switches and a UPS. Behind the rack on the wall are the 110 blocks. This room has no dedicated environmental controls.

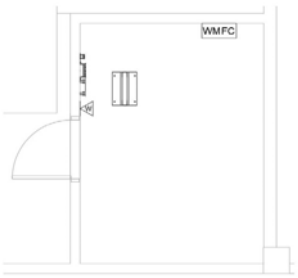
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

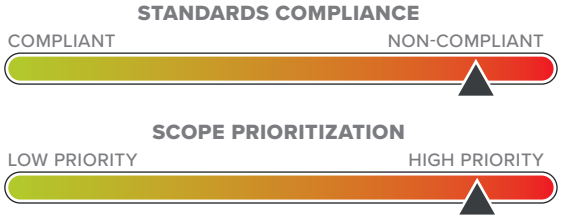
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

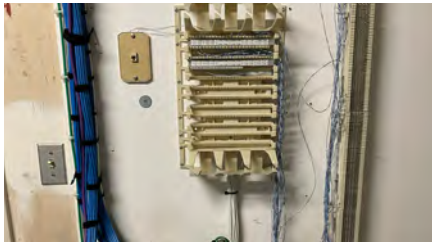
Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.



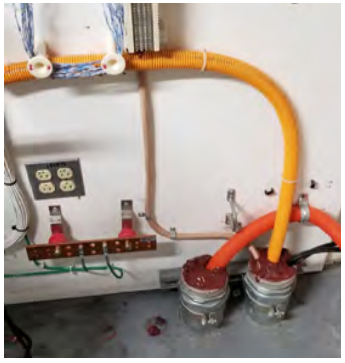


Existing Horizontal Cabling.

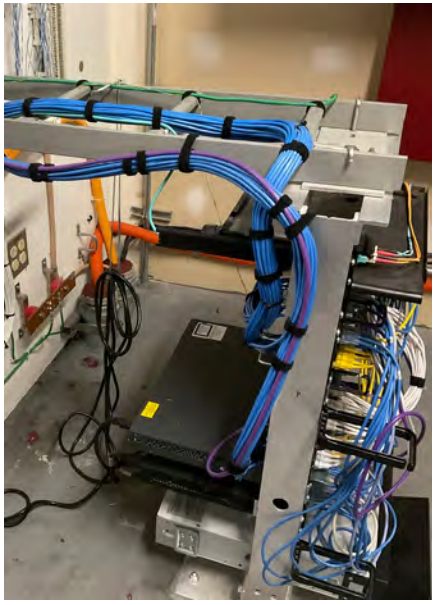


Existing Voice Patching.

Existing Data Patching.



Existing Grounding.

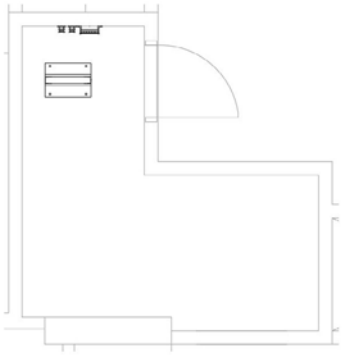


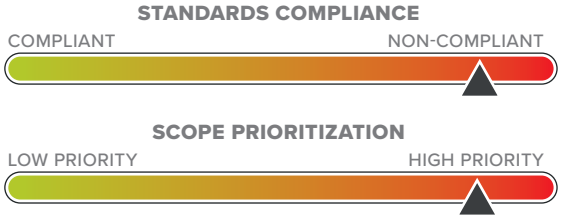
Existing Telecom Rack.

TELECOMMUNICATIONS ROOM – TR-353 – WITHIN 3N3

This room is shared with electrical equipment. A floor mounted two post half rack is present and includes a rack mount fiber cabinet, copper patch panels with cable management, network switches and a UPS. Behind the rack on the wall are the 110 blocks. This room has no dedicated environmental controls.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.



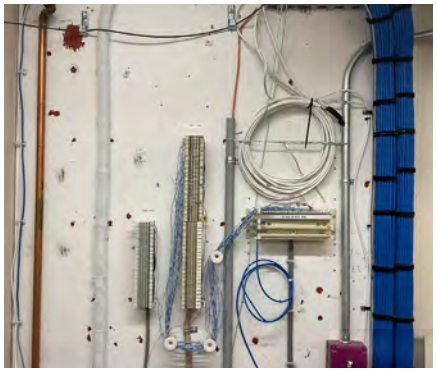


Deficiencies:

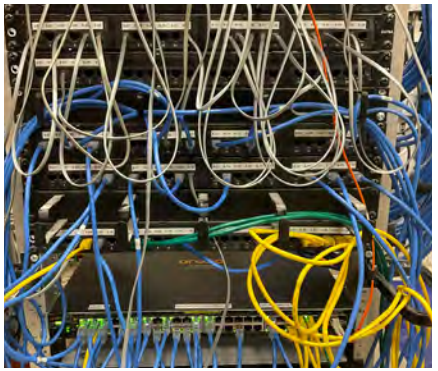
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.



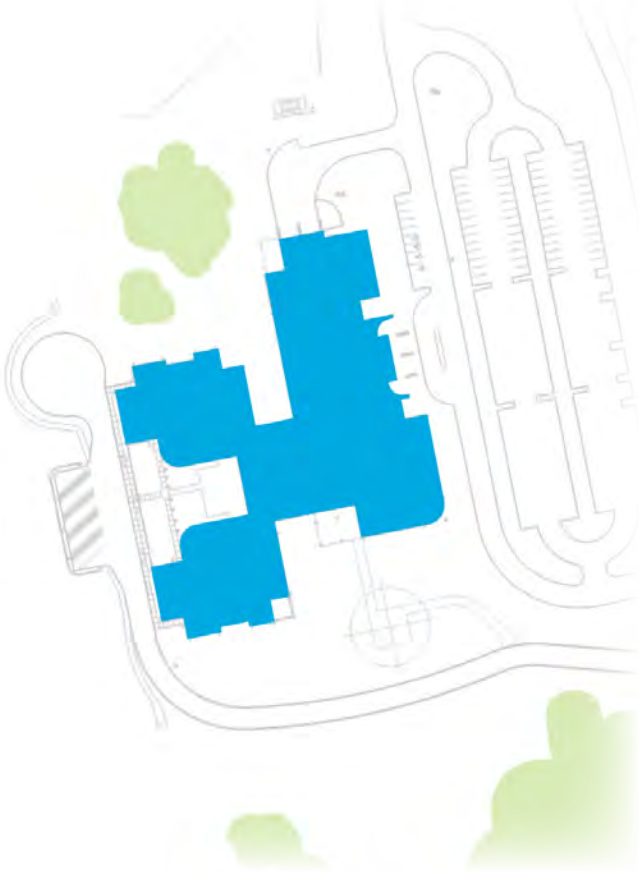
Existing Voice Patching.



Existing Voice and Data Patching.

Existing Telecom Rack.

Existing Category 5e Cabling.



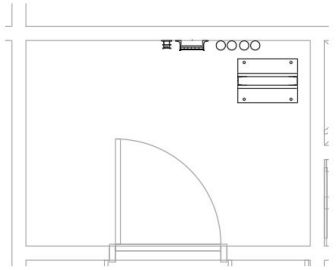
STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

WESTLAKE HOSPITAL BUILDING



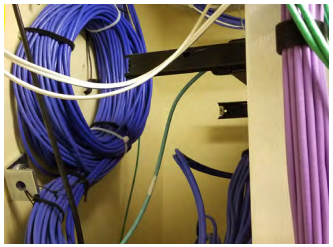
TELECOMMUNICATIONS ROOM – TR-A145

Provides connectivity for Pod A – This room is shared with electrical equipment. A floor mounted two post full height rack is present and includes multiple rack mount fiber cabinets, copper patch panels with cable management, network switches and a small UPS. Behind the rack on the wall are the 110 blocks. This room has no dedicated environmental controls.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space. A properly sized UPS should be provided to protect equipment.

Deficiencies:

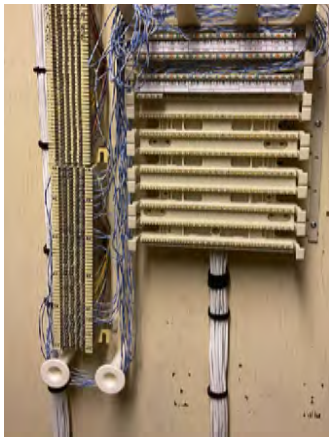
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.



Existing Category 5e Cabling.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- UPS should be replaced with a properly sized UPS to handle the electrical load and duration.



Existing Voice Patching.

TELECOMMUNICATIONS ROOM – TR-B145

Provides connectivity for Pod B – This room is shared with electrical equipment. A floor mounted two post full height rack is present and includes multiple rack mount fiber cabinets, copper patch panels with cable management, network switches and a small UPS. Behind the rack on the wall are the 110 blocks. This room has no dedicated environmental controls.

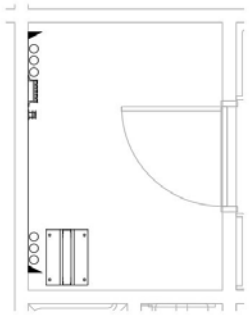
Deficiencies:

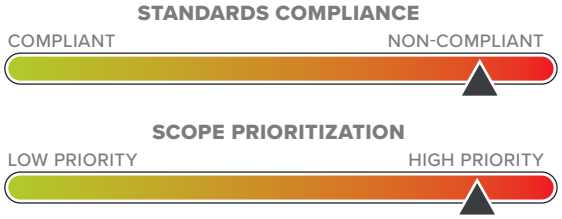
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space. A properly sized UPS should be provided to protect equipment.

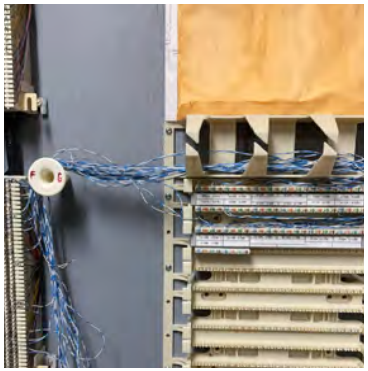
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

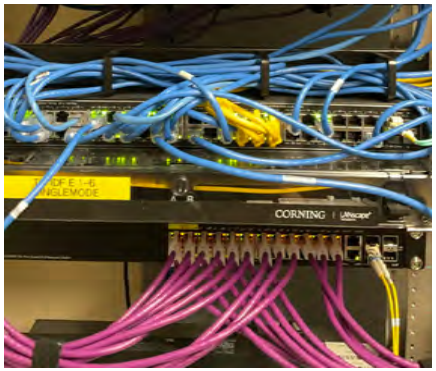
- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- UPS should be replaced with a properly sized UPS to handle the electrical load and duration.







Existing Voice Patching.



Existing Data Patching.

Existing Telecom Rack.

Existing Grounding.

TELECOMMUNICATIONS ROOM – TR-C118

Provides connectivity for Pod C –A floor mounted two post half rack is present and includes a rack mount fiber cabinet, copper patch panels and cable management, network switch and UPS on the floor next to the rack. Behind the rack on the wall mounted to plywood 110 blocks are also present. This closet includes insufficient dedicated environmental controls.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space. A properly sized UPS should be provided to protect equipment.

Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

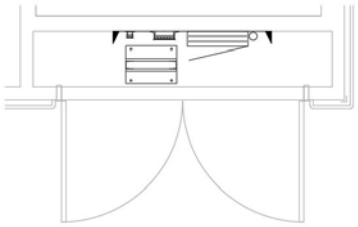
- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- UPS should be replaced with a properly sized UPS to handle the electrical load and duration.

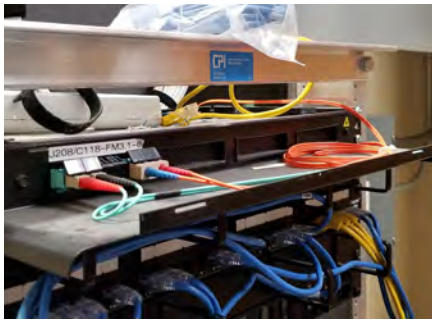
STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY





Existing Mismatch Fiber Patching.

Existing Cabling.

Existing Telecom Rack.

TELECOMMUNICATIONS CLOSET – TR-D245

Provides connectivity for Pod D – This room is shared with electrical equipment. A floor mounted two post full height rack is present and includes multiple rack mount fiber cabi copper patch panels with cable management, network switches and a small UPS. Behind rack on the wall are the 110 blocks. This room has no dedicated environmental controls.

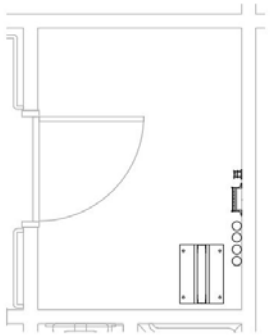
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space. A properly sized UPS should be provided to protect equipment.

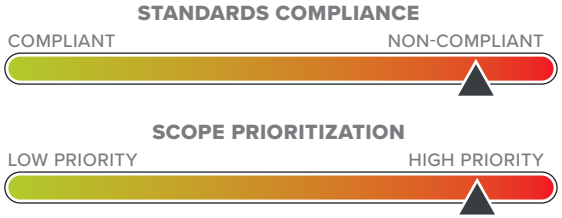
Deficiencies:

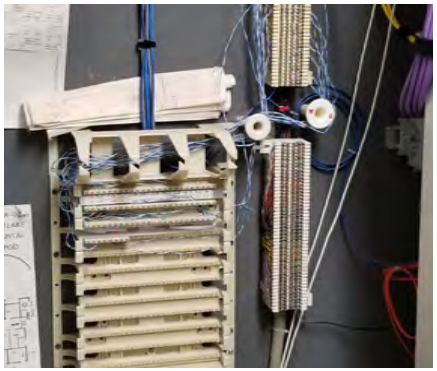
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

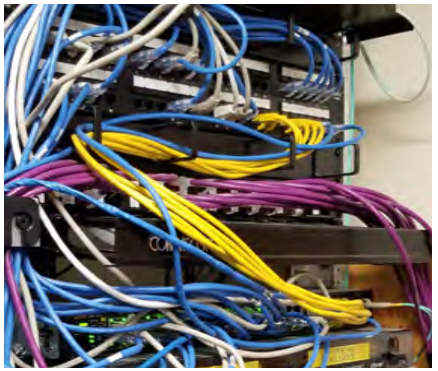
- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- UPS should be replaced with a properly sized UPS to properly handle the electrical load and duration.



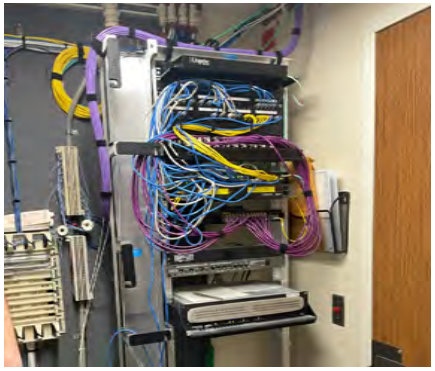




Existing Voice Patching.



Existing Cabling.



Existing Telecom Rack.

Existing Fiber Cabinet.

TELECOMMUNICATIONS CLOSET – TR-E245

Provides connectivity for Pod E – This room is shared with electrical equipment. A floor mounted two post full height rack is present and includes multiple rack mount fiber cabinets, copper patch panels with cable management, network switches and a small UPS. Behind the rack on the wall are the 110 blocks. This room has no dedicated environmental controls.

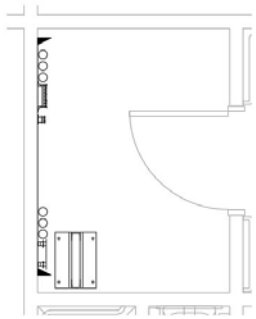
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space. A properly sized UPS should be provided to protect equipment.

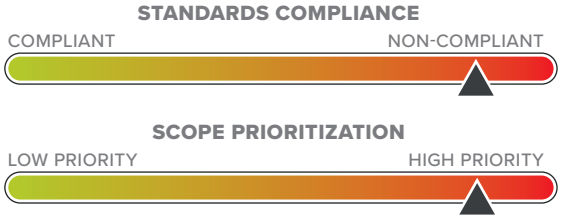
Deficiencies:

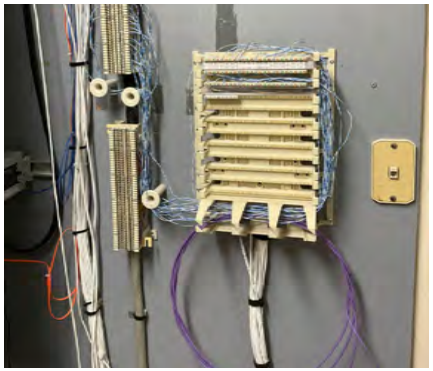
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- UPS should be replaced with a properly sized UPS to properly handle the electrical load and duration.

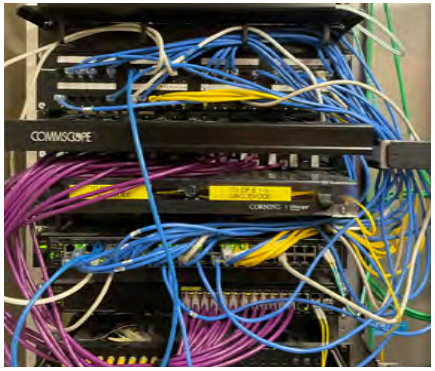






Existing Voice Patching.

Existing Data Patching.

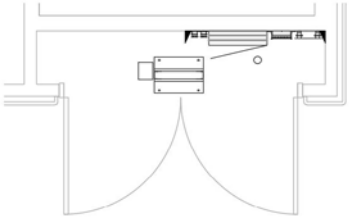


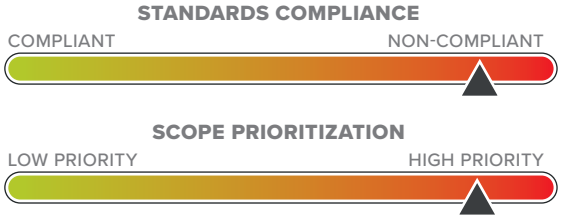
Existing Telecom Rack.

Existing Fiber Patching Mismatch.

TELECOMMUNICATIONS CLOSET – TR-J208

Services the central section of the building – A floor mounted two post full height rack is present and includes multiple rack mount fiber cabinets, copper patch panels with cable management, network switches and a small UPS. Behind the rack on the wall are the 110 blocks. This room has no dedicated environmental controls. Closet is limited on space and includes non telecommunications equipment.





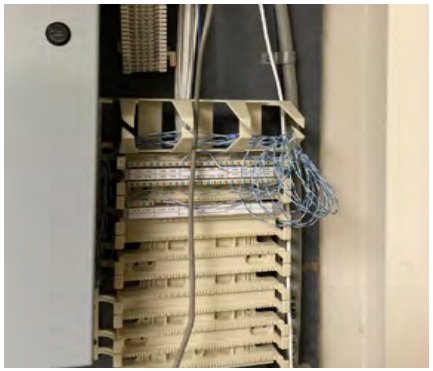
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space. A properly sized UPS should be provided to protect equipment.

Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

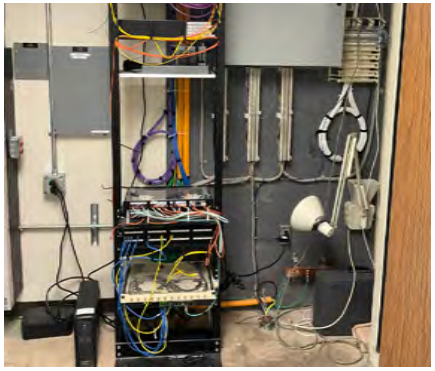
Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- UPS should be replaced with a properly sized UPS to properly handle the electrical load and duration.

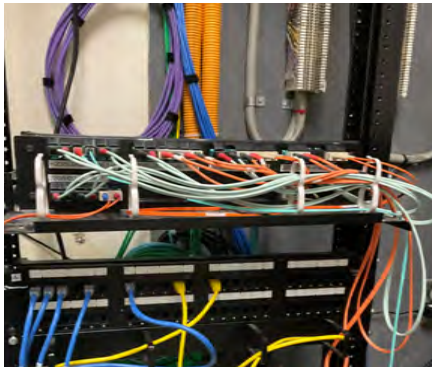


Existing Voice Patching.

Existing Grounding.



Existing Telecom Rack.



Existing Fiber Patching.

TELECOMMUNICATIONS ROOM – TR-F223

Services the F section of the building – This room is shared with electrical equipment. Very little space is available for expansion. A wall mounted two post half rack is present and includes multiple rack mount fiber cabinets, copper patch panels with cable management, network switches. Below the rack on the wall are the 110 blocks. A floor mounted UPS is present. This room has no dedicated environmental controls.

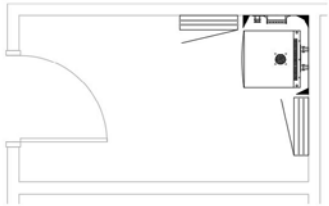
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space. A properly sized UPS should be provided to protect equipment.

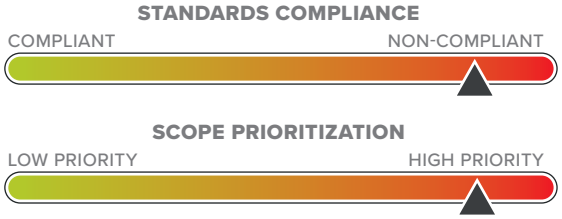
Deficiencies:

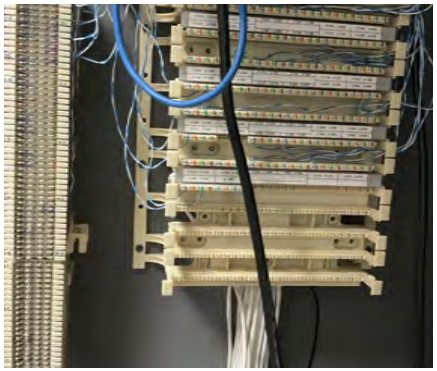
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

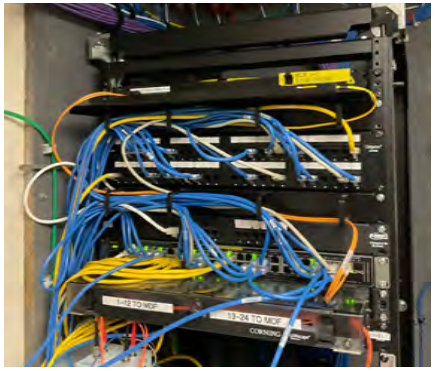
- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.



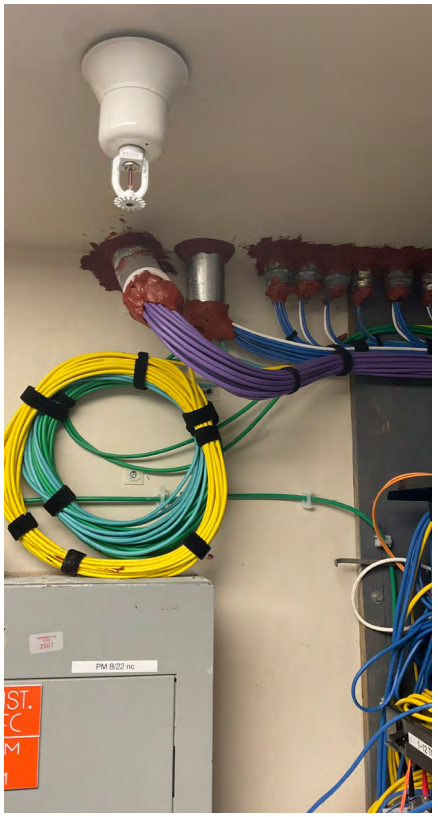




Existing Voice Patching.



Existing Telecom Rack.



Existing Cabling.

TELECOMMUNICATIONS ROOM – TR-G285

Covering the central section offices – This closet is shared with electrical equipment. A floor mounted two post half rack is present and includes multiple rack mount fiber cabinets, copper patch panels with cable management, network switches and a small UPS. Behind the rack on the wall are the 110 blocks. This room has no dedicated environmental controls. Closet is limited on space and includes non telecommunications equipment.

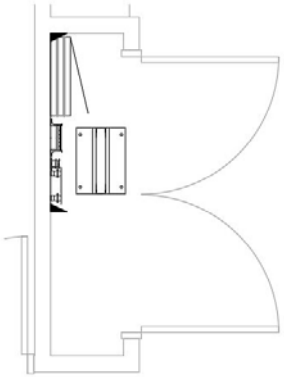
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space. A properly sized UPS should be provided to protect equipment.

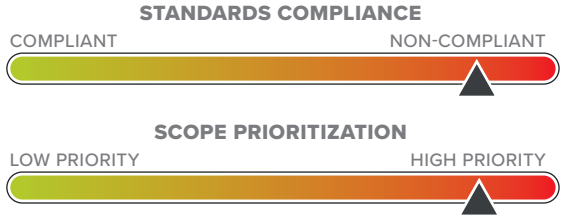
Deficiencies:

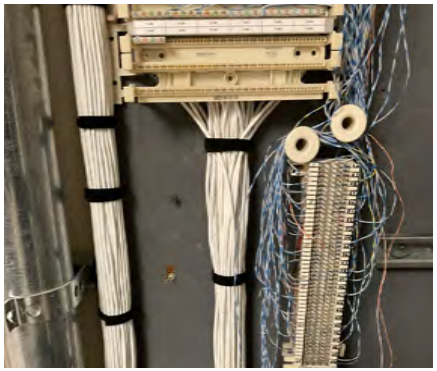
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

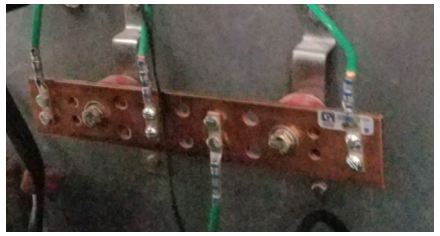
- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- UPS should be replaced with a properly sized UPS to properly handle the electrical load and duration.





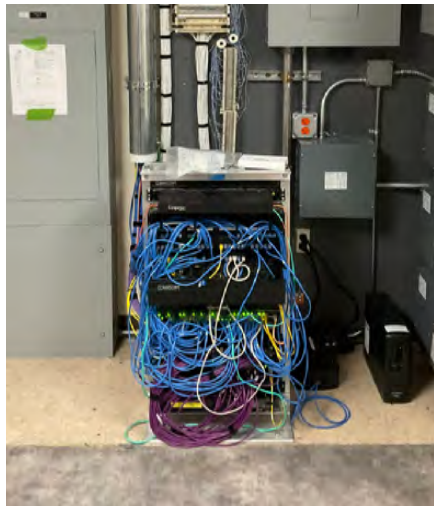


Existing Voice Patching.



Existing Grounding.

Existing Data Patching.

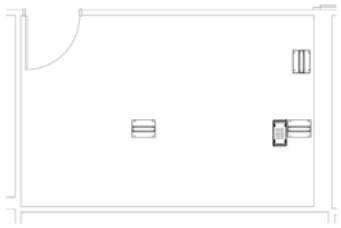


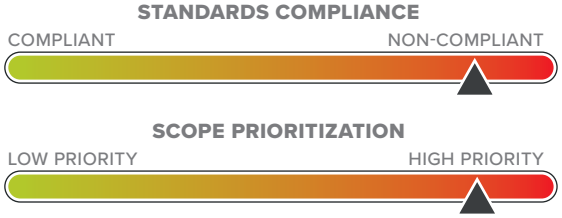
Existing Telecom Room.

TELECOMMUNICATIONS ROOM – TR-H235

MC for the building – Dedicated TR which includes equipment racks and equipment cabinets for which the main rack includes the rack mount fiber cabinets, network switches, copper patch panels, and UPS. There is also a workstation, phone system equipment and the main cross connect 110 blocks, and a ladder rack servicing much of the room.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space. A properly sized UPS should be provided to protect equipment.





Deficiencies:

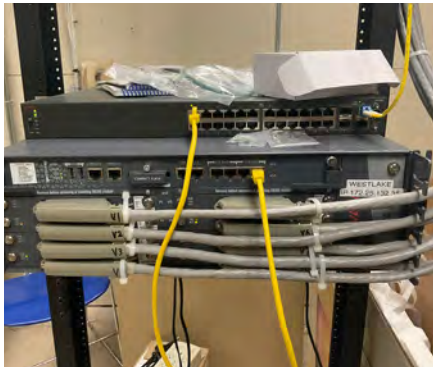
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.

Recommendations:

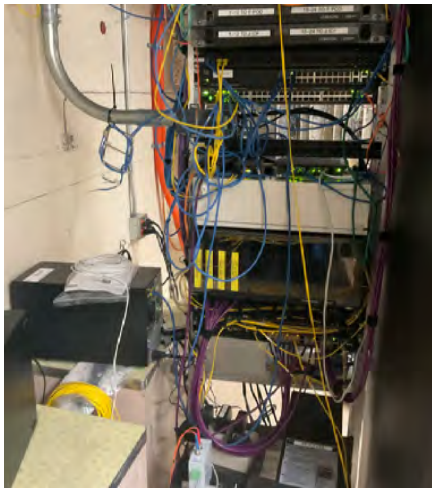
- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add power circuits and receptacles as needed.

Existing Voice Patching.

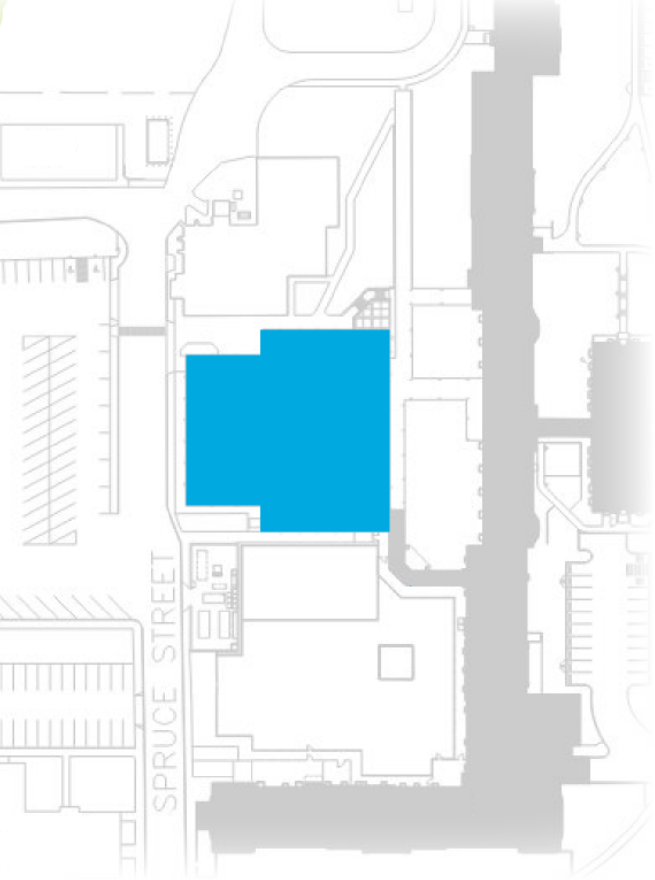
Existing Fiber Cabinets.



Existing Phone Headend.



Existing Telecom Rack.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

KITCHEN & DINING

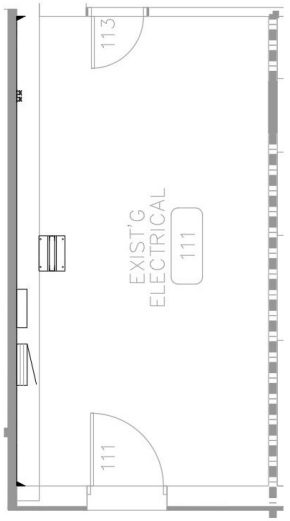
TELECOMMUNICATIONS ROOM – TR-111

Located in the basement, this TR provides the sole telecommunications space for the building. This space is shared with electrical equipment though space exists to allow for some expansion. A full height two post rack is present and includes a rack mount fiber cabinet, copper patch panels and associated cable management, a network switch, and a small UPS. A series of 110 blocks are mounted on the wall nearby.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/ OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. It is also recommended to provide a telecommunications grounding busbar to create a consistent potential across all components. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

Deficiencies:

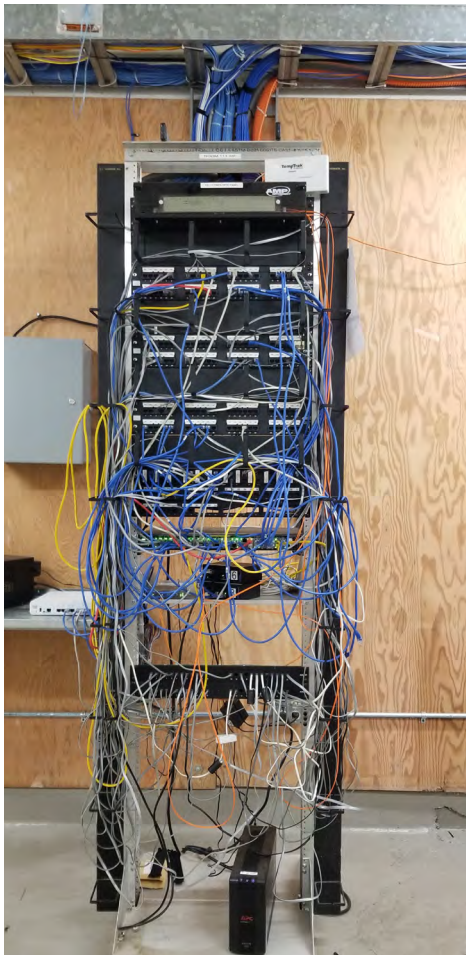
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- No grounding busbar for the telecommunications equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.



Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar if needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- UPS should be replaced with a ups sized to properly handle the electrical load and duration.

TELECOMMUNICATIONS ROOM – TR-111

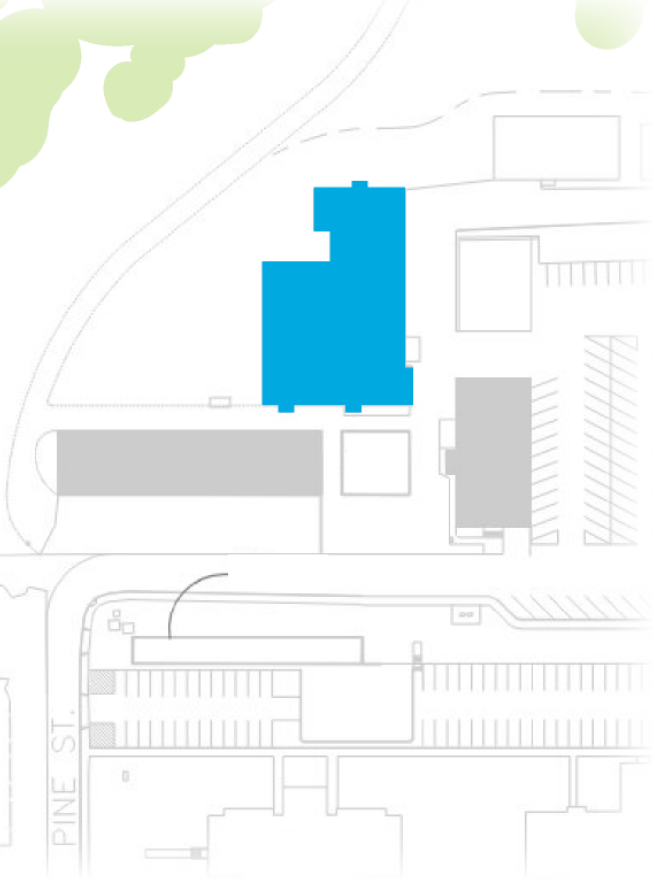


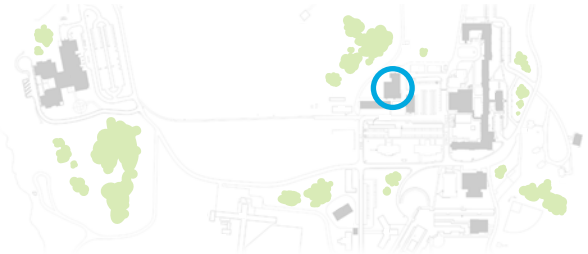
Existing Telecom Rack

Existing Data and Voice Patching

Existing Fiber Cabinet.

Existing Voice Patching.





STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

COMMISSARY (BUILDING 7)

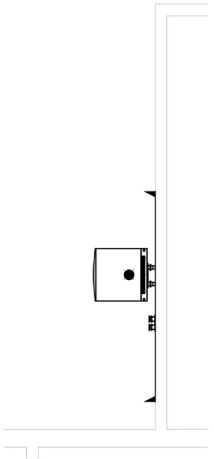
TELECOMMUNICATIONS ROOM – TR-10

Located on a wall within the warehouse area. A half rack equipment cabinet is present and includes the rack mount fiber cabinet, Copper patch panel and cable management, network switches, and a small UPS. On the backplane of the cabinet and next to the cabinet are the 110 blocks.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/ OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. It is also recommended to provide a telecommunications grounding busbar to create a consistent potential across all components. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

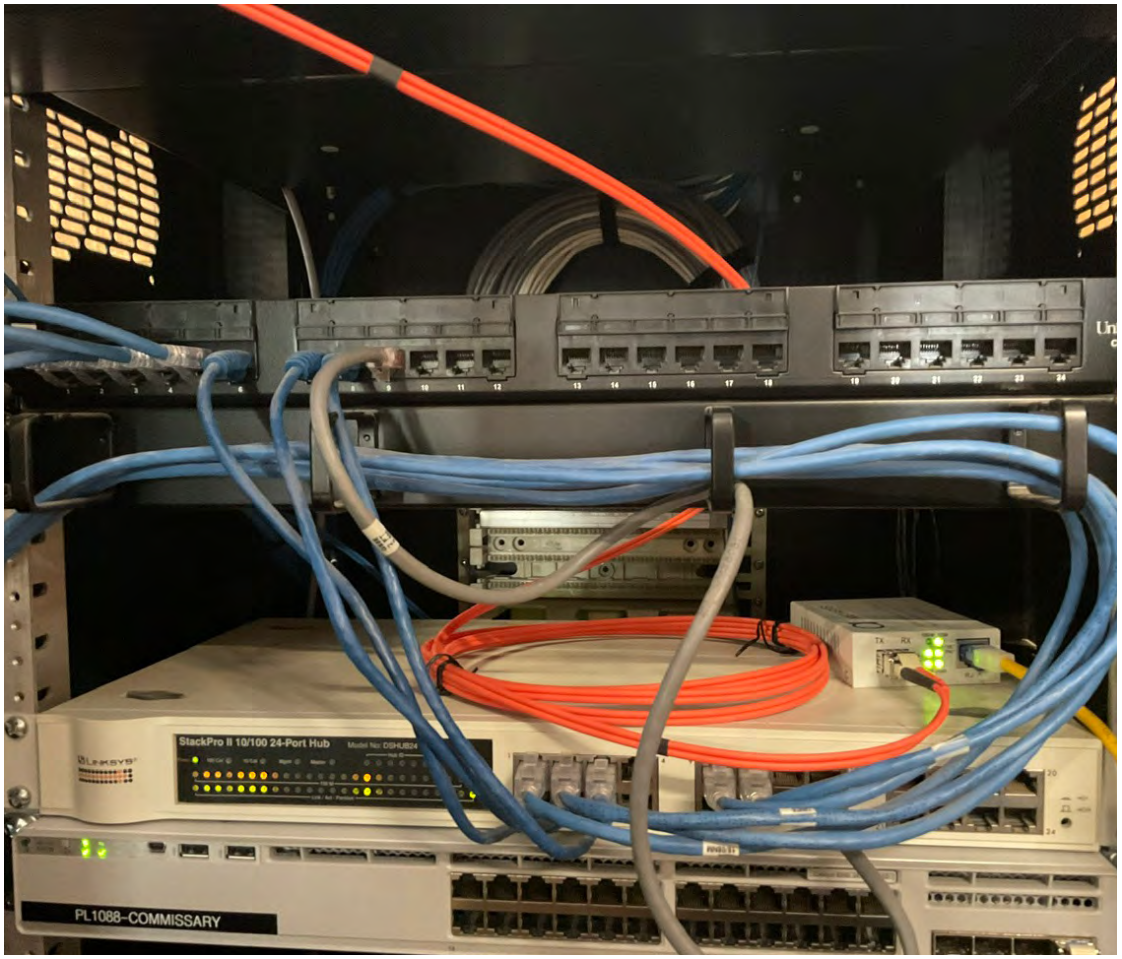


Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar if needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- UPS should be replaced with a ups sized to properly handle the electrical load and duration.

COMMISSARY (BUILDING 7)

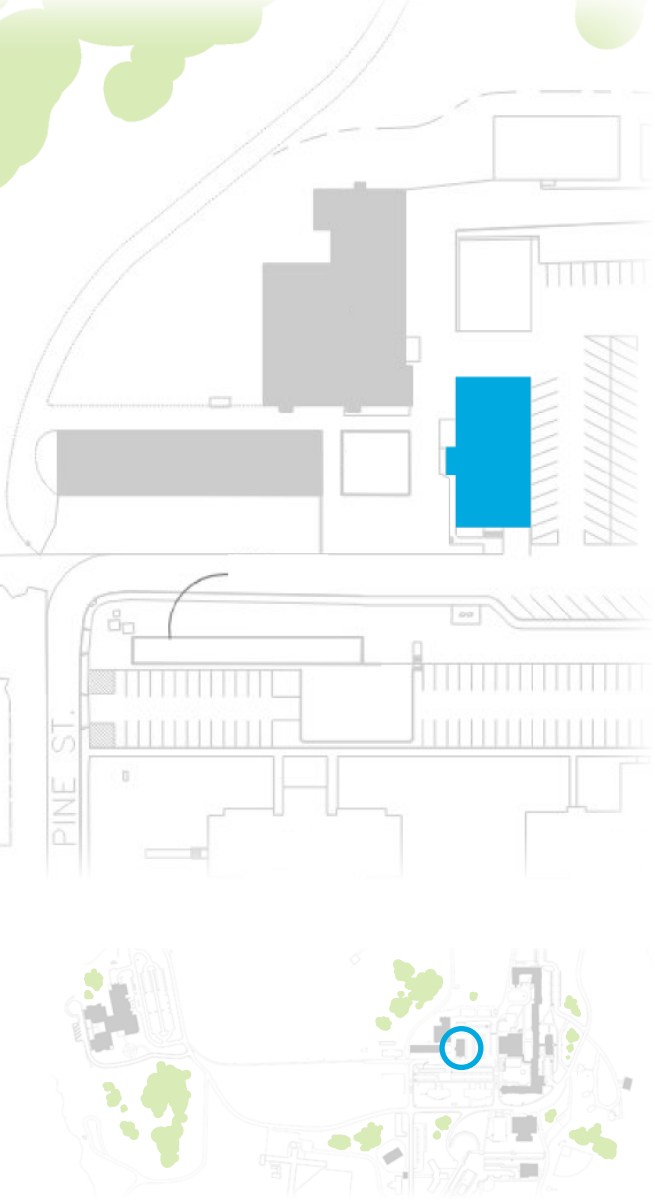
TELECOMMUNICATIONS ROOM – TR-10



Existing Telecom Enclosure

Existing Grounding.

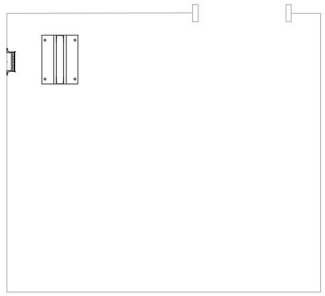
Existing Voice Patching.

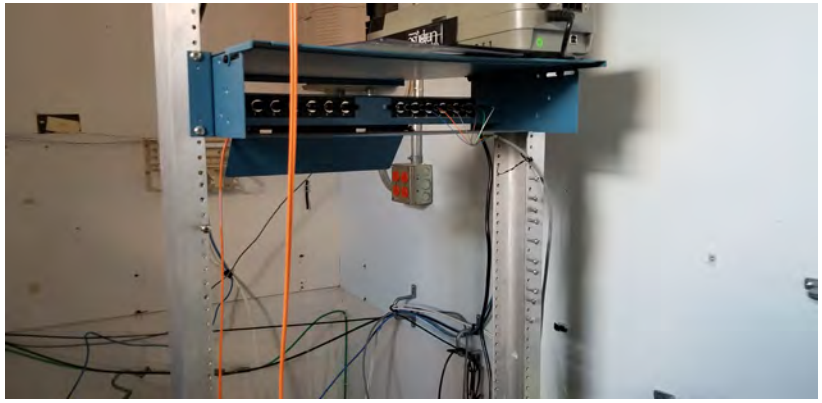


MOTOR POOL (BUILDING 9)

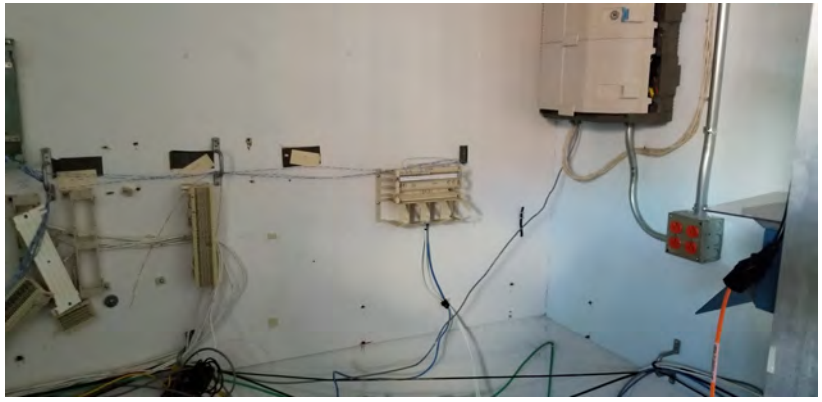
TELECOMMUNICATIONS ROOM – TR-B15

The building is decommissioned and the TR has been mostly demolished.

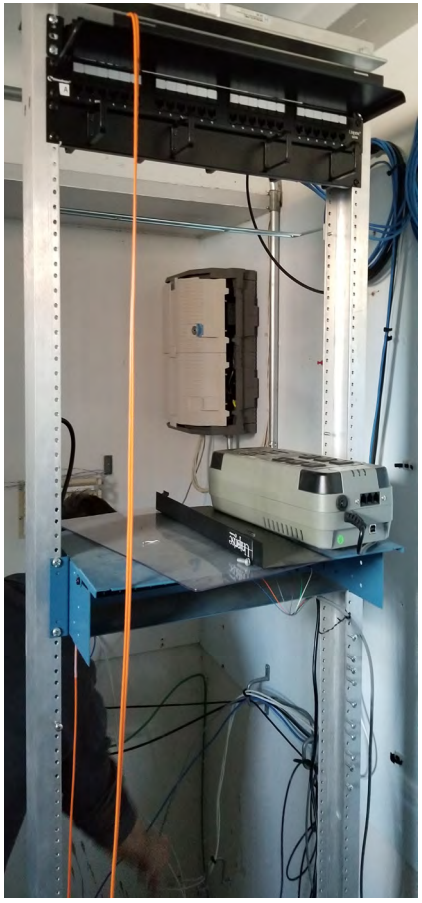




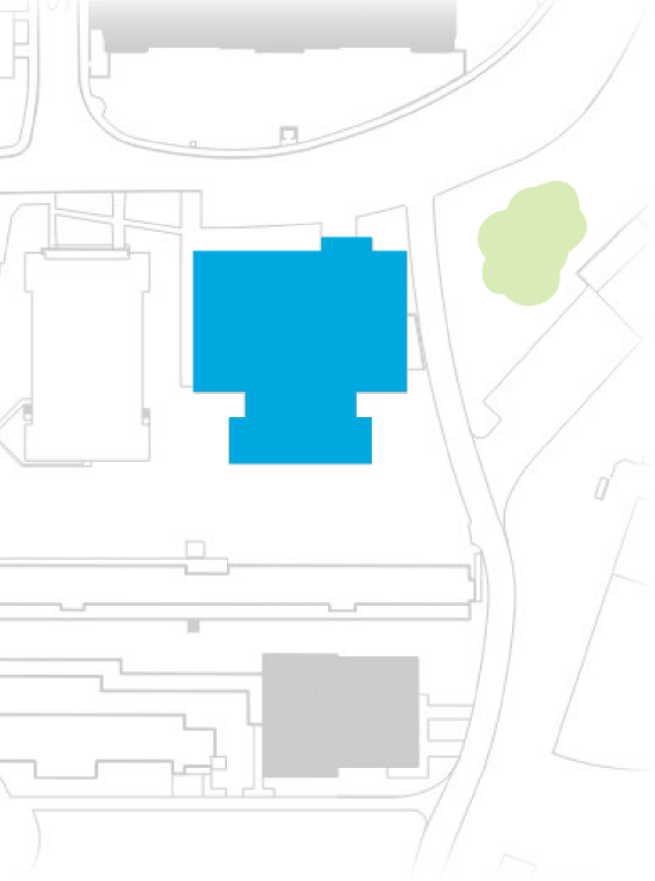
Existing fiber Cabinet.



Existing Voice Patching.



Existing Telecom Rack.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

ACTIVITY THERAPY BUILDING

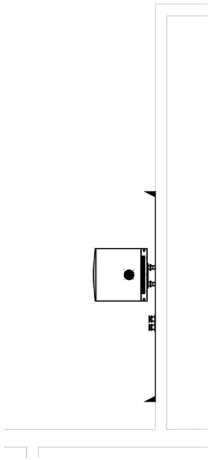
TELECOMMUNICATIONS CLOSET – TR-018

Located within a small closet on the lower level. A full height two post rack is present and includes the rack mount fiber cabinet, copper patch panel and associated cable management, and the Network switch. On the wall next to the rack the 110 Blocks are mounted to the plywood. This room does not include dedicated environmental controls.

To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/ OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. It is also recommended to provide a telecommunications grounding busbar to create a consistent potential across all components. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

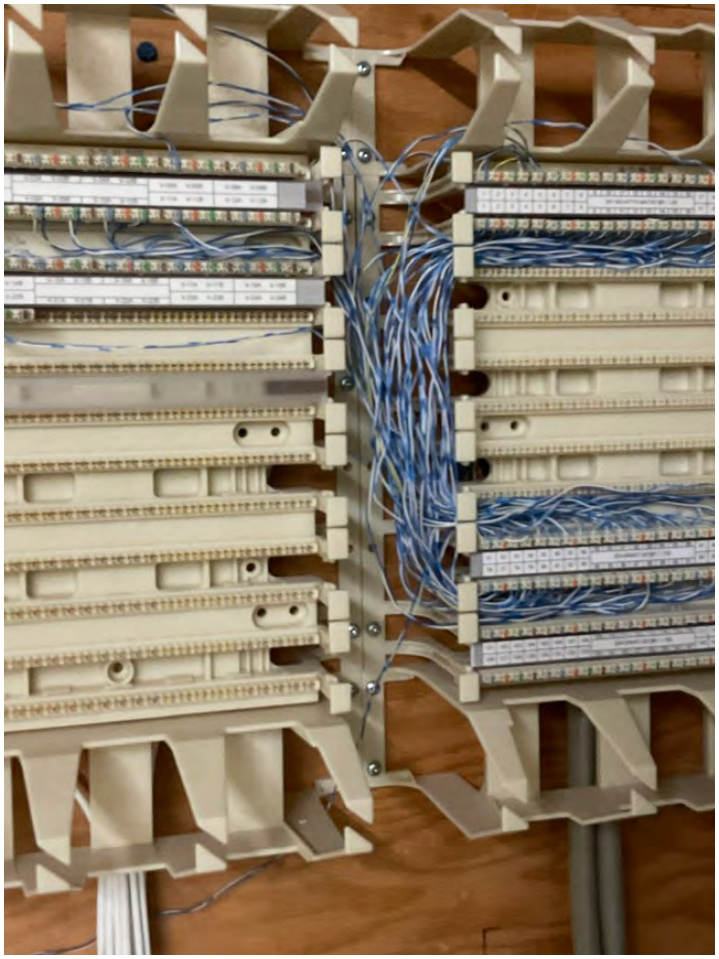


Recommendations:

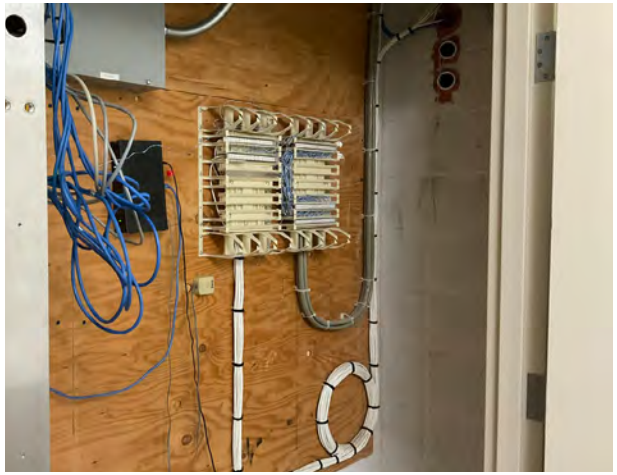
- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- A properly sized UPS should be installed.

ACTIVITY THERAPY BUILDING

TELECOMMUNICATIONS CLOSET – TR-018



Existing Voice Patching.

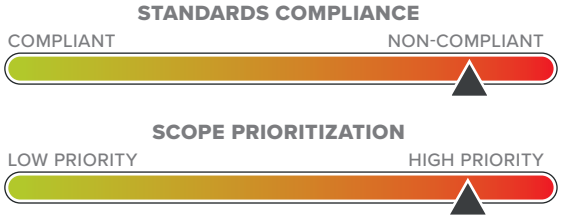


Existing Telecom Rack.

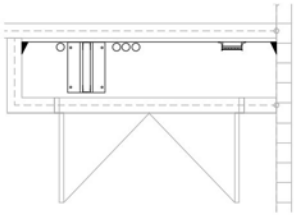
Existing Mismatch Fiber Patching.

TELECOMMUNICATIONS CLOSET – TR-120B

Located within a small closet on the first floor. A full height two post rack is present and includes the rack mount fiber cabinet, copper patch panel and associated cable management, the Network switch, and a UPS. On the wall next to the rack the 110 Blocks are mounted to the plywood. This room does not include dedicated environmental controls.



To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. It is also recommended to provide a telecommunications grounding busbar to create a consistent potential across all components. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.



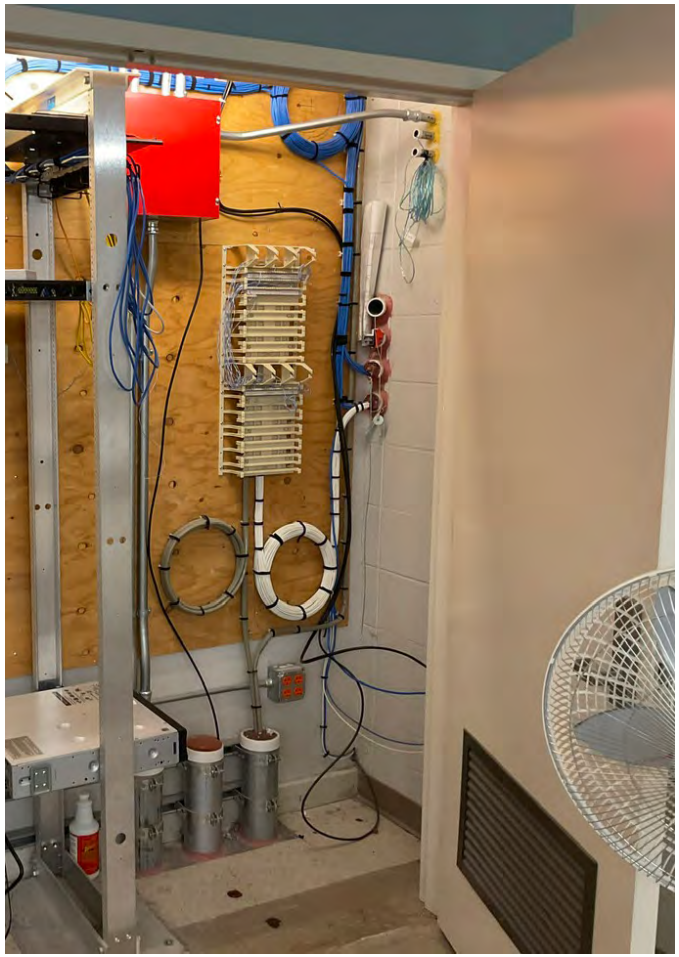
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- UPS should be replaced with a ups sized to properly handle the electrical load and duration.

TELECOMMUNICATIONS CLOSET – TR-120B



Existing Telecom Rack.

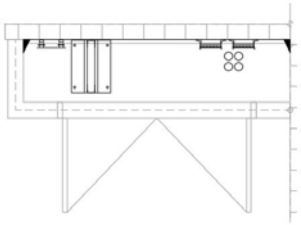
Existing Voice Patching.

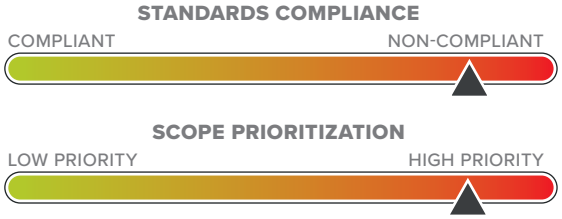
Existing Data Patching.

Existing Fiber Cabinet.

TELECOMMUNICATIONS CLOSET – TR-217A

Located on the second floor within a small closet. A full height two post rack is present and includes the rack mount fiber cabinet, copper patch panel and associated cable management, and the Network switch. On the wall next to the rack the 110 Blocks are mounted to the plywood. This room does not include dedicated environmental controls.





To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

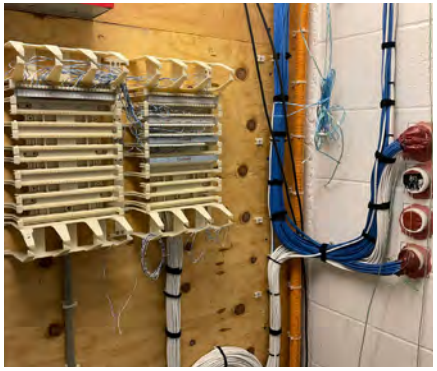
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

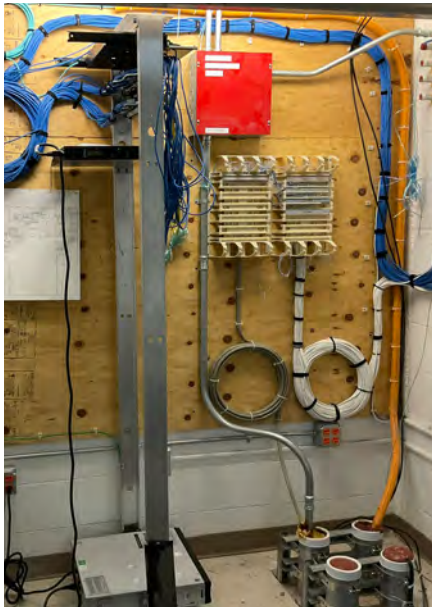
Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.

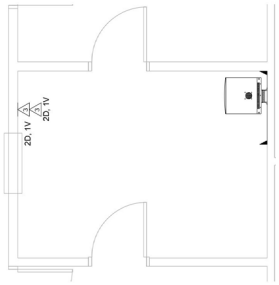
Existing Data Patching.



Existing Voice Patching.



Existing Telecom Rack.



SUPERINTENDENT'S HOUSE

NO DEDICATED TR

THERAPY POOL

TELECOMMUNICATIONS ROOM – TR-THERAPY POOL

The Therapy pool building has been converted into storage. The TR is located in a wall mounted cabinet within an adjoining room next to what was the pool manager's office. The cabinet includes a rack mount fiber cabinet, copper patch panel and associated cable management, and a network switch. A 110 block is located on the backplane of the cabinet. No dedicated environmental controls.

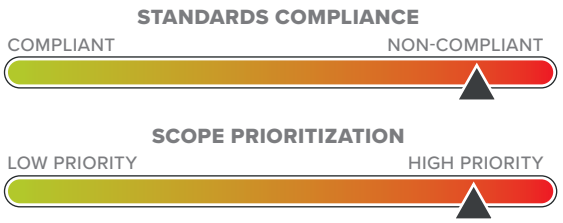
To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling to OM4/ OS2 and Category 6A. Additional Category 6A data ports are required to meet standards. It is also recommended to provide a telecommunications grounding busbar to create a consistent potential across all components. Dedicated cooling, ladder rack, cable management, and dedicated equipment receptacles are required to meet standards. The addition of card-based access control is recommended to control access and track access to the space.

Deficiencies:

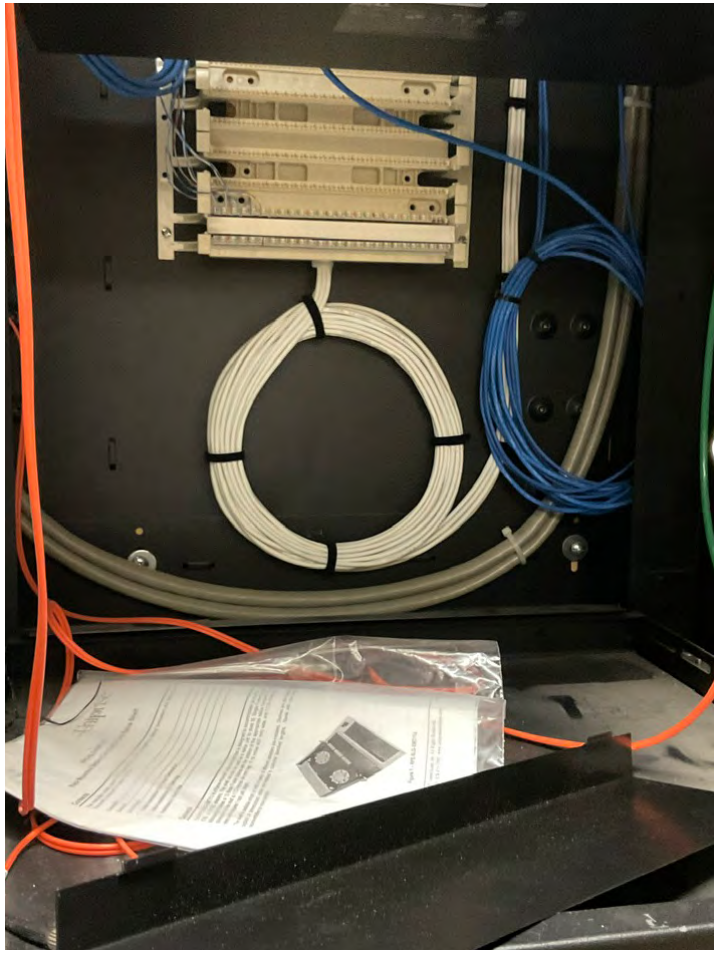
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No grounding busbar for the telecommunications equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.
- Uncontrolled access to space with no identity verification.

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber
  backbone from ESH MER in the Admin Building.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar.
- Add ductless split-system cooling unit.
- Add power circuits and receptacles as needed.
- A properly sized UPS should be installed.



THERAPY POOL
TELECOMMUNICATIONS ROOM – TR-THERAPY POOL



Existing Voice Patching.

Existing Telecom Enclosure.

WATER TANK (NORTH OF CAMPUS)

NO ROOM NUMBER - TR

Primarily dedicated to radio equipment and connected via copper this TR is located within a small building next to the water tank.

FUEL ISLAND

NO ROOM NUMBER - TR

Located within the open garage within a small wooden cabinet. Includes a small fiber optic media convertor to communicate with the local fuel control system.

APPENDIX A: FULL COST OPINIONS

telecommunications **cost opinion**

HARGIS
1201 third avenue, ste 600
seattle, washington 98101
206.448.3376

www.hargis.biz

Telecommunications Infrastructure Assessment Recommendations
Eastern State Hospital

BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

telecommunications summary			subtotal	OH&P	total
Building 1 - Administration			$ 393,830	$ 59,075	$ 452,905
Building 2 - Main Hospital			$ 3,062,280	$ 459,342	$ 3,521,622
Building 3 - Kitchen & Dining			$ 192,072	$ 28,811	$ 220,883
Building 7 - Commissary			$ 188,829	$ 28,324	$ 217,153
Building 20 - Activity Therapy			$ 588,460	$ 88,269	$ 676,729
Building 27 - Westlake Hospital			$ 2,451,357	$ 367,704	$ 2,819,061
Building 74 - Therapy Pool			$ 317,425	$ 47,614	$ 365,039
Sub-Total			$ 7,194,253	$ 1,079,138	$ 8,273,392
General Contractor OH&P	**15%**				$ 1,241,009
Escalation	**7%**				$ 86,871
Total					**$ 9,601,271**

EXCLUSIONS

1 - Design contingency

2 - Sales Tax

telecommunications **cost opinion**

Building 1 - Administration Building

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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seattle, washington 98101
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
DIVISION 27									
LOW-VOLTAGE SYSTEMS - DIVISIONS 27									
General Provisions (Submittals, Mobilization, Permits)	1	LS	5,486.08	5,486	$ 10,972	$ 10,972	$ 16,458	$ 2,469	$ 18,927
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	11,542.70	11,543	$ -	$ -	$ 11,543	$ 1,731	$ 13,274
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	24	EA	150.00	3,600	50.00	1,200	4,800	720	5,520
Rack Mount Fiber Cabinet - 4RU	1	EA	390.00	390	110.00	110	500	75	575
Rack Mount Fiber Cabinet - 2RU	3	EA	300.00	900	110.00	330	1,230	185	1,415
Ladder Rack	30	LF	7.50	225	20.00	600	825	124	949
Ventilated Rack	3	EA	7,500.00	22,500	800.00	2,400	24,900	3,735	28,635
Demolish Defunct Infrastructure After System Cutover	1	LS			8,000.00	8,000	8,000	1,200	9,200
12 Strand Singlemode Plenum Rated OFC	360	LF	.94	337	.05	18	355	53	408
12 Strand Multimode Plenum Rated OFC	360	LF	1.25	450	.05	18	468	70	538
Telecommunications Device - 4-Port	60	EA	1,100.00	66,000	473.67	28,420	94,420	14,163	108,583
Telecommunications Device - 4-Port - Existing	45	EA	1,100.00	49,500	473.67	21,315	70,815	10,622	81,438
CAT 6A Quickport Connector	480	EA	36.16	17,355	25.00	12,000	29,355	4,403	33,758
CAT 6A Quickport Connector - Existing	360	EA	36.16	13,016	26.00	9,360	22,376	3,356	25,733
CAT 6A Patch Panel	9	EA	320.11	2,881	150.00	1,350	4,231	635	4,866
Copper 6-port Empty Cassette	72	EA	100.00	7,200	50.00	3,600	10,800	1,620	12,420
Telecom Room - Electrical Improvements	3	EA	4,000.00	12,000	2,500.00	7,500	19,500	2,925	22,425

telecommunications **cost opinion**

Building 1 - Administration Building

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

HARGIS
1201 third avenue, ste 600
seattle, washington 98101
206.448.3376

www.hargis.biz

BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
Telecom Room - HVAC - Ductless Split System	3	EA	7,500.00	22,500	1,500.00	4,500	27,000	4,050	31,050
Pathway per Drop	60	EA	200.00	12,000	150.00	9,000	21,000	3,150	24,150
Subtotal Low-Voltage Systems (Divisions 27)							368,577	55,286	423,863
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	288.63	289	577.26	577	866	129.88	996
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	521.80	522			522	78.27	600
Raceway, Cabling Supports and Outlet Boxes	3	EA	200.00	600	200.00	600	1,200	180	1,380
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800.00	2,800	680.00	680	3,480	522	4,002
Door Controller - 2-Door	2	EA	535.00	1,070	85.00	170	1,240	186	1,426
Power Supply 10A/24V - 8-Door	1	EA	925.00	925	170.00	170	1,095	164	1,259
Portal Licenses	3	EA	100.00	300	50.00	150	450	68	518
Card Reader	3	EA	325.00	975	127.50	383	1,358	204	1,561
Electrified Hardware (Electrified Lock and Power Transfer)	3	EA	1,800.00	5,400	600.00	1,800	7,200	1,080	8,280
Request To Exit (REX)	3	EA	125.00	375	85.00	255	630	95	725
Wiring - Per Access Control Door	3	EA	400.00	1,200	700.00	2,100	3,300	495	3,795
Programming	1	LS			2,609.00	2,609	2,609	391	3,000
Engineering	1	LS			1,304.50	1,305	1,305	196	1,500
Subtotal Life Safety and Security Systems (Divisions 28)							25,254	3,788	29,042

telecommunications **cost opinion**

Building 2 - Main Hospital

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

HARGIS
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
DIVISION 27									
LOW-VOLTAGE SYSTEMS - DIVISIONS 27									
General Provisions (Submittals, Mobilization, Permits)	1	LS	42,770.55	42,771	$ 85,541	$ 85,541	$ 128,312	$ 19,247	$ 147,558
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	93,174.10	93,174	$ -	$ -	$ 93,174	$ 13,976	$ 107,150
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	17	EA	12,000.00	204,000	2,500.00	42,500	246,500	36,975	283,475
Adaptor Plates - LC ACP	76	EA	150.00	11,400	50.00	3,800	15,200	2,280	17,480
Rack Mount Fiber Cabinet - 4RU	3	EA	390.00	1,170	110.00	330	1,500	225	1,725
Rack Mount Fiber Cabinet - 2RU	16	EA	300.00	4,800	110.00	1,760	6,560	984	7,544
Ladder Rack	340	LF	7.50	2,550	20.00	6,800	9,350	1,403	10,753
2000VA UPS	17	EA	3,000.00	51,000	110.00	1,870	52,870	7,931	60,801
Demolish Defunct Infrastructure After System Cutover	1	LS			36,000.00	36,000	36,000	5,400	41,400
12 Strand Singlemode Plenum Rated OFC	8,110	LF	.94	7,591	.05	406	7,996	1,199	9,196
12 Strand Multimode Plenum Rated OFC	8,110	LF	1.25	10,138	.05	406	10,543	1,581	12,124
Telecommunications Device - 4-Port	463	EA	1,100.00	509,300	473.67	219,311	728,611	109,292	837,902
Telecommunications Device - 4-Port - Existing	394	EA	1,100.00	433,400	473.67	186,627	620,027	93,004	713,031
CAT 6A Quickport Connector	3,704	EA	36.16	133,922	25.00	92,600	226,522	33,978	260,500
CAT 6A Quickport Connector - Existing	3,152	EA	36.16	113,964	26.00	81,952	195,916	29,387	225,303
CAT 6A Patch Panel	72	EA	320.11	23,048	150.00	10,800	33,848	5,077	38,925
Copper 6-port Empty Cassette	576	EA	100.00	57,600	50.00	28,800	86,400	12,960	99,360
Telecom Room - Electrical Improvements	18	EA	4,000.00	72,000	2,500.00	45,000	117,000	17,550	134,550

telecommunications **cost opinion**

Building 2 - Main Hospital

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
Telecom Room - HVAC - Ductless Split System	18	EA	7,500.00	135,000	1,500.00	27,000	162,000	24,300	186,300
Pathway per Drop	463	EA	200.00	92,600	150.00	69,450	162,050	24,308	186,358
Subtotal Low-Voltage Systems (Divisions 27)							2,940,379	441,057	3,381,436
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	1,439.76	1,440	2,879.52	2,880	4,319	647.89	4,967
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,399.60	2,400			2,400	359.94	2,760
Raceway, Cabling Supports and Outlet Boxes	18	EA	200.00	3,600	200.00	3,600	7,200	1,080	8,280
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800.00	2,800	680.00	680	3,480	522	4,002
Door Controller - 2-Door	9	EA	535.00	4,815	85.00	765	5,580	837	6,417
Power Supply 10A/24V - 8-Door	1	EA	925.00	925	170.00	170	1,095	164	1,259
Power Supply 10A/24V - 16-Door	1	EA	1,950.00	1,950	255.00	255	2,205	331	2,536
Portal Licenses	18	EA	100.00	1,800	50.00	900	2,700	405	3,105
Card Reader	18	EA	325.00	5,850	127.50	2,295	8,145	1,222	9,367
Electrified Hardware (Electrified Lock and Power Transfer)	18	EA	1,800.00	32,400	600.00	10,800	43,200	6,480	49,680
Request To Exit (REX)	18	EA	125.00	2,250	85.00	1,530	3,780	567	4,347
Wiring - Per Access Control Door	18	EA	400.00	7,200	700.00	12,600	19,800	2,970	22,770
Programming	1	LS			11,998.00	11,998	11,998	1,800	13,798
Engineering	1	LS			5,999.00	5,999	5,999	900	6,899
Subtotal Life Safety and Security Systems (Divisions 28)							121,901	18,285	140,186

telecommunications **cost opinion**

Building 3 - Kitchen & Dining

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
DIVISION 27									
LOW-VOLTAGE SYSTEMS - DIVISIONS 27									
General Provisions (Submittals, Mobilization, Permits)	1	LS	2,745.10	2,745	$ 5,490	$ 5,490	$ 8,235	$ 1,235	$ 9,471
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	5,534.75	5,535	$ -	$ -	$ 5,535	$ 830	$ 6,365
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	8	EA	150.00	1,200	50.00	400	1,600	240	1,840
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000.00	2,000	2,000	300	2,300
12 Strand Singlemode Plenum Rated OFC	700	LF	.94	655	.05	35	690	104	794
12 Strand Multimode Plenum Rated OFC	700	LF	1.25	875	.05	35	910	137	1,047
Telecommunications Device - 4-Port	25	EA	1,100.00	27,500	473.67	11,842	39,342	5,901	45,243
Telecommunications Device - 4-Port - Existing	36	EA	1,100.00	39,600	473.67	17,052	56,652	8,498	65,150
CAT 6A Quickport Connector	200	EA	36.16	7,231	25.00	5,000	12,231	1,835	14,066
CAT 6A Quickport Connector - Existing	288	EA	36.16	10,413	26.00	7,488	17,901	2,685	20,586
CAT 6A Patch Panel	6	EA	320.11	1,921	150.00	900	2,821	423	3,244
Copper 6-port Empty Cassette	48	EA	100.00	4,800	50.00	2,400	7,200	1,080	8,280
Telecom Room - Electrical Improvements	1	EA	4,000.00	4,000	2,500.00	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500.00	7,500	1,500.00	1,500	9,000	1,350	10,350
Pathway per Drop	25	EA	200.00	5,000	150.00	3,750	8,750	1,313	10,063
Subtotal Low-Voltage Systems (Divisions 27)							179,367	26,905	206,272

telecommunications **cost opinion**

Building 3 - Kitchen & Dining

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	138.02	138	276.03	276	414	62.11	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280.40	280			280	42.06	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200.00	200	200.00	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800.00	2,800	680.00	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535.00	535	85.00	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925.00	925	170.00	170	1,095	164	1,259
Portal Licenses	1	EA	100.00	100	50.00	50	150	23	173
Card Reader	1	EA	325.00	325	127.50	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800.00	1,800	600.00	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125.00	125	85.00	85	210	32	242
Wiring - Per Access Control Door	1	EA	400.00	400	700.00	700	1,100	165	1,265
Programming	1	LS			1,402.00	1,402	1,402	210	1,612
Engineering	1	LS			701.00	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 7 - Commissary

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
DIVISION 27									
LOW-VOLTAGE SYSTEMS - DIVISIONS 27									
General Provisions (Submittals, Mobilization, Permits)	1	LS	3,363.85	3,364	$ 6,728	$ 6,728	$ 10,092	$ 1,514	$ 11,605
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,702.62	4,703	$ -	$ -	$ 4,703	$ 705	$ 5,408
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	8	EA	150.00	1,200	50.00	400	1,600	240	1,840
Ladder Rack	20	LF	7.50	150	20.00	400	550	83	633
Ventilated Rack	1	EA	7,500.00	7,500	800.00	800	8,300	1,245	9,545
2000VA UPS	1	EA	3,000.00	3,000	110.00	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000.00	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,800	LF	2.50	4,500	.05	90	4,590	689	5,279
12 Strand Multimode Outside Plant (OSP) OFC	1,800	LF	1.19	2,138	.05	90	2,228	334	2,563
Trenching	500	LF	7.50	3,750	15.00	7,500	11,250	1,688	12,938
(4)4"C w/ 3" 3-Cell Textile Innerduct	500	LF	61.40	30,700	71.00	35,500	66,200	9,930	76,130
Utility Vault (Medium)	1	EA	4,335.00	4,335	3,500.00	3,500	7,835	1,175	9,010
Telecommunications Device - 4-Port	11	EA	1,100.00	12,100	473.67	5,210	17,310	2,597	19,907
Telecommunications Device - 4-Port - Existing	4	EA	1,100.00	4,400	473.67	1,895	6,295	944	7,239
CAT 6A Quickport Connector	88	EA	36.16	3,182	25.00	2,200	5,382	807	6,189
CAT 6A Quickport Connector - Existing	32	EA	36.16	1,157	26.00	832	1,989	298	2,287
CAT 6A Patch Panel	2	EA	320.11	640	150.00	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100.00	1,600	50.00	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000.00	4,000	2,500.00	2,500	6,500	975	7,475

telecommunications **cost opinion**

Building 7 - Commissary

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
Telecom Room - HVAC - Ductless Split System	1	EA	7,500.00	7,500	1,500.00	1,500	9,000	1,350	10,350
Pathway per Drop	11	EA	200.00	2,200	150.00	1,650	3,850	578	4,428
Subtotal Low-Voltage Systems (Divisions 27)							176,124	26,419	202,542
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	138.02	138	276.03	276	414	62.11	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280.40	280			280	42.06	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200.00	200	200.00	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800.00	2,800	680.00	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535.00	535	85.00	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925.00	925	170.00	170	1,095	164	1,259
Portal Licenses	1	EA	100.00	100	50.00	50	150	23	173
Card Reader	1	EA	325.00	325	127.50	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800.00	1,800	600.00	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125.00	125	85.00	85	210	32	242
Wiring - Per Access Control Door	1	EA	400.00	400	700.00	700	1,100	165	1,265
Programming	1	LS			1,402.00	1,402	1,402	210	1,612
Engineering	1	LS			701.00	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 20 - Activity Therapy

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
DIVISION 27									
LOW-VOLTAGE SYSTEMS - DIVISIONS 27									
General Provisions (Submittals, Mobilization, Permits)	1	LS	10,243.44	10,243	$ 20,487	$ 20,487	$ 30,730	$ 4,610	$ 35,340
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	15,600.36	15,600	$ -	$ -	$ 15,600	$ 2,340	$ 17,940
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	24	EA	150.00	3,600	50.00	1,200	4,800	720	5,520
Rack Mount Fiber Cabinet - 2RU	3	EA	300.00	900	110.00	330	1,230	185	1,415
Ladder Rack	30	LF	7.50	225	20.00	600	825	124	949
2000VA UPS	2	EA	3,000.00	6,000	110.00	220	6,220	933	7,153
Demolish Defunct Infrastructure After System Cutover	1	LS			6,000.00	6,000	6,000	900	6,900
12 Strand Singlemode Outside Plant (OSP) OFC	1,100	LF	2.50	2,750	.05	55	2,805	421	3,226
12 Strand Multimode Outside Plant (OSP) OFC	1,100	LF	1.19	1,307	.05	55	1,362	204	1,566
Trenching	900	LF	7.50	6,750	15.00	13,500	20,250	3,038	23,288
(4)4"C w/ 3" 3-Cell Textile Innerduct	900	LF	61.40	55,260	71.00	63,900	119,160	17,874	137,034
Utility Vault (Medium)	4	EA	4,335.00	17,340	3,500.00	14,000	31,340	4,701	36,041
Telecommunications Device - 4-Port	69	EA	1,100.00	75,900	473.67	32,683	108,583	16,288	124,871
Telecommunications Device - 4-Port - Existing	45	EA	1,100.00	49,500	473.67	21,315	70,815	10,622	81,438
CAT 6A Quickport Connector	552	EA	36.16	19,958	25.00	13,800	33,758	5,064	38,822
CAT 6A Quickport Connector - Existing	360	EA	36.16	13,016	26.00	9,360	22,376	3,356	25,733
CAT 6A Patch Panel	10	EA	320.11	3,201	150.00	1,500	4,701	705	5,406
Copper 6-port Empty Cassette	80	EA	100.00	8,000	50.00	4,000	12,000	1,800	13,800
Telecom Room - Electrical Improvements	3	EA	4,000.00	12,000	2,500.00	7,500	19,500	2,925	22,425

telecommunications **cost opinion**

Building 20 - Activity Therapy

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
Telecom Room - HVAC - Ductless Split System	3	EA	7,500.00	22,500	1,500.00	4,500	27,000	4,050	31,050
Pathway per Drop	69	EA	200.00	13,800	150.00	10,350	24,150	3,623	27,773
Subtotal Low-Voltage Systems (Divisions 27)							563,207	84,481	647,688
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	288.63	289	577.26	577	866	129.88	996
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	521.80	522			522	78.27	600
Raceway, Cabling Supports and Outlet Boxes	3	EA	200.00	600	200.00	600	1,200	180	1,380
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800.00	2,800	680.00	680	3,480	522	4,002
Door Controller - 2-Door	2	EA	535.00	1,070	85.00	170	1,240	186	1,426
Power Supply 10A/24V - 8-Door	1	EA	925.00	925	170.00	170	1,095	164	1,259
Portal Licenses	3	EA	100.00	300	50.00	150	450	68	518
Card Reader	3	EA	325.00	975	127.50	383	1,358	204	1,561
Electrified Hardware (Electrified Lock and Power Transfer)	3	EA	1,800.00	5,400	600.00	1,800	7,200	1,080	8,280
Request To Exit (REX)	3	EA	125.00	375	85.00	255	630	95	725
Wiring - Per Access Control Door	3	EA	400.00	1,200	700.00	2,100	3,300	495	3,795
Programming	1	LS			2,609.00	2,609	2,609	391	3,000
Engineering	1	LS			1,304.50	1,305	1,305	196	1,500
Subtotal Life Safety and Security Systems (Divisions 28)							25,254	3,788	29,042

telecommunications **cost opinion**

Building 27 - Westlake Hospital

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
DIVISION 27									
LOW-VOLTAGE SYSTEMS - DIVISIONS 27									
General Provisions (Submittals, Mobilization, Permits)	1	LS	41,120.15	41,120	$ 82,240	$ 82,240	$ 123,360	$ 18,504	$ 141,865
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	68,628.57	68,629	$ -	$ -	$ 68,629	$ 10,294	$ 78,923
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	72	EA	150.00	10,800	50.00	3,600	14,400	2,160	16,560
Rack Mount Fiber Cabinet - 2RU	9	EA	300.00	2,700	110.00	990	3,690	554	4,244
Ladder Rack	280	LF	7.50	2,100	20.00	5,600	7,700	1,155	8,855
Ventilated Rack	1	EA	7,500.00	7,500	800.00	800	8,300	1,245	9,545
2000VA UPS	9	EA	3,000.00	27,000	110.00	990	27,990	4,199	32,189
Demolish Defunct Infrastructure After System Cutover	1	LS			18,000.00	18,000	18,000	2,700	20,700
12 Strand Singlemode Outside Plant (OSP) OFC	45,000	LF	2.50	112,500	.05	2,250	114,750	17,213	131,963
12 Strand Multimode Outside Plant (OSP) OFC	45,000	LF	1.19	53,460	.05	2,250	55,710	8,357	64,067
Trenching	4,000	LF	7.50	30,000	15.00	60,000	90,000	13,500	103,500
(4)4"C w/ 3" 3-Cell Textile Innerduct	4,000	LF	61.40	245,600	71.00	284,000	529,600	79,440	609,040
Utility Vault (Medium)	10	EA	4,335.00	43,350	3,500.00	35,000	78,350	11,753	90,103
Telecommunications Device - 4-Port	290	EA	1,100.00	319,000	473.67	137,365	456,365	68,455	524,820
Telecommunications Device - 4-Port - Existing	166	EA	1,100.00	182,600	473.67	78,630	261,230	39,184	300,414
CAT 6A Quickport Connector	2,320	EA	36.16	83,882	25.00	58,000	141,882	21,282	163,164
CAT 6A Quickport Connector - Existing	1,328	EA	36.16	48,015	26.00	34,528	82,543	12,381	94,925
CAT 6A Patch Panel	38	EA	320.11	12,164	150.00	5,700	17,864	2,680	20,544
Copper 6-port Empty Cassette	304	EA	100.00	30,400	50.00	15,200	45,600	6,840	52,440
Telecom Room - Electrical Improvements	9	EA	4,000.00	36,000	2,500.00	22,500	58,500	8,775	67,275

telecommunications **cost opinion**

Building 27 - Westlake Hospital

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

HARGIS
1201 third avenue, ste 600
seattle, washington 98101
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
Telecom Room - HVAC - Ductless Split System	9	EA	7,500.00	67,500	1,500.00	13,500	81,000	12,150	93,150
Pathway per Drop	290	EA	200.00	58,000	150.00	43,500	101,500	15,225	116,725
Subtotal Low-Voltage Systems (Divisions 27)							2,386,963	358,045	2,745,008
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	752.25	752	1,504.50	1,505	2,257	338.51	2,595
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	1,287.00	1,287			1,287	193.05	1,480
Raceway, Cabling Supports and Outlet Boxes	9	EA	200.00	1,800	200.00	1,800	3,600	540	4,140
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800.00	2,800	680.00	680	3,480	522	4,002
Door Controller - 2-Door	5	EA	535.00	2,675	85.00	425	3,100	465	3,565
Power Supply 10A/24V - 16-Door	1	EA	1,950.00	1,950	255.00	255	2,205	331	2,536
Portal Licenses	9	EA	100.00	900	50.00	450	1,350	203	1,553
Card Reader	9	EA	325.00	2,925	127.50	1,148	4,073	611	4,683
Electrified Hardware (Electrified Lock and Power Transfer)	9	EA	1,800.00	16,200	600.00	5,400	21,600	3,240	24,840
Request To Exit (REX)	9	EA	125.00	1,125	85.00	765	1,890	284	2,174
Wiring - Per Access Control Door	9	EA	400.00	3,600	700.00	6,300	9,900	1,485	11,385
Programming	1	LS			6,435.00	6,435	6,435	965	7,400
Engineering	1	LS			3,217.50	3,218	3,218	483	3,700
Subtotal Life Safety and Security Systems (Divisions 28)							64,394	9,659	74,053

telecommunications **cost opinion**

Building 74 - Therapy Pool

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
DIVISION 27									
LOW-VOLTAGE SYSTEMS - DIVISIONS 27									
General Provisions (Submittals, Mobilization, Permits)	1	LS	6,286.59	6,287	$ 12,573	$ 12,573	$ 18,860	$ 2,829	$ 21,689
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	7,346.02	7,346	$ -	$ -	$ 7,346	$ 1,102	$ 8,448
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	8	EA	150.00	1,200	50.00	400	1,600	240	1,840
Rack Mount Fiber Cabinet - 2RU	1	EA	300.00	300	110.00	110	410	62	472
Ladder Rack	100	LF	7.50	750	20.00	2,000	2,750	413	3,163
Ventilated Rack	1	EA	7,500.00	7,500	800.00	800	8,300	1,245	9,545
2000VA UPS	1	EA	3,000.00	3,000	110.00	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000.00	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,300	LF	2.50	3,250	.05	65	3,315	497	3,812
12 Strand Multimode Outside Plant (OSP) OFC	1,300	LF	1.19	1,544	.05	65	1,609	241	1,851
Trenching	1,000	LF	7.50	7,500	15.00	15,000	22,500	3,375	25,875
(4)4"C w/ 3" 3-Cell Textile Innerduct	1,000	LF	61.40	61,400	71.00	71,000	132,400	19,860	152,260
Utility Vault (Medium)	4	EA	4,335.00	17,340	3,500.00	14,000	31,340	4,701	36,041
Telecommunications Device - 4-Port	15	EA	1,100.00	16,500	473.67	7,105	23,605	3,541	27,146
Telecommunications Device - 4-Port - Existing	4	EA	1,100.00	4,400	473.67	1,895	6,295	944	7,239
CAT 6A Quickport Connector	120	EA	36.16	4,339	25.00	3,000	7,339	1,101	8,440
CAT 6A Quickport Connector - Existing	32	EA	36.16	1,157	26.00	832	1,989	298	2,287
CAT 6A Patch Panel	2	EA	320.11	640	150.00	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100.00	1,600	50.00	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000.00	4,000	2,500.00	2,500	6,500	975	7,475

telecommunications **cost opinion**

Building 74 - Therapy Pool

Telecommunications Infrastructure Assessment Recommendations

Eastern State Hospital

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** July 11, 2024

JOB NUMBER 23083 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

description	quantity		material cost		labor cost		engineering opinion		
	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
Telecom Room - HVAC - Ductless Split System	1	EA	7,500.00	7,500	1,500.00	1,500	9,000	1,350	10,350
Pathway per Drop	15	EA	200.00	3,000	150.00	2,250	5,250	788	6,038
Subtotal Low-Voltage Systems (Divisions 27)							298,858	44,829	343,687
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	209.64	210	419.28	419	629	94.34	723
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	390.40	390			390	58.56	449
Raceway, Cabling Supports and Outlet Boxes	2	EA	200.00	400	200.00	400	800	120	920
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800.00	2,800	680.00	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535.00	535	85.00	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925.00	925	170.00	170	1,095	164	1,259
Portal Licenses	2	EA	100.00	200	50.00	100	300	45	345
Card Reader	2	EA	325.00	650	127.50	255	905	136	1,041
Electrified Hardware (Electrified Lock and Power Transfer)	2	EA	1,800.00	3,600	600.00	1,200	4,800	720	5,520
Request To Exit (REX)	2	EA	125.00	250	85.00	170	420	63	483
Wiring - Per Access Control Door	2	EA	400.00	800	700.00	1,400	2,200	330	2,530
Programming	1	LS			1,952.00	1,952	1,952	293	2,245
Engineering	1	LS			976.00	976	976	146	1,122
Subtotal Life Safety and Security Systems (Divisions 28)							18,567	2,785	21,352