HARGIS TELECOMMUNICATIONS ASSESSMENT

DSHS

RAINIER SCHOOL

WA STATE PROJECT NUMBER: 2024-429 K (8)

EXECUTIVE SUMMARY

OVERVIEW

Rainier School, established in 1939 in Buckley, Washington, is a dedicated facility providing comprehensive care for adults with intellectual and developmental disabilities. With a commitment to individual well-being, Rainier School offers 24-hour residential services, personalized programs, and vocational training. Certified by the U.S. Department of Health and Human Services as an Intermediate Care Facility for Individuals with Intellectual Disabilities (ICF/IID), Rainier School continues to be a trusted resource for its residents.

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.

The existing campus telecommunications cabling backbone infrastructure includes inter-building optical fiber cabling and twisted-pair copper backbone cabling installed between several of the

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buildings on campus. The Administration Building also includes intra-building copper backbone. The existing backbone cabling was installed many years ago. In most areas, the backbone cabling is antiquated and is not able to support the deployment of new technologies nor does it comply with current industry standards. The twisted-pair copper backbone is rated for traditional telephony service. As DSHS transitions towards new technologies, the existing copper backbone is outmoded and should be replaced with new single and multi-mode optical fiber cabling.

The existing horizontal cabling within buildings includes unshielded twisted-pair copper to provide connectivity to computers, telephones, printers, and other network attached devices. The existing cabling consists of a mixture of Category 3, 5e, and 6A. The Category 6A cabling are primarily used for Wireless Access Points (WAPs), and meet current industry infrastructure standards, but the Category 3 and 5e do not.

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 current industry standards and that it will not support evolutions to modern and/or future technologies. The existing optical fiber infrastructure consists of OM1 62.5-micron and OM3 50-micron multi-mode optical fiber cable. The OM1 multi-mode optical fiber cable is obsolete. Improving the IP backbone connectivity will be a fundamental component to creating an environment that will permit Rainier School and DSHS to identify, adapt, and implement new technologies that contribute to safety and operational improvements.

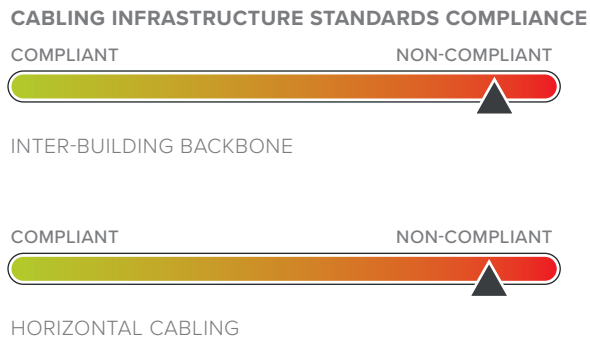
Existing horizontal cabling is not compliant with current TIA standards for this facility type. Upgrading category cabling requires a replacement of the complete channel to include horizontal cabling, patch cords, patch panels, and work area outlets. At Rainier School, this upgrade also requires installation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

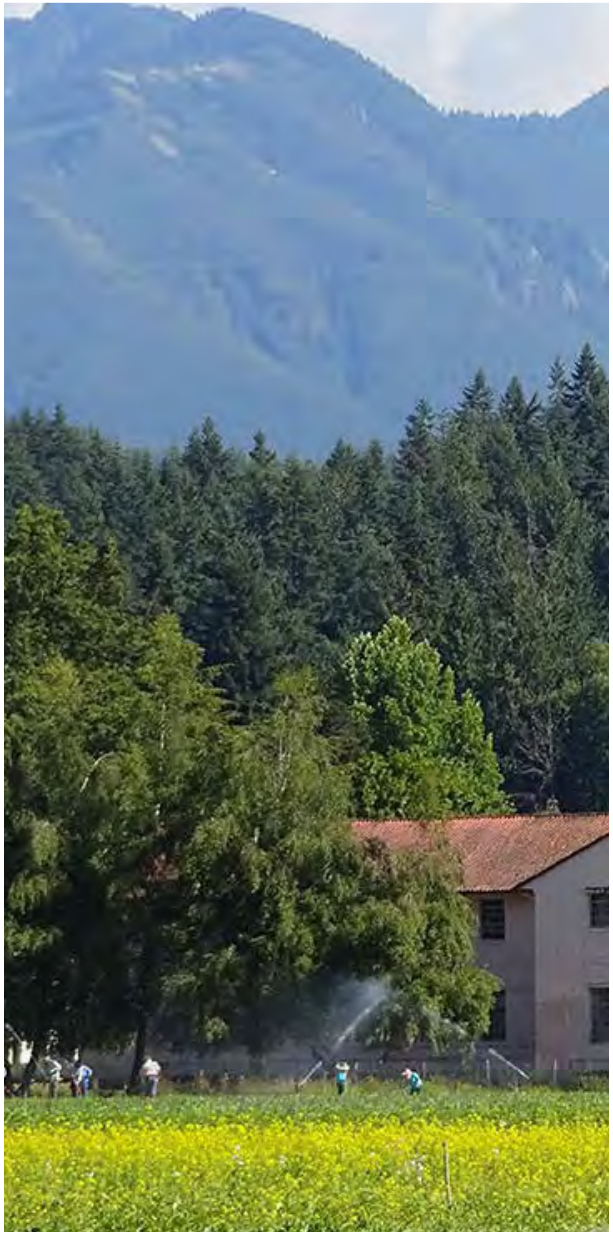
In addition to the cabling noted above, the existing telecommunications spaces do not meet industry standards. Per TIA-1179 a dedicated telecommunications space is required on every floor to support the horizontal cabling infrastructure. Complying with the standard will require new/additional telecommunications rooms in buildings and on floors without telecommunications rooms. 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, 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 Rainier School and DSHS 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

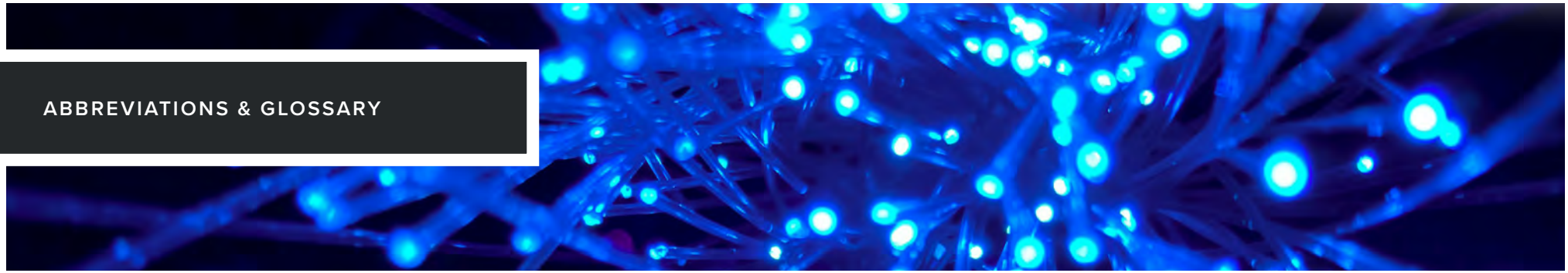
Review, assess and evaluate systems in each building

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, 3, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 22, 23, 24, 25, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50A, 50B, 51A, 51B, 52, 53, 56, 57, 58, 61, 62, 63, 64, 65, 66, 67, 68, 68, & 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 dedicated cooling 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.)	$4,271,000
INSTALL BACKBONE OFC TO NEW TELECOM SPACES			
2	N/A	» Pull 12 st OM4 and 12 st OS2 OFC from MER of Building 1 to each telecom room in Buildings 3, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 22, 23, 24, 25, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50A, 50B, 51A, 51B, 52, 53, 56, 57, 58, 61, 62, 63, 64, 65, 66, 67, 68, 68, & 74 - Terminate OFC Cabling if RMFC is installed.	$662,000
INSTALL HORIZONTAL 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.	$6,675,000
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.	$1,284,000
DEMOLISH DEFUNCT INFRASTRUCTURE			
6	1-5	» Demolish OSP cable. - Demolish OM1 Multi-mode OSP OFC to from Building 30 to Buildings 22, 23, 24, 25, 27, 31, & 32 - Demolish OM1 Multi-mode OSP OFC to from Building 19 to Buildings 17, 18, & 20 - Demolish OM1 Multi-mode OSP OFC to from Building 35 to Buildings 33, 34, 45, 46, 47, & 48 - Demolish OM1 Multi-mode OSP OFC to from Building 35 to Buildings 33, 34, 37, 45, 46, 47, & 48 - Demolish OM1 and OM3 Multi-mode OSP OFC to from Building 37 to Buildings 38, 39, 41, 42, 43, 44, 53, & 56 - Demolish OM1 and OM3 Multi-mode OSP OFC to from Building 50B to Buildings 50A, 51A, 51B, 62, 63, 64, 65, 66, 67, 68, & 69 - Demolish OM1 and OM3 Multi-mode OSP OFC from Building 1 to Buildings 3, 7, 8, 9, 10, 11, 12, 13, 14, 15, 19, 30, 35, 37, 40, 49, & 50B - Demolish Copper twisted pair OSP Backbone cabling from MER to Buildings 3, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 19, 20, 22, 23, 24, 25, 27, 28, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50A, 50B, 51A, 51B, 52, 53, 56, 57, 58, 61, 62, 63, 64, 65, 66, 67, 68, 68, & 74 » Demolish Building 1 backbone cabling - Demolish OM1 Multi-mode backbone cabling between TRs. » Demolish Defunct telecommmunications rooms. - Remove any salvageable equipment from TR's. - Remove the remaining equipment and dispose of it.	$228,000

EXISTING COMMUNICATIONS INFRASTRUCTURE

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

INTER-BUILDING BACKBONE CABLING

The existing communications infrastructure providing connectivity to the Rainier School campus is a mix of OM1 multi-mode and OM3 multi-mode outside plant optical fiber backbone cable and twisted-pair copper cable for voice applications.

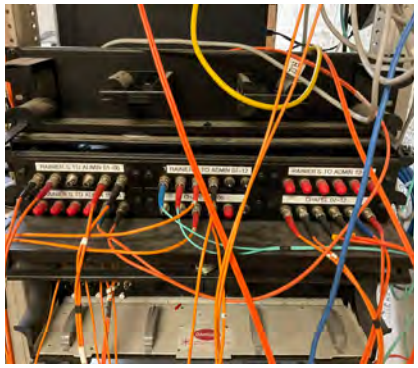
The inter-building backbone cabling originates from the Administration Building and extends to each of the buildings on campus via the exterior covered walkways. A few buildings have underground pathways with vaults and enclosures.

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 for optical backbone cabling. To allow future network expansion, technology growth, and to meet current standards, it is recommended that the existing OM1 optical fiber backbone be replaced with an optical fiber backbone utilizing 12-strands of OM4 multi-mode and 12 strands of single-mode outside plant optical fiber cable supporting each building. The existing OM1 optical fiber backbone cabling should be demolished.

All buildings are served by Category 3 twisted-pair copper cabling for voice applications. The existing Avaya digital phone system utilizes existing Category 3 backbone cabling. The backbone cabling originates in the Administration Building, terminating on 110-blocks and building entrance protection. Due to the limited capacity of the backbone cabling, it is recommended that the existing Category 3 twisted-pair copper backbone be replaced and/or augmented with industry standard compliant backbone cabling consisting of a hybrid of single-mode and multi-mode optical fiber cabling and the voice network combined on the IP network.

INTRA-BUILDING BACKBONE CABLING

The only intra-building backbone cabling resides within the Administration Building. Each telecom room within Administration is connected to the Main Equipment Room through twisted-pair copper backbone. The intra-building twisted-pair copper backbone is extremely limited in bandwidth and data speeds, is not readily available, and should be replaced with standards compliant OM4 or single-mode optical fiber backbone cabling.

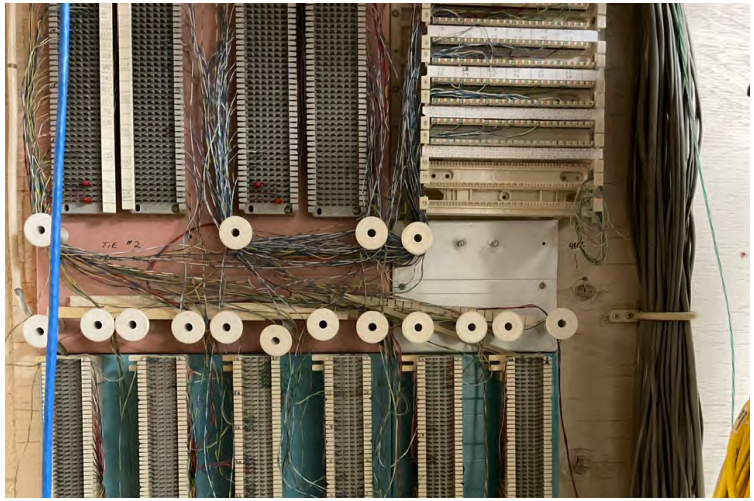


Existing Intrabuilding Fiber Backbone.

Existing Copper Backbone.

Existing Fiber Backbone.

Existing Interbuilding Backbone Cabling.



Existing Intrabuilding Backbone.

HORIZONTAL CABLING

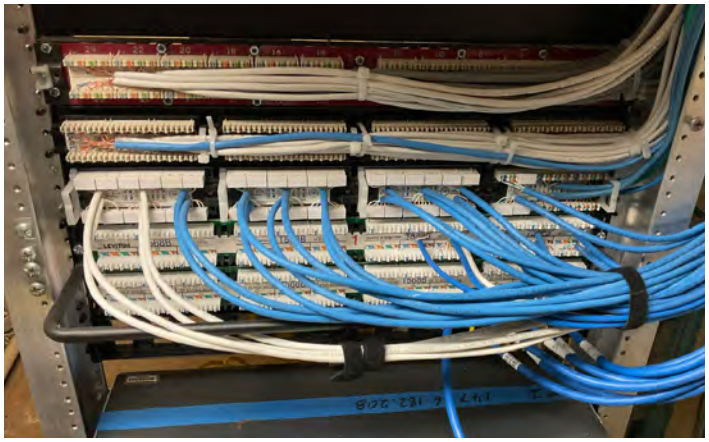
CATEGORY CABLE COMPARISON				
Category	Max. Data Rate	Bandwidth	Max. Distance	Usage
Category 1	1 Mbps	0.4 MHz		Telephone and modem lines
Category 2	4 Mbps	4 MHz		LocalTalk & Telephone
Category 3	10 Mbps	16 MHz	100 m (328 ft.)	Telephone & 10BaseT Ethernet
Category 4	16 Mbps	20 MHz	100 m (328 ft.)	Token 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

VOICE HORIZONTAL CABLING

A review of the horizontal voice cabling infrastructure found it to be inadequate to serve the current and future needs of Rainier School. The horizontal cabling consists of twisted-pair copper cabling, which is terminated on 110-blocks on each building. These 110-blocks serve as cable termination points, allowing interconnection of on-premises wiring within a structured cabling system. From the 110-blocks, the cabling is patched to a Category 3 backbone cable that routes back to the Administration Building.

Category 3 cabling does not meet TIA-1179 standards for horizontal cabling. It is recommended that all Category 3 cabling be removed, and the voice network be collapsed onto a converged network infrastructure utilizing standards compliant cabling.



Existing Category 5e Cabling.

Existing Voice and Data Outlet.

Existing Voice Outlet.

ETHERNET HORIZONTAL CABLING

The existing ethernet network is comprised of a mix of Category 5e and 6A cabling. The Category 6A cabling are primarily used for WAPs. The existing patch panels, connectors, and patch panels meet Category 5, 5e and 6A standards.

The existing Category 5e infrastructure is not adequate to meet the current and future needs of Rainier School nor does it comply with TIA standards for infrastructure in healthcare facilities. It is recommended that the existing cabling infrastructure be replaced with a new Category 6A cabling infrastructure and that additional data ports be added throughout the facility to provide employees with an adequate quantity of network port connections to support required device connections. New cabling infrastructure installation requires cabling to be secured and outlet boxes to be fitted with the appropriate faceplates to protect the cabling.

Meeting TIA-1179 standards will require the entire channel to be Category 6A certified. Meeting this standard will require all new patch panels, modular jacks, and wall outlets comprising a replacement of the entire infrastructure. Existing Category 5 and 5e 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 Horizontal Cabling Patching.

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

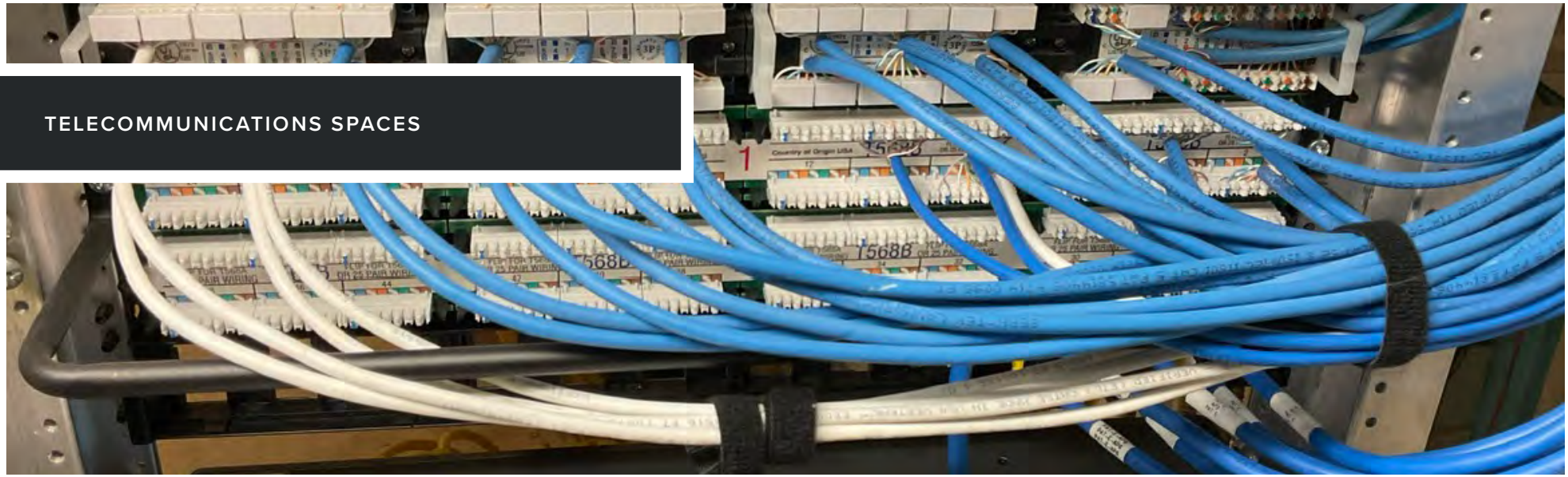
Source: https://learn.microsoft.com/en-us/microsoftteams/prepare-network

CAMPUS MAP

HARGIS

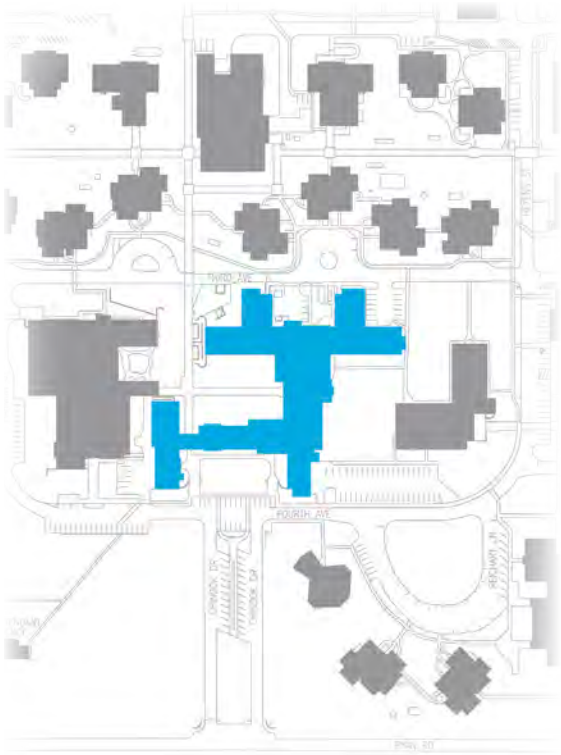
EVALUATION CRITERIA FOR TELECOMMUNICATIONS ROOMS		
Room/Space	»	Quantity, Location, and Size of Telecommunications Room.
	»	Available space to install and terminate new cabling and rack space to mount new equipment
	»	Adequate working clearances to access and maintain additional equipment and cabling
	»	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



Most of the existing telecommunications spaces are not compliant with current standards. There are small rooms, rooms shared with other equipment, or a lack of telecommunications spaces in some cases. Inconsistent grounding was observed during the walkthrough.

To support future expanded infrastructure and meet industry standards, it is recommended to modify the telecommunications rooms. Some recommended upgrades include installation of Category 6A patch panels and standards compliant grounding systems. To comply with the Health Insurance Portability and Accountability Act (HIPAA) and current telecommunications standards, controlled 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 facility 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 with keys and locks using 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.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

ADMINISTRATION

TELECOMMUNICATIONS ROOM – TR-004

Telecommunications Room TR-004 is in the basement. There is no dedicated telecommunications room. The space is a pump room, and the telecommunications equipment shares spaces with mechanical pumps. There is a single floor mounted rack with a rack mount fiber cabinet along with multiple copper patch panels and network switches. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable from TR-74. There is space for expansion on the existing rack. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room. Electrical infrastructure is not standards compliant.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

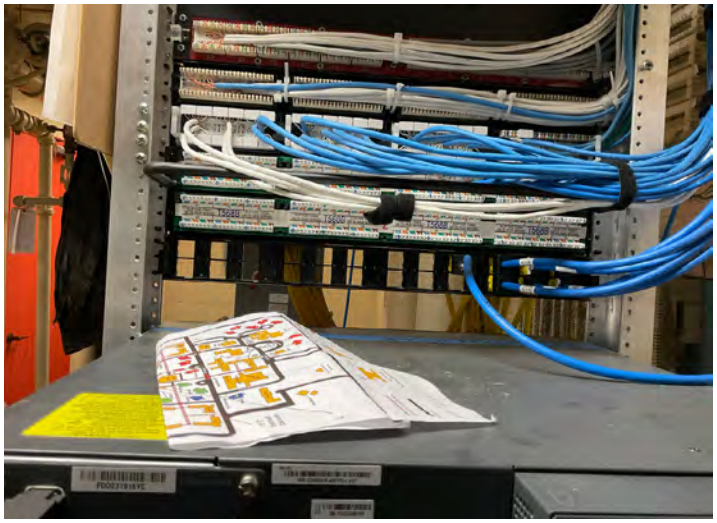
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the MER.
- Add proper grounding Telecommunications Grounding Busbar.
- Add cable management as needed.
- Add dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-004

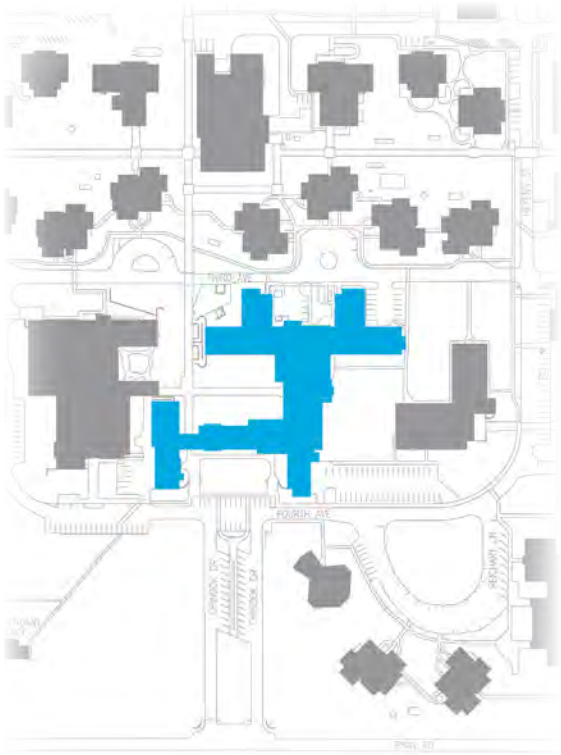


Existing Data Patching.

Existing Telecom Rack.

Existing Voice Patching.

Existing Voice Patching.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

ADMINISTRATION

TELECOMMUNICATIONS ROOM – TR-74

Telecommunications Room, TR-74, is in the basement of the Administration Building. The space appears to be a corridor, and there is not a dedicated telecommunications space. There is a single floor mounted rack with multiple rack-mount fiber cabinets, copper patch panels, and network switches. The space is a fiber distribution point. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable from the MER and TR-004 in the Administration Building. There is also a 24-strand OM1 multi-mode optical fiber backbone cable from the Gymnasium and a 12-strand OM1 multi-mode optical fiber backbone cable from the Chapel. There is space for expansion on the existing rack. There is no cable management and cables are draped over equipment. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room. Electrical infrastructure is not standards compliant.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

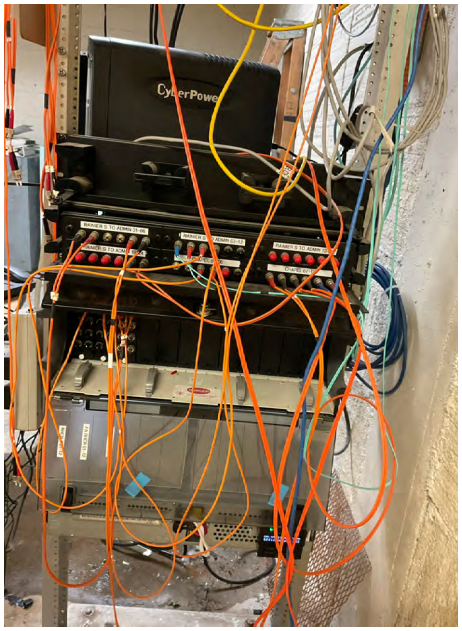
Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the MER.
- Add proper grounding Telecommunications Grounding Busbar.
- Add cable management as needed.
- Add dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

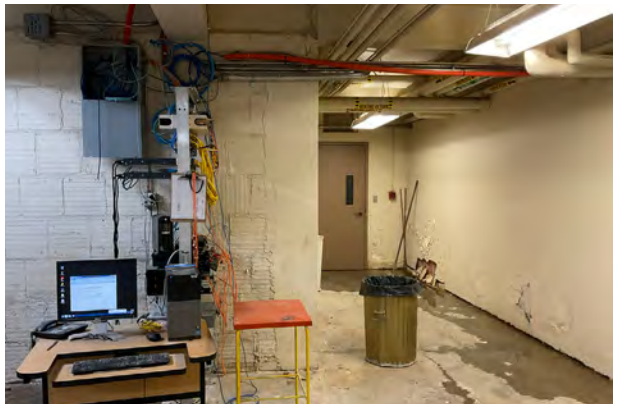
TELECOMMUNICATIONS ROOM – TR-74

Existing Data Patching.

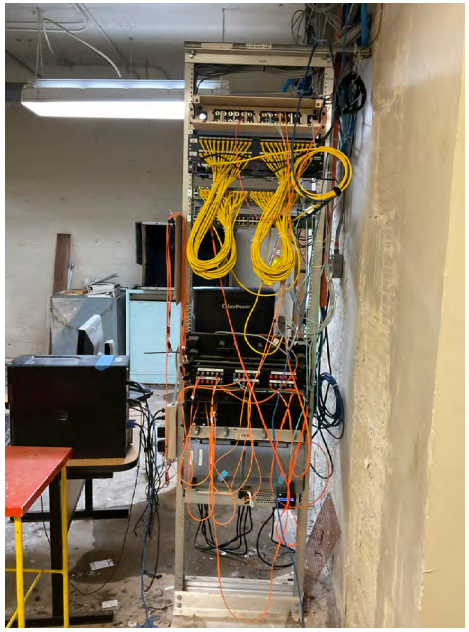
Existing Cables in Telecom Room.



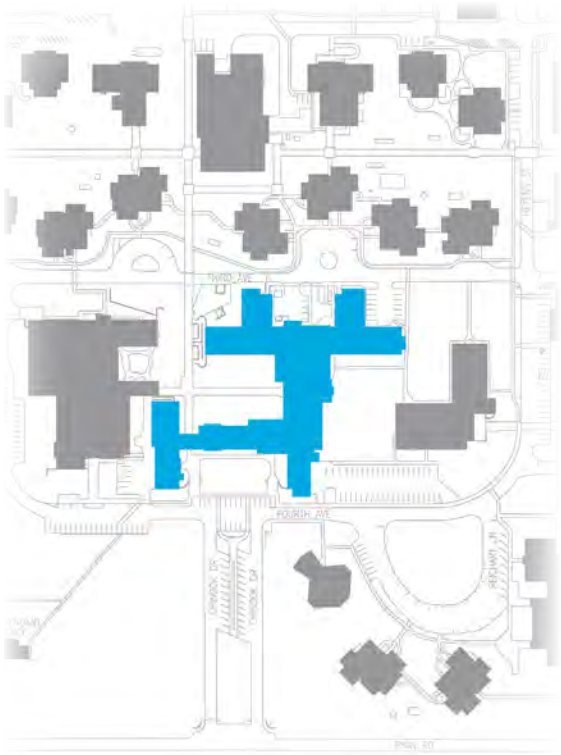
Existing Fiber Patching.



Existing Telecom Room Layout.



Existing Telecom Rack.

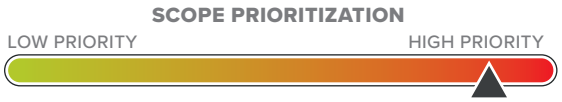


STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY



ADMINISTRATION

TELECOMMUNICATIONS ROOM – TR-BASEMENT

Telecommunications Room, TR-Basement, is in the basement of the Administration Building. There is a single rack dedicated to phone headend equipment. The room serves as the central point for the voice backbone cabling on the campus. There is only a copper connection back to the MER. There is no space for expansion on the existing rack, but there is space for an additional rack. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control and track access to the space.

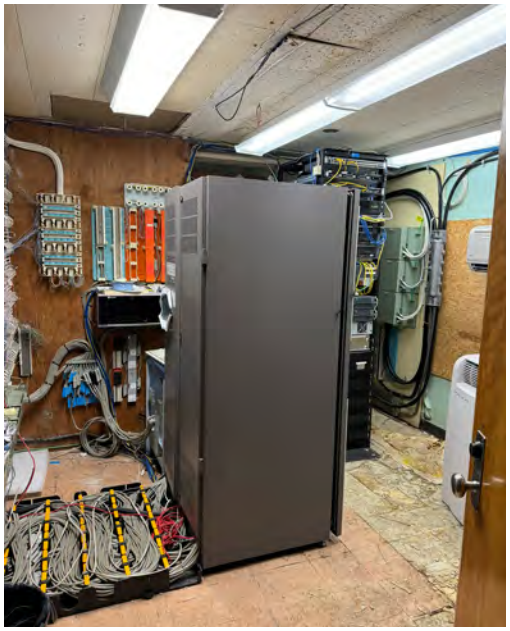
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No telecommunications grounding busbar.
- No dedicated cooling system to maintain temperature of equipment.
- Not a dedicated telecom room.

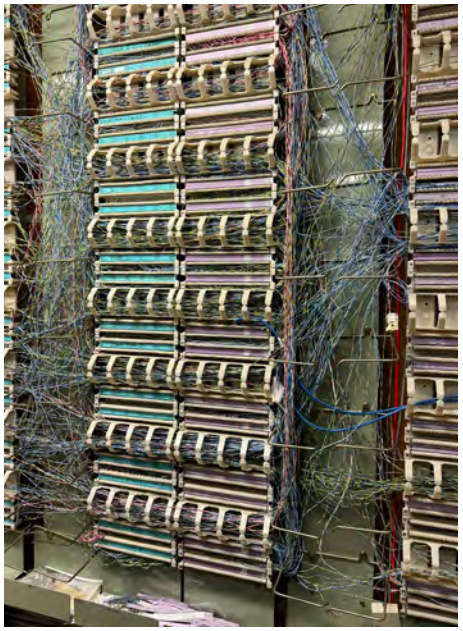
Recommendations:

- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the MER.
- Add a Telecommunications Grounding Busbar.
- Add cable management as needed.
- Add dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

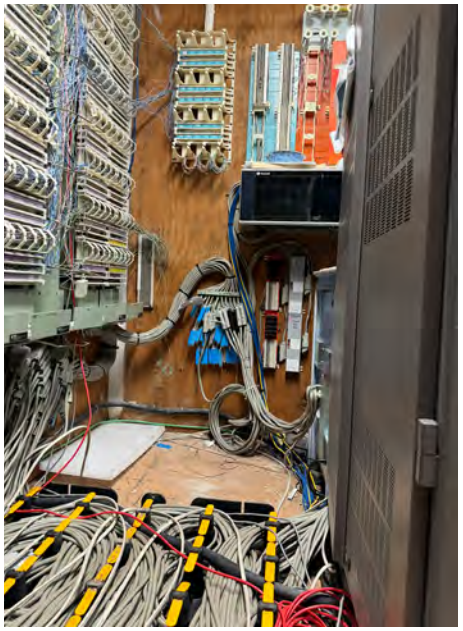
TELECOMMUNICATIONS ROOM – TR-BASEMENT



Existing Telecom Room Layout.

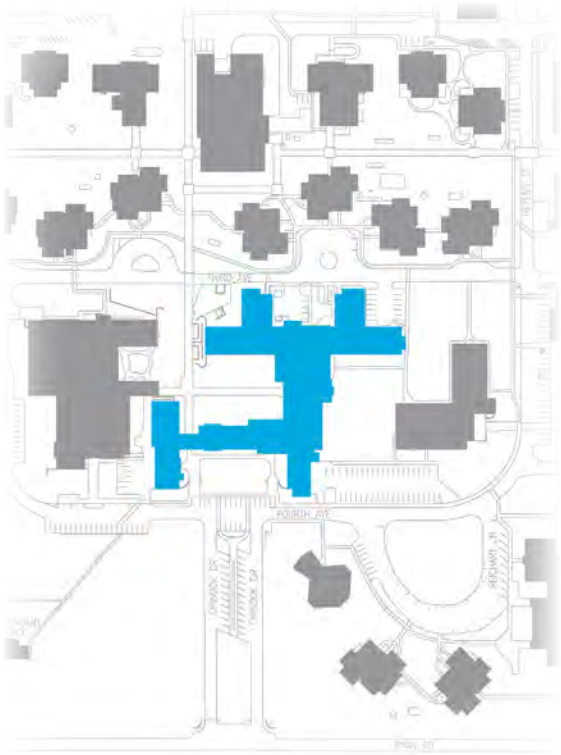


Existing Voice Patching.



Existing Copper Cabling.

Existing Telecom Rack.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

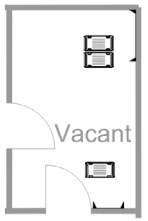
SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

ADMINISTRATION

TELECOMMUNICATIONS ROOM – TR-ADMIN

Telecommunications Room, TR-Admin, is on the first floor. It is a dedicated telecommunications room. There are three server enclosures, with only one in use for the Avaya phone system. There is only a copper backbone connection back to the MER. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room. Electrical infrastructure is not standards compliant.



The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

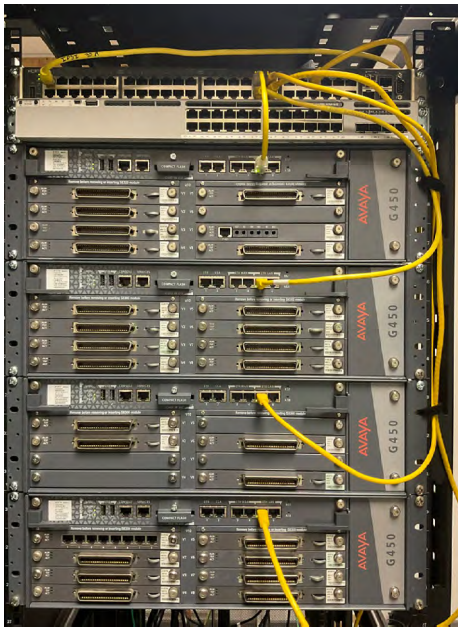
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No telecommunications grounding busbar.
- No dedicated cooling system to maintain temperature of equipment.
- Not a dedicated telecom room.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

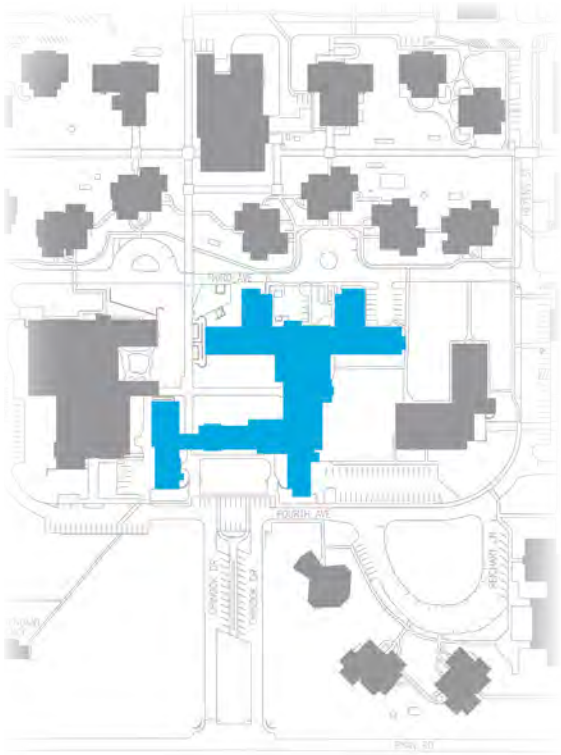
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the MER.
- Add a Telecommunications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

TELECOMMUNICATIONS ROOM – TR-ADMIN

Existing Telecom Racks.



Existing Servers.

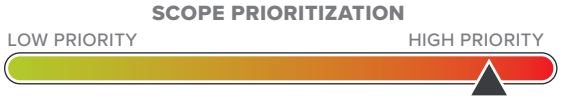


STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

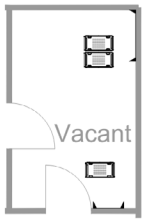
SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY



ADMINISTRATION

EQUIPMENT ROOM – ER-ADMIN



The Main Equipment Room for the campus is on the first floor. There are three telecommunication racks, each containing multiple fiber cabinets, patch panels, UPS, and switches. This room is the main fiber hub for the campus, with 12 or 24 strand OFC backbone cables connecting to most building on campus. There is space for expansion on the existing racks. There is an overhead ladder tray for cable management, but there is no dedicated cooling for temperature and humidity control. There is a grounding busbar present in the room, but not all racks are bonded to it.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control 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 cable support, leading to cables being draped or placed directly on equipment.
- Limited bonding between telecommunications equipment and grounding busbar.
- No dedicated cooling system to maintain temperature of equipment.

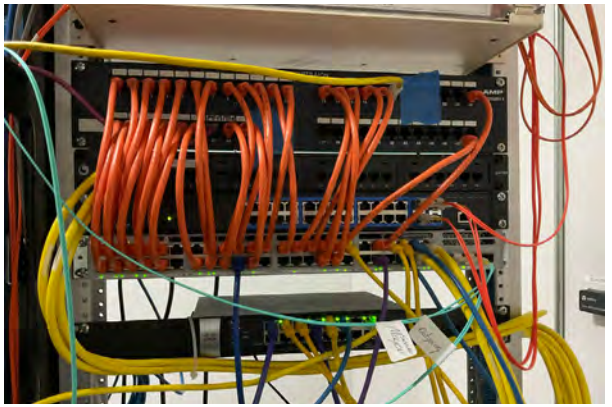
Recommendations:

- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone to connected buildings.
- Add bonding to Telecommunications Grounding Busbar.
- Add cable management as needed.
- Add dedicated cooling system.
- Control access to authorized individuals.

EQUIPMENT ROOM – ER-ADMIN

Existing Fiber Patching.

Existing Telecom Racks.



Existing Data Patching.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

GYMNASIUM & SCHOOL

TELECOMMUNICATIONS ENCLOSURE – TR-CONFERENCE

TR-Conference is an enclosure in the conference room that contains a rack-mounted fiber cabinet and building entrance protection. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable from TR-74 in the Administration Building (Building 1), and a 25-pair Category 3 twisted-pair copper backbone cable from the Administration Building. The fiber terminates in the rack-mounted fiber cabinet and then patches over to TR-Closet. The enclosure is not grounded, there is no telecommunications grounding busbar, and the electrical infrastructure does not meet standards.

While the enclosure is sufficient to meet current needs, it is recommended to move the telecommunications space to a dedicated 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. 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:

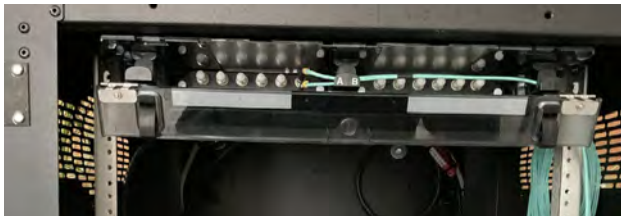
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Mismatched sizes of optical fiber.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No telecommunications grounding busbar.
- No dedicated cooling system to maintain temperature of equipment.
- Not a dedicated telecom room.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

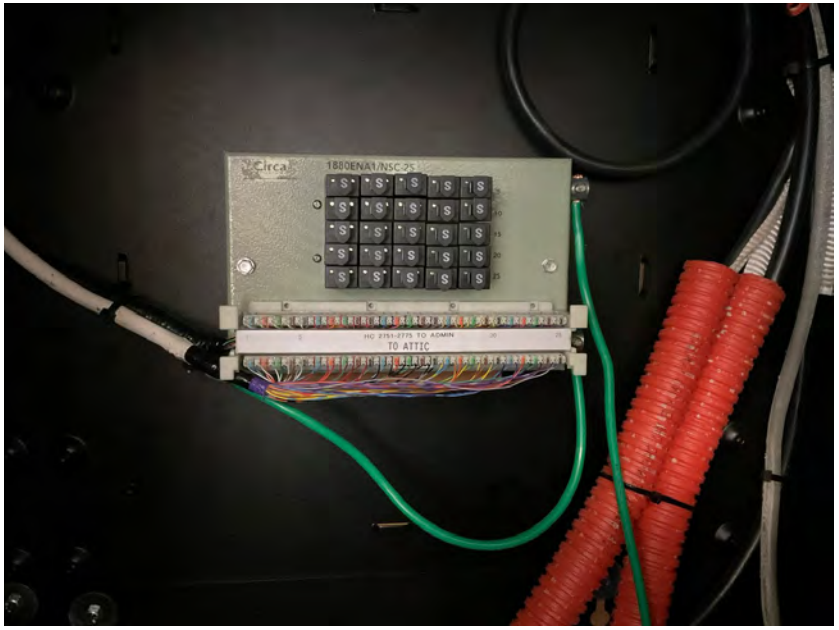
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add Telecommunications Grounding Busbar.
- Add cable management as needed.
- Add a dedicated cooling system.

TELECOMMUNICATIONS ENCLOSURE – TR-CONFERENCE

Existing Telecom Cabinet.



Existing Fiber Patching.



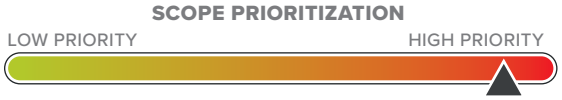
Existing Building Entrance Protection.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY



GYMNASIUM & SCHOOL

TELECOMMUNICATIONS ROOM – TR-CLOSET

The Telecommunications Room, TR-Closet, is in a supply closet. There is no dedicated telecommunications room. There is a single UPS on the floor and ethernet switch mounted on the wall. There is a 2-strand OM3 multi-mode optical fiber backbone cable from TR-Conference that connects to the switch. There is no space for expansion. There is no dedicated cooling for temperature and humidity control.

Due to the small size of the room, it is recommended that the telecommunications room be abandoned, with all cabling and equipment relocated to the new TR-Conference telecommunications room.

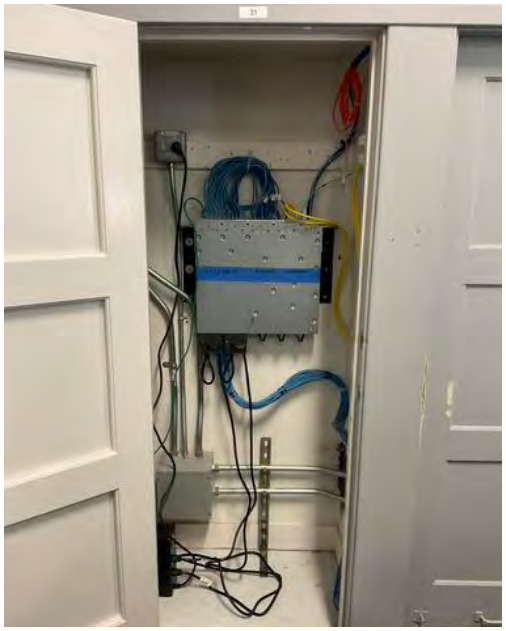
Deficiencies:

» Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
» Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
» Minimal cable support, leading to cables being draped or placed directly on equipment.
» No bonding between telecommunications equipment and grounding busbar.
» No dedicated cooling system to maintain temperature of equipment.
» Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

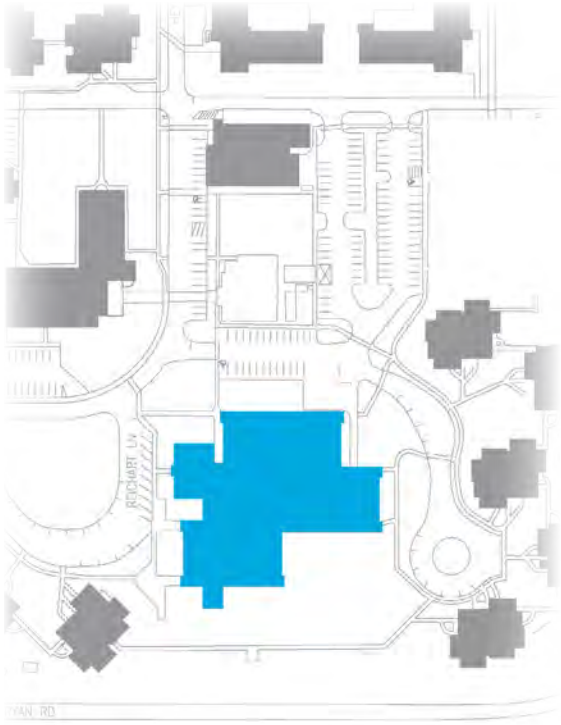
» Abandon the room and relocate all telecom equipment and cabling to the new TR-Conference telecommunications room.

TELECOMMUNICATIONS ROOM – TR-CLOSET

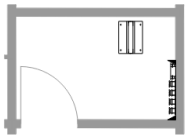


Existing Telecom Closet.

Existing Data Patching.



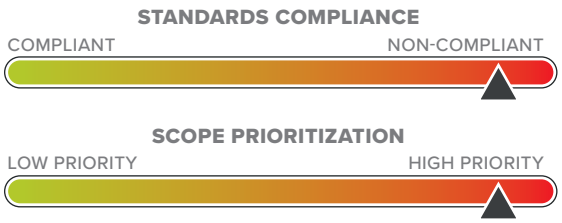
INSTRUCTIONAL SERVICES BUILDING



TELECOMMUNICATIONS ROOM – TR-ISB

The Telecommunications Room, TR-ISB, contains a single rack with multiple switches and patch panels. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Administration Building (Building 1), and a 100-pair Category 3 twisted-pair copper backbone cable from the Administration Building. The fiber terminates in a rack-mounted fiber cabinet. The rack contains room for expansion, and there is an overhead ladder tray for cable support. There is a grounding busbar present, but no dedicated cooling system. The electrical infrastructure does not meet current standards.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control and track access to the space.



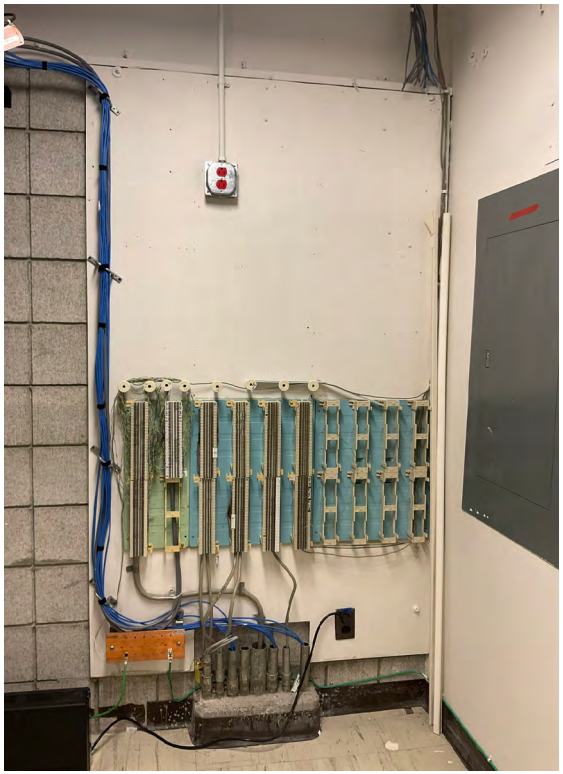
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- Limited bonding between telecommunications equipment and grounding busbar.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

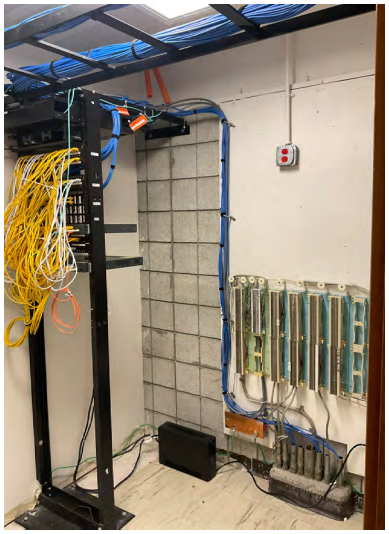
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.
- Bond telecommunications equipment to the existing telecommunications grounding busbar.

TELECOMMUNICATIONS ROOM – TR-ISB

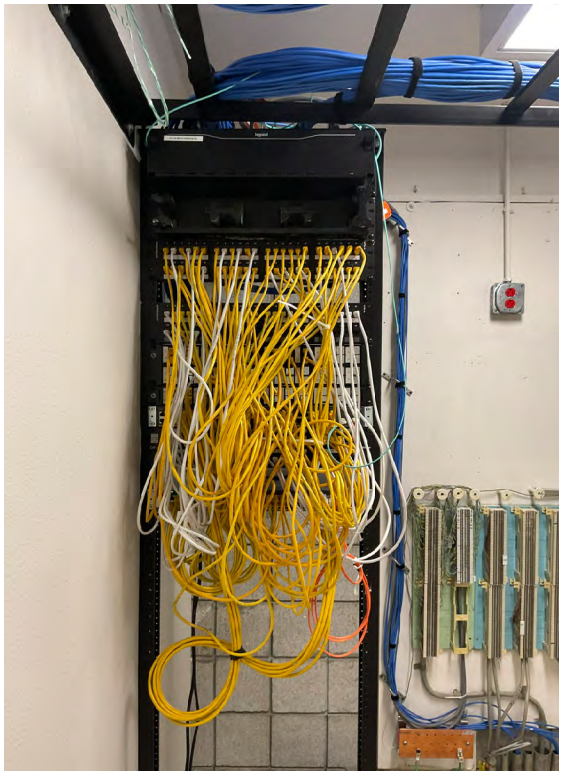


Existing Voice Patching.

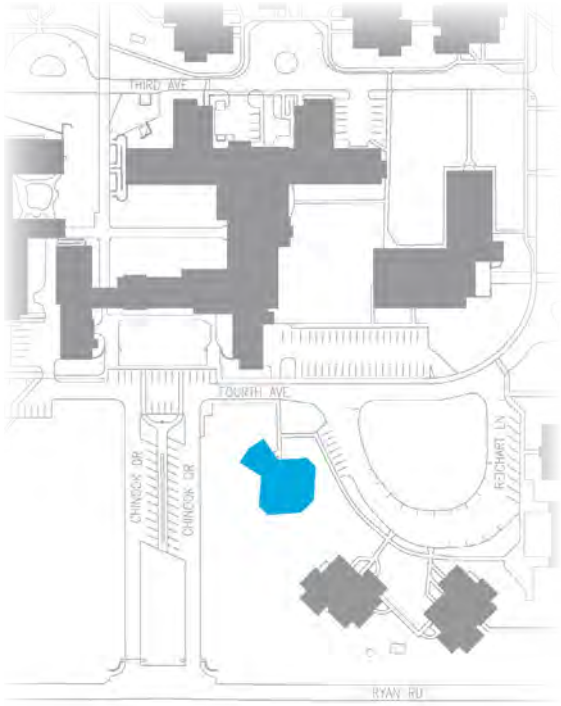
Existing Data Patching.



Existing Telecom Room Overall Plan.



Existing Telecom Racks.



CHAPEL

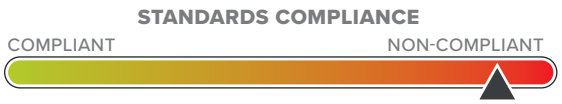
TELECOMMUNICATIONS ROOM – TR-CHAPEL

Telecommunications Room TR-Chapel contains a single wall mount fiber cabinet with 12-strand OM1 multi-mode optical fiber backbone cable and a 25-pair Category 3 twisted-pair copper backbone cable from the Administration Building 1. The room is very small and is not a dedicated telecommunications space. From the wall mount fiber cabinet, two strands of fiber connect to a media converter that then connects to a wireless access point in the room. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room. Electrical infrastructure is not standards compliant.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT



SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

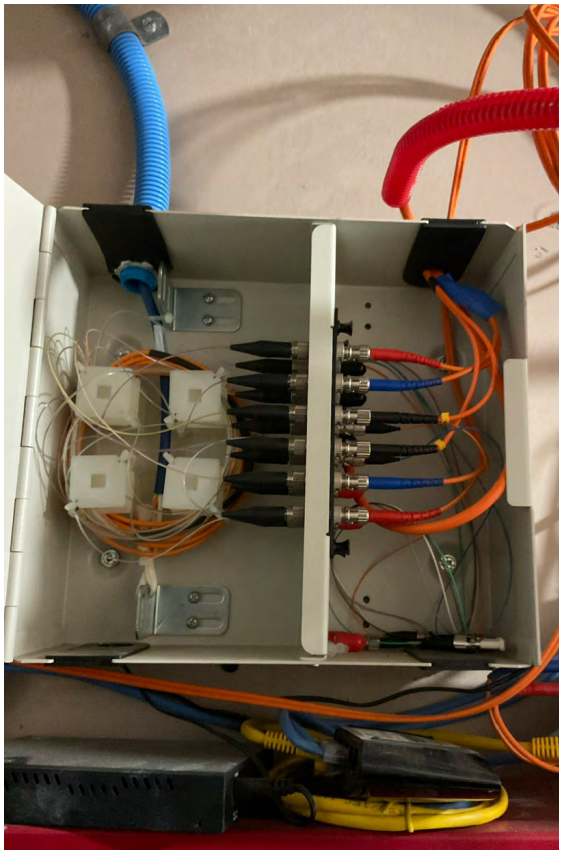
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

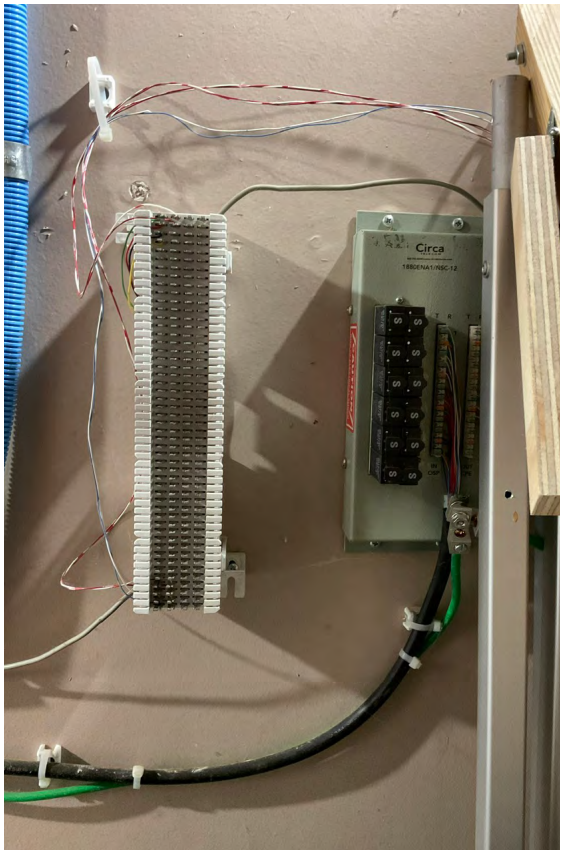
Recommendations:

- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

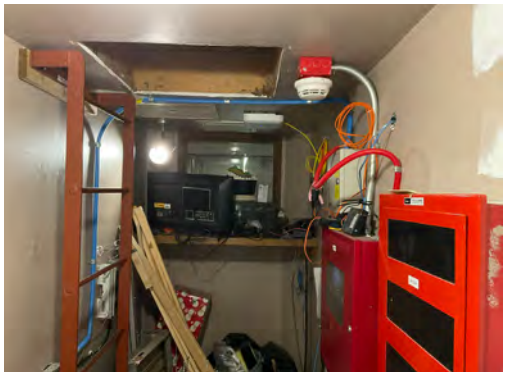
TELECOMMUNICATIONS ROOM – TR-CHAPEL



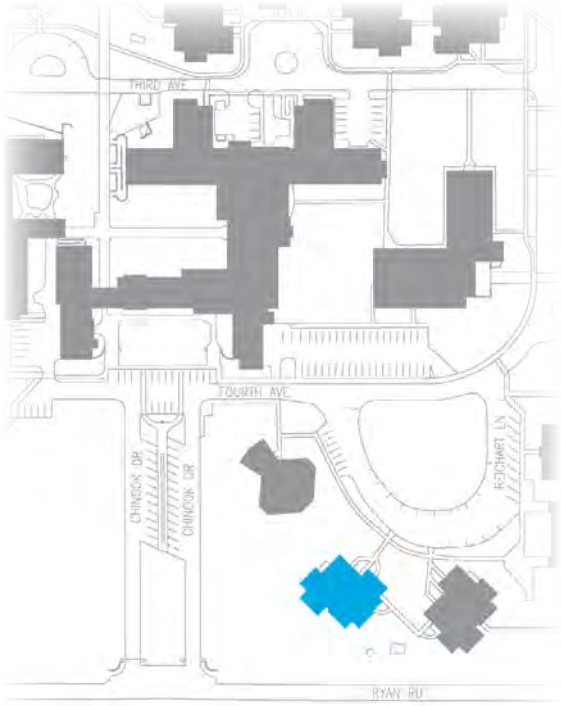
Existing Fiber Patching.



Existing Voice Patching.



Existing Telecom Room.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

ALPINE

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet on level 1 and serves as the demarcation point for building voice and data. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable and a 25-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). The OM1 optical fiber cable is terminated in a wall mount fiber cabinet within the room and a 2 strand OM3 patch cable is routed to the telecommunications enclosure in the attic supporting the building's network connectivity. The 25-pair cable is terminated on building entrance protectors and is patched through to 66 blocks within the room. A telecommunications grounding busbar was not observed, and there is no dedicated cooling for temperature and humidity control.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The TR space contains a wall mounted vertical rack. The wall mounted rack includes a patch panel, network switch, and a UPS. The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

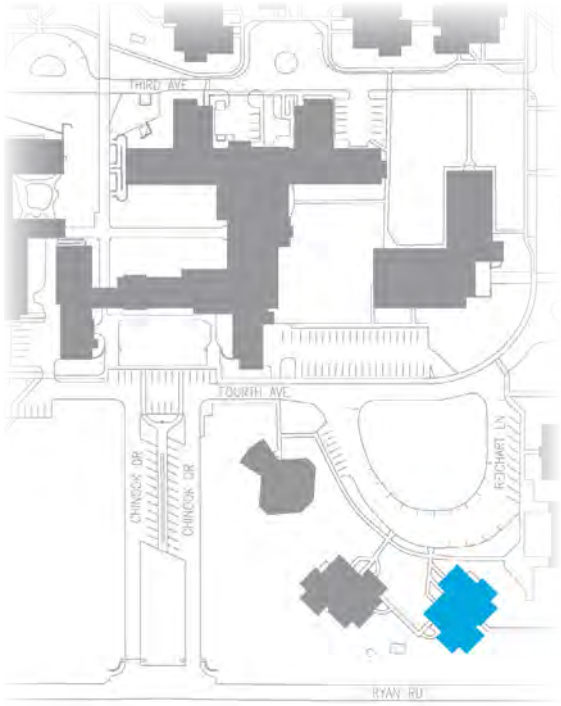
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

Existing Grounding.

Existing Data Patching.

Existing Telecom Cabinet.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

ASPEN

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet on level 1 and serves as the demarcation point for building voice and data. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable and a 25-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). The OM1 optical fiber cable is terminated in a wall mount fiber cabinet within the room and a 2 strand OM3 patch cable is routed to the telecommunications enclosure in the attic supporting the building's network connectivity. The 25-pair cable is terminated on building entrance protectors and is patched through to 66 blocks within the room. A telecommunications grounding busbar was not observed, and there is no dedicated cooling for temperature and humidity control.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The TR space contains a wall mounted vertical rack. The wall mounted rack includes a patch panel, network switch, and a UPS. The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

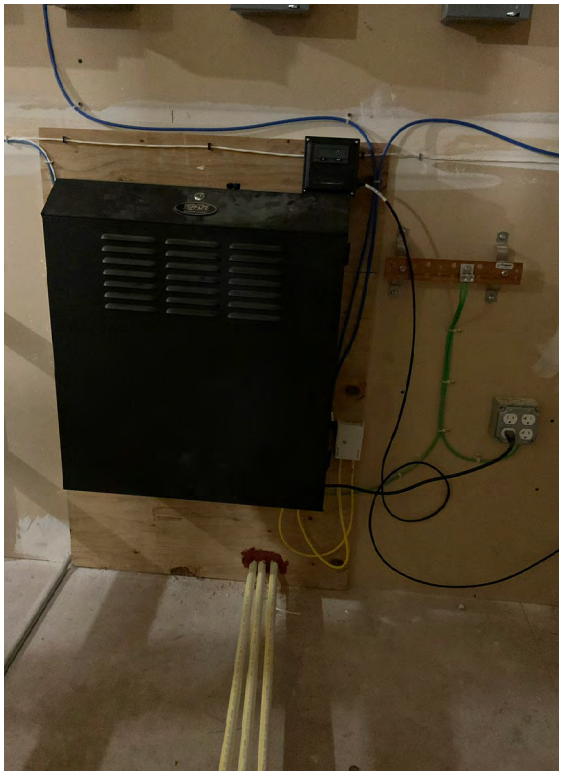
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

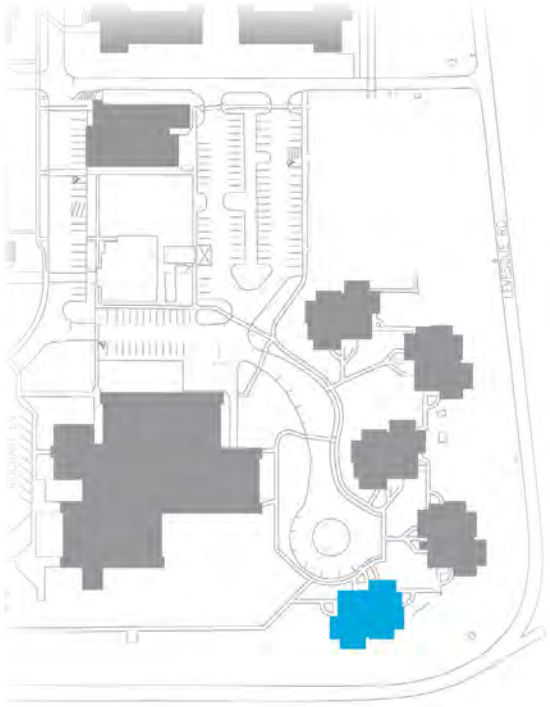


Existing Telecom Cabinet.

Existing Data Patching.

Existing Telecom Room Layout.

Existing Cross-Connect Room.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

SAN JUAN

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet on level 1 and serves as the demarcation point for building voice and data. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable and a 25-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). The OM1 optical fiber cable is terminated in a wall mount fiber cabinet within the room and a 2 strand OM3 patch cable is routed to the telecommunications enclosure in the attic supporting the building's network connectivity. The 25-pair cable is terminated on building entrance protectors and is patched through to 66 blocks within the room. A telecommunications grounding busbar was not observed, and there is no dedicated cooling for temperature and humidity control.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The TR space contains a wall mounted vertical rack. The wall mounted rack includes a patch panel, network switch, and a UPS. The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

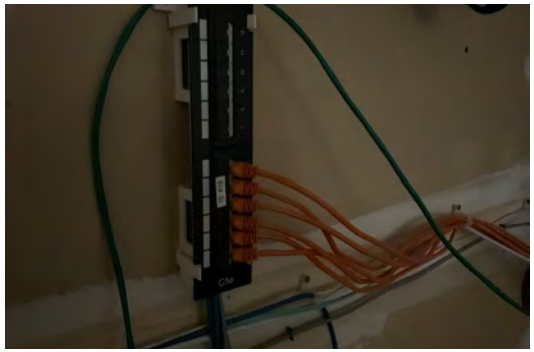
- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No grounding busbar for the telecommunications equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

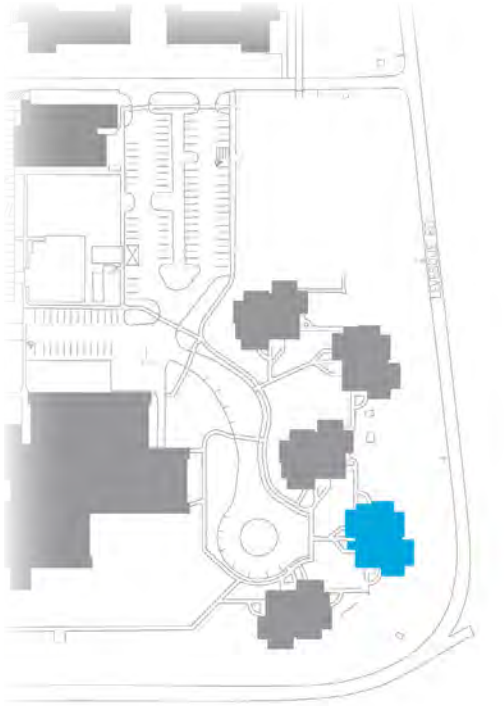
CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

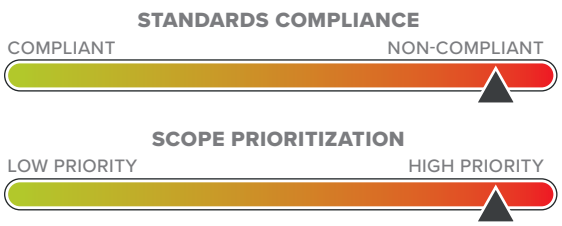
Existing Telecom Cabinet.



Existing Data Patching.

Existing Cross-Connect Room.





SHASTA

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet on level 1 and serves as the demarcation point for building voice and data. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable and a 25-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). The OM1 optical fiber cable is terminated in a wall mount fiber cabinet within the room and a 2 strand OM3 patch cable is routed to the telecommunications enclosure in the attic supporting the building's network connectivity. The 25-pair cable is terminated on building entrance protectors and is patched through to 66 blocks within the room. A telecommunications grounding busbar was not observed, and there is no dedicated cooling for temperature and humidity control.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The TR space contains a wall mounted vertical rack. The wall mounted rack includes a patch panel, network switch, and a UPS. The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

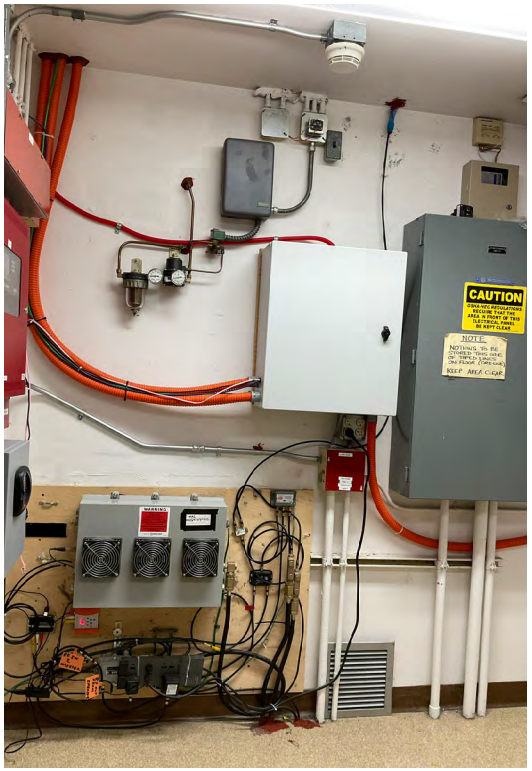
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

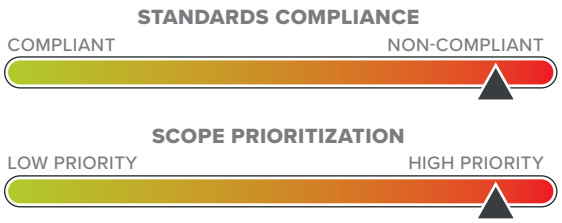
Existing Grounding.

Existing Data Patching.

Existing Telecom Cabinet.



Existing Cross-Connect Room.



OMAK

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet on level 1 and serves as the demarcation point for building voice and data. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable and a 25-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). The OM1 optical fiber cable is terminated in a wall mount fiber cabinet within the room and a 2 strand OM3 patch cable is routed to the telecommunications enclosure in the attic supporting the building's network connectivity. The 25-pair cable is terminated on building entrance protectors and is patched through to 66 blocks within the room. A telecommunications grounding busbar was not observed, and there is no dedicated cooling for temperature and humidity control.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The TR space contains a wall mounted vertical rack. The wall mounted rack includes a patch panel, network switch, and a UPS. The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

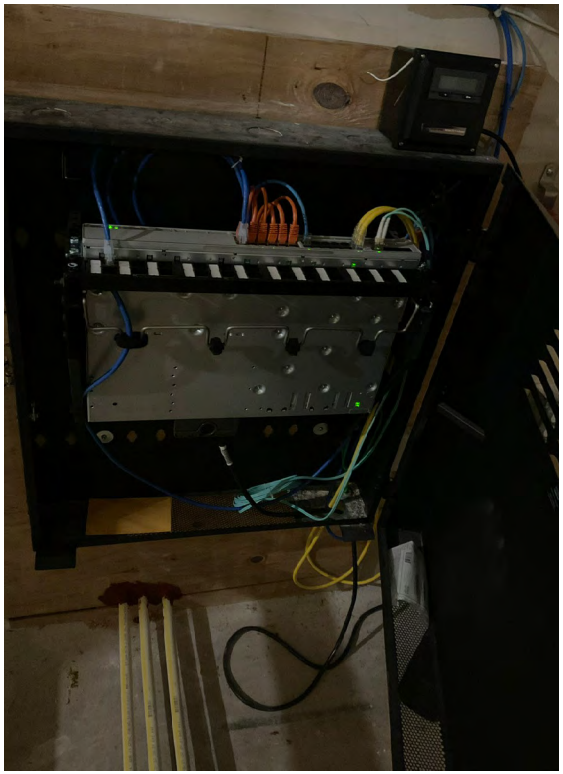
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

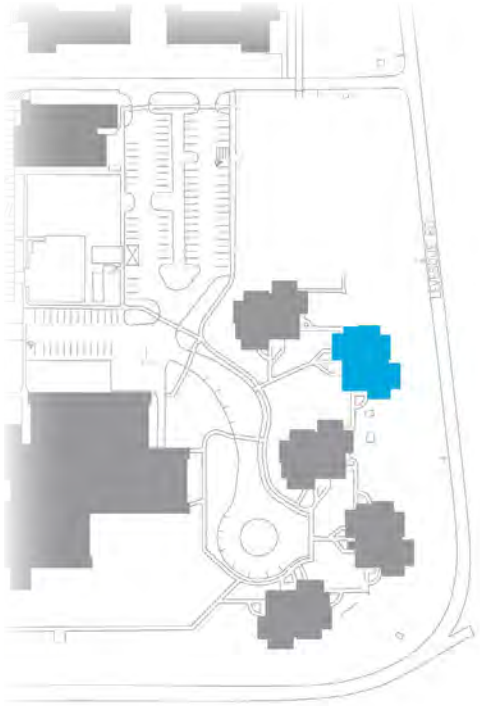


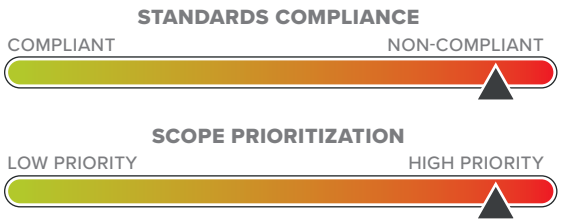
Existing Telecom Cabinet.

Existing Data Patching.

Existing Telecom Room Layout.

Existing Cross-Connect Room.





ORCAS

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet on level 1 and serves as the demarcation point for building voice and data. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable and a 25-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). The OM1 optical fiber cable is terminated in a wall mount fiber cabinet within the room and a 2 strand OM3 patch cable is routed to the telecommunications enclosure in the attic supporting the building's network connectivity. The 25-pair cable is terminated on building entrance protectors and is patched through to 66 blocks within the room. A telecommunications grounding busbar was not observed, and there is no dedicated cooling for temperature and humidity control.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The TR space contains a wall mounted vertical rack. The wall mounted rack includes a patch panel, network switch, and a UPS. The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

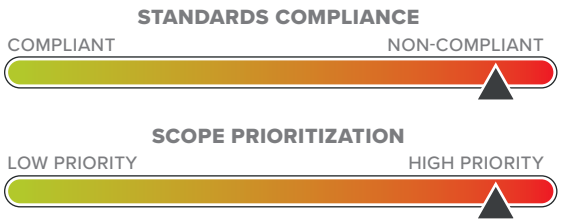
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

Existing Telecom Cabinet.

Existing Data Patching.

Existing Cross-Connect Room.



CHELAN

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet on level 1 and serves as the demarcation point for building voice and data. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable and a 25-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). The OM1 optical fiber cable is terminated in a wall mount fiber cabinet within the room and a 2 strand OM3 patch cable is routed to the telecommunications enclosure in the attic supporting the building's network connectivity. The 25-pair cable is terminated on building entrance protectors and is patched through to 66 blocks within the room. A telecommunications grounding busbar was not observed, and there is no dedicated cooling for temperature and humidity control.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The TR space contains a wall mounted vertical rack. The wall mounted rack includes a patch panel, network switch, and a UPS. The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

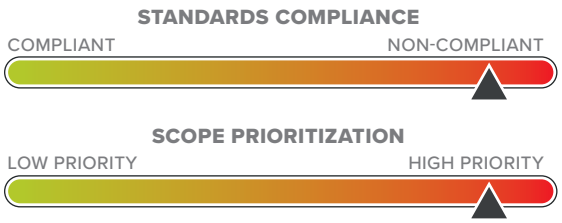
CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

Existing Telecom Cabinet.

Existing Data Patching.

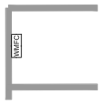
Existing Telecom Room Layout.

Existing Cross-Connect Room.



RAY PEEL

TELECOMMUNICATIONS ROOM – TR-RAY PEEL



The telecommunications space is on the wall in the utility room. It is a shared space utilized for the fire alarm panel and fire sprinkler riser. There is not a dedicated telecommunications room. The telecommunications space contains a wall mount fiber cabinet and media converters with unsupported cables. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Olsen Building (Building 19). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room. Electrical infrastructure is not standards compliant.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

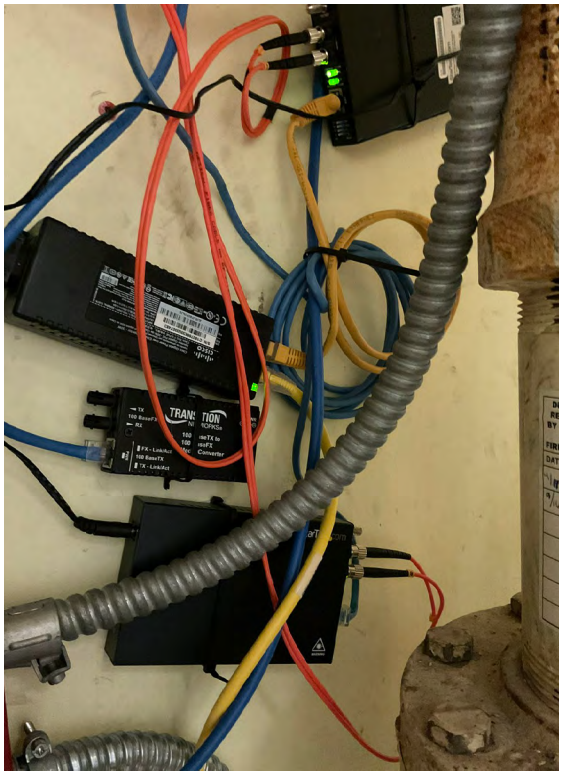
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

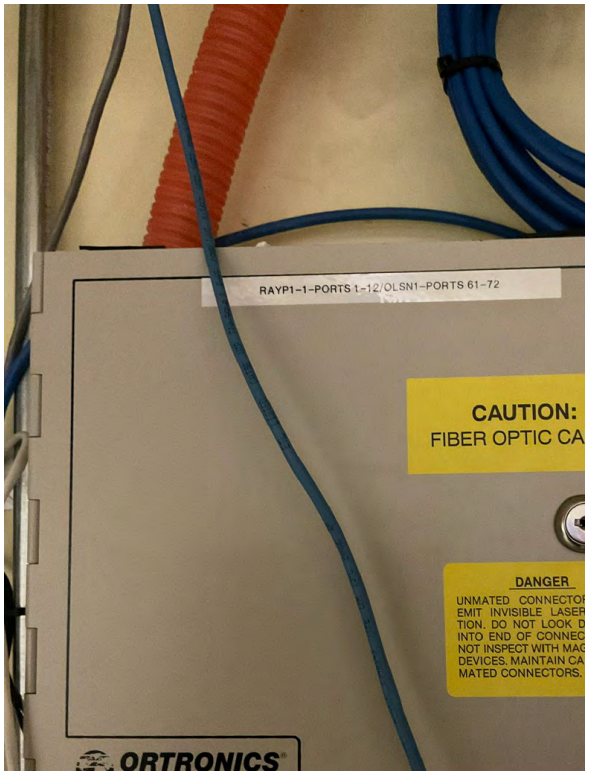
Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Olsen Building (Building 19).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-RAY PEEL



Existing Fiber Patching.



Existing Fiber Cabinet.

Existing Telecom Room Layout.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

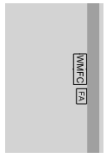
SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

MARTIN

TELECOMMUNICATIONS ROOM – TR-MARTIN

The telecommunications space is on the wall in the utility room. It is a shared space utilized for the fire alarm panel and fire sprinkler riser. There is not a dedicated telecommunications room. The telecommunications space contains a wall mount fiber cabinet and media converters with unsupported cables. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Olsen Building (Building 19). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room. Electrical infrastructure is not standards compliant.



The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

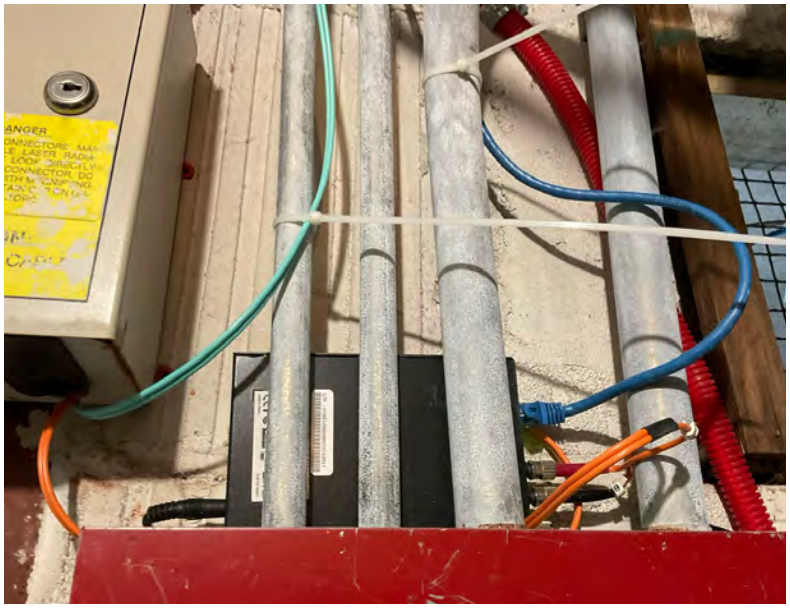
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Olsen Building (Building 19).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-MARTIN



Existing Fiber & Data Patching.

Existing Fiber Cabinet.

STANDARDS COMPLIANCE

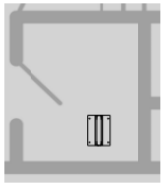
COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

OLSEN

TELECOMMUNICATIONS ROOM – TR-OLSEN



Telecommunications Room TR-Olsen is on the first floor of the Olsen Building. The telecommunications room has a single telecom rack housing multiple fiber cabinets and a single network switch. It is a fiber distribution hub for the campus with 12-strand OM1 multi-mode optical fiber backbone connections to the Cedar (Building 20), Martin (Building 18), and Ray Peel (Building 17) Buildings. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable from the Administration Building (Building 1). Space for expansion is available on the existing rack. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room. There is an overhead ladder rack for cable management.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control 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 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.

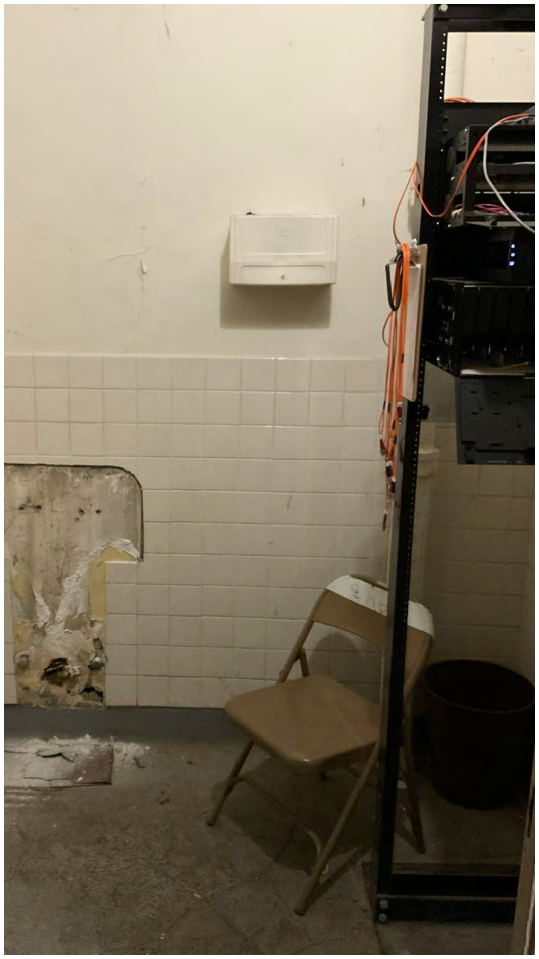
Recommendations:

- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from Administration Building (Building 1).
- Add Telecommunications Grounding Busbar.
- Add cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-OLSEN

Existing Telecom Rack.

Existing Fiber Patching.



Existing Telecom Room Layout.

STANDARDS COMPLIANCE

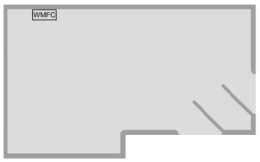
COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

CEDAR

TELECOMMUNICATIONS ROOM – TR-CEDAR



Telecommunications Room TR-Cedar contains a single wall mount fiber cabinet. There is not a dedicated telecommunications room. There are no switches or patch panels in the room. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Olsen Building (Building 19). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Olsen Building (Building 19).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-CEDAR

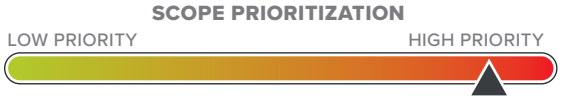
Existing Fiber Cabinet.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

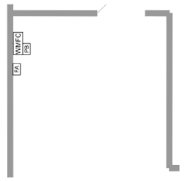
SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY



CARPENTER SHOP

TELECOMMUNICATIONS ROOM – TR-CARPENTER



The telecommunications space is on the wall in an open area within the facility. There is no dedicated telecommunications space. The telecommunications space contains a wall mounted fiber cabinet. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Powerhouse Building (Building 30) and a 50-pair twisted-pair copper backbone cable from the Administration Building (Building 1). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

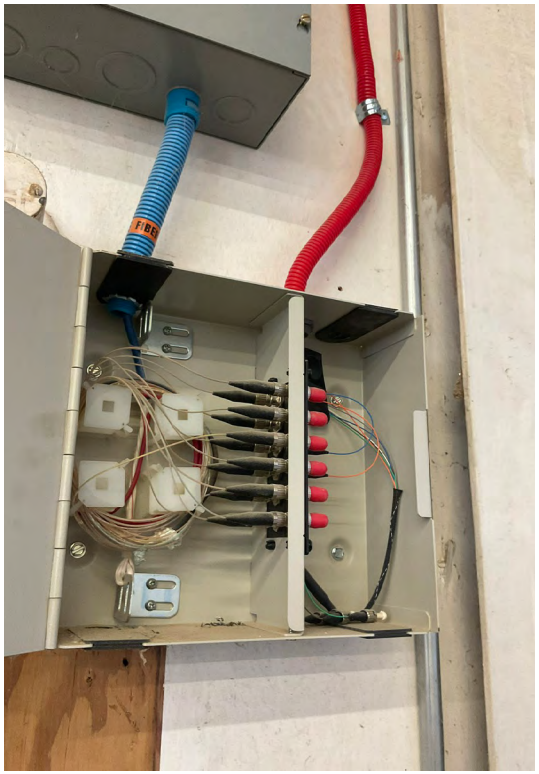
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Olsen Building (Building 19).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

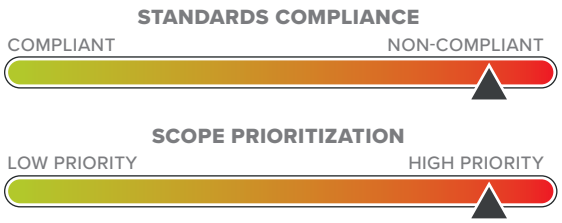
TELECOMMUNICATIONS ROOM – TR-CARPENTER



Existing Fiber Patching.

Existing Fiber Cabinet.

Existing Telecom Room Layout.



MAINTENANCE SHOP

TELECOMMUNICATIONS ROOM – TR-101

The telecommunications space is in the ceiling space above the reception area. There is no dedicated telecommunications room. The telecommunications space consists of two wall mount fiber cabinets, a patch panel, and a vertically mounted network switch. Connectivity is provided by 12-strand and 6-strand OM1 multi-mode optical fiber backbone cables from the Powerhouse Building (30) and a 50-pair twisted-pair copper backbone cable from the Administration Building (Building 1). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

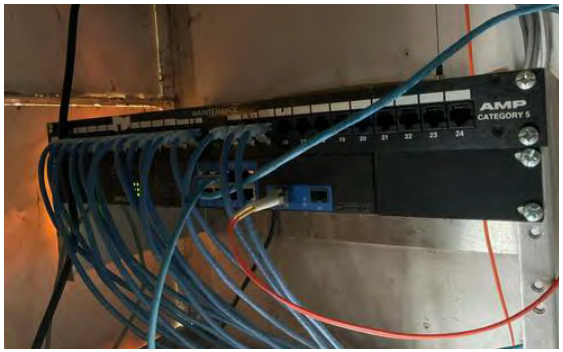
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

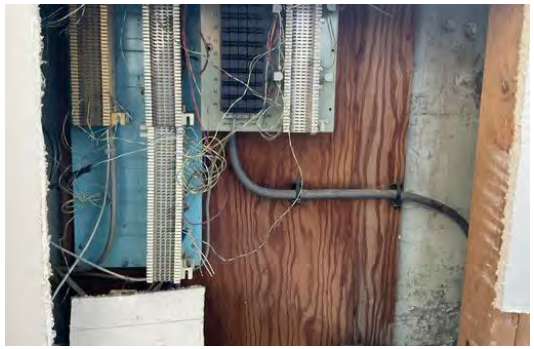
Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Powerhouse Building (Building 30).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-101



Existing Data Patching.



Existing Voice Patching.

Existing Telecom Room.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

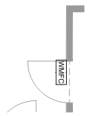
SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

COMMISSARY

TELECOMMUNICATIONS ROOM – TR-COMMISSARY

The Telecommunications Space, TR-commissary, is in an open area within the facility. There is no dedicated telecommunications room. The TR space contains a wall mounted fiber cabinet. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Powerhouse Building (Building 30). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.



The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Powerhouse Building (Building 30).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-COMMISSARY

Existing Fiber Patching.

Fiber Cabinet Above Window.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

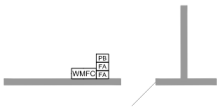
SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

MOTORPOOL

TELECOMMUNICATIONS ROOM – TR-MOTORPOOL

The telecommunications space in the Motorpool is in an open area within the welding shop area. There is no dedicated telecommunications room. The telecommunications space consists of a wall mounted fiber cabinet and a network switch. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Powerhouse Building (Building 30). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.



The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Powerhouse Building (Building 30).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-MOTORPOOL

Existing Fiber Patching.

Existing Telecom Room Layout.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

PAINT SHOP

TELECOMMUNICATIONS ROOM – TR-PAINT SHOP

The telecommunications space in the Paint Shop is in an open area within the facility. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted fiber cabinet. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Powerhouse Building (Building 30) and a 50-pair twisted-pair copper backbone cable from the Administration Building (Building 1). The network switch is in the office area and it hangs by cables from the ceiling. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

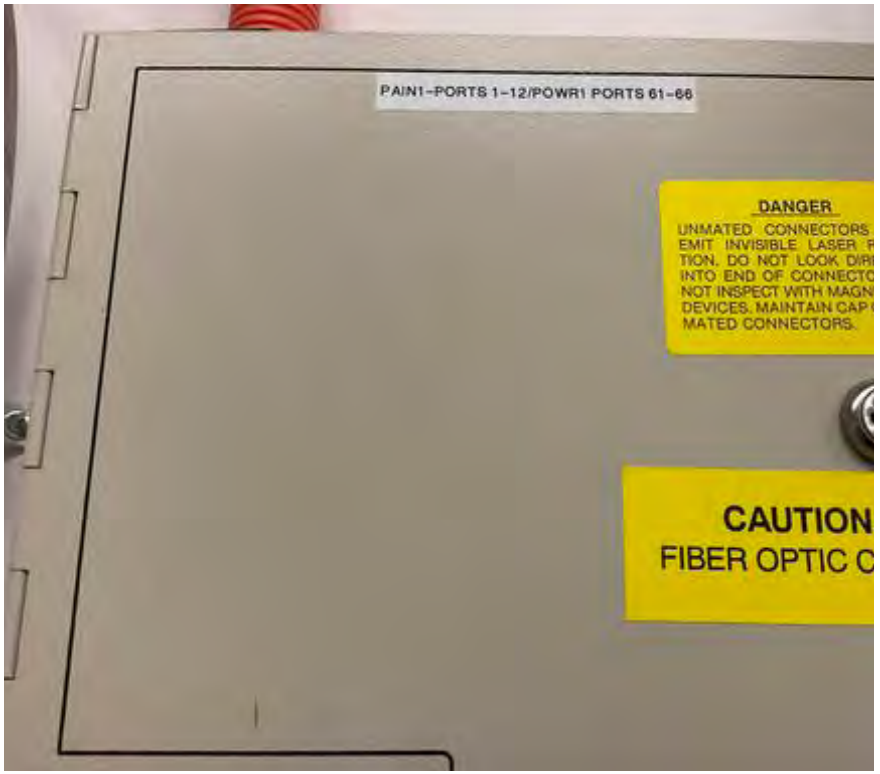
- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No grounding busbar for the telecommunications equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Powerhouse Building (Building 30).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-PAINT SHOP

Existing Fiber Patching.



Existing Fiber Cabinet.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

MAINTENANCE STORAGE

TELECOMMUNICATIONS ROOM – TR-MAINTENANCE

The telecommunications space in the Maintenance Storage Building is in an open area within the facility. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted network switch connected by a single Category 5e cable from the Paint Shop. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Powerhouse Building (Building 30).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

STANDARDS COMPLIANCE

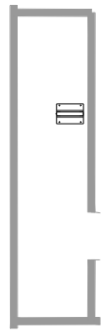
COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

POWERHOUSE

TELECOMMUNICATIONS ROOM – TR-ELECTRICAL



The telecommunications space is a shared space in the electrical room. There is no dedicated telecommunications room. The room contains a single telecommunications rack with multiple rack mount fiber cabinets, switches, and patch panels. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable from the Administration Building (Building 1). The Powerhouse acts as a fiber hub for the campus, with OM1 multi-mode optical fiber backbone connections to Hurlbert, Laundry, Commissary, Carpenter Shop, Maintenance, Motorpool, and the Paint Shop. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

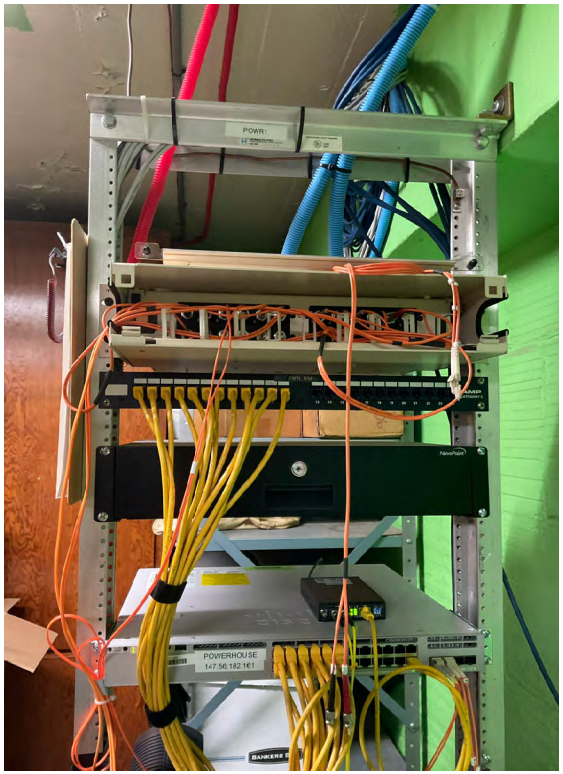
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Powerhouse Building (Building 30).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-ELECTRICAL



Existing Telecom Rack.

Existing Fiber Patching.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

LAUNDRY & SEWING

TELECOMMUNICATIONS ROOM – TR-LAUNDRY

The telecommunications space is in the facility's office area. There is no dedicated telecommunications room. The telecommunications space is located on the North wall of the office space. The space contains a wall mounted fiber cabinet. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable and a Category 5e cable from the Powerhouse Building (Building 30) and a 50-pair twisted-pair copper backbone cable from the Administration Building (Building 1). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

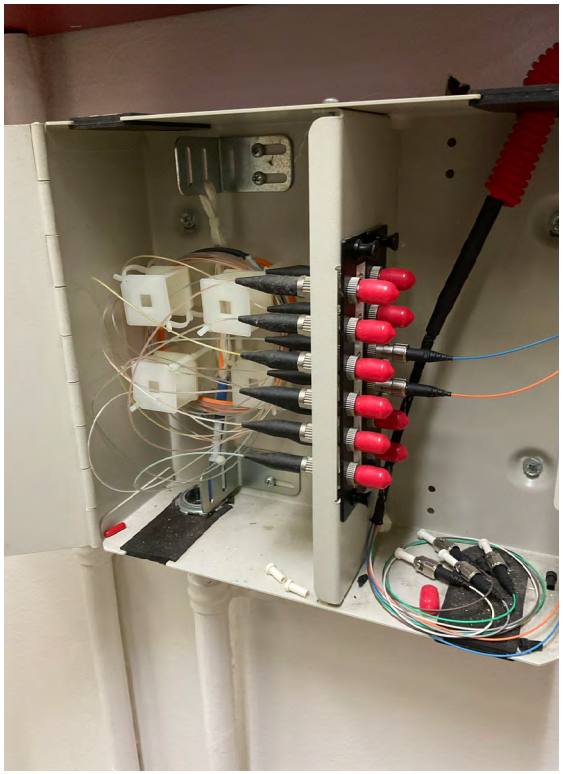
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

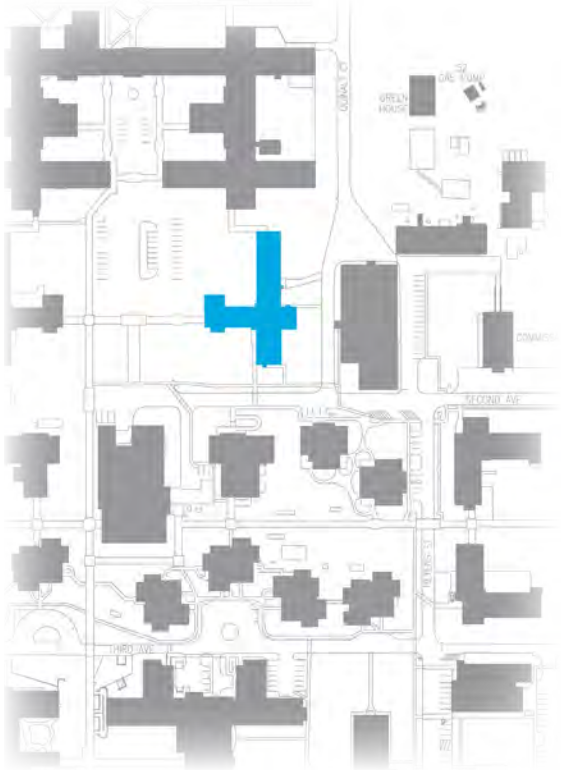
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Powerhouse Building (Building 30).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-LAUNDRY



Existing Fiber Patching.

Existing Fiber Cabinet.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

HURLBERT

TELECOMMUNICATIONS ROOM – TR-HURLBERT

The telecommunications space is a shared area in the basement of the building. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted fiber cabinet and it is shared with the fire alarm control panel. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Powerhouse Building (Building 30) and a 50-pair twisted-pair copper backbone cable from the Administration Building (Building 1). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Powerhouse Building (Building 30).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-HURLBERT

Existing Fiber Cabinet.

Existing Telecom Room Layout.

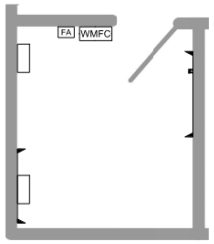
STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

COLUMBIA



TELECOMMUNICATIONS ROOM – TR-COLUMBIA

The telecommunications space is a vertical wall mounted enclosure in an office that shares space with the fire alarm control panel. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted rack, a fiber cabinet, and a 110 block. The wall mounted rack houses a network switch. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Oakley Building (Building 35), and a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room. An OM3 patch cable was utilized to patch to the OM1 backbone cable resulting in a cable mismatch and added reflectivity and noise in the system.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

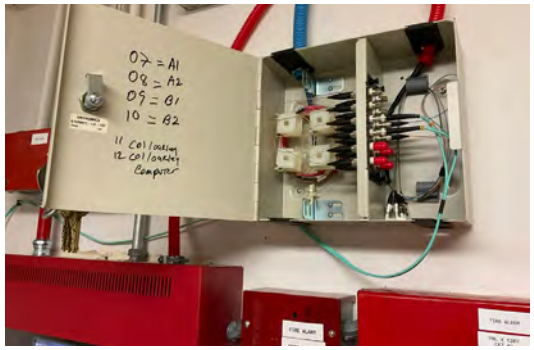
- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No grounding busbar for the telecommunications equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Oakley Building (Building 35).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-COLUMBIA

Existing Telecom Cabinet.



Existing Fiber Patching.

Existing Voice Patching.

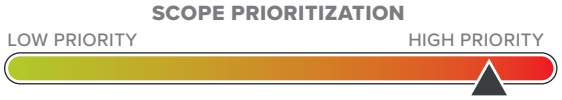
Existing Telecom Room Layout.

STANDARDS COMPLIANCE

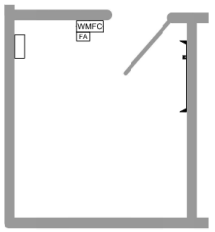
COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY



CRYSTAL



TELECOMMUNICATIONS ROOM – TR-CRYSTAL

The telecommunications space is a vertical wall mounted enclosure in the Mother's Room that shares space with the fire alarm control panel. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted rack, a fiber cabinet, and a 110 block. The wall mounted rack houses a network switch. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Oakley Building (Building 35), and a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Oakley Building (Building 35).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

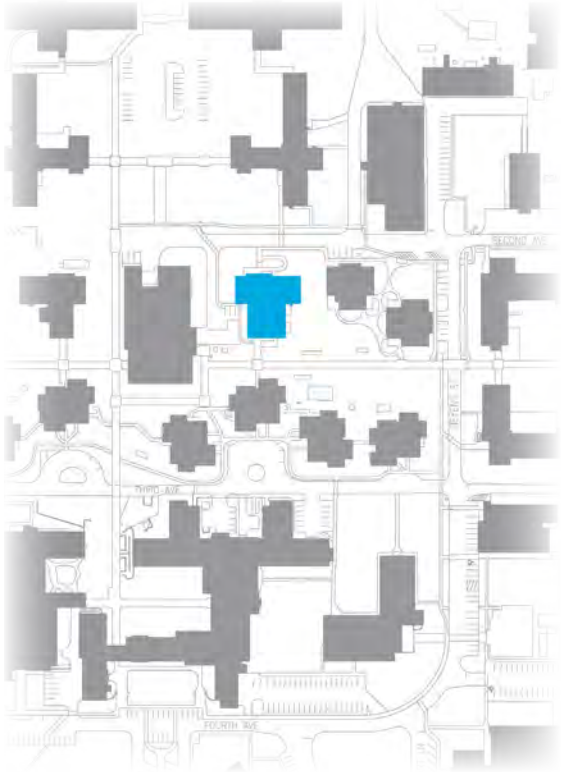
TELECOMMUNICATIONS ROOM – TR-CRYSTAL

Existing Telecom Room Layout.

Existing Fiber & Data Patching.

Existing Fiber Cabinet.

Existing Telecom Cabinet.



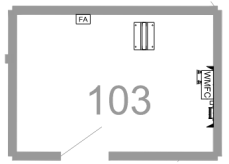
STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

OAKLEY



TELECOMMUNICATIONS ROOM – TR-103

The Telecommunications Room, TR-103, is located along the north-south corridor The telecommunications room contains a floor-mounted rack, a wall mount fiber cabinet, an entrance protection enclosure, a patch panel, and 110 blocks. The floor-mounted rack includes network switches, rack mount fiber cabinets, patch panels, and a UPS. Connectivity is provided by a 24-strand OM1 multi-mode optical fiber backbone cable from the Administration Building (Building 1) and a 6-strand OM1 multi-mode optical fiber backbone cable from the Meyer Building (Building 37). Oakley is a fiber hub for the campus, with 12-strand OM1 multi-mode optical fiber backbone cables to Percival, Devenish, Tyee, Hyak, Columbia, and Crystal. A telecommunications grounding busbar was observed. There was no dedicated cooling for temperature and humidity control. A fan was hung on the wall to cool the telecommunications equipment.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control 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 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.

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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Administration Building (Building 1).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

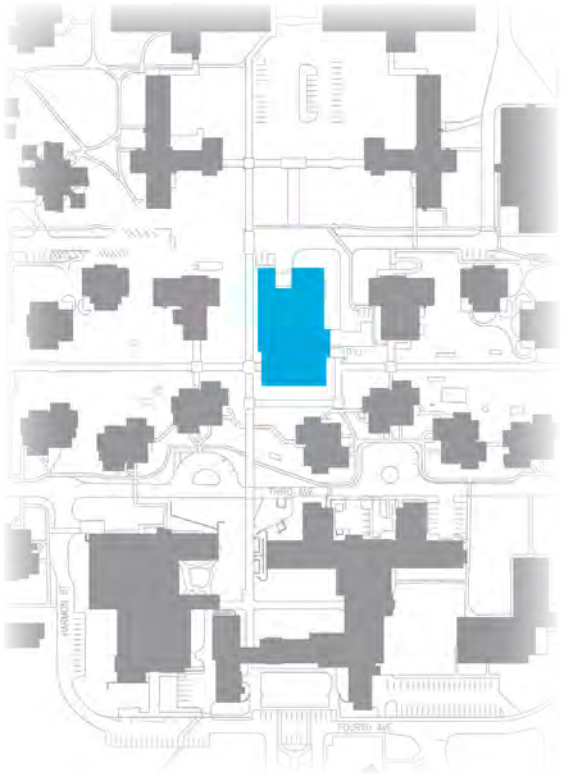
TELECOMMUNICATIONS ROOM – TR-103

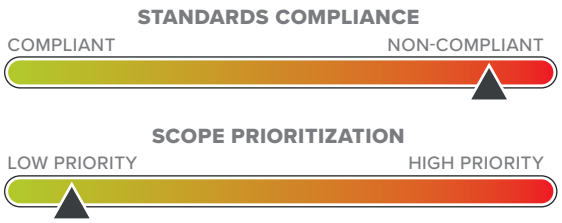
Existing Voice & Data Patching.

Existing Fiber Patching.

Existing Fan Used for Cooling.

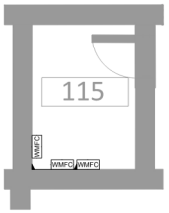
Existing Telecom Room Layout.





CENTRAL KITCHEN

TELECOMMUNICATIONS ROOM – TR-115



The Telecommunications Room, TR-115, contains three wall mount fiber cabinets. Connectivity is provided by 6-strand and 12-strand OM1 multi-mode optical fiber backbone cables and a 12-strand OM3 multi-mode optical fiber cable from the Meyer Building (Building 37), and a 50-pair copper from the Administration Building. There is a wall mounted ethernet switch and patch panel. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. A rack to support equipment and cable management should be added. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control and track access to the space.

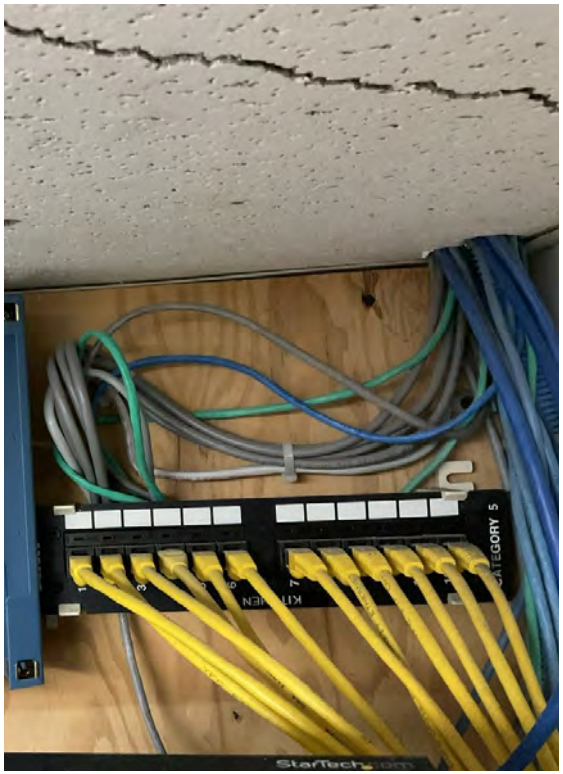
Deficiencies:

- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.
- No racks to support equipment.

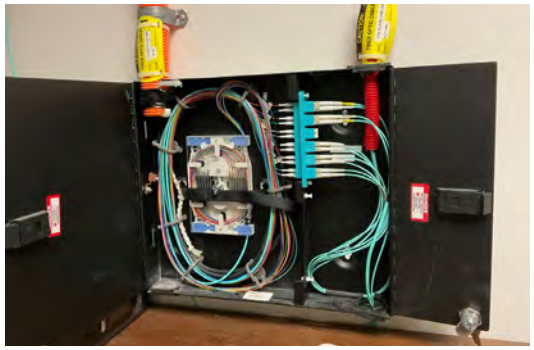
Recommendations:

- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from Meyer Building (37).
- Add Telecommunications Grounding Busbar.
- Add rack, ladder tray, and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

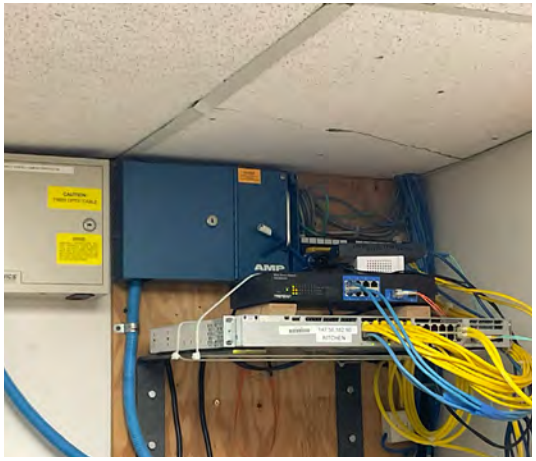
TELECOMMUNICATIONS ROOM – TR-115



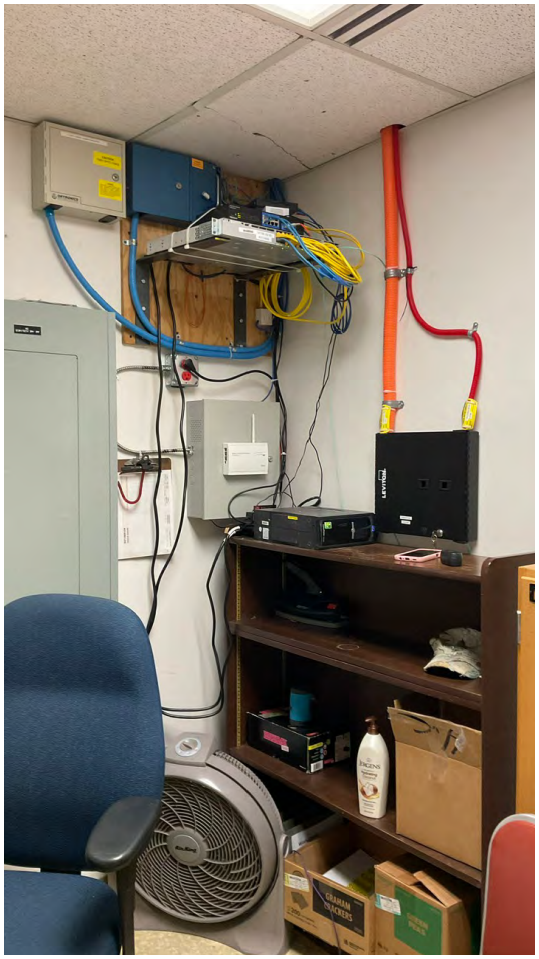
Existing Data Patching.



Existing Fiber Patching.



Existing Telecom Wall Elevation.



Existing Telecom Room Layout.

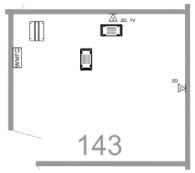
STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

MEYER



TELECOMMUNICATIONS ROOM – TR-143

Telecommunications Room TR-143 contains a telecommunication rack and two server enclosures. One server enclosure contains computer equipment while the other is dedicated for UPS's. The two-post equipment rack contains multiple rack-mounted fiber cabinets, patch panels, and switches. Connectivity is provided by a 144-strand OM1 multi-mode optical fiber cable and a 50-pair Category 3 cable to the Administration Building (Building 1). Meyer is a major fiber distribution hub for the campus. It has fiber optic backbone connections to Laurel, Belle King, Chinook, Cascade, Naches, Klamath, Haddon, Buckley, and the Central Kitchen. Some overhead ladder tray is available for cable routing, but it does not connect the enclosures. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control and track access to the space.

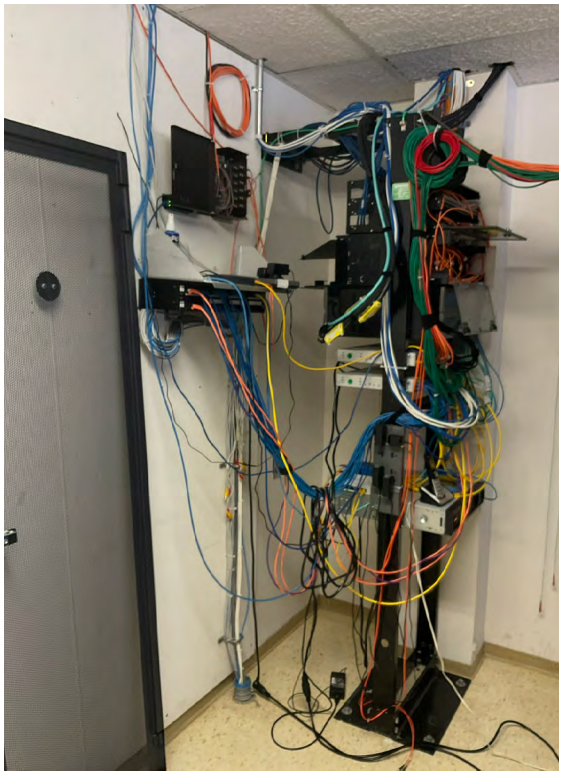
Deficiencies:

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

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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from Administration Building (Building 1).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.
- Add a Telecommunications Grounding Busbar.

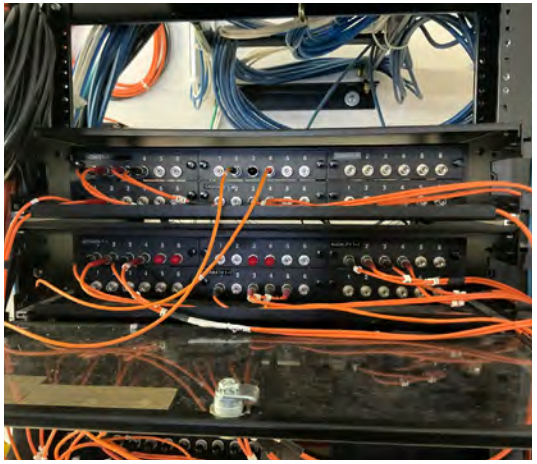
TELECOMMUNICATIONS ROOM – TR-143



Existing Telecom Room Layout.

Existing Data Patching.

Existing Telecom Rack.



Existing Fiber Patching.

Existing UPS & Server Racks.

STANDARDS COMPLIANCE

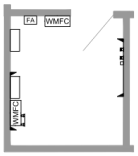
COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

CHINOOK

TELECOMMUNICATIONS ROOM – TR-CHINOOK



The telecommunications space is a vertical wall mounted enclosure in an office that shares space with the fire alarm control panel. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted rack, two wall mount fiber cabinets, and a 110 block. The wall mounted rack houses a network switch. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Meyer Building (Building 37), and a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). A telecommunications grounding busbar was observed in the room bonded to the rack. No dedicated cooling was observed in the room.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

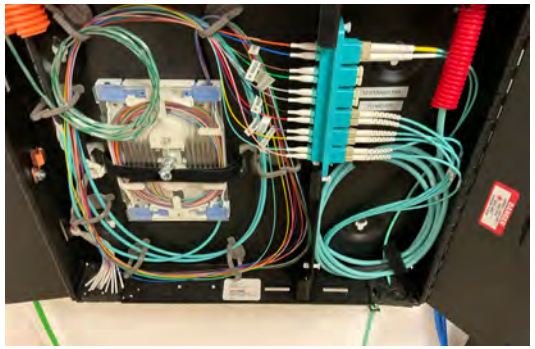
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from Meyer Building (37).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-CHINOOK

Existing Voice Patching.



Existing Fiber Patching.

Existing Telecom Room Layout.

Existing Telecom Cabinet.

STANDARDS COMPLIANCE

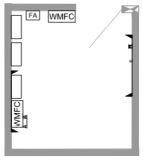
COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

CASCADE

TELECOMMUNICATIONS ROOM – TR-CASCADE



The telecommunications space is a vertical wall mounted enclosure in an office that shares space with the fire alarm control panel. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted rack, two wall mount fiber cabinets, and a 110 block. The wall mounted rack houses a network switch. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Meyer Building (Building 37), and a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). A telecommunications grounding busbar was observed in the room bonded to the rack. No dedicated cooling was observed in the room.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control and track access to the space.

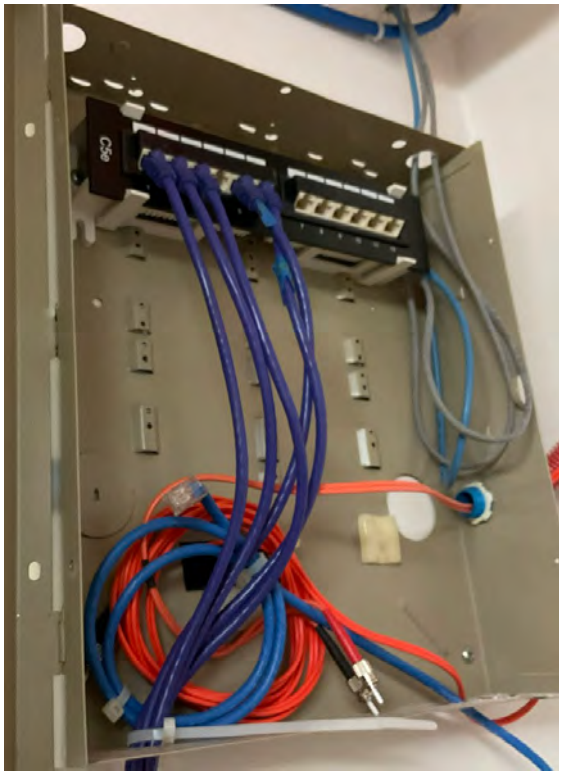
Deficiencies:

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

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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from Meyer Building (37).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-CASCADE

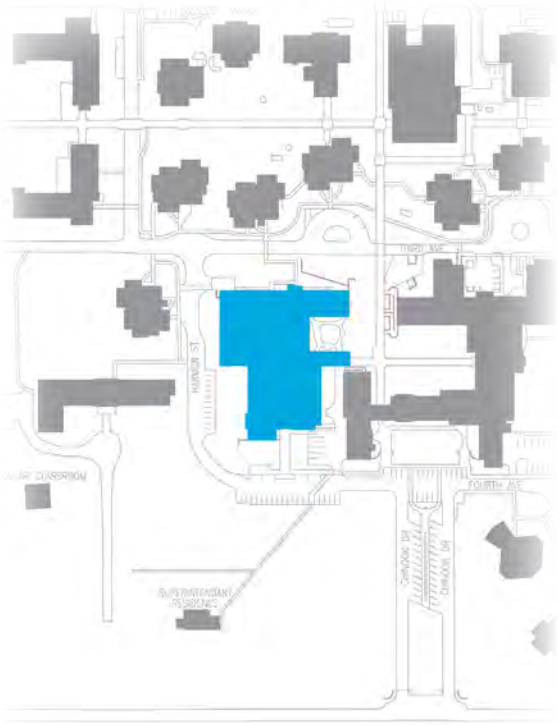


Existing Data Patching.

Existing Fiber Patching.

Existing Telecom Cabinet.

Existing Telecom Room Layout.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

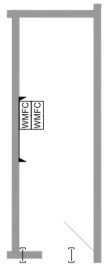
SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

2010 4TH AVENUE

TELECOMMUNICATIONS ROOM – TR-131

Telecommunications Room, TR-131, contains multiple wall mount fiber cabinets, patch panels, and a UPS. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable and a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room. There is a wireless transceiver to provide connectivity to the Modular Classroom Building and the Superintendent's Residence.



The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control 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 cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- No grounding busbar for the telecommunications equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from Meyer Building (37).
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

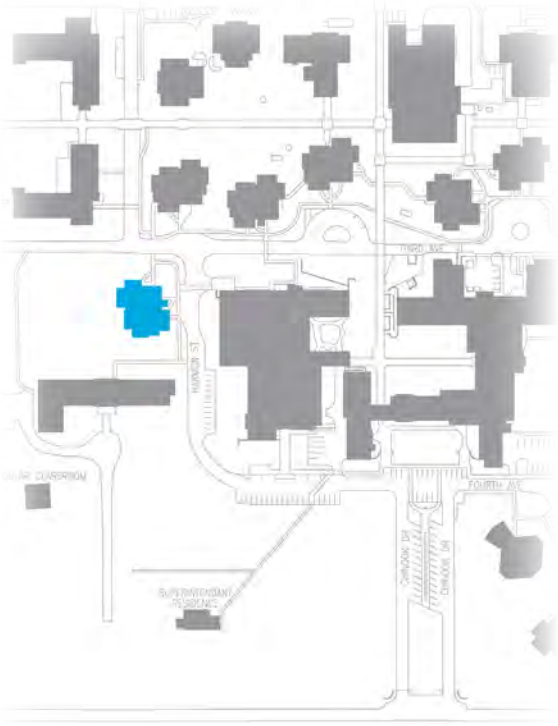
TELECOMMUNICATIONS ROOM – TR-131

Existing Data Patching.

Existing Fiber Patching.

Existing Telecom Equipment.

Existing Telecom Room Layout.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

KLAMATH

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Meyer Building (Building 37). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

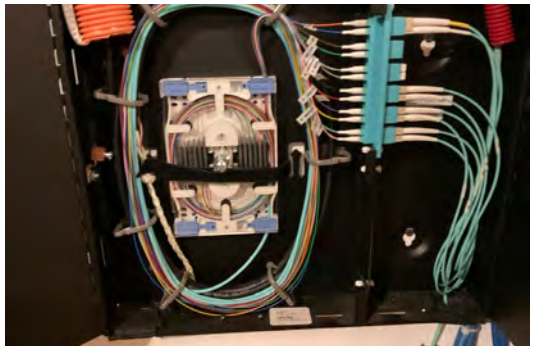
- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Meyer Building (Building 37).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

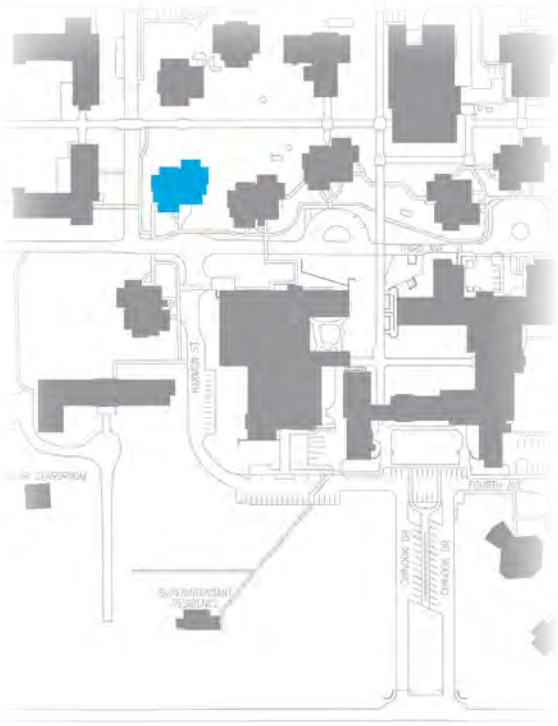
CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

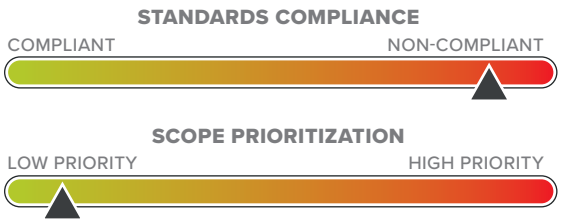
Existing Telecom Cabinet.



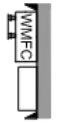
Existing Fiber Patching.

Existing Telecom Room Layout.





NACHES



CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Meyer Building (Building 37). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control and track access to the space.

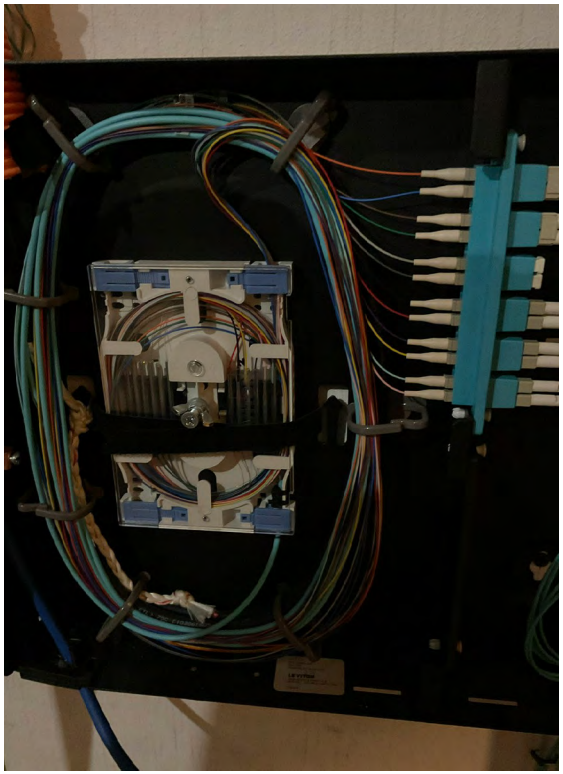
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Meyer Building (Building 37).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

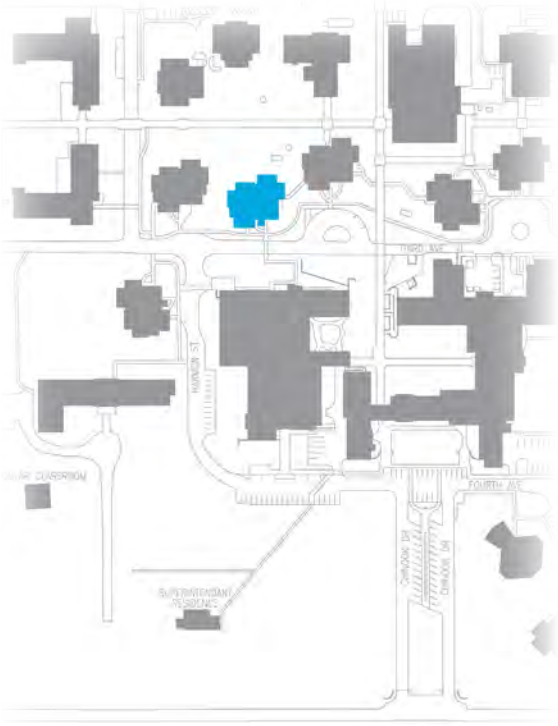


Existing Fiber Patching.

Existing Telecom Room Layout.

Existing Telecom Cabinet.

Existing Data Patching.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

HADDON

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Meyer Building (Building 37). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

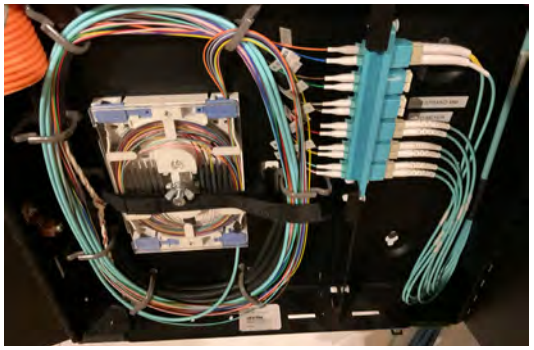
- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Meyer Building (Building 37).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

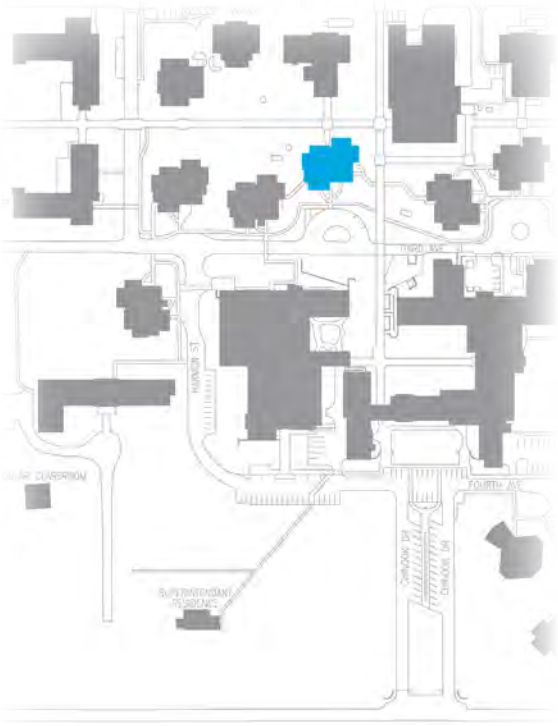
Existing Telecom Cabinet.



Existing Fiber Cabinet.

Existing Telecom Room Layout.

Existing Data Patching.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

BUCKLEY

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Meyer Building (Building 37). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Meyer Building (Building 37).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

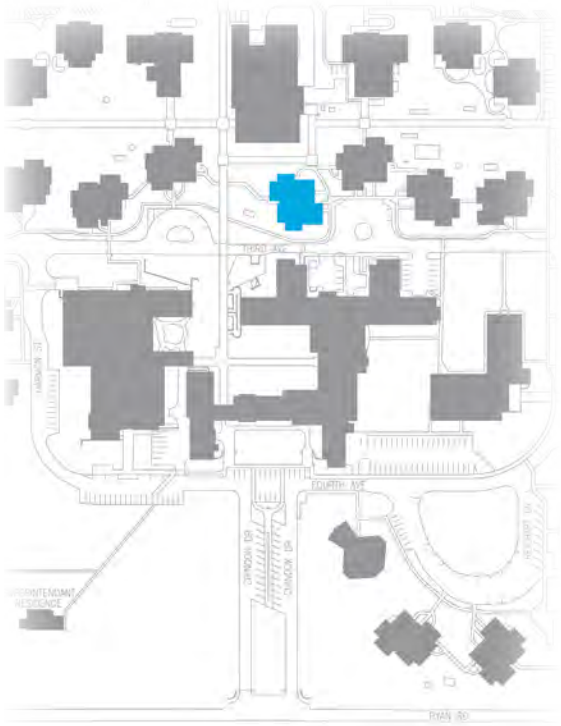
CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

Existing Fiber & Data Patching.

Existing Data Patching.

Existing Telecom Room Layout.

Existing Telecom Cabinet.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

PERCIVAL

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Oakley Building (Building 35). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

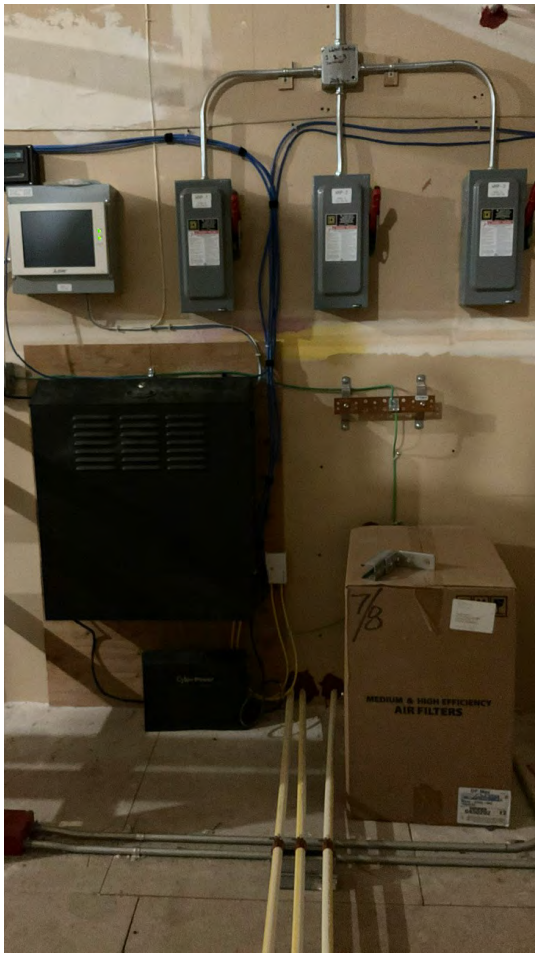
Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Oakley Building (Building 35).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

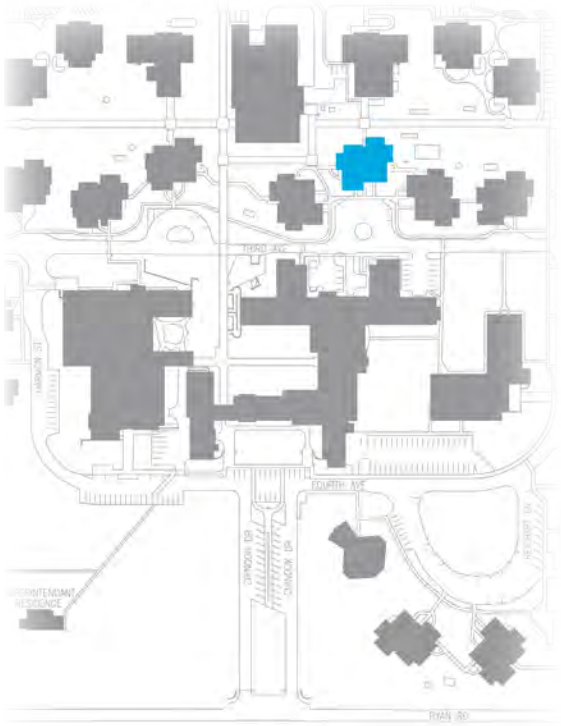
CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

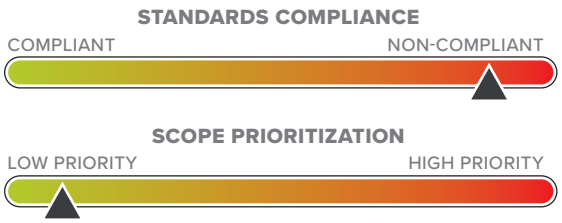
Existing Telecom Room Layout.

Existing Data Patching.



Existing Telecom Cabinet.





DEVENISH

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Oakley Building (Building 35). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Oakley Building (Building 35).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

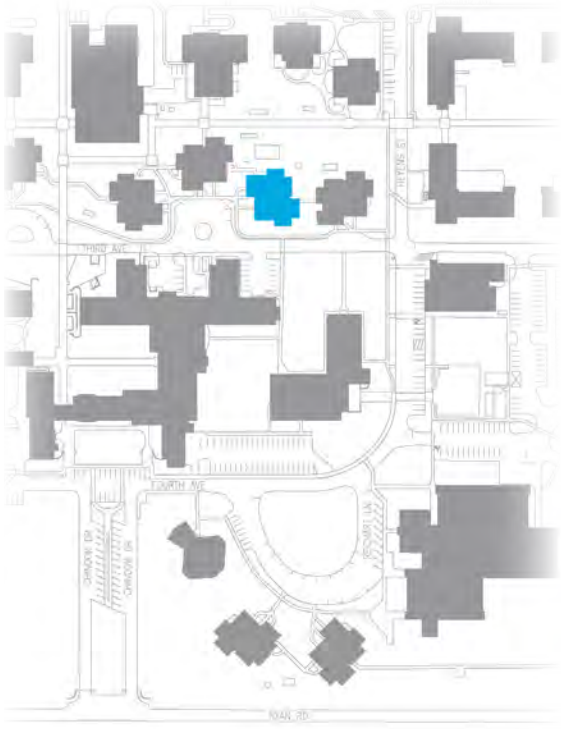
CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

Existing Telecom Room Layout.

Existing Grounding.

Existing Voice Patching.

Existing Telecom Cabinet.



STANDARDS COMPLIANCE

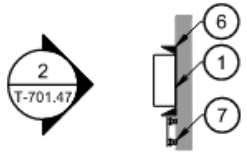
COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

TYEE

CROSS-CONNECT ROOM



The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Oakley Building (Building 35). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

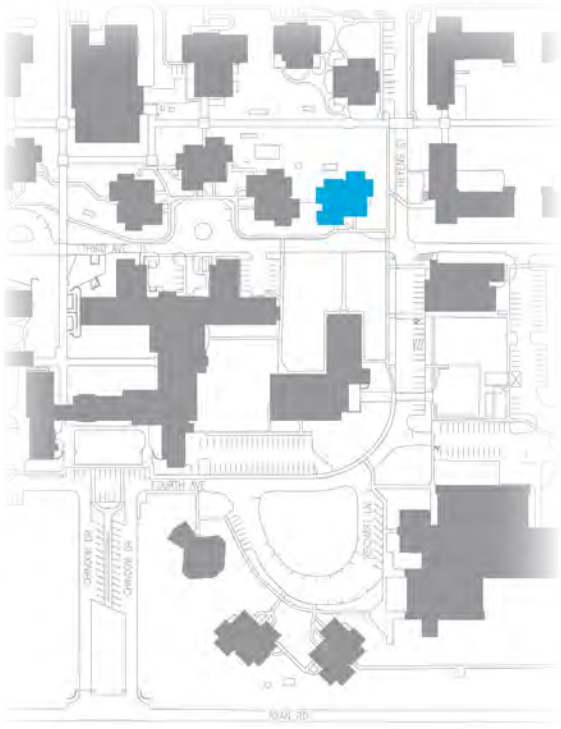
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Oakley Building (Building 35).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

Existing Telecom Room Layout.

Existing Data Patching.

Existing Telecom Cabinet.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

HYAK

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. A telecommunications grounding busbar was not observed, and there is no dedicated cooling for temperature and humidity control.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Oakley Building (Building 35). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

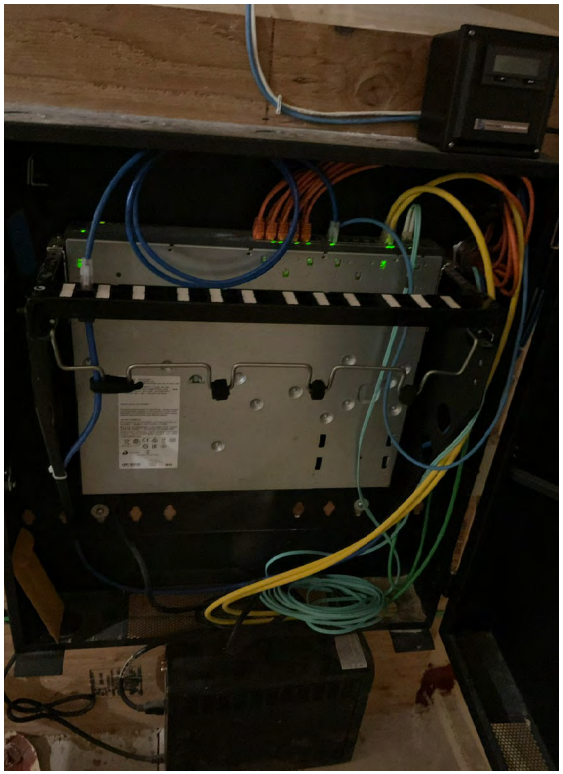
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

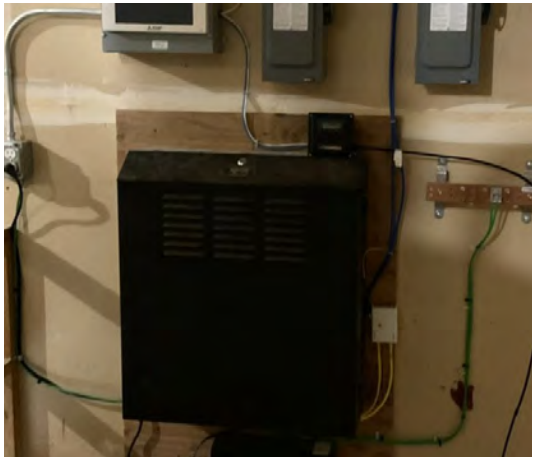
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Oakley Building (Building 35).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC



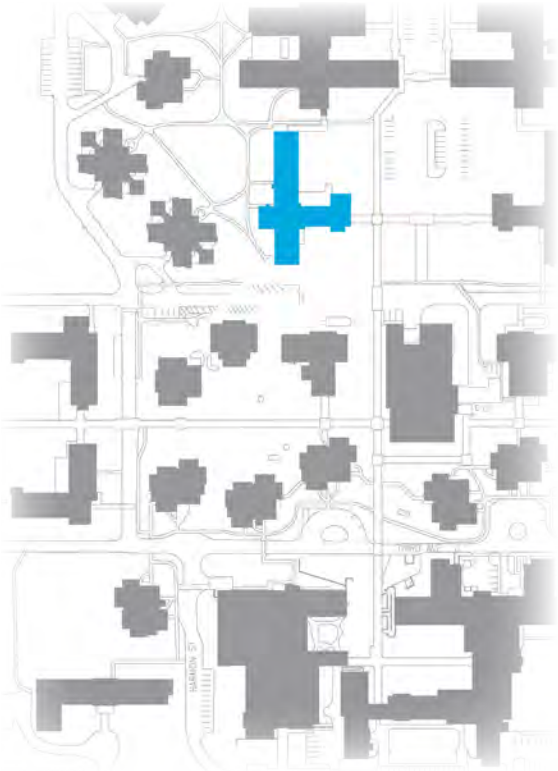
Existing Telecom Cabinet.

Existing Data Patching.



Existing Grounding.

Existing Telecom Room Layout.



STANDARDS COMPLIANCE

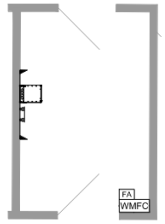
COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

ROBIN

TELECOMMUNICATIONS ROOM – TR-08



The telecommunications room contains a wall mount fiber cabinet, a wall mounted rack, and shares space with the fire alarm control panel. The wall mounted rack includes a network switch and UPS. Connectivity is provided by a 24-strand OM3 multi-mode optical fiber backbone cable and a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). A telecommunications grounding busbar was observed. There is no dedicated cooling for temperature and humidity control.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, and dedicated equipment and convenience receptacles are required to meet standards. The addition of card-based access control is recommended to control 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 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.

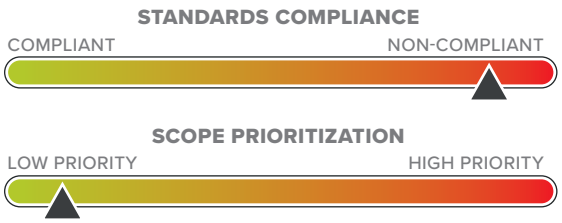
Recommendations:

- 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 24-strand OM4 multi-mode optical fiber backbone from Administration Building (Building 1).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-08

Existing Telecom Room Layout.

Existing Fiber Cabinet.



SPRUCE

TELECOMMUNICATIONS ROOM – TR-57

The telecommunications room contains a single two-post equipment rack with a rack mount fiber cabinet, multiple patch panels, network switches, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). A telecommunications grounding busbar was observed. There is no dedicated cooling for temperature and humidity control.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling is required to meet standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

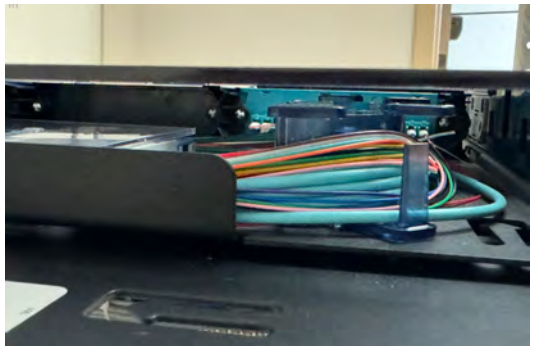
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.

Recommendations:

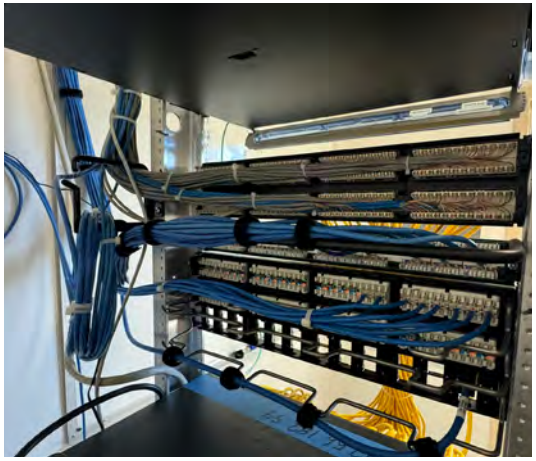
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 24-strand OM4 multi-mode optical fiber backbone from Hemlock Building (Building 50B).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-57

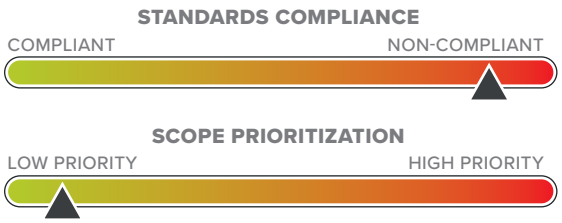
Existing Telecom Room Layout.



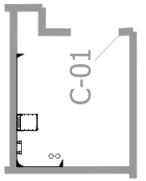
Existing Fiber Patching.



Existing Data Patching.



HEMLOCK



TELECOMMUNICATIONS ROOM – TR-C01

The telecommunications room contains a single wall mounted rack with a rack mount fiber cabinet, multiple patch panels, network switches, and a UPS. Connectivity is provided by a 144-strand OM3 multi-mode optical fiber backbone cable and two 100-pair Category 3 twisted-pair copper backbone cables from the Administration Building (Building 1). Hemlock is a primary fiber distribution hub for the campus with 12-strand OM3 multi-mode optical fiber backbone connections to the Quinault Court Buildings, Pine, Spruce, and Fir. A telecommunications grounding busbar was observed with proper bonding to the telecom equipment. There is no dedicated cooling for temperature and humidity control.

The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to upgrade the existing backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling is required to meet standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

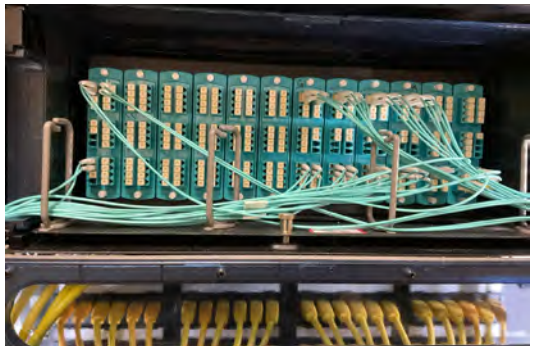
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

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 48-strand single-mode optical fiber backbone from the Administration Building (Building 1).
- Add floor mounted racks for equipment.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-C01

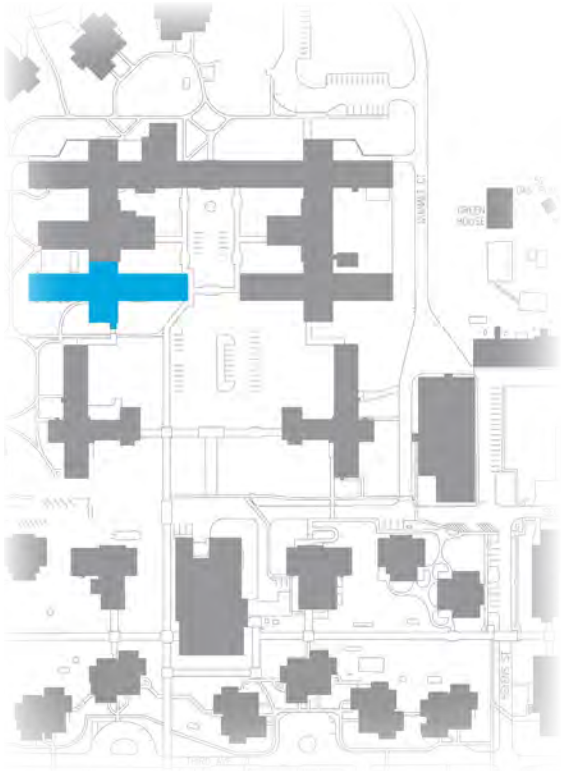
Existing Telecom Cabinet.



Existing Fiber Patching.

Existing Telecom Room Layout.

Existing Grounding.



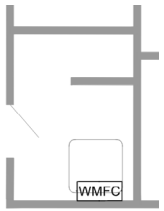
STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

FIR



TELECOMMUNICATIONS ROOM – TR-FIR

The telecommunications space is in the fire control panel room. There is not a dedicated telecommunications space. The space contains a wall mounted fiber cabinet. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

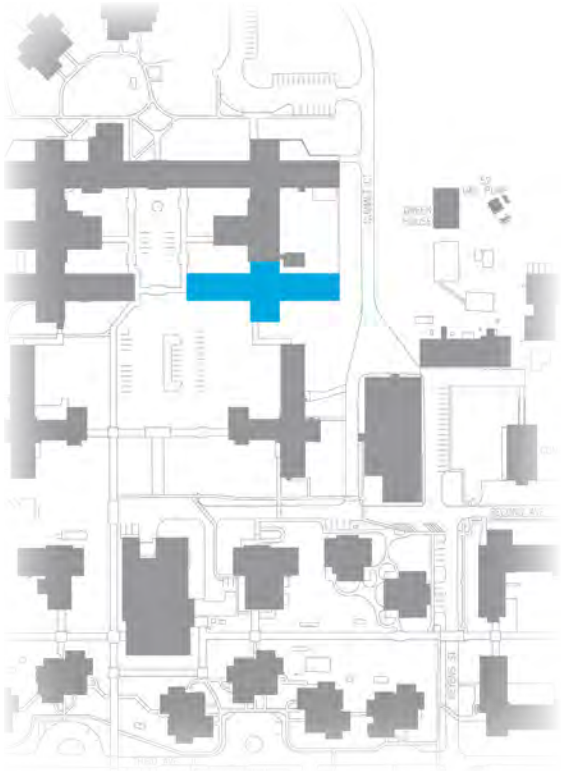
The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Hemlock Building (Building 50B).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

PINE

TELECOMMUNICATIONS ROOM – TR-118

The Telecommunications room is in the fire control panel room. The space contains two wall mounted fiber cabinets. There is not a dedicated telecommunications room. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). A telecommunications grounding busbar was observed. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Hemlock Building (Building 50B).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-118

Existing Fiber Cabinet.

Existing Grounding.

Existing Telecom Room Layout.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

GASOLINE STATION

The gasoline station's office building is served by (1) Category 5e cable from the Maintenance Storage Building (Building 28) to support a single workstation in the office. Neither a telecommunications grounding busbar nor dedicated cooling were observed. There is no dedicated telecommunications space.

There is no existing telecommunications space. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a telecommunications enclosure with standards compliant backbone and horizontal cabling. Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards.

Deficiencies:

- No dedicated telecommunications space.
- 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.

Recommendations:

- Provide a dedicated telecommunications enclosure.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Powerhouse (Building 30).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

GASOLINE STATION

Existing Category 5e Cable.

STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

BELLE KING

TELECOMMUNICATIONS ROOM – TR-BASEMENT

The telecommunications space is in the fire alarm control panel room in the basement. There is no dedicated telecommunications space. The space contains a single wall mount fiber cabinet. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Meyer Building (Building 37) and a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

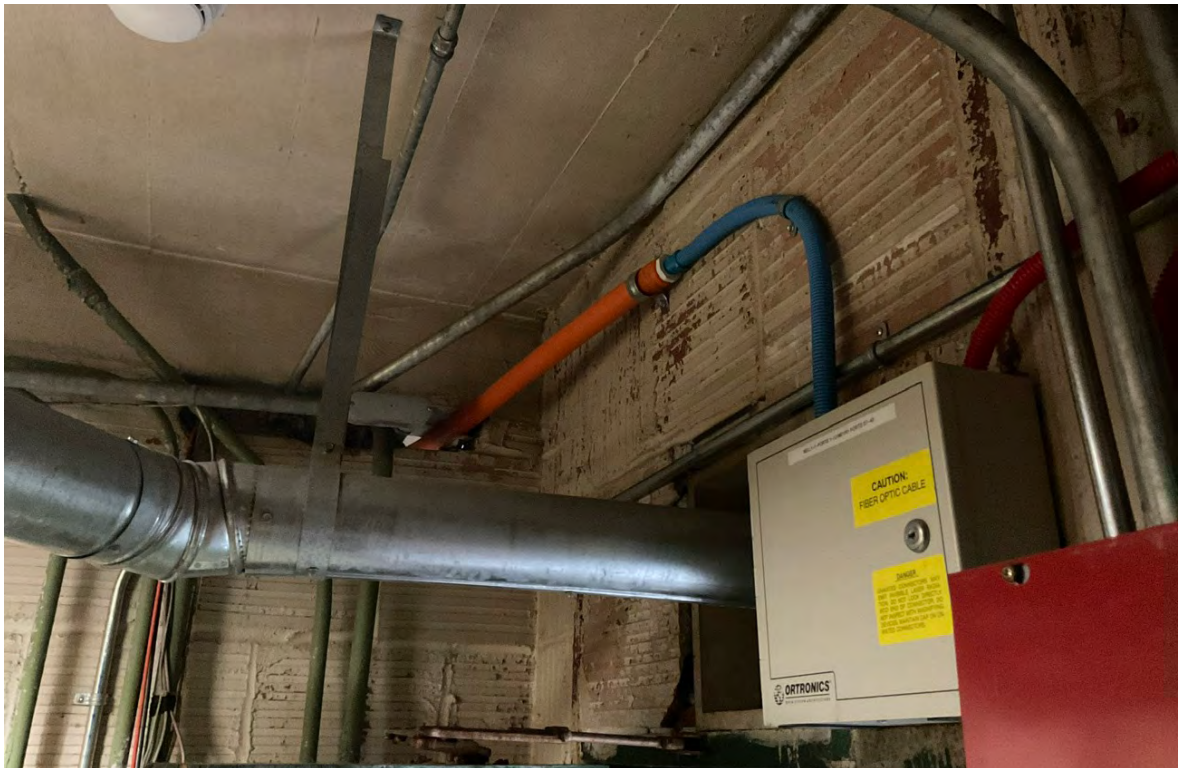
- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No grounding busbar for the telecommunications equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Meyer Building (Building 37).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-BASEMENT

Existing Fiber Cabinet.



Existing Fiber Routing.

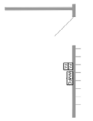
STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

LAUREL



TELECOMMUNICATIONS ROOM – TR-BASEMENT

The telecommunications space is in the fire alarm control panel room in the basement. There is no dedicated telecommunications space. The space contains a single wall mount fiber cabinet. Connectivity is provided by a 12-strand OM1 multi-mode optical fiber backbone cable from the Meyer Building (Building 37) and a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

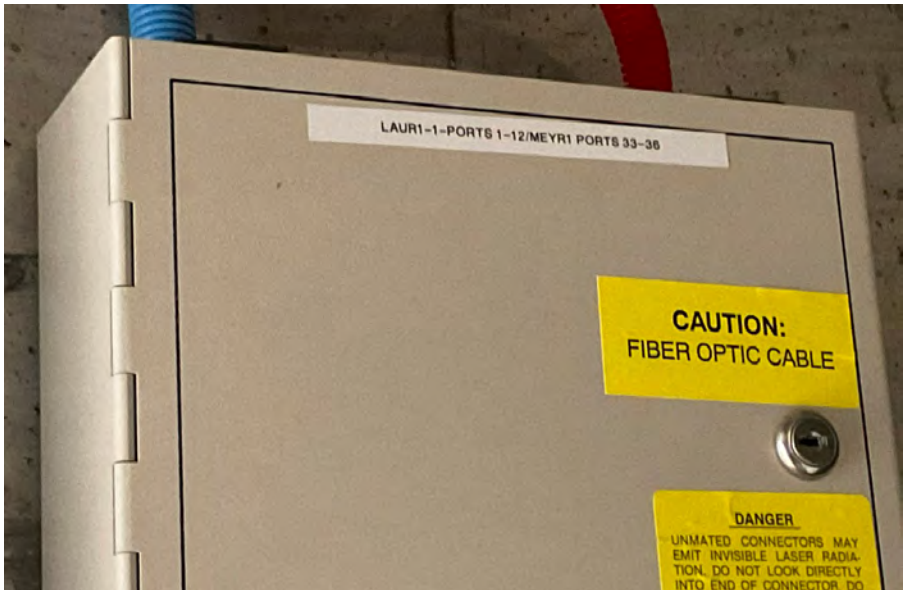
- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No grounding busbar for the telecommunications equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

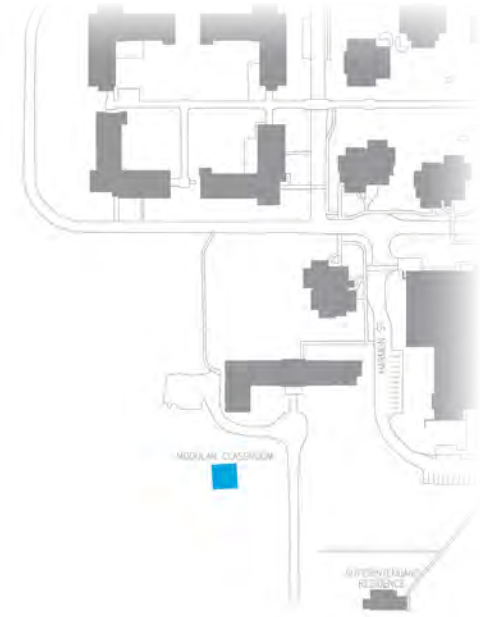
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Meyer Building (Building 37).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-BASEMENT

Existing Telecom Room Layout.



Existing Fiber Cabinet.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

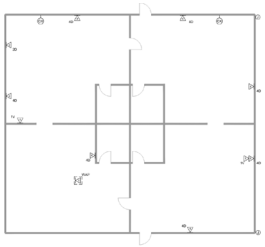
SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

MODULAR CLASSROOM

TELECOMMUNICATIONS ROOM – TR-MODULAR CLASSROOM

The telecommunications room is served by a point-to-point wireless network from the 2010 4th Avenue Building (Building 40). There is no dedicated telecommunications space. Neither a telecommunications grounding busbar nor dedicated cooling were observed.



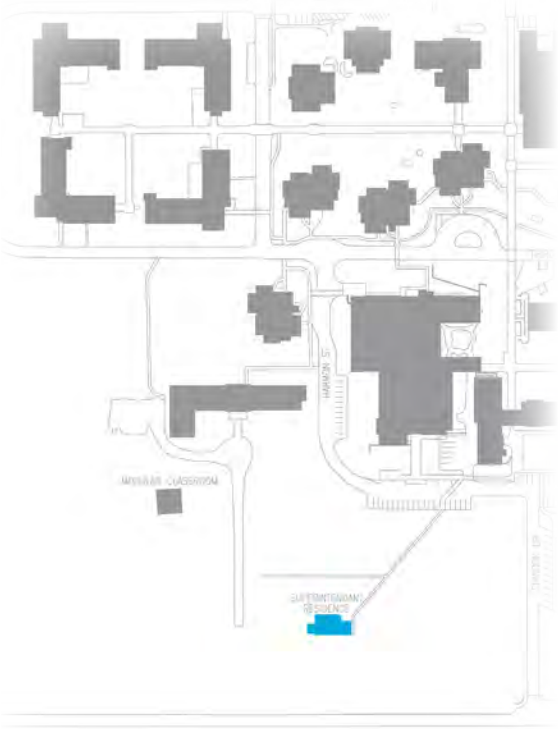
There is no existing telecommunications space. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a telecommunications enclosure with standards compliant backbone and horizontal cabling. Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications enclosure.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the 2010 4th Avenue Building (Building 30).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.



STANDARDS COMPLIANCE

COMPLIANT — NON-COMPLIANT

SCOPE PRIORITIZATION

LOW PRIORITY — HIGH PRIORITY

SUPERINTENDENT'S RESIDENCE

TELECOMMUNICATIONS ROOM – TR-SUPERINTENDENT'S RESIDENCE

The superintendent's residence is served by a point-to-point wireless mesh network interconnected between the Modular Classroom Building (Building 58) and the 2010 4th Avenue building (Building 40) and a 50-pair Category 3 twisted-pair copper backbone cable from the Administration Building (Building 1). Neither a telecommunications grounding busbar nor dedicated cooling were observed. There is no dedicated telecommunications space.

There is no existing telecommunications space. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a telecommunications enclosure with standards compliant backbone and horizontal cabling. Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards.

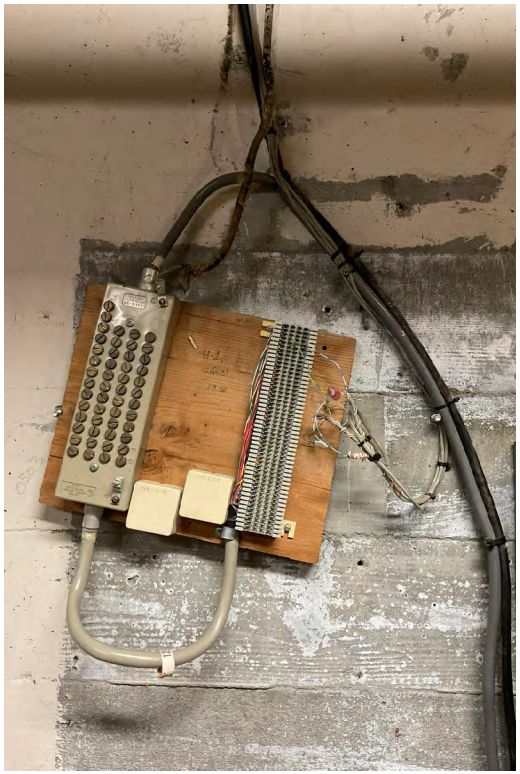
Deficiencies:

- No dedicated telecommunications space.
- 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.

Recommendations:

- Provide a dedicated telecommunications enclosure.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the 2010 4th Ave Building (Building 40).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

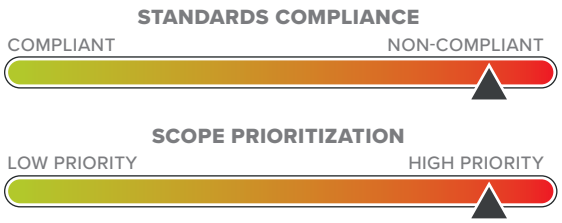
TELECOMMUNICATIONS ROOM – TR-SUPERINTENDENT'S RESIDENCE



Existing Voice Patching.

Existing Room Layout.

Existing Category 3 Cabling.



QUINAULT COURT 1050 (BEHAVIOR MANAGEMENT)

TELECOMMUNICATIONS ROOM – TR-BASEMENT

The telecommunications room is in the basement mechanical HVAC room. There is no dedicated telecommunications space. The basement telecommunications equipment is split between two wall spaces: one adjacent to the exterior entry door and the other at the rear of the basement. The space adjacent to the basement entry door contains one wall mount fiber cabinet. The space at the rear of the basement contains a wall mounted rack, a wall mount fiber cabinet, and a patch panel. The wall mounted rack supports a network switch and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). The wall mount fiber cabinet near the basement entry door is served by a defunct 12-strand OM1 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). A telecommunications grounding busbar was observed. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

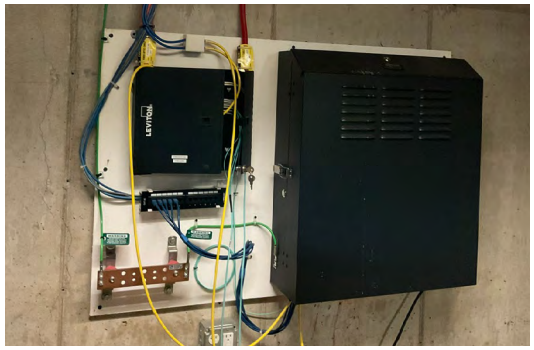
- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No grounding busbar for the telecommunications equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

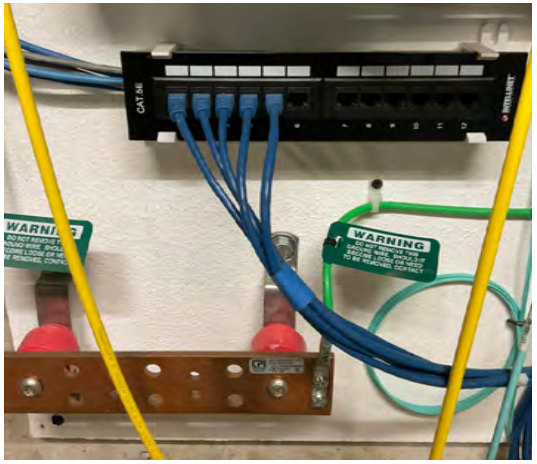
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Hemlock Building (Building 50B).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

TELECOMMUNICATIONS ROOM – TR-BASEMENT

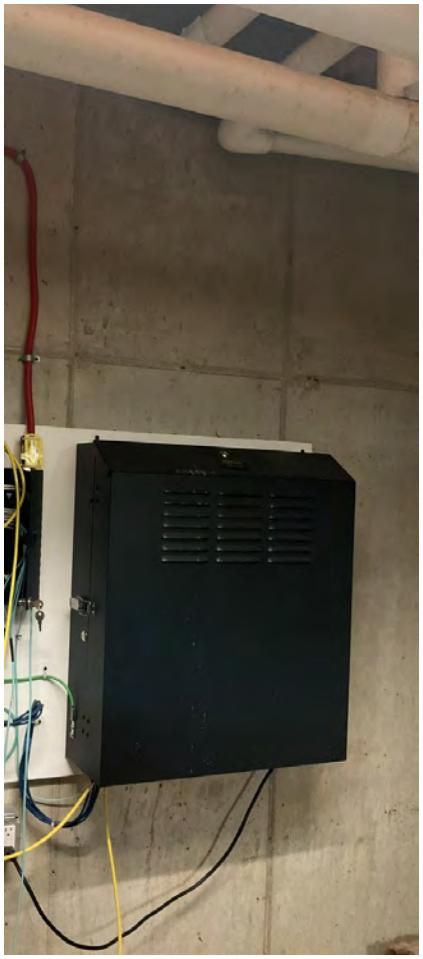
Existing Fiber Patching.



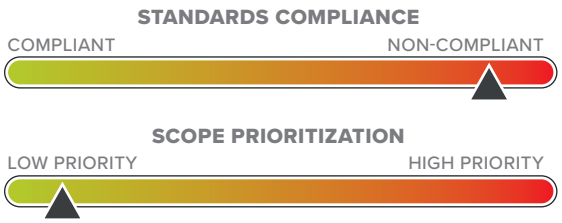
Existing Telecom Room Layout.



Existing Data Patching.



Existing Telecom Cabinet.



QUINAULT COURT 1040 (BEHAVIOR MANAGEMENT)

TELECOMMUNICATIONS ROOM – TR-BASEMENT

The telecommunications room is in the basement mechanical HVAC room. There is no dedicated telecommunications space. The basement telecommunications equipment is split between two wall spaces: one adjacent to the exterior entry door and the other at the rear of the basement. The space adjacent to the basement entry door contains one wall mount fiber cabinet. The space at the rear of the basement contains a wall mounted rack, a wall mount fiber cabinet, and a patch panel. The wall mounted rack supports a network switch and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). The wall mount fiber cabinet near the basement entry door is served by a defunct 12-strand OM1 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). A telecommunications grounding busbar was observed. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, cable management, and proper grounding are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

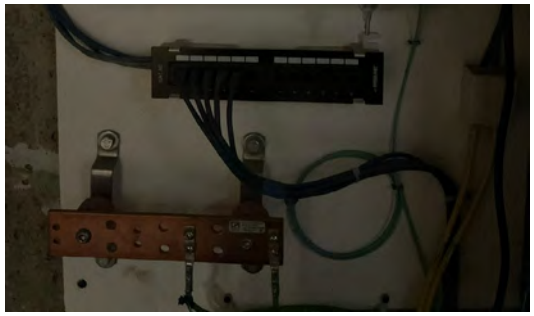
- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal cable support, leading to cables being draped or placed directly on equipment.
- No grounding busbar for the telecommunications equipment.
- No dedicated cooling system to maintain temperature of equipment.
- Electrical infrastructure does not meet minimum requirements per standards.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Hemlock Building (Building 50B).
- Add Telecommunications Grounding Busbar.
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

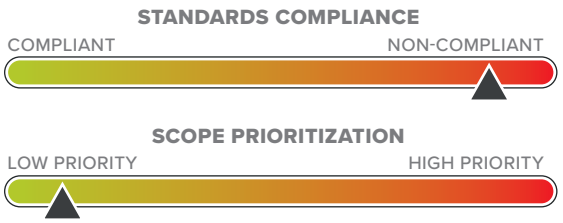
TELECOMMUNICATIONS ROOM – TR-BASEMENT

Existing SM Fiber Infrastructure.



Existing Category 5e Patch Panel.

Existing Telecom Cabinet.



QUINAULT COURT 1030 (BEHAVIOR MANAGEMENT)

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice ar data. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable and a defunct 12-strand OM1 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). A 50-pair Category 3 twisted-pair copper backbone cable connects from the Administration Building (Building 1). The OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mount fiber cabinet, and a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

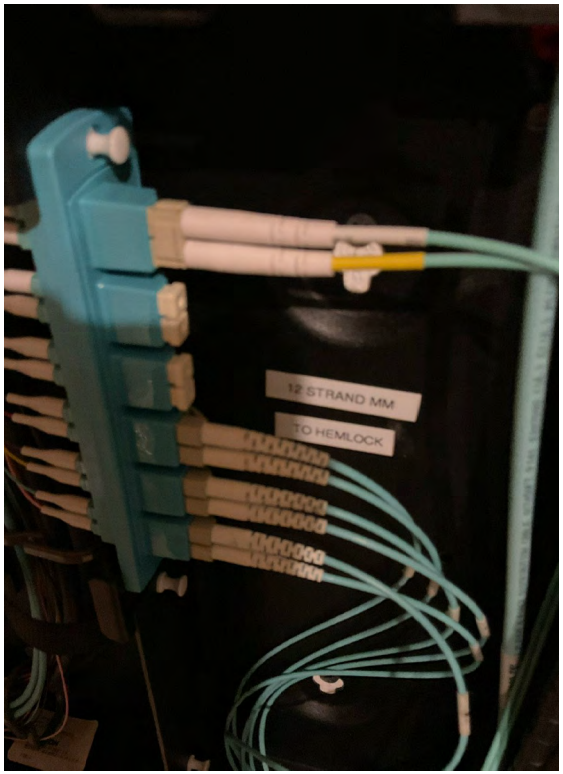
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Hemlock Building (Building 50B).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

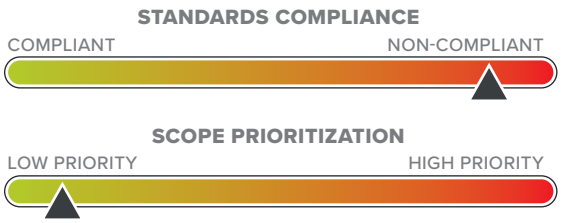


Existing Fiber Patching.

Existing Data Patching.

Existing Telecom Room Layout.

Existing Telecom Cabinet.



QUINAULT COURT 1020 (BEHAVIOR MANAGEMENT)

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice ar data. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable and a defunct 12-strand OM1 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). A 50-pair Category 3 twisted-pair copper backbone cable connects from the Administration Building (Building 1). The OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mount fiber cabinet, and a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

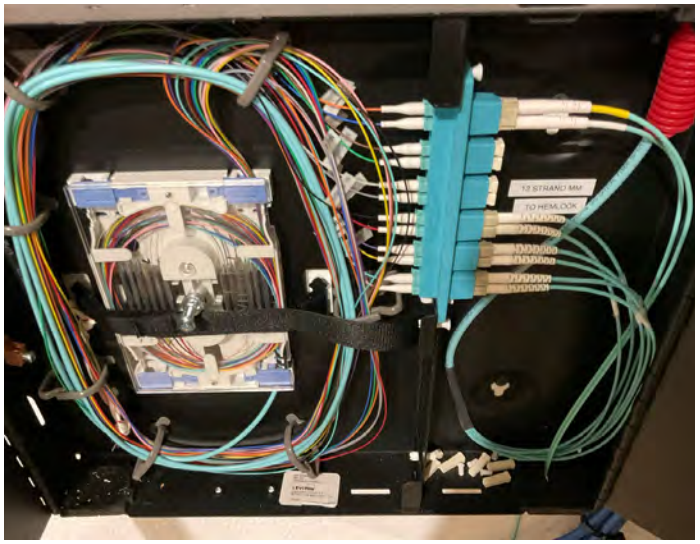
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

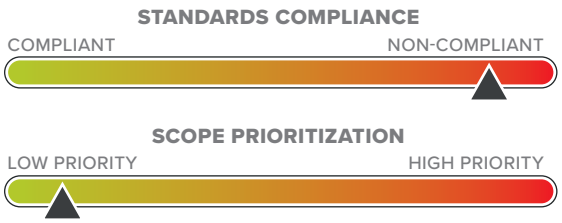
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Hemlock Building (Building 50B).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC



Existing Fiber Patching.

Existing Telecom Room Layout.



QUINAULT COURT 1010 (BEHAVIOR MANAGEMENT)

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice ar data. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable and a defunct 12-strand OM1 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). A 50-pair Category 3 twisted-pair copper backbone cable connects from the Administration Building (Building 1). The OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mount fiber cabinet, and a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

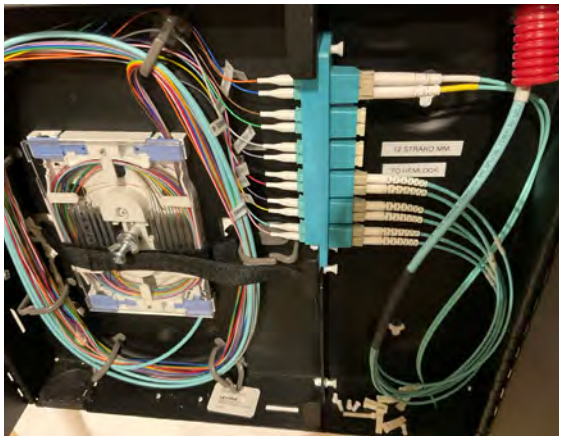
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

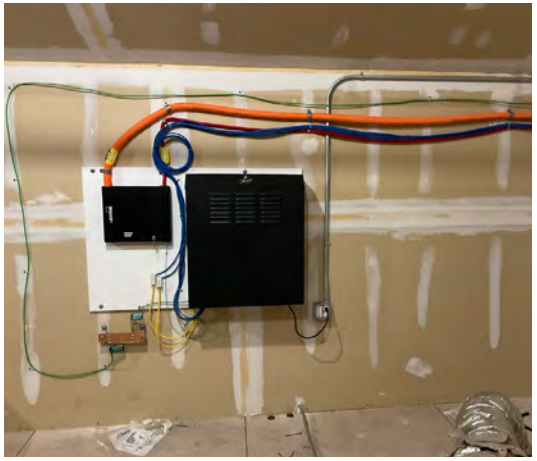
- Provide a dedicated telecommunications room.
- Upgrade existing port locations to Category 6A.
- Provide labels for all new cabling and existing cables to remain.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Hemlock Building (Building 50B).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

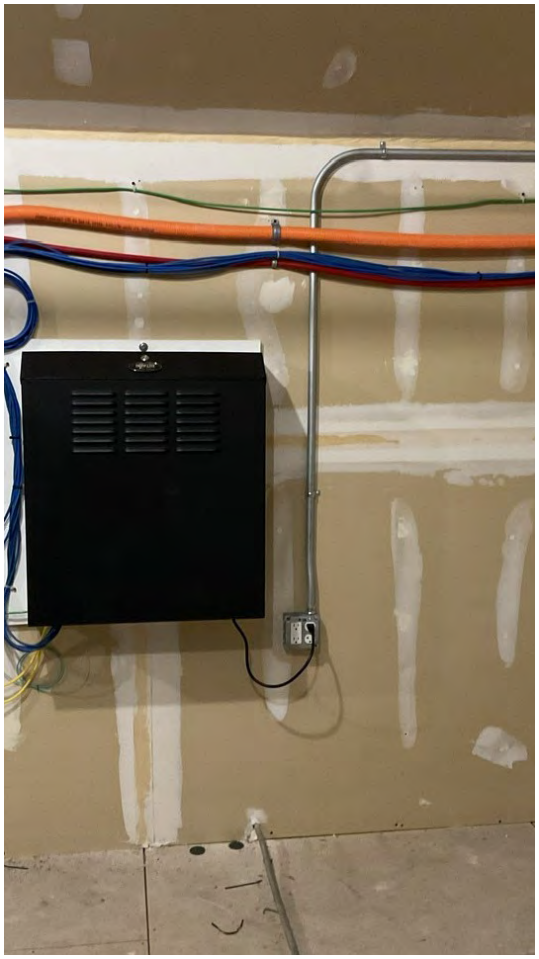


Existing Fiber Patching.

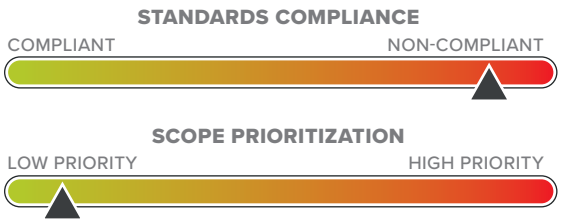
Existing Data Patching.



Existing Telecom Room Layout.



Existing Telecom Cabinet.



QUINAULT COURT 2005 (BEHAVIOR MANAGEMENT)

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable and a defunct 12-strand OM1 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). A 50-pair Category 3 twisted-pair copper backbone cable connects from the Administration Building (Building 1). The OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mount fiber cabinet, and a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

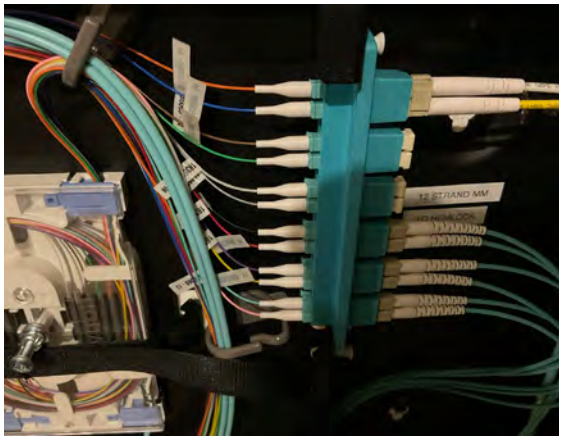
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Hemlock Building (Building 50B).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

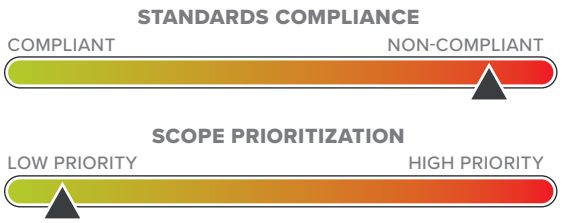


Existing Fiber Patching.

Existing Data Patching.

Existing Fiber Patching.

Existing Telecom Room Layout.



QUINAULT COURT 2015 (BEHAVIOR MANAGEMENT)

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable and a defunct 12-strand OM1 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). A 50-pair Category 3 twisted-pair copper backbone cable connects from the Administration Building (Building 1). The OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mount fiber cabinet, and a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

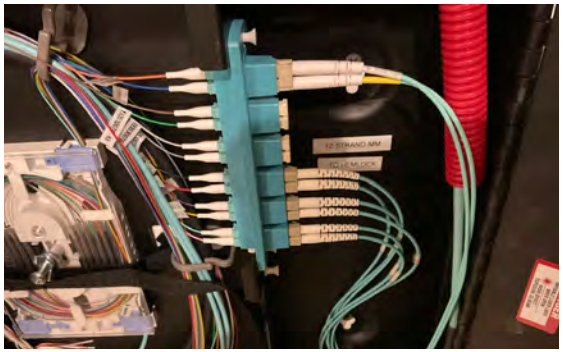
Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Hemlock Building (Building 50B).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

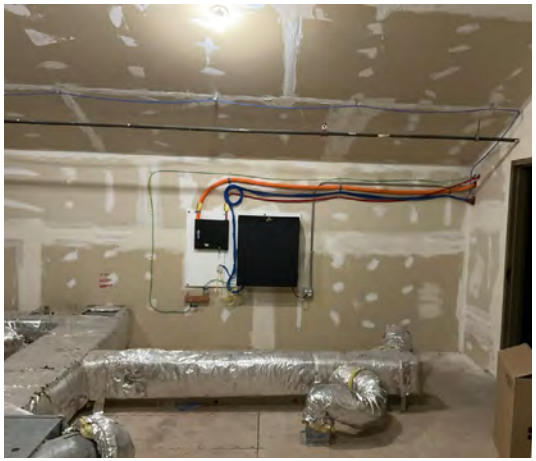
CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC



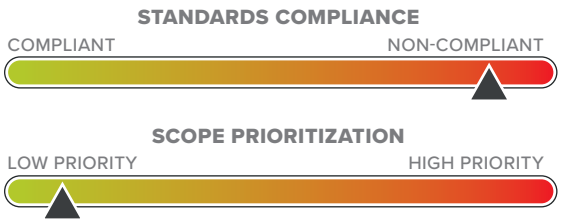
Existing Fiber Patching.

Existing Data Patching.

Existing Telecom Cabinet.



Existing Telecom Room Layout.



QUINAULT COURT 2025 (BEHAVIOR MANAGEMENT)

CROSS-CONNECT ROOM

The electrical room is in the janitor's closet and serves as the demarcation point for building voice and data. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable and a defunct 12-strand OM1 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). A 50-pair Category 3 twisted-pair copper backbone cable connects from the Administration Building (Building 1). The OM3 optical fiber backbone cable routes through the room and up to the attic telecommunications space. The defunct OM1 cable is terminated in a wall mount fiber cabinet within the room. The 50-pair twisted-pair copper backbone cable is terminated on building entrance protectors and is patched through to 66 blocks. Neither a telecommunications grounding busbar nor dedicated cooling were observed within the room.

TELECOMMUNICATIONS ROOM – TR-ATTIC

The telecommunications space is in the attic. There is no dedicated telecommunications room. The telecommunications space contains a wall mount fiber cabinet, and a wall mounted vertical rack that includes a patch panel, network switch, and a UPS. Connectivity is provided by a 12-strand OM3 multi-mode optical fiber backbone cable from the Hemlock Building (Building 50B). The vertical rack was grounded to a telecommunications grounding busbar. There is no dedicated cooling for temperature and humidity control.

The existing telecommunications space is not standards compliant. The existing backbone and horizontal cabling do not meet current TIA standards for healthcare facilities. To meet industry standards, it is recommended to provide a new, dedicated telecommunications room with standards compliant backbone and horizontal cabling. Additional Category 6A data ports should be provided as required to meet standards. Dedicated cooling, rack space, and cable management are required to meet current standards. The addition of card-based access control is recommended to control and track access to the space.

Deficiencies:

- No dedicated telecommunications room.
- Horizontal Cabling infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Minimal 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.

Recommendations:

- Provide a dedicated telecommunications room.
- 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 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the Hemlock Building (Building 50B).
- Add ladder tray and cable management as needed.
- Add a dedicated cooling system.
- Add power circuits and receptacles as needed.
- Control access to authorized individuals.

CROSS-CONNECT ROOM & TELECOMMUNICATIONS ROOM – TR-ATTIC

Existing Fiber Patching.

Existing Telecom Room Layout.

Existing Telecom Cabinet.

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
Rainier School

BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

telecommunications summary	subtotal	OH&P	total
Building 1 - Administration	$ 1,003,077	$ 150,462	$ 1,153,539
Building 3 - Gymnasium & School	$ 113,230	$ 16,985	$ 130,215
Building 7 - Instructional Service Building	$ 208,722	$ 31,308	$ 240,030
Building 8 - Chapel	$ 77,452	$ 11,618	$ 89,070
Building 9 - Alpine	$ 124,966	$ 18,745	$ 143,710
Building 10 - Aspen	$ 124,966	$ 18,745	$ 143,710
Building 11 - San Juan	$ 129,003	$ 19,350	$ 148,353
Building 12 - Shasta	$ 129,003	$ 19,350	$ 148,353
Building 13 - Omak	$ 129,837	$ 19,476	$ 149,313
Building 14 - Orcas	$ 124,805	$ 18,721	$ 143,525
Building 15 - Chelan	$ 129,003	$ 19,350	$ 148,353
Building 17 - Ray Peel	$ 85,625	$ 12,844	$ 98,469
Building 18 - Martin	$ 142,649	$ 21,397	$ 164,046
Building 19 - Olsen	$ 148,265	$ 22,240	$ 170,505
Building 20 - Cedar	$ 225,964	$ 33,895	$ 259,859
Building 22 - Carpenter Shop	$ 174,142	$ 26,121	$ 200,263
Building 23 - Maintenance Shop	$ 252,986	$ 37,948	$ 290,933
Building 24 - Commissary	$ 113,685	$ 17,053	$ 130,738
Building 25 - Motorpool	$ 128,717	$ 19,308	$ 148,025
Building 27 - Paint Shop	$ 106,967	$ 16,045	$ 123,012
Building 28 - Maintenance Storage	$ 84,746	$ 12,712	$ 97,458
Building 30 - Power House	$ 82,434	$ 12,365	$ 94,799
Building 31 - Loundry & Sewing Room	$ 125,667	$ 18,850	$ 144,517

telecommunications **cost opinion**

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Telecommunications Infrastructure Assessment Recommendations
Rainier School

BASIS OF OPINION Pre-Design
PREPARED BY Tin Vo
DATE September 19, 2024

JOB NUMBER 24047
CHECKED BY Ben Helms
OVERHEAD & PROFIT 15%

telecommunications summary	subtotal	OH&P	total
Building 32 - Hulbert	$ 188,730	$ 28,310	$ 217,040
Building 33 - Columbia	$ 97,139	$ 14,571	$ 111,710
Building 34 - Crystal	$ 96,741	$ 14,511	$ 111,252
Building 35 - Oakley	$ 143,356	$ 21,503	$ 164,859
Building 36 - Central Kitchen	$ 140,856	$ 21,128	$ 161,984
Building 37 - Meyer	$ 171,102	$ 25,665	$ 196,767
Building 38 - Chinook	$ 99,421	$ 14,913	$ 114,334
Building 39 - Cascade	$ 108,128	$ 16,219	$ 124,348
Building 40 - 2010 4th Avenue	$ 206,164	$ 30,925	$ 237,088
Building 41 - Klamath	$ 106,614	$ 15,992	$ 122,607
Building 42 - Naches	$ 107,461	$ 16,119	$ 123,581
Building 43 - Haddon	$ 107,262	$ 16,089	$ 123,351
Building 44 - Buckley	$ 108,308	$ 16,246	$ 124,555
Building 45 - Percival	$ 111,585	$ 16,738	$ 128,323
Building 46 - Devenish	$ 112,382	$ 16,857	$ 129,240
Building 47 - Tyee	$ 113,379	$ 17,007	$ 130,386
Building 48 - Hyak	$ 113,778	$ 17,067	$ 130,845
Building 49 - Robin	$ 159,709	$ 23,956	$ 183,665
Building 50A - Spruce	$ 241,312	$ 36,197	$ 277,509
Building 50B - Hemlock	$ 238,958	$ 35,844	$ 274,801
Building 51A - Fir	$ 136,946	$ 20,542	$ 157,488
Building 51B - Pine	$ 192,045	$ 28,807	$ 220,851
Building 52 - Gasoline Station	$ 75,254	$ 11,288	$ 86,542

telecommunications **cost opinion**

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telecommunications summary	subtotal	OH&P	total
Building 53 - Belle King	$ 143,670	$ 21,550	$ 165,220
Building 56 - Laurel	$ 329,789	$ 49,468	$ 379,257
Building 57 - Staff Dormitory	$ 340,808	$ 51,121	$ 391,929
Building 58 - Modular Classroom	$ 87,584	$ 13,138	$ 100,722
Building 61 - Superintendent's Residence	$ 78,025	$ 11,704	$ 89,728
Building 62 - 1050 Quinault Court	$ 156,167	$ 23,425	$ 179,592
Building 63 - 1040 Quinault Court	$ 159,842	$ 23,976	$ 183,818
Building 64 - 1030 Quinault Court	$ 147,689	$ 22,153	$ 169,842
Building 65 - 1020 Quinault Court	$ 148,125	$ 22,219	$ 170,343
Building 66 - 1010 Quinault Court	$ 148,523	$ 22,278	$ 170,802
Building 67 - 2005 Quinault Court	$ 148,523	$ 22,278	$ 170,802
Building 68 - 2015 Quinault Court	$ 146,443	$ 21,966	$ 168,409
Building 69 - 2025 Quinault Court	$ 150,118	$ 22,518	$ 172,636
Building 74 - Greenhouse	$ 70,221	$ 10,533	$ 80,754
Sub-Total	$ 9,398,065	$ 1,409,710	$ 10,807,775
General Contractor OH&P **15%**			$ 1,621,166
Escalation **7%**			$ 113,482
Total			**$ 12,542,423**

EXCLUSIONS

1 - Design contingency
2 - Sales Tax

telecommunications **cost opinion**

Building 1 - Administration

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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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	14,704	14,704	29,408	29,408	44,112	6,617	50,729
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	28,595	28,595			28,595	4,289	32,884
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	10	EA	150	1,500	50	500	2,000	300	2,300
Rack Mount Fiber Cabinet - 2RU	5	EA	300	1,500	110	550	2,050	308	2,358
Ladder Rack	300	LF	8	2,250	20	6,000	8,250	1,238	9,488
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			10,000	10,000	10,000	1,500	11,500
12 Strand Singlemode Plenum Rated OFC	900	LF	1	842	.05	45	887	133	1,021
12 Strand Multimode Plenum Rated OFC	900	LF	1	1,125	.05	45	1,170	176	1,346
Telecommunications Device - 4-Port	215	EA	1,100	236,500	474	101,840	338,340	50,751	389,091
Telecommunications Device - 4-Port - Existing	96	EA	1,100	105,600	474	45,473	151,073	22,661	173,734
CAT 6A Quickport Connector	1,720	EA	36	62,188	25	43,000	105,188	15,778	120,967
CAT 6A Quickport Connector - Existing	768	EA	36	27,768	26	19,968	47,736	7,160	54,896
CAT 6A Patch Panel	26	EA	320	8,323	150	3,900	12,223	1,833	14,056
Copper 6-port Empty Cassette	208	EA	100	20,800	50	10,400	31,200	4,680	35,880
Telecom Room - Electrical Improvements	5	EA	4,000	20,000	2,500	12,500	32,500	4,875	37,375
Telecom Room - HVAC - Ductless Split System	5	EA	7,500	37,500	1,500	7,500	45,000	6,750	51,750
Pathway per Drop	215	EA	200	43,000	150	32,250	75,250	11,288	86,538
Subtotal Low-Voltage Systems (Divisions 27)							938,684	140,803	1,079,486

telecommunications **cost opinion**

Building 1 - Administration

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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JOB NUMBER 24047 **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	752	752	1,505	1,505	2,257	339	2,595
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	1,287	1,287			1,287	193	1,480
Raceway, Cabling Supports and Outlet Boxes	9	EA	200	1,800	200	1,800	3,600	540	4,140
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	5	EA	535	2,675	85	425	3,100	465	3,565
Power Supply 10A/24V - 16-Door	1	EA	1,950	1,950	255	255	2,205	331	2,536
Portal Licenses	9	EA	100	900	50	450	1,350	203	1,553
Card Reader	9	EA	325	2,925	128	1,148	4,073	611	4,683
Electrified Hardware (Electrified Lock and Power Transfer)	9	EA	1,800	16,200	600	5,400	21,600	3,240	24,840
Request To Exit (REX)	9	EA	125	1,125	85	765	1,890	284	2,174
Wiring - Per Access Control Door	9	EA	400	3,600	700	6,300	9,900	1,485	11,385
Programming	1	LS			6,435	6,435	6,435	965	7,400
Engineering	1	LS			3,218	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 3 - Gymnasium & School

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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JOB NUMBER 24047 **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	1,504	1,504	3,008	3,008	4,512	677	5,189
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,140	3,140			3,140	471	3,611
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Telecommunication Room Demolition	1	EA			2,000	2,000	2,000	300	2,300
Demolish Defunct Infrastructure After System Cutover	1	LS			4,000	4,000	4,000	600	4,600
12 Strand Singlemode Outside Plant (OSP) OFC	900	LF	3	2,250	.05	45	2,295	344	2,639
12 Strand Multimode Outside Plant (OSP) OFC	900	LF	1	1,069	.05	45	1,114	167	1,281
Telecommunications Device - 4-Port	8	EA	1,100	8,800	474	3,789	12,589	1,888	14,478
Telecommunications Device - 4-Port - Existing	12	EA	1,100	13,200	474	5,684	18,884	2,833	21,717
CAT 6A Quickport Connector	64	EA	36	2,314	25	1,600	3,914	587	4,501
CAT 6A Quickport Connector - Existing	96	EA	36	3,471	26	2,496	5,967	895	6,862
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	8	EA	200	1,600	150	1,200	2,800	420	3,220
Subtotal Low-Voltage Systems (Divisions 27)							100,525	15,079	115,604

telecommunications **cost opinion**

Building 3 - Gymnasium & School

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 7 - Instructional Service Building

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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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	3,002	3,002	6,005	6,005	9,007	1,351	10,358
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	6,046	6,046			6,046	907	6,953
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Ladder Rack	20	LF	8	150	20	400	550	83	633
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Telecommunication Room Demolition	1	EA			2,000	2,000	2,000	300	2,300
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,200	LF	3	3,000	.05	60	3,060	459	3,519
12 Strand Multimode Outside Plant (OSP) OFC	1,200	LF	1	1,426	.05	60	1,486	223	1,708
Telecommunications Device - 4-Port	35	EA	1,100	38,500	474	16,579	55,079	8,262	63,340
Telecommunications Device - 4-Port - Existing	28	EA	1,100	30,800	474	13,263	44,063	6,609	50,672
CAT 6A Quickport Connector	280	EA	36	10,124	25	7,000	17,124	2,569	19,692
CAT 6A Quickport Connector - Existing	224	EA	36	8,099	26	5,824	13,923	2,088	16,011
CAT 6A Patch Panel	6	EA	320	1,921	150	900	2,821	423	3,244
Copper 6-port Empty Cassette	48	EA	100	4,800	50	2,400	7,200	1,080	8,280
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	35	EA	200	7,000	150	5,250	12,250	1,838	14,088
Subtotal Low-Voltage Systems (Divisions 27)							196,017	29,403	225,420

telecommunications **cost opinion**

Building 7 - Instructional Service Building

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 8 - Chapel

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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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	910	910	1,821	1,821	2,731	410	3,141
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,086	2,086			2,086	313	2,399
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Telecommunication Room Demolition	1	EA			2,000	2,000	2,000	300	2,300
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	550	LF	3	1,375	.05	28	1,403	210	1,613
12 Strand Multimode Outside Plant (OSP) OFC	550	LF	1	653	.05	28	681	102	783
Telecommunications Device - 4-Port	5	EA	1,100	5,500	474	2,368	7,868	1,180	9,049
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
CAT 6A Quickport Connector	40	EA	36	1,446	25	1,000	2,446	367	2,813
CAT 6A Quickport Connector - Existing	16	EA	36	578	26	416	994	149	1,144
CAT 6A Patch Panel	1	EA	320	320	150	150	470	71	541
Copper 6-port Empty Cassette	8	EA	100	800	50	400	1,200	180	1,380
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	5	EA	200	1,000	150	750	1,750	263	2,013
Subtotal Low-Voltage Systems (Divisions 27)							64,747	9,712	74,459

telecommunications **cost opinion**

Building 8 - Chapel

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 9 - Alpine

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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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	1,667	1,667	3,334	3,334	5,001	750	5,751
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,520	3,520			3,520	528	4,048
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,200	LF	3	3,000	.05	60	3,060	459	3,519
12 Strand Multimode Outside Plant (OSP) OFC	1,200	LF	1	1,426	.05	60	1,486	223	1,708
Telecommunications Device - 4-Port	26	EA	1,100	28,600	474	12,316	40,916	6,137	47,053
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	208	EA	36	7,520	25	5,200	12,720	1,908	14,629
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	26	EA	200	5,200	150	3,900	9,100	1,365	10,465
Subtotal Low-Voltage Systems (Divisions 27)							112,261	16,839	129,100

telecommunications **cost opinion**

Building 9 - Alpine

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 10 - Aspen

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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1201 third avenue, ste 600
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,667	1,667	3,334	3,334	5,001	750	5,751
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,520	3,520			3,520	528	4,048
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,200	LF	3	3,000	.05	60	3,060	459	3,519
12 Strand Multimode Outside Plant (OSP) OFC	1,200	LF	1	1,426	.05	60	1,486	223	1,708
Telecommunications Device - 4-Port	26	EA	1,100	28,600	474	12,316	40,916	6,137	47,053
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	208	EA	36	7,520	25	5,200	12,720	1,908	14,629
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	26	EA	200	5,200	150	3,900	9,100	1,365	10,465
Subtotal Low-Voltage Systems (Divisions 27)							112,261	16,839	129,100

telecommunications **cost opinion**

Building 10 - Aspen

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 11 - San Juan

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,703	1,703	3,407	3,407	5,110	767	5,877
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,672	3,672			3,672	551	4,223
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,650	LF	3	4,125	.05	83	4,208	631	4,839
12 Strand Multimode Outside Plant (OSP) OFC	1,650	LF	1	1,960	.05	83	2,043	306	2,349
Telecommunications Device - 4-Port	26	EA	1,100	28,600	474	12,316	40,916	6,137	47,053
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	208	EA	36	7,520	25	5,200	12,720	1,908	14,629
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	26	EA	200	5,200	150	3,900	9,100	1,365	10,465
Subtotal Low-Voltage Systems (Divisions 27)							116,298	17,445	133,742

telecommunications **cost opinion**

Building 11 - San Juan

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 12 - Shasta

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,703	1,703	$ 3,407	$ 3,407	$ 5,110	$ 767	$ 5,877
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,672	3,672	$ -	$ -	$ 3,672	$ 551	$ 4,223
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4		150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1		300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,650	LF	3	4,125	.05	83	4,208	631	4,839
12 Strand Multimode Outside Plant (OSP) OFC	1,650	LF	1	1,960	.05	83	2,043	306	2,349
Telecommunications Device - 4-Port	26	EA	1,100	28,600	474	12,316	40,916	6,137	47,053
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	208	EA	36	7,520	25	5,200	12,720	1,908	14,629
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	26	EA	200	5,200	150	3,900	9,100	1,365	10,465
Subtotal Low-Voltage Systems (Divisions 27)							116,298	17,445	133,742

telecommunications **cost opinion**

Building 12 - Shasta

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Power Supply 10A/24V - 16-Door		EA	1,950		255				
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 13 - Omak

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,675	1,675	3,349	3,349	5,024	754	5,777
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,744	3,744			3,744	562	4,305
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,600	LF	3	4,000	.05	80	4,080	612	4,692
12 Strand Multimode Outside Plant (OSP) OFC	1,600	LF	1	1,901	.05	80	1,981	297	2,278
Telecommunications Device - 4-Port	26	EA	1,100	28,600	474	12,316	40,916	6,137	47,053
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	208	EA	36	7,520	25	5,200	12,720	1,908	14,629
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	26	EA	200	5,200	150	3,900	9,100	1,365	10,465
Subtotal Low-Voltage Systems (Divisions 27)							117,132	17,570	134,702

telecommunications **cost opinion**

Building 13 - Omak

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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1201 third avenue, ste 600
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 14 - Orcas

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,592	1,592	3,185	3,185	4,777	717	5,494
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,594	3,594			3,594	539	4,133
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,650	LF	3	4,125	.05	83	4,208	631	4,839
12 Strand Multimode Outside Plant (OSP) OFC	1,650	LF	1	1,960	.05	83	2,043	306	2,349
Telecommunications Device - 4-Port	24	EA	1,100	26,400	474	11,368	37,768	5,665	43,433
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	192	EA	36	6,942	25	4,800	11,742	1,761	13,503
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	24	EA	200	4,800	150	3,600	8,400	1,260	9,660
Subtotal Low-Voltage Systems (Divisions 27)							112,100	16,815	128,915

telecommunications **cost opinion**

Building 14 - Orcas

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 15 - Chelan

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,703	1,703	3,407	3,407	5,110	767	5,877
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,672	3,672			3,672	551	4,223
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4		150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1		300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,650	LF	3	4,125	.05	83	4,208	631	4,839
12 Strand Multimode Outside Plant (OSP) OFC	1,650	LF	1	1,960	.05	83	2,043	306	2,349
Telecommunications Device - 4-Port	26	EA	1,100	28,600	474	12,316	40,916	6,137	47,053
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	208	EA	36	7,520	25	5,200	12,720	1,908	14,629
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	26	EA	200	5,200	150	3,900	9,100	1,365	10,465
Subtotal Low-Voltage Systems (Divisions 27)							116,298	17,445	133,742

telecommunications **cost opinion**

Building 15 - Chelan

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 17 - Ray Peel

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	965	965	1,930	1,930	2,895	434	3,330
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,415	2,415			2,415	362	2,778
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Telecommunication Room Demolition	1	EA			2,000	2,000	2,000	300	2,300
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,850	LF	3	4,625	.05	93	4,718	708	5,425
12 Strand Multimode Outside Plant (OSP) OFC	1,850	LF	1	2,198	.05	93	2,290	344	2,634
Telecommunications Device - 4-Port	7	EA	1,100	7,700	474	3,316	11,016	1,652	12,668
Telecommunications Device - 4-Port - Existing	1	EA	1,100	1,100	474	474	1,574	236	1,810
CAT 6A Quickport Connector	56	EA	36	2,025	25	1,400	3,425	514	3,938
CAT 6A Quickport Connector - Existing	8	EA	36	289	26	208	497	75	572
CAT 6A Patch Panel	1	EA	320	320	150	150	470	71	541
Copper 6-port Empty Cassette	8	EA	100	800	50	400	1,200	180	1,380
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	7	EA	200	1,400	150	1,050	2,450	368	2,818
Subtotal Low-Voltage Systems (Divisions 27)							72,920	10,938	83,858

telecommunications **cost opinion**

Building 17 - Ray Peel

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 18 - Martin

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,793	1,793	3,585	3,585	5,378	807	6,184
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,225	4,225			4,225	634	4,858
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,950	LF	3	4,875	.05	98	4,973	746	5,718
12 Strand Multimode Outside Plant (OSP) OFC	1,950	LF	1	2,317	.05	98	2,414	362	2,776
Telecommunications Device - 4-Port	29	EA	1,100	31,900	474	13,737	45,637	6,845	52,482
CAT 6A Quickport Connector	232	EA	36	8,388	25	5,800	14,188	2,128	16,316
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	29	EA	200	5,800	150	4,350	10,150	1,523	11,673
Subtotal Low-Voltage Systems (Divisions 27)							129,944	19,492	149,435

telecommunications **cost opinion**

Building 18 - Martin

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 19 - Olsen

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	2,059	2,059	4,119	4,119	6,178	927	7,105
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,200	4,200			4,200	630	4,830
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	4		150	600	50	200	800	120	920
Ladder Rack	40	LF	8	300	20	800	1,100	165	1,265
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,500	LF	3	3,750	.05	75	3,825	574	4,399
12 Strand Multimode Outside Plant (OSP) OFC	1,500	LF	1	1,782	.05	75	1,857	279	2,136
Telecommunications Device - 4-Port	37	EA	1,100	40,700	474	17,526	58,226	8,734	66,960
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
CAT 6A Quickport Connector	296	EA	36	10,702	25	7,400	18,102	2,715	20,818
CAT 6A Quickport Connector - Existing	16	EA	36	578	26	416	994	149	1,144
CAT 6A Patch Panel	4	EA	320	1,280	150	600	1,880	282	2,163
Copper 6-port Empty Cassette	32	EA	100	3,200	50	1,600	4,800	720	5,520
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	37	EA	200	7,400	150	5,550	12,950	1,943	14,893
Subtotal Low-Voltage Systems (Divisions 27)							135,560	20,334	155,894

telecommunications **cost opinion**

Building 19 - Olsen

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 20 - Cedar

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	3,123	3,123	6,245	6,245	9,368	1,405	10,773
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	6,735	6,735			6,735	1,010	7,746
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,600	LF	3	4,000	.05	80	4,080	612	4,692
12 Strand Multimode Outside Plant (OSP) OFC	1,600	LF	1	1,901	.05	80	1,981	297	2,278
Telecommunications Device - 4-Port	60	EA	1,100	66,000	474	28,420	94,420	14,163	108,583
CAT 6A Quickport Connector	480	EA	36	17,355	25	12,000	29,355	4,403	33,758
CAT 6A Patch Panel	5	EA	320	1,601	150	750	2,351	353	2,703
Copper 6-port Empty Cassette	40	EA	100	4,000	50	2,000	6,000	900	6,900
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	60	EA	200	12,000	150	9,000	21,000	3,150	24,150
Subtotal Low-Voltage Systems (Divisions 27)							213,260	31,989	245,248

telecommunications **cost opinion**

Building 20 - Cedar

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 22 - Carpenter Shop

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	2,239	2,239	4,478	4,478	6,716	1,007	7,724
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	5,235	5,235			5,235	785	6,021
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,800	LF	3	7,000	.05	140	7,140	1,071	8,211
12 Strand Multimode Outside Plant (OSP) OFC	2,800	LF	1	3,326	.05	140	3,466	520	3,986
Telecommunications Device - 4-Port	39	EA	1,100	42,900	474	18,473	61,373	9,206	70,579
CAT 6A Quickport Connector	312	EA	36	11,281	25	7,800	19,081	2,862	21,943
CAT 6A Quickport Connector - Existing	2	EA	36	72	26	52	124	19	143
CAT 6A Patch Panel	4	EA	320	1,280	150	600	1,880	282	2,163
Copper 6-port Empty Cassette	32	EA	100	3,200	50	1,600	4,800	720	5,520
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	39	EA	200	7,800	150	5,850	13,650	2,048	15,698
Subtotal Low-Voltage Systems (Divisions 27)							161,437	24,216	185,652

telecommunications **cost opinion**

Building 22 - Carpenter Shop

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 23 - Maintenance Shop

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	3,597	3,597	7,193	7,193	10,790	1,619	12,409
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	7,503	7,503			7,503	1,125	8,628
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
Telecommunication Room Demolition	1	EA			2,000	2,000	2,000	300	2,300
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,450	LF	3	6,125	.05	123	6,248	937	7,185
12 Strand Multimode Outside Plant (OSP) OFC	2,450	LF	1	2,911	.05	123	3,033	455	3,488
Telecommunications Device - 4-Port	61	EA	1,100	67,100	474	28,894	95,994	14,399	110,393
Telecommunications Device - 4-Port - Existing	9	EA	1,100	9,900	474	4,263	14,163	2,124	16,288
CAT 6A Quickport Connector	488	EA	36	17,644	25	12,200	29,844	4,477	34,321
CAT 6A Quickport Connector - Existing	72	EA	36	2,603	26	1,872	4,475	671	5,147
CAT 6A Patch Panel	6	EA	320	1,921	150	900	2,821	423	3,244
Copper 6-port Empty Cassette	48	EA	100	4,800	50	2,400	7,200	1,080	8,280
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	61	EA	200	12,200	150	9,150	21,350	3,203	24,553
Subtotal Low-Voltage Systems (Divisions 27)							240,281	36,042	276,323

telecommunications **cost opinion**

Building 23 - Maintenance Shop

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 24 - Commissary

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,307	1,307	2,615	2,615	3,922	588	4,511
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,377	3,377			3,377	506	3,883
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,450	LF	3	6,125	.05	123	6,248	937	7,185
12 Strand Multimode Outside Plant (OSP) OFC	2,450	LF	1	2,911	.05	123	3,033	455	3,488
Telecommunications Device - 4-Port	17	EA	1,100	18,700	474	8,052	26,752	4,013	30,765
Telecommunications Device - 4-Port - Existing	1	EA	1,100	1,100	474	474	1,574	236	1,810
CAT 6A Quickport Connector	136	EA	36	4,917	25	3,400	8,317	1,248	9,565
CAT 6A Quickport Connector - Existing	8	EA	36	289	26	208	497	75	572
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	17	EA	200	3,400	150	2,550	5,950	893	6,843
Subtotal Low-Voltage Systems (Divisions 27)							100,980	15,147	116,127

telecommunications **cost opinion**

Building 24 - Commissary

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 25 - Motorpool

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,600	1,600	3,199	3,199	4,799	720	5,519
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,772	3,772			3,772	566	4,338
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Telecommunication Room Demolition	1	EA			2,000	2,000	2,000	300	2,300
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,550	LF	3	6,375	.05	128	6,503	975	7,478
12 Strand Multimode Outside Plant (OSP) OFC	2,550	LF	1	3,029	.05	128	3,157	474	3,630
Telecommunications Device - 4-Port	20	EA	1,100	22,000	474	9,473	31,473	4,721	36,194
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	160	EA	36	5,785	25	4,000	9,785	1,468	11,253
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	20	EA	200	4,000	150	3,000	7,000	1,050	8,050
Subtotal Low-Voltage Systems (Divisions 27)							116,012	17,402	133,414

telecommunications **cost opinion**

Building 25 - Motorpool

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 27 - Paint Shop

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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JOB NUMBER 24047 **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	1,276	1,276	2,552	2,552	3,827	574	4,402
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,091	3,091			3,091	464	3,555
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Telecommunication Room Demolition	1	EA			2,000	2,000	2,000	300	2,300
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,250	LF	3	5,625	.05	113	5,738	861	6,598
12 Strand Multimode Outside Plant (OSP) OFC	2,250	LF	1	2,673	.05	113	2,786	418	3,203
Telecommunications Device - 4-Port	13	EA	1,100	14,300	474	6,158	20,458	3,069	23,526
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
CAT 6A Quickport Connector	104	EA	36	3,760	25	2,600	6,360	954	7,314
CAT 6A Quickport Connector - Existing	16	EA	36	578	26	416	994	149	1,144
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	13	EA	200	2,600	150	1,950	4,550	683	5,233
Subtotal Low-Voltage Systems (Divisions 27)							94,262	14,139	108,401

telecommunications **cost opinion**

Building 27 - Paint Shop

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 28 - Maintenance Storage

Telecommunications Infrastructure Assessment Recommendations

Rainier School

HARGIS
1201 third avenue, ste 600
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	860	860	1,721	1,721	2,581	387	2,968
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,488	2,488			2,488	373	2,862
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,300	LF	3	5,750	.05	115	5,865	880	6,745
Telecommunications Device - 4-Port	6	EA	1,100	6,600	474	2,842	9,442	1,416	10,858
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
CAT 6A Quickport Connector	48	EA	36	1,735	25	1,200	2,935	440	3,376
CAT 6A Quickport Connector - Existing	16	EA	36	578	26	416	994	149	1,144
CAT 6A Patch Panel	1	EA	320	320	150	150	470	71	541
Copper 6-port Empty Cassette	8	EA	100	800	50	400	1,200	180	1,380
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	6	EA	200	1,200	150	900	2,100	315	2,415
Subtotal Low-Voltage Systems (Divisions 27)							72,041	10,806	82,847

telecommunications **cost opinion**

Building 28 - Maintenance Storage

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 30 - Power House

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,005	1,005	2,009	2,009	3,014	452	3,466
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,220	2,220			2,220	333	2,553
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,050	LF	3	5,125	.05	103	5,228	784	6,012
12 Strand Multimode Outside Plant (OSP) OFC	2,050	LF	1	2,435	.05	103	2,538	381	2,919
Telecommunications Device - 4-Port	13	EA	1,100	14,300	474	6,158	20,458	3,069	23,526
Telecommunications Device - 4-Port - Existing	1	EA	1,100	1,100	474	474	1,574	236	1,810
CAT 6A Quickport Connector	104	EA	36	3,760	25	2,600	6,360	954	7,314
CAT 6A Quickport Connector - Existing	8	EA	36	289	26	208	497	75	572
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	13	EA	200	2,600	150	1,950	4,550	683	5,233
Subtotal Low-Voltage Systems (Divisions 27)							69,729	10,459	80,188

telecommunications **cost opinion**

Building 30 - Power House

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 31 - Loundry & Sewing Room

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,407	1,407	2,814	2,814	4,221	633	4,854
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,838	3,838			3,838	576	4,414
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
20KVA UPS	1	EA	12,600	12,600	110	110	12,710	1,907	14,617
Telecommunication Room Demolition	1	EA			2,000	2,000	2,000	300	2,300
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,350	LF	3	5,875	.05	118	5,993	899	6,891
12 Strand Multimode Outside Plant (OSP) OFC	2,350	LF	1	2,792	.05	118	2,909	436	3,346
Telecommunications Device - 4-Port	17	EA	1,100	18,700	474	8,052	26,752	4,013	30,765
Telecommunications Device - 4-Port - Existing	1	EA	1,100	1,100	474	474	1,574	236	1,810
CAT 6A Quickport Connector	136	EA	36	4,917	25	3,400	8,317	1,248	9,565
CAT 6A Quickport Connector - Existing	8	EA	36	289	26	208	497	75	572
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	17	EA	200	3,400	150	2,550	5,950	893	6,843
Subtotal Low-Voltage Systems (Divisions 27)							112,962	16,944	129,906

telecommunications **cost opinion**

Building 31 - Loundry & Sewing Room

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 32 - Hulbert

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	2,475	2,475	4,951	4,951	7,426	1,114	8,540
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	5,671	5,671			5,671	851	6,522
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,650	LF	3	6,625	.05	133	6,758	1,014	7,771
12 Strand Multimode Outside Plant (OSP) OFC	2,650	LF	1	3,148	.05	133	3,281	492	3,773
Telecommunications Device - 4-Port	44	EA	1,100	48,400	474	20,842	69,242	10,386	79,628
Telecommunications Device - 4-Port - Existing	1	EA	1,100	1,100	474	474	1,574	236	1,810
CAT 6A Quickport Connector	352	EA	36	12,727	25	8,800	21,527	3,229	24,756
CAT 6A Quickport Connector - Existing	8	EA	36	289	26	208	497	75	572
CAT 6A Patch Panel	4	EA	320	1,280	150	600	1,880	282	2,163
Copper 6-port Empty Cassette	32	EA	100	3,200	50	1,600	4,800	720	5,520
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	44	EA	200	8,800	150	6,600	15,400	2,310	17,710
Subtotal Low-Voltage Systems (Divisions 27)							176,025	26,404	202,429

telecommunications **cost opinion**

Building 32 - Hulbert

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 33 - Columbia

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,189	1,189	2,378	2,378	3,567	535	4,102
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,719	2,719			2,719	408	3,126
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,400	LF	3	3,500	.05	70	3,570	536	4,106
12 Strand Multimode Outside Plant (OSP) OFC	1,400	LF	1	1,663	.05	70	1,733	260	1,993
Telecommunications Device - 4-Port	15	EA	1,100	16,500	474	7,105	23,605	3,541	27,146
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
CAT 6A Quickport Connector	120	EA	36	4,339	25	3,000	7,339	1,101	8,440
CAT 6A Quickport Connector - Existing	16	EA	36	578	26	416	994	149	1,144
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	15	EA	200	3,000	150	2,250	5,250	788	6,038
Subtotal Low-Voltage Systems (Divisions 27)							84,434	12,665	97,100

telecommunications **cost opinion**

Building 33 - Columbia

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 34 - Crystal

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,188	1,188	2,377	2,377	3,565	535	4,100
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,700	2,700			2,700	405	3,105
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,300	LF	3	3,250	.05	65	3,315	497	3,812
12 Strand Multimode Outside Plant (OSP) OFC	1,300	LF	1	1,544	.05	65	1,609	241	1,851
Telecommunications Device - 4-Port	15	EA	1,100	16,500	474	7,105	23,605	3,541	27,146
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
CAT 6A Quickport Connector	120	EA	36	4,339	25	3,000	7,339	1,101	8,440
CAT 6A Quickport Connector - Existing	16	EA	36	578	26	416	994	149	1,144
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	15	EA	200	3,000	150	2,250	5,250	788	6,038
Subtotal Low-Voltage Systems (Divisions 27)							84,036	12,605	96,641

telecommunications **cost opinion**

Building 34 - Crystal

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 35 - Oakley

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	2,006	2,006	4,012	4,012	6,019	903	6,921
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,024	4,024			4,024	604	4,628
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,050	LF	3	2,625	.05	53	2,678	402	3,079
12 Strand Multimode Outside Plant (OSP) OFC	1,050	LF	1	1,247	.05	53	1,300	195	1,495
Telecommunications Device - 4-Port	27	EA	1,100	29,700	474	12,789	42,489	6,373	48,863
Telecommunications Device - 4-Port - Existing	12	EA	1,100	13,200	474	5,684	18,884	2,833	21,717
CAT 6A Quickport Connector	216	EA	36	7,810	25	5,400	13,210	1,981	15,191
CAT 6A Quickport Connector - Existing	96	EA	36	3,471	26	2,496	5,967	895	6,862
CAT 6A Patch Panel	4	EA	320	1,280	150	600	1,880	282	2,163
Copper 6-port Empty Cassette	32	EA	100	3,200	50	1,600	4,800	720	5,520
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	27	EA	200	5,400	150	4,050	9,450	1,418	10,868
Subtotal Low-Voltage Systems (Divisions 27)							130,651	19,598	150,248

telecommunications **cost opinion**

Building 35 - Oakley

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 36 - Central Kitchen

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,826	1,826	3,653	3,653	5,479	822	6,301
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,102	4,102			4,102	615	4,717
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	750	LF	3	1,875	.05	38	1,913	287	2,199
12 Strand Multimode Outside Plant (OSP) OFC	750	LF	1	891	.05	38	929	139	1,068
Telecommunications Device - 4-Port	25	EA	1,100	27,500	474	11,842	39,342	5,901	45,243
Telecommunications Device - 4-Port - Existing	6	EA	1,100	6,600	474	2,842	9,442	1,416	10,858
CAT 6A Quickport Connector	200	EA	36	7,231	25	5,000	12,231	1,835	14,066
CAT 6A Quickport Connector - Existing	48	EA	36	1,735	26	1,248	2,983	448	3,431
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350

telecommunications **cost opinion**

Building 36 - Central Kitchen

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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
Pathway per Drop	25	EA	200	5,000	150	3,750	8,750	1,313	10,063
Subtotal Low-Voltage Systems (Divisions 27)							128,151	19,223	147,374
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	138	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 37 - Meyer

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	2,443	2,443	4,887	4,887	7,330	1,100	8,430
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,867	4,867			4,867	730	5,597
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	900	LF	3	2,250	.05	45	2,295	344	2,639
12 Strand Multimode Outside Plant (OSP) OFC	900	LF	1	1,069	.05	45	1,114	167	1,281
Telecommunications Device - 4-Port	32	EA	1,100	35,200	474	15,158	50,358	7,554	57,911
Telecommunications Device - 4-Port - Existing	18	EA	1,100	19,800	474	8,526	28,326	4,249	32,575
CAT 6A Quickport Connector	256	EA	36	9,256	25	6,400	15,656	2,348	18,004
CAT 6A Quickport Connector - Existing	144	EA	36	5,206	26	3,744	8,950	1,343	10,293
CAT 6A Patch Panel	5	EA	320	1,601	150	750	2,351	353	2,703
Copper 6-port Empty Cassette	40	EA	100	4,000	50	2,000	6,000	900	6,900
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	32	EA	200	6,400	150	4,800	11,200	1,680	12,880
Subtotal Low-Voltage Systems (Divisions 27)							158,397	23,759	182,156

telecommunications **cost opinion**

Building 37 - Meyer

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 38 - Chinook

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,206	1,206	2,411	2,411	3,617	543	4,160
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,809	2,809			2,809	421	3,230
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,100	LF	3	2,750	.05	55	2,805	421	3,226
12 Strand Multimode Outside Plant (OSP) OFC	1,100	LF	1	1,307	.05	55	1,362	204	1,566
Telecommunications Device - 4-Port	14	EA	1,100	15,400	474	6,631	22,031	3,305	25,336
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
CAT 6A Quickport Connector	112	EA	36	4,049	25	2,800	6,849	1,027	7,877
CAT 6A Quickport Connector - Existing	16	EA	36	578	26	416	994	149	1,144
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	14	EA	200	2,800	150	2,100	4,900	735	5,635
Subtotal Low-Voltage Systems (Divisions 27)							86,716	13,007	99,723

telecommunications **cost opinion**

Building 38 - Chinook

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 39 - Cascade

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,294	1,294	2,588	2,588	3,882	582	4,464
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,127	3,127			3,127	469	3,596
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,150	LF	3	2,875	.05	58	2,933	440	3,372
12 Strand Multimode Outside Plant (OSP) OFC	1,150	LF	1	1,366	.05	58	1,424	214	1,637
Telecommunications Device - 4-Port	16	EA	1,100	17,600	474	7,579	25,179	3,777	28,956
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
CAT 6A Quickport Connector	128	EA	36	4,628	25	3,200	7,828	1,174	9,002
CAT 6A Quickport Connector - Existing	16	EA	36	578	26	416	994	149	1,144
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350

telecommunications **cost opinion**

Building 39 - Cascade

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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
Pathway per Drop	16	EA	200	3,200	150	2,400	5,600	840	6,440
Subtotal Low-Voltage Systems (Divisions 27)							95,423	14,314	109,737
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	138	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 40 - 2010 4th Avenue

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	2,903	2,903	5,806	5,806	8,709	1,306	10,015
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	6,033	6,033			6,033	905	6,938
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	400	LF	3	1,000	.05	20	1,020	153	1,173
12 Strand Multimode Outside Plant (OSP) OFC	400	LF	1	475	.05	20	495	74	569
Telecommunications Device - 4-Port	16	EA	1,100	17,600	474	7,579	25,179	3,777	28,956
Telecommunications Device - 4-Port - Existing	48	EA	1,100	52,800	474	22,736	75,536	11,330	86,867
CAT 6A Quickport Connector	128	EA	36	4,628	25	3,200	7,828	1,174	9,002
CAT 6A Quickport Connector - Existing	384	EA	36	13,884	26	9,984	23,868	3,580	27,448
CAT 6A Patch Panel	6	EA	320	1,921	150	900	2,821	423	3,244
Copper 6-port Empty Cassette	48	EA	100	4,800	50	2,400	7,200	1,080	8,280
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350

telecommunications **cost opinion**

Building 40 - 2010 4th Avenue

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

	quantity		material cost		labor cost		engineering opinion		
description	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
Pathway per Drop	16	EA	200	3,200	150	2,400	5,600	840	6,440
Subtotal Low-Voltage Systems (Divisions 27)							193,459	29,019	222,477
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	138	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 41 - Klamath

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,360	1,360	2,720	2,720	4,080	612	4,692
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,982	2,982			2,982	447	3,430
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,550	LF	3	3,875	.05	78	3,953	593	4,545
12 Strand Multimode Outside Plant (OSP) OFC	1,550	LF	1	1,841	.05	78	1,919	288	2,207
Telecommunications Device - 4-Port	20	EA	1,100	22,000	474	9,473	31,473	4,721	36,194
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
CAT 6A Quickport Connector	160	EA	36	5,785	25	4,000	9,785	1,468	11,253
CAT 6A Quickport Connector - Existing	16	EA	36	578	26	416	994	149	1,144
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	20	EA	200	4,000	150	3,000	7,000	1,050	8,050
Subtotal Low-Voltage Systems (Divisions 27)							93,909	14,086	107,996

telecommunications **cost opinion**

Building 41 - Klamath

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 42 - Naches

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,392	1,392	2,785	2,785	4,177	627	4,804
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,987	2,987			2,987	448	3,435
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,200	LF	3	3,000	.05	60	3,060	459	3,519
12 Strand Multimode Outside Plant (OSP) OFC	1,200	LF	1	1,426	.05	60	1,486	223	1,708
Telecommunications Device - 4-Port	20	EA	1,100	22,000	474	9,473	31,473	4,721	36,194
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	160	EA	36	5,785	25	4,000	9,785	1,468	11,253
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	20	EA	200	4,000	150	3,000	7,000	1,050	8,050
Subtotal Low-Voltage Systems (Divisions 27)							94,756	14,213	108,970

telecommunications **cost opinion**

Building 42 - Naches

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 43 - Haddon

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,392	1,392	2,784	2,784	4,177	626	4,803
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,978	2,978			2,978	447	3,425
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,150	LF	3	2,875	.05	58	2,933	440	3,372
12 Strand Multimode Outside Plant (OSP) OFC	1,150	LF	1	1,366	.05	58	1,424	214	1,637
Telecommunications Device - 4-Port	20	EA	1,100	22,000	474	9,473	31,473	4,721	36,194
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	160	EA	36	5,785	25	4,000	9,785	1,468	11,253
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	20	EA	200	4,000	150	3,000	7,000	1,050	8,050
Subtotal Low-Voltage Systems (Divisions 27)							94,557	14,184	108,741

telecommunications **cost opinion**

Building 43 - Haddon

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 44 - Buckley

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,425	1,425	2,850	2,850	4,274	641	4,915
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,992	2,992			2,992	449	3,441
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	850	LF	3	2,125	.05	43	2,168	325	2,493
12 Strand Multimode Outside Plant (OSP) OFC	850	LF	1	1,010	.05	43	1,052	158	1,210
Telecommunications Device - 4-Port	20	EA	1,100	22,000	474	9,473	31,473	4,721	36,194
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	160	EA	36	5,785	25	4,000	9,785	1,468	11,253
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	20	EA	200	4,000	150	3,000	7,000	1,050	8,050
Subtotal Low-Voltage Systems (Divisions 27)							95,604	14,341	109,944

telecommunications **cost opinion**

Building 44 - Buckley

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 45 - Percival

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,430	1,430	2,861	2,861	4,291	644	4,934
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,142	3,142			3,142	471	3,613
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	850	LF	3	2,125	.05	43	2,168	325	2,493
12 Strand Multimode Outside Plant (OSP) OFC	850	LF	1	1,010	.05	43	1,052	158	1,210
Telecommunications Device - 4-Port	20	EA	1,100	22,000	474	9,473	31,473	4,721	36,194
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	160	EA	36	5,785	25	4,000	9,785	1,468	11,253
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	20	EA	200	4,000	150	3,000	7,000	1,050	8,050
Subtotal Low-Voltage Systems (Divisions 27)							98,880	14,832	113,712

telecommunications **cost opinion**

Building 45 - Percival

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 46 - Devenish

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,431	1,431	2,863	2,863	4,294	644	4,938
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,179	3,179			3,179	477	3,656
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,050	LF	3	2,625	.05	53	2,678	402	3,079
12 Strand Multimode Outside Plant (OSP) OFC	1,050	LF	1	1,247	.05	53	1,300	195	1,495
Telecommunications Device - 4-Port	20	EA	1,100	22,000	474	9,473	31,473	4,721	36,194
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	160	EA	36	5,785	25	4,000	9,785	1,468	11,253
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350

telecommunications **cost opinion**

Building 46 - Devenish

Telecommunications Infrastructure Assessment Recommendations

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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
Pathway per Drop	20	EA	200	4,000	150	3,000	7,000	1,050	8,050
Subtotal Low-Voltage Systems (Divisions 27)							99,677	14,952	114,629
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	138	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 47 - Tyee

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,433	1,433	2,865	2,865	4,298	645	4,942
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,225	3,225			3,225	484	3,709
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,300	LF	3	3,250	.05	65	3,315	497	3,812
12 Strand Multimode Outside Plant (OSP) OFC	1,300	LF	1	1,544	.05	65	1,609	241	1,851
Telecommunications Device - 4-Port	20	EA	1,100	22,000	474	9,473	31,473	4,721	36,194
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	160	EA	36	5,785	25	4,000	9,785	1,468	11,253
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	20	EA	200	4,000	150	3,000	7,000	1,050	8,050
Subtotal Low-Voltage Systems (Divisions 27)							100,674	15,101	115,775

telecommunications **cost opinion**

Building 47 - Tyee

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 48 - Hyak

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,433	1,433	2,866	2,866	4,299	645	4,944
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,244	3,244			3,244	487	3,730
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,400	LF	3	3,500	.05	70	3,570	536	4,106
12 Strand Multimode Outside Plant (OSP) OFC	1,400	LF	1	1,663	.05	70	1,733	260	1,993
Telecommunications Device - 4-Port	20	EA	1,100	22,000	474	9,473	31,473	4,721	36,194
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	160	EA	36	5,785	25	4,000	9,785	1,468	11,253
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	2	EA	320	640	150	300	940	141	1,081
Copper 6-port Empty Cassette	16	EA	100	1,600	50	800	2,400	360	2,760
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	20	EA	200	4,000	150	3,000	7,000	1,050	8,050
Subtotal Low-Voltage Systems (Divisions 27)							101,073	15,161	116,234

telecommunications **cost opinion**

Building 48 - Hyak

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 49 - Robin

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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JOB NUMBER 24047 **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	2,123	2,123	4,247	4,247	6,370	955	7,325
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,396	4,396			4,396	659	5,055
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,250	LF	3	3,125	.05	63	3,188	478	3,666
12 Strand Multimode Outside Plant (OSP) OFC	1,250	LF	1	1,485	.05	63	1,548	232	1,780
Telecommunications Device - 4-Port	37	EA	1,100	40,700	474	17,526	58,226	8,734	66,960
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	296	EA	36	10,702	25	7,400	18,102	2,715	20,818
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	4	EA	320	1,280	150	600	1,880	282	2,163
Copper 6-port Empty Cassette	32	EA	100	3,200	50	1,600	4,800	720	5,520
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	37	EA	200	7,400	150	5,550	12,950	1,943	14,893
Subtotal Low-Voltage Systems (Divisions 27)							141,142	21,171	162,313

telecommunications **cost opinion**

Building 49 - Robin

Telecommunications Infrastructure Assessment Recommendations

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	210	210	419	419	629	94	723
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	390	390			390	59	449
Raceway, Cabling Supports and Outlet Boxes	2	EA	200	400	200	400	800	120	920
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	2	EA	100	200	50	100	300	45	345
Card Reader	2	EA	325	650	128	255	905	136	1,041
Electrified Hardware (Electrified Lock and Power Transfer)	2	EA	1,800	3,600	600	1,200	4,800	720	5,520
Request To Exit (REX)	2	EA	125	250	85	170	420	63	483
Wiring - Per Access Control Door	2	EA	400	800	700	1,400	2,200	330	2,530
Programming	1	LS			1,952	1,952	1,952	293	2,245
Engineering	1	LS			976	976	976	146	1,122
Subtotal Life Safety and Security Systems (Divisions 28)							18,567	2,785	21,352

telecommunications **cost opinion**

Building 50A - Spruce

Telecommunications Infrastructure Assessment Recommendations

Rainier School

HARGIS
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	3,486	3,486	6,972	6,972	10,458	1,569	12,027
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	7,068	7,068			7,068	1,060	8,128
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,650	LF	3	4,125	.05	83	4,208	631	4,839
12 Strand Multimode Outside Plant (OSP) OFC	1,650	LF	1	1,960	.05	83	2,043	306	2,349
Telecommunications Device - 4-Port	45	EA	1,100	49,500	474	21,315	70,815	10,622	81,438
Telecommunications Device - 4-Port - Existing	31	EA	1,100	34,100	474	14,684	48,784	7,318	56,101
CAT 6A Quickport Connector	360	EA	36	13,016	25	9,000	22,016	3,302	25,319
CAT 6A Quickport Connector - Existing	248	EA	36	8,967	26	6,448	15,415	2,312	17,727
CAT 6A Patch Panel	7	EA	320	2,241	150	1,050	3,291	494	3,784
Copper 6-port Empty Cassette	56	EA	100	5,600	50	2,800	8,400	1,260	9,660
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	45	EA	200	9,000	150	6,750	15,750	2,363	18,113
Subtotal Low-Voltage Systems (Divisions 27)							228,607	34,291	262,898

telecommunications **cost opinion**

Building 50A - Spruce

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 50B - Hemlock

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	3,325	3,325	6,649	6,649	9,974	1,496	11,470
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	7,133	7,133			7,133	1,070	8,202
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,850	LF	3	4,625	.05	93	4,718	708	5,425
12 Strand Multimode Outside Plant (OSP) OFC	1,850	LF	1	2,198	.05	93	2,290	344	2,634
Telecommunications Device - 4-Port	42	EA	1,100	46,200	474	19,894	66,094	9,914	76,008
Telecommunications Device - 4-Port - Existing	27	EA	1,100	29,700	474	12,789	42,489	6,373	48,863
CAT 6A Quickport Connector	336	EA	36	12,148	25	8,400	20,548	3,082	23,631
CAT 6A Quickport Connector - Existing	216	EA	36	7,810	26	5,616	13,426	2,014	15,440
CAT 6A Patch Panel	6	EA	320	1,921	150	900	2,821	423	3,244
Copper 6-port Empty Cassette	48	EA	100	4,800	50	2,400	7,200	1,080	8,280
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	42	EA	200	8,400	150	6,300	14,700	2,205	16,905
Subtotal Low-Voltage Systems (Divisions 27)							226,253	33,938	260,191

telecommunications **cost opinion**

Building 50B - Hemlock

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 51A - Fir

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,676	1,676	3,353	3,353	5,029	754	5,784
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,080	4,080			4,080	612	4,692
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,300	LF	3	5,750	.05	115	5,865	880	6,745
12 Strand Multimode Outside Plant (OSP) OFC	2,300	LF	1	2,732	.05	115	2,847	427	3,275
Telecommunications Device - 4-Port	22	EA	1,100	24,200	474	10,421	34,621	5,193	39,814
Telecommunications Device - 4-Port - Existing	5	EA	1,100	5,500	474	2,368	7,868	1,180	9,049
CAT 6A Quickport Connector	176	EA	36	6,363	25	4,400	10,763	1,615	12,378
CAT 6A Quickport Connector - Existing	40	EA	36	1,446	26	1,040	2,486	373	2,859
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	22	EA	200	4,400	150	3,300	7,700	1,155	8,855
Subtotal Low-Voltage Systems (Divisions 27)							124,241	18,636	142,877

telecommunications **cost opinion**

Building 51A - Fir

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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1201 third avenue, ste 600
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 51B - Pine

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	2,535	2,535	5,071	5,071	7,606	1,141	8,747
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	5,763	5,763			5,763	864	6,627
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,450	LF	3	6,125	.05	123	6,248	937	7,185
12 Strand Multimode Outside Plant (OSP) OFC	2,450	LF	1	2,911	.05	123	3,033	455	3,488
Telecommunications Device - 4-Port	43	EA	1,100	47,300	474	20,368	67,668	10,150	77,818
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	344	EA	36	12,438	25	8,600	21,038	3,156	24,193
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	4	EA	320	1,280	150	600	1,880	282	2,163
Copper 6-port Empty Cassette	32	EA	100	3,200	50	1,600	4,800	720	5,520
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	43	EA	200	8,600	150	6,450	15,050	2,258	17,308
Subtotal Low-Voltage Systems (Divisions 27)							179,340	26,901	206,241

telecommunications **cost opinion**

Building 51B - Pine

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 52 - Gasoline Station

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	703	703	1,407	1,407	2,110	317	2,427
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,208	2,208			2,208	331	2,539
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,450	LF	3	6,125	.05	123	6,248	937	7,185
12 Strand Multimode Outside Plant (OSP) OFC	2,450	LF	1	2,911	.05	123	3,033	455	3,488
Telecommunications Device - 4-Port	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
Telecommunications Device - 4-Port - Existing	1	EA	1,100	1,100	474	474	1,574	236	1,810
CAT 6A Quickport Connector	24	EA	36	868	25	600	1,468	220	1,688
CAT 6A Quickport Connector - Existing	8	EA	36	289	26	208	497	75	572
CAT 6A Patch Panel	1	EA	320	320	150	150	470	71	541
Copper 6-port Empty Cassette	8	EA	100	800	50	400	1,200	180	1,380
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	3	EA	200	600	150	450	1,050	158	1,208
Subtotal Low-Voltage Systems (Divisions 27)							62,549	9,382	71,931

telecommunications **cost opinion**

Building 52 - Gasoline Station

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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1201 third avenue, ste 600
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 53 - Belle King

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,832	1,832	3,664	3,664	5,495	824	6,320
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,230	4,230			4,230	635	4,865
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,550	LF	3	3,875	.05	78	3,953	593	4,545
12 Strand Multimode Outside Plant (OSP) OFC	1,550	LF	1	1,841	.05	78	1,919	288	2,207
Telecommunications Device - 4-Port	30	EA	1,100	33,000	474	14,210	47,210	7,082	54,292
CAT 6A Quickport Connector	240	EA	36	8,677	25	6,000	14,677	2,202	16,879
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	30	EA	200	6,000	150	4,500	10,500	1,575	12,075
Subtotal Low-Voltage Systems (Divisions 27)							130,965	19,645	150,610

telecommunications **cost opinion**

Building 53 - Belle King

Telecommunications Infrastructure Assessment Recommendations

Rainier School

HARGIS
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 56 - Laurel

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	4,756	4,756	9,512	9,512	14,268	2,140	16,408
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	9,890	9,890			9,890	1,484	11,374
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	1,550	LF	3	3,875	.05	78	3,953	593	4,545
12 Strand Multimode Outside Plant (OSP) OFC	1,550	LF	1	1,841	.05	78	1,919	288	2,207
Telecommunications Device - 4-Port	97	EA	1,100	106,700	474	45,946	152,646	22,897	175,543
CAT 6A Quickport Connector	776	EA	36	28,057	25	19,400	47,457	7,119	54,576
CAT 6A Patch Panel	9	EA	320	2,881	150	1,350	4,231	635	4,866
Copper 6-port Empty Cassette	72	EA	100	7,200	50	3,600	10,800	1,620	12,420
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	97	EA	200	19,400	150	14,550	33,950	5,093	39,043
Subtotal Low-Voltage Systems (Divisions 27)							317,084	47,563	364,647

telecommunications **cost opinion**

Building 56 - Laurel

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 57 - Staff Dormitory

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	5,050	5,050	10,100	10,100	15,150	2,272	17,422
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	10,093	10,093			10,093	1,514	11,607
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Telecommunication Room Demolition	1	EA			2,000	2,000	2,000	300	2,300
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	550	LF	3	1,375	.05	28	1,403	210	1,613
12 Strand Multimode Outside Plant (OSP) OFC	550	LF	1	653	.05	28	681	102	783
Telecommunications Device - 4-Port	101	EA	1,100	111,100	474	47,841	158,941	23,841	182,782
Telecommunications Device - 4-Port - Existing	1	EA	1,100	1,100	474	474	1,574	236	1,810
CAT 6A Quickport Connector	808	EA	36	29,214	25	20,200	49,414	7,412	56,826
CAT 6A Quickport Connector - Existing	8	EA	36	289	26	208	497	75	572
CAT 6A Patch Panel	9	EA	320	2,881	150	1,350	4,231	635	4,866
Copper 6-port Empty Cassette	72	EA	100	7,200	50	3,600	10,800	1,620	12,420
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	101	EA	200	20,200	150	15,150	35,350	5,303	40,653
Subtotal Low-Voltage Systems (Divisions 27)							328,103	49,215	377,319

telecommunications **cost opinion**

Building 57 - Staff Dormitory

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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1201 third avenue, ste 600
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 58 - Modular Classroom

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	984	984	1,968	1,968	2,953	443	3,395
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,488	2,488			2,488	373	2,861
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	950	LF	3	2,375	.05	48	2,423	363	2,786
12 Strand Multimode Outside Plant (OSP) OFC	950	LF	1	1,129	.05	48	1,176	176	1,353
Telecommunications Device - 4-Port	10	EA	1,100	11,000	474	4,737	15,737	2,361	18,097
Telecommunications Device - 4-Port - Existing	1	EA	1,100	1,100	474	474	1,574	236	1,810
CAT 6A Quickport Connector	80	EA	36	2,892	25	2,000	4,892	734	5,626
CAT 6A Quickport Connector - Existing	8	EA	36	289	26	208	497	75	572
CAT 6A Patch Panel	1	EA	320	320	150	150	470	71	541
Copper 6-port Empty Cassette	8	EA	100	800	50	400	1,200	180	1,380
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	10	EA	200	2,000	150	1,500	3,500	525	4,025
Subtotal Low-Voltage Systems (Divisions 27)							74,879	11,232	86,111

telecommunications **cost opinion**

Building 58 - Modular Classroom

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 61 - Superintendent's Residence

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	918	918	1,835	1,835	2,753	413	3,166
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,105	2,105			2,105	316	2,421
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Telecommunication Room Demolition	1	EA			2,000	2,000	2,000	300	2,300
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	600	LF	3	1,500	.05	30	1,530	230	1,760
12 Strand Multimode Outside Plant (OSP) OFC	600	LF	1	713	.05	30	743	111	854
Telecommunications Device - 4-Port	6	EA	1,100	6,600	474	2,842	9,442	1,416	10,858
Telecommunications Device - 4-Port - Existing	1	EA	1,100	1,100	474	474	1,574	236	1,810
CAT 6A Quickport Connector	48	EA	36	1,735	25	1,200	2,935	440	3,376
CAT 6A Quickport Connector - Existing	8	EA	36	289	26	208	497	75	572
CAT 6A Patch Panel	1	EA	320	320	150	150	470	71	541
Copper 6-port Empty Cassette	8	EA	100	800	50	400	1,200	180	1,380
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	6	EA	200	1,200	150	900	2,100	315	2,415
Subtotal Low-Voltage Systems (Divisions 27)							65,320	9,798	75,118

telecommunications **cost opinion**

Building 61 - Superintendent's Residence

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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1201 third avenue, ste 600
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 62 - 1050 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	2,009	2,009	4,018	4,018	6,027	904	6,931
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,631	4,631			4,631	695	5,326
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,600	LF	3	6,500	.05	130	6,630	995	7,625
12 Strand Multimode Outside Plant (OSP) OFC	2,600	LF	1	3,089	.05	130	3,219	483	3,702
Telecommunications Device - 4-Port	31	EA	1,100	34,100	474	14,684	48,784	7,318	56,101
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	248	EA	36	8,967	25	6,200	15,167	2,275	17,442
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	31	EA	200	6,200	150	4,650	10,850	1,628	12,478
Subtotal Low-Voltage Systems (Divisions 27)							143,462	21,519	164,981

telecommunications **cost opinion**

Building 62 - 1050 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

HARGIS
1201 third avenue, ste 600
seattle, washington 98101
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 63 - 1040 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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1201 third avenue, ste 600
seattle, washington 98101
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	2,015	2,015	4,030	4,030	6,045	907	6,952
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,800	4,800			4,800	720	5,520
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,700	LF	3	6,750	.05	135	6,885	1,033	7,918
12 Strand Multimode Outside Plant (OSP) OFC	2,700	LF	1	3,208	.05	135	3,343	501	3,844
Telecommunications Device - 4-Port	31	EA	1,100	34,100	474	14,684	48,784	7,318	56,101
Telecommunications Device - 4-Port - Existing	4	EA	1,100	4,400	474	1,895	6,295	944	7,239
CAT 6A Quickport Connector	248	EA	36	8,967	25	6,200	15,167	2,275	17,442
CAT 6A Quickport Connector - Existing	32	EA	36	1,157	26	832	1,989	298	2,287
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	31	EA	200	6,200	150	4,650	10,850	1,628	12,478
Subtotal Low-Voltage Systems (Divisions 27)							147,137	22,071	169,207

telecommunications **cost opinion**

Building 63 - 1040 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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1201 third avenue, ste 600
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 64 - 1030 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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JOB NUMBER 24047 **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	1,954.2	1,954	3,908	3,908	5,863	879	6,742
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,287.5	4,287			4,287	643	4,931
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500.0	4,500	1,200.0	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150.0	600	50.0	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300.0	300	110.0	110	410	62	472
Ladder Rack	30	LF	7.5	225	20.0	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000.0	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,400	LF	2.5	6,000	.05	120	6,120	918	7,038
12 Strand Multimode Outside Plant (OSP) OFC	2,400	LF	1.2	2,851	.05	120	2,971	446	3,417
Telecommunications Device - 4-Port	32	EA	1,100.0	35,200	473.7	15,158	50,358	7,554	57,911
Telecommunications Device - 4-Port - Existing	4	EA	1,100.0	4,400	473.7	1,895	6,295	944	7,239
CAT 6A Quickport Connector	256	EA	36.2	9,256	25.0	6,400	15,656	2,348	18,004
CAT 6A Quickport Connector - Existing	32	EA	36.2	1,157	26.0	832	1,989	298	2,287
CAT 6A Patch Panel	3	EA	320.1	960	150.0	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100.0	2,400	50.0	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000.0	4,000	2,500.0	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500.0	7,500	1,500.0	1,500	9,000	1,350	10,350
Pathway per Drop	32	EA	200.0	6,400	150.0	4,800	11,200	1,680	12,880
Subtotal Low-Voltage Systems (Divisions 27)							134,984	20,248	155,231

telecommunications **cost opinion**

Building 64 - 1030 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138.0	138	276.0	276	414	62.1	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280.4	280			280	42.1	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200.0	200	200.0	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800.0	2,800	680.0	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535.0	535	85.0	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925.0	925	170.0	170	1,095	164	1,259
Portal Licenses	1	EA	100.0	100	50.0	50	150	23	173
Card Reader	1	EA	325.0	325	127.5	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800.0	1,800	600.0	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125.0	125	85.0	85	210	32	242
Wiring - Per Access Control Door	1	EA	400.0	400	700.0	700	1,100	165	1,265
Programming	1	LS			1,402.0	1,402	1,402	210	1,612
Engineering	1	LS			701.0	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 65 - 1020 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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1201 third avenue, ste 600
seattle, washington 98101
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,925	1,925	3,850	3,850	5,775	866	6,641
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,340	4,340			4,340	651	4,991
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,250	LF	3	5,625	.05	113	5,738	861	6,598
12 Strand Multimode Outside Plant (OSP) OFC	2,250	LF	1	2,673	.05	113	2,786	418	3,203
Telecommunications Device - 4-Port	32	EA	1,100	35,200	474	15,158	50,358	7,554	57,911
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	256	EA	36	9,256	25	6,400	15,656	2,348	18,004
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	32	EA	200	6,400	150	4,800	11,200	1,680	12,880
Subtotal Low-Voltage Systems (Divisions 27)							135,420	20,313	155,732

telecommunications **cost opinion**

Building 65 - 1020 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

HARGIS
1201 third avenue, ste 600
seattle, washington 98101
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 66 - 1010 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,925	1,925	3,851	3,851	5,776	866	6,643
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,359	4,359			4,359	654	5,013
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,350	LF	3	5,875	.05	118	5,993	899	6,891
12 Strand Multimode Outside Plant (OSP) OFC	2,350	LF	1	2,792	.05	118	2,909	436	3,346
Telecommunications Device - 4-Port	32	EA	1,100	35,200	474	15,158	50,358	7,554	57,911
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	256	EA	36	9,256	25	6,400	15,656	2,348	18,004
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	32	EA	200	6,400	150	4,800	11,200	1,680	12,880
Subtotal Low-Voltage Systems (Divisions 27)							135,818	20,373	156,191

telecommunications **cost opinion**

Building 66 - 1010 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 67 - 2005 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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1201 third avenue, ste 600
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,925	1,925	3,851	3,851	5,776	866	6,643
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,359	4,359			4,359	654	5,013
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,350	LF	3	5,875	.05	118	5,993	899	6,891
12 Strand Multimode Outside Plant (OSP) OFC	2,350	LF	1	2,792	.05	118	2,909	436	3,346
Telecommunications Device - 4-Port	32	EA	1,100	35,200	474	15,158	50,358	7,554	57,911
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	256	EA	36	9,256	25	6,400	15,656	2,348	18,004
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	32	EA	200	6,400	150	4,800	11,200	1,680	12,880
Subtotal Low-Voltage Systems (Divisions 27)							135,818	20,373	156,191

telecommunications **cost opinion**

Building 67 - 2005 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

HARGIS
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 68 - 2015 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,921	1,921	3,843	3,843	5,764	865	6,629
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,264	4,264			4,264	640	4,904
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,650	LF	3	6,625	.05	133	6,758	1,014	7,771
12 Strand Multimode Outside Plant (OSP) OFC	2,650	LF	1	3,148	.05	133	3,281	492	3,773
Telecommunications Device - 4-Port	32	EA	1,100	35,200	474	15,158	50,358	7,554	57,911
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	256	EA	36	9,256	25	6,400	15,656	2,348	18,004
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	32	EA	200	6,400	150	4,800	11,200	1,680	12,880
Subtotal Low-Voltage Systems (Divisions 27)							133,738	20,061	153,799

telecommunications **cost opinion**

Building 68 - 2015 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

	quantity		material cost		labor cost		engineering opinion		
description	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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 69 - 2025 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	1,927	1,927	3,855	3,855	5,782	867	6,649
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	4,433	4,433			4,433	665	5,097
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	4,500	4,500	1,200	1,200	5,700	855	6,555
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	30	LF	8	225	20	600	825	124	949
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,750	LF	3	6,875	.05	138	7,013	1,052	8,064
12 Strand Multimode Outside Plant (OSP) OFC	2,750	LF	1	3,267	.05	138	3,405	511	3,915
Telecommunications Device - 4-Port	32	EA	1,100	35,200	474	15,158	50,358	7,554	57,911
Telecommunications Device - 4-Port - Existing	3	EA	1,100	3,300	474	1,421	4,721	708	5,429
CAT 6A Quickport Connector	256	EA	36	9,256	25	6,400	15,656	2,348	18,004
CAT 6A Quickport Connector - Existing	24	EA	36	868	26	624	1,492	224	1,716
CAT 6A Patch Panel	3	EA	320	960	150	450	1,410	212	1,622
Copper 6-port Empty Cassette	24	EA	100	2,400	50	1,200	3,600	540	4,140
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350
Pathway per Drop	32	EA	200	6,400	150	4,800	11,200	1,680	12,880
Subtotal Low-Voltage Systems (Divisions 27)							137,413	20,612	158,025

telecommunications **cost opinion**

Building 69 - 2025 Quinault Court

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611

telecommunications **cost opinion**

Building 74 - Greenhouse

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **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	621	621	1,243	1,243	1,864	280	2,143
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	2,058	2,058			2,058	309	2,367
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Telecommunications Rooms - HC	1	EA	12,000	12,000	2,500	2,500	14,500	2,175	16,675
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Rack Mount Fiber Cabinet - 2RU	1	EA	300	300	110	110	410	62	472
Ladder Rack	60	LF	8	450	20	1,200	1,650	248	1,898
2000VA UPS	1	EA	3,000	3,000	110	110	3,110	467	3,577
Demolish Defunct Infrastructure After System Cutover	1	LS			2,000	2,000	2,000	300	2,300
12 Strand Singlemode Outside Plant (OSP) OFC	2,500	LF	3	6,250	.05	125	6,375	956	7,331
12 Strand Multimode Outside Plant (OSP) OFC	2,500	LF	1	2,970	.05	125	3,095	464	3,559
Telecommunications Device - 4-Port	1	EA	1,100	1,100	474	474	1,574	236	1,810
Telecommunications Device - 4-Port - Existing	1	EA	1,100	1,100	474	474	1,574	236	1,810
CAT 6A Quickport Connector	8	EA	36	289	25	200	489	73	563
CAT 6A Quickport Connector - Existing	8	EA	36	289	26	208	497	75	572
CAT 6A Patch Panel	1	EA	320	320	150	150	470	71	541
Copper 6-port Empty Cassette	8	EA	100	800	50	400	1,200	180	1,380
Telecom Room - Electrical Improvements	1	EA	4,000	4,000	2,500	2,500	6,500	975	7,475
Telecom Room - HVAC - Ductless Split System	1	EA	7,500	7,500	1,500	1,500	9,000	1,350	10,350

telecommunications **cost opinion**

Building 74 - Greenhouse

Telecommunications Infrastructure Assessment Recommendations

Rainier School

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** September 19, 2024

JOB NUMBER 24047 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

	quantity		material cost		labor cost		engineering opinion		
description	number	unit	unit cost	total	unit cost	total	subtotal	OH&P	total
Pathway per Drop	1	EA	200	200	150	150	350	53	403
Subtotal Low-Voltage Systems (Divisions 27)							57,516	8,627	66,144
DIVISION 28									
LIFE SAFETY & SECURITY SYSTEMS - DIVISIONS 28									
General Provisions (Submittals, Mobilization, Permits)	1	LS	138	138	276	276	414	62	476
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	280	280			280	42	322
Raceway, Cabling Supports and Outlet Boxes	1	EA	200	200	200	200	400	60	460
SECTION 281300 ACCESS CONTROL SYSTEM									
Access Control Panel w/ Controller	1	EA	2,800	2,800	680	680	3,480	522	4,002
Door Controller - 2-Door	1	EA	535	535	85	85	620	93	713
Power Supply 10A/24V - 8-Door	1	EA	925	925	170	170	1,095	164	1,259
Portal Licenses	1	EA	100	100	50	50	150	23	173
Card Reader	1	EA	325	325	128	128	453	68	520
Electrified Hardware (Electrified Lock and Power Transfer)	1	EA	1,800	1,800	600	600	2,400	360	2,760
Request To Exit (REX)	1	EA	125	125	85	85	210	32	242
Wiring - Per Access Control Door	1	EA	400	400	700	700	1,100	165	1,265
Programming	1	LS			1,402	1,402	1,402	210	1,612
Engineering	1	LS			701	701	701	105	806
Subtotal Life Safety and Security Systems (Divisions 28)							12,705	1,906	14,611