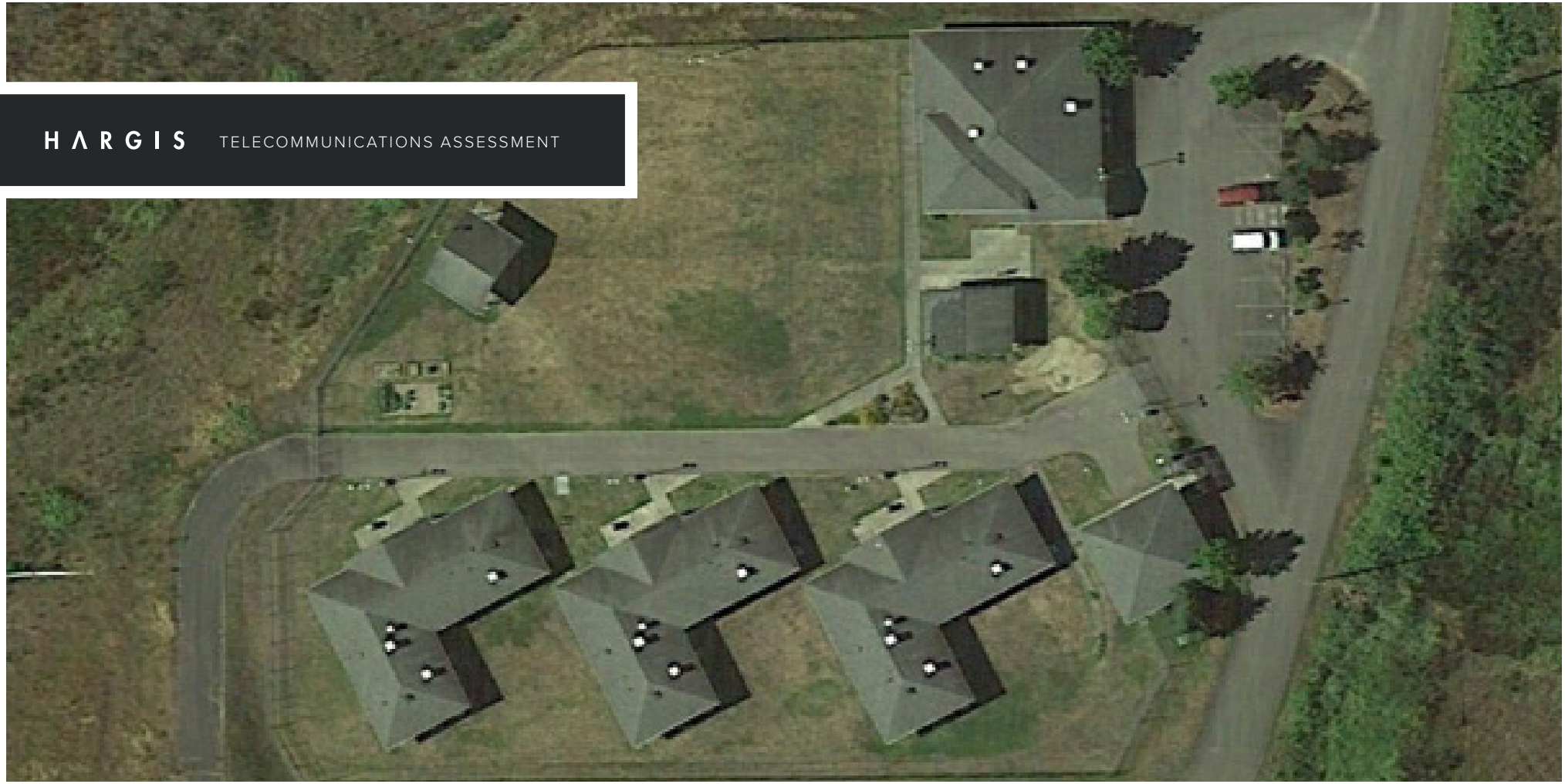
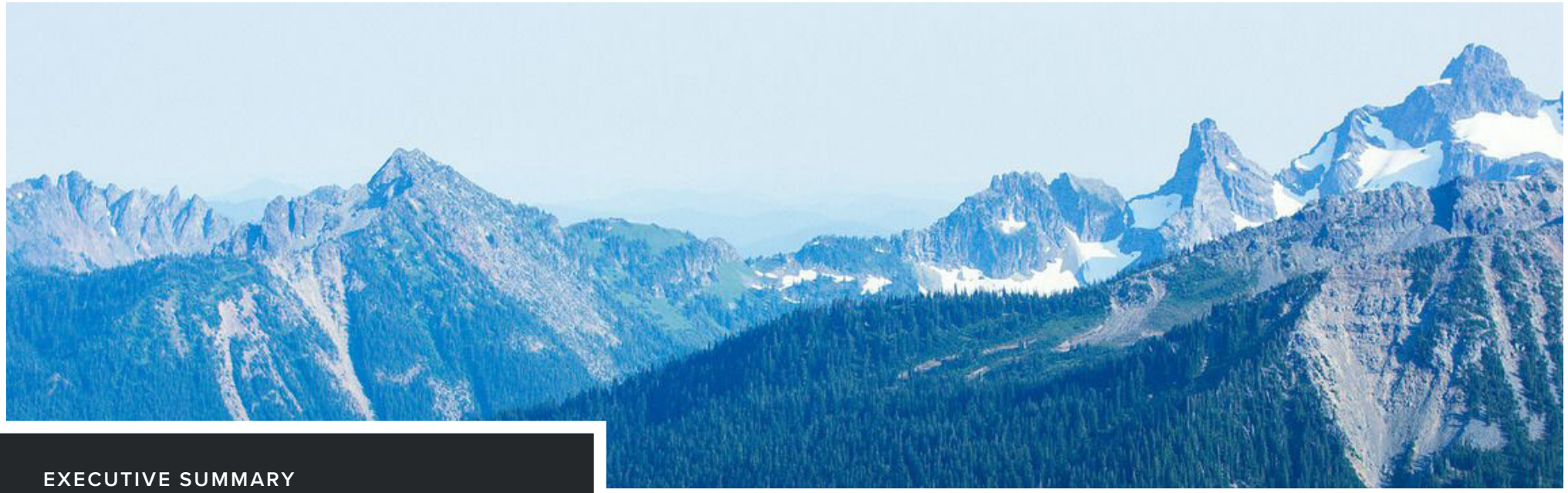
HARGIS TELECOMMUNICATIONS ASSESSMENT



DSHS

PIERCE COUNTY SCTF

WA STATE PROJECT NUMBER: 2024-429 F (5)



EXECUTIVE SUMMARY

OVERVIEW

The Pierce County Secure Community Transition Facility (SCTF), established in 2001, is a state-operated facility under the administration of the Special Commitment Center (SCC) within the Behavioral Health Administration (BHA) of the Department of Social and Health Services (DSHS). Located on McNeil Island, adjacent to the SCC total confinement facility, the SCTF is designed to provide a secure environment with strictly controlled access and monitored movement, ensuring safety and security while offering treatment programs.

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. The existing backbone cabling

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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 toward newer telephony 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 Category 3 and 5e which do not meet current industry infrastructure standards.

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 The existing optical fiber infrastructure is obsolete, consisting of OM1 62.5-micron multi-mode optical fiber cable.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

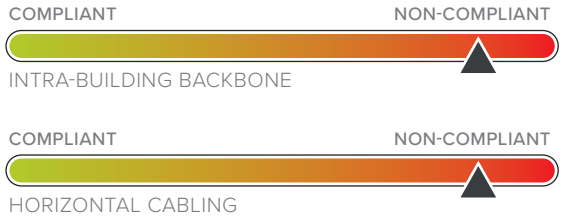
Existing horizontal cabling is not compliant with current TIA standards for this facility type. Upgrading category cabling requires a replacement of the complete channel to include horizontal cabling, patch cords, patch panels, and work area outlets. At Pierce County SCTF, this upgrade also requires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

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.

CABLING INFRASTRUCTURE STANDARDS COMPLIANCE



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 the Pierce County SCTF 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

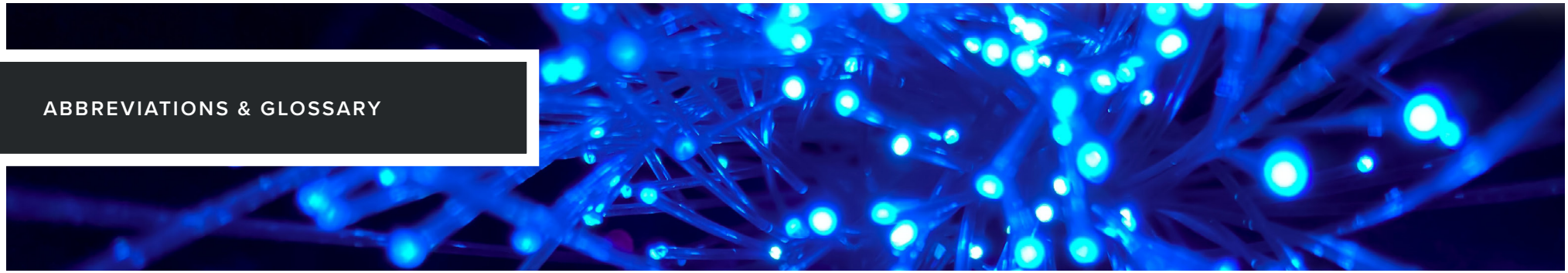
Review, assess and evaluate systems in each building

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 SPACES			
1	N/A	» Retrofit Telecommunications Rooms In Buildings 1, 2, 3, 7, 20, 27, And 74. - Demolish any obsolete or non-operational existing equipment to make space. - Provide Electrical Infrastructure (Grounding, UPS, Convenience Receptacles, Equipment Receptacles, Power Distribution Units [PDUs]) - Provide venting for telecommunications space. - Add 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.)	$276,000
INSTALL BACKBONE OFC TO NEW TELECOMMUNICATIONS SPACES			
2	N/A	» Pull 12 st OS2 and 12 st OM4 OFC from DOC Communications Building in Special Commitment Center campus to MER in Building - Terminate OFC Cabling if RMFC is installed. » Pull 12 st OS2 and 12 st OM4 OFC from MER in Building 1 to each telecom room in Buildings 2, 3, & 4. - Terminate OFC Cabling if RMFC is installed.	$30,000
INSTALL HORISONTAL CABLING TO NEW TELECOMMUNICATIONS OUTLETS			
3	1	» Install Back boxes and pathway at new telecommunications outlet locations - Existing jacks will need to be maintained in operation. » Install Category 6A cabling and terminate for new telecommunications outlets.	$77,000
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.	$44,000
DEMOLISH DEFUNCT INFRASTRUCTURE			
6	1-5	» Demolish OSP cable. - Demolish OM1 Multi-mode OSP OFC to from DOC Communications Building in Special Commitment Center campus to MER in Building 1. - Demolish Copper twisted pair OSP Backbone cabling from DOC Communications Building in Special Commitment Center campus to MER in Building 1. - Demolish OM1 Multi-mode OSP OFC from MER in Building 1 to Buildings 2, 3, & 4. - Demolish Copper twisted pair OSP Backbone cabling from MER in Building 1 to Buildings 2, 3, & 4. » Demolish Defunct telecommmunications rooms. - Remove any salvageable equipment from TR's. - Remove the remaining equipment and dispose of it.	$12,000

BACKBONE CABLING

Service Provider Connections

Pierce County SCTF receives internet service from the Special Commitment Center through a 24-strand OM1 multi-mode outside plant optical fiber cable. The phone service provider connection is provided with a 200-pair Category 3 cable, also from the Special Commitment Center. Both cables originate from the DOC Communications Building on the SCC campus and route through vaults C-14, C-15, C-16, and C-19 before terminating in the telecommunications room A19 of Pilchuck Center (Program Support).

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

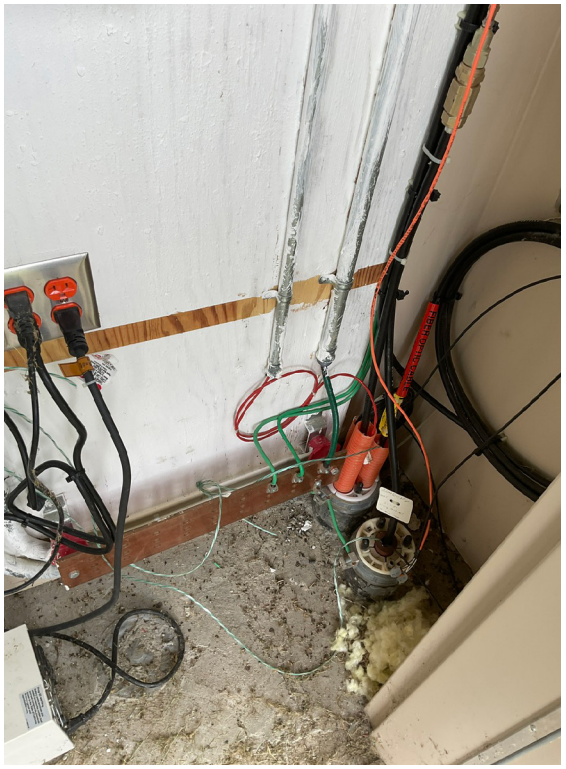
The existing communications infrastructure providing connectivity to the Pierce County SCTF is a mix of OM1 multi-mode outside plant optical fiber cable and twisted-pair copper cable for voice applications.

All buildings on the Pierce County SCTF campus are connected through OM1 multi-mode outside plant optical fiber cabling backbone and twisted-pair copper from the existing telecommunications room in Pilchuck Center/Program Support.

The current OM1 fiber backbone is extremely limited in bandwidth and data speeds. OM1 fiber is obsolete, is not readily available through distribution, and is not being manufactured in great quantity. TIA standards for healthcare facilities dictate the use of single-mode optical fiber or a minimum of OM4 rated multi-mode fiber. To allow future network expansion, technology growth, and 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 OS2 single-mode outside plant optical fiber cable and 12-strands of OM4 multi-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. Due to the limited backbone cabling going to each building, 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.

Existing Optical Fiber & Copper Cable Patching.



Existing Backbone Cabling Entering Pathway to SCC.

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

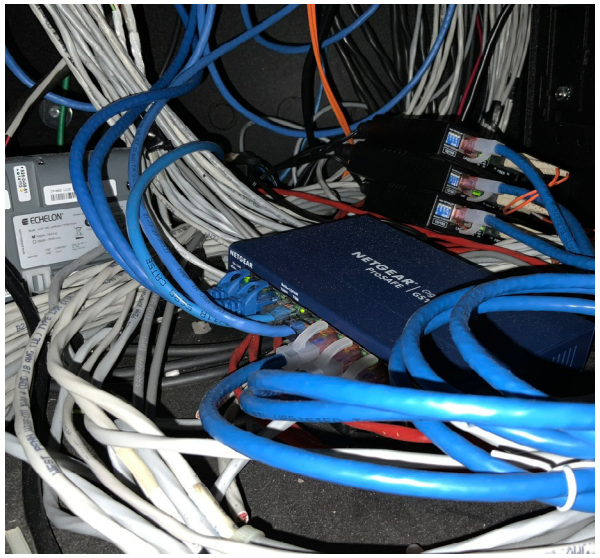
VOICE HORIZONTAL CABLING

Upon review of the voice infrastructure, it was found to be inadequate to serve the current and future needs of SCC. The existing phone system uses a VOIP system based on Category 3 cabling. In each building, Category 3 cabling from the workstation phone is connected to 110-blocks in the telecommunications rooms. These 110-blocks serve as cable termination points, allowing interconnection of on-premises wiring within a structured cabling system. From the 110-blocks, the Category 3 cabling is patched to a Category 3 backbone cable that routes back to the DOC Communications Building.

Category 3 cabling does not meet TIA-1179 standards for horizontal cabling. Industry wide, its use has been on a rapid decline for years as it is not manufactured to meet current bandwidth or data rate standards. It is recommended that all Category 3 cabling be removed, and the voice network be integrated into a converged network infrastructure utilizing standards-compliant Category 6A cabling.

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

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



Existing Cabling.

ETHERNET HORIZONTAL CABLING

The existing ethernet network is comprised of Category 5e cabling. The existing patch panels, connectors, and patch panels meet Category 6 and 6A standards. There are also multiple areas where horizontal cables are left abandoned behind walls with blank cover plates.

The existing Category 5e infrastructure is not adequate to meet the current and future needs of Pierce County SCTF. While the existing Category 5e infrastructure sufficiently supports the current network load, it is not in compliance with TIA standards for infrastructure. It is recommended that the existing cabling infrastructure be replaced with a new Category 6A cabling infrastructure.

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

CAMPUS MAP

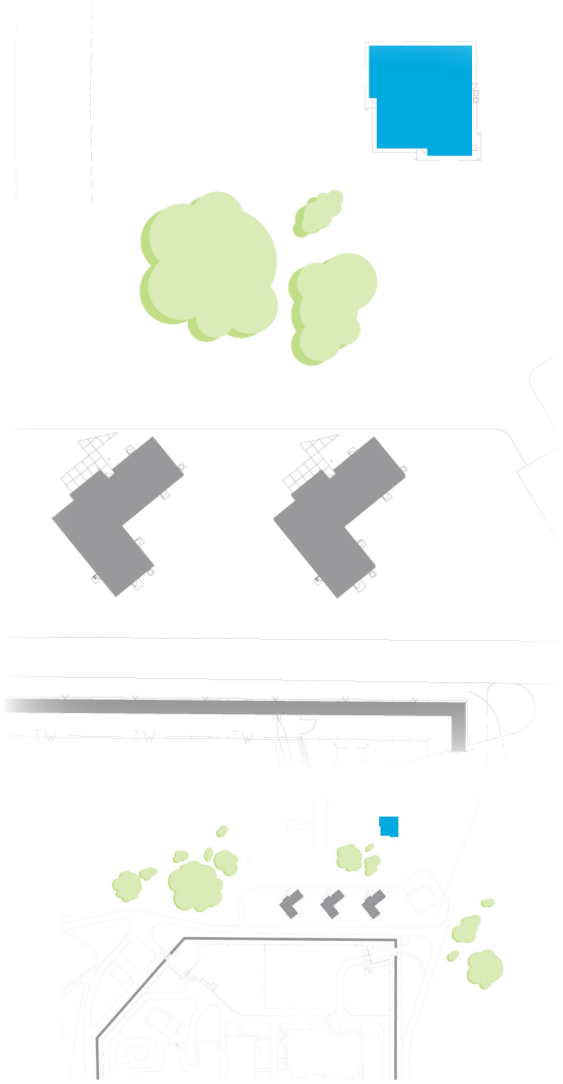
HARGIS

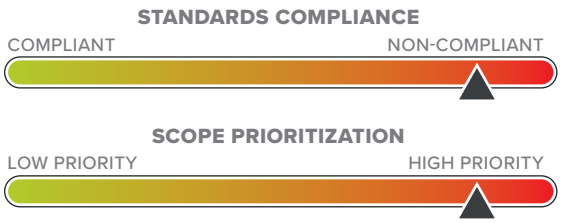
EVALUATION CRITERIA FOR TELECOMMUNICATIONS ROOMS		
Room/Space	»	Quantity, Location, and Size of Telecommunications Room.
	»	Available space to install and terminate new cabling and rack space to mount new equipment
	»	Adequate working clearances to access and maintain additional equipment and cabling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

The existing telecommunications spaces are not compliant with current industry standards. The existing spaces do not all have an environmental control system to maintain required temperature and humidity. Inconsistent grounding was observed during the walkthrough, increasing the risk of damage to equipment from transient voltages.

To support future expanded infrastructure and meet industry standards, it is recommended to modify the telecommunications rooms. Category 6A patch panels will have to be provided and network support equipment will have to be grounded to their bonding busbar. To comply with the Health Insurance Portability and Accountability Act (HIPAA) and meet telecommunications standards, access to the space will need to be provided to limit access to authorized staff. Access control can be accomplished using different methods, including, keys and locks or an electronic access control system. Per HIPAA security requirements, the entity must "Implement procedures to control and validate a person's access to facilities based on their role or function..." Electronic access control systems have this capability built in. This capability can be accomplished for keys and locks 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.





PILCHUCK CENTER (PROGRAM SUPPORT)

TELECOMMUNICATIONS ROOM – TR-A19

Telecommunications Room TR-A19 is where all of Pierce County SCTF's optical fiber and copper backbone terminate. The room contains a wall-mounted rack for telecom equipment and a wall-mounted cabinet for security electronics equipment. There are also multiple 66 and 110-blocks for voice cross-connecting. The wall-mounted rack contains 24-port Category 6 and Category 6A patch panels.

The telecommunications room is served by a 24-strand OM1 multi-mode OFC from the DOC Communications Building on the SCC campus. From TR-A19, there is a 6-strand OM1 multi-mode OFC to each of the telecommunications rooms on Pierce County SCTF's campus. All optical fiber terminates in rack-mounted fiber cabinets.

The voice infrastructure is supported by a 200-pair Category 3 cable from the DOC Communications Building that terminates on 110-blocks. From room TR-A19, there is a 25-pair Category 3 cable to each of the Pierce County SCTF telecommunications room.

There is space for expansion in the existing rack, but there is no space to add a second rack. There is a grounding busbar present, but not all telecommunications equipment is bonded to it. The space does not contain any cooling or humidity control. There are a few convenience receptacles, but no dedicated equipment receptacles. UPS power is also not available for the equipment. The room does not contain access control to track access into the space.

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

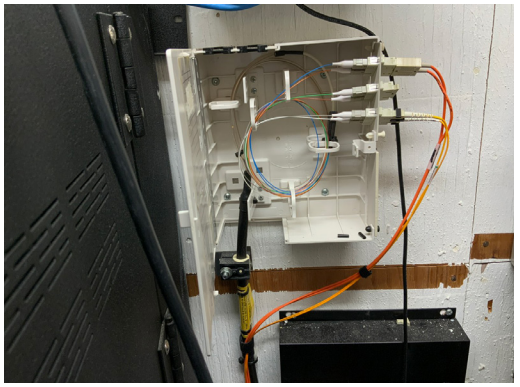
TELECOMMUNICATIONS ROOM – TR-A164

Deficiencies:

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

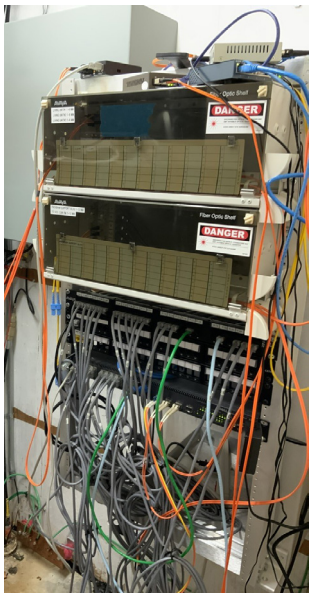
Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone from the MER in the DOC Communications Building.
- Add ladder tray and cable management as needed.
- Bond telecommunications equipment to the grounding busbar.
- Add power circuits, receptacles, and UPS power as needed.
- Add dedicated cooling system.
- Control access to authorized individuals.

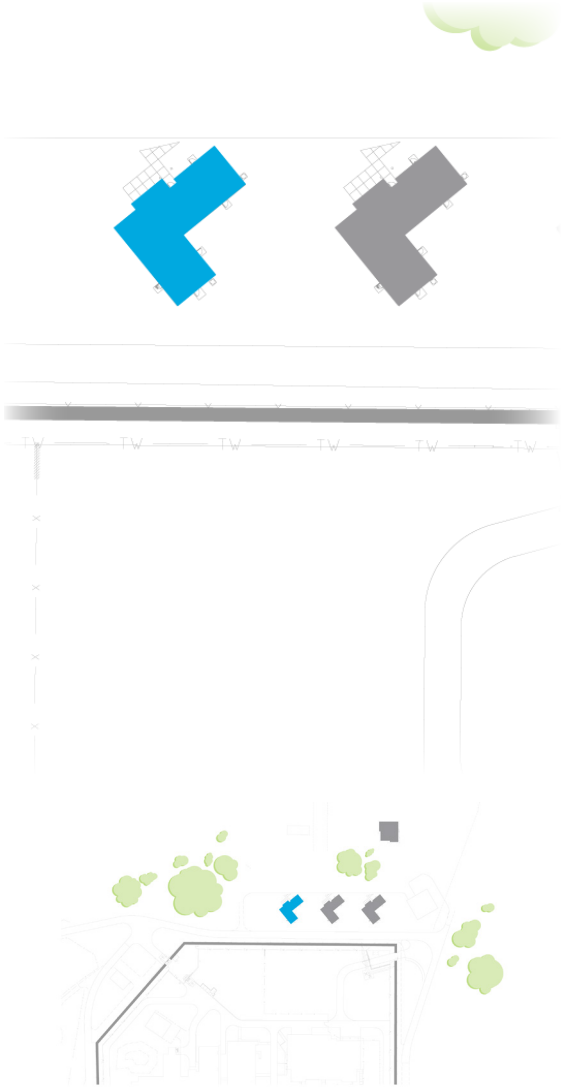


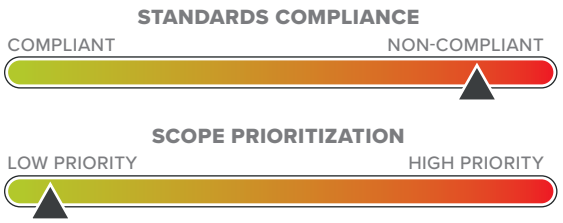
Existing Fiber Patching.

Existing Building Entrance Protection.



Existing Telecom Rack.





CONSTANCE HOUSE (LIVING UNIT 1)

TELECOMMUNICATIONS ROOM – TR-R24

Telecommunications Room TR-R24 does not contain any racks. All telecommunications equipment is mounted on the wall. The room is connected to TR-A19 with a 6-strand OM1 multi-mode OFC. The optical fiber terminates on a wall-mounted fiber cabinet. The voice infrastructure is supported by a 25-pair Category 3 cable from the TR-A19 that terminates on a 110-block. There are no patch panels. All Category 5e cables get patched through biscuit jacks that then terminate directly to a switch on the shelf.

There is limited wall-space for expansion due to all the equipment being mounted on the wall. However, there is space to provide a wall-mounted cabinet. There is no grounding busbar present. The space does not contain any cooling or humidity control. There are a few convenience receptacles, but no dedicated equipment receptacles. UPS power is also not available for the equipment. The room does not contain access control to track access into the space.

To meet industry standards, it is recommended to upgrade the existing backbone cabling. Dedicated cooling, ladder rack, cable management, UPS, and dedicated equipment receptacles are required to meet standards. It is recommended that all wall-mounted equipment get moved to a wall-mounted rack to create room for future expansion. A telecommunications grounding busbar should also be installed to create a consistent potential across all components. The addition of card-based access control is recommended to control and track access to the space.

TELECOMMUNICATIONS ROOM – TR-R24

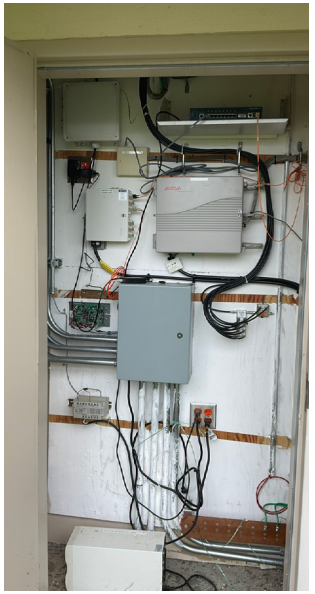
Deficiencies:

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

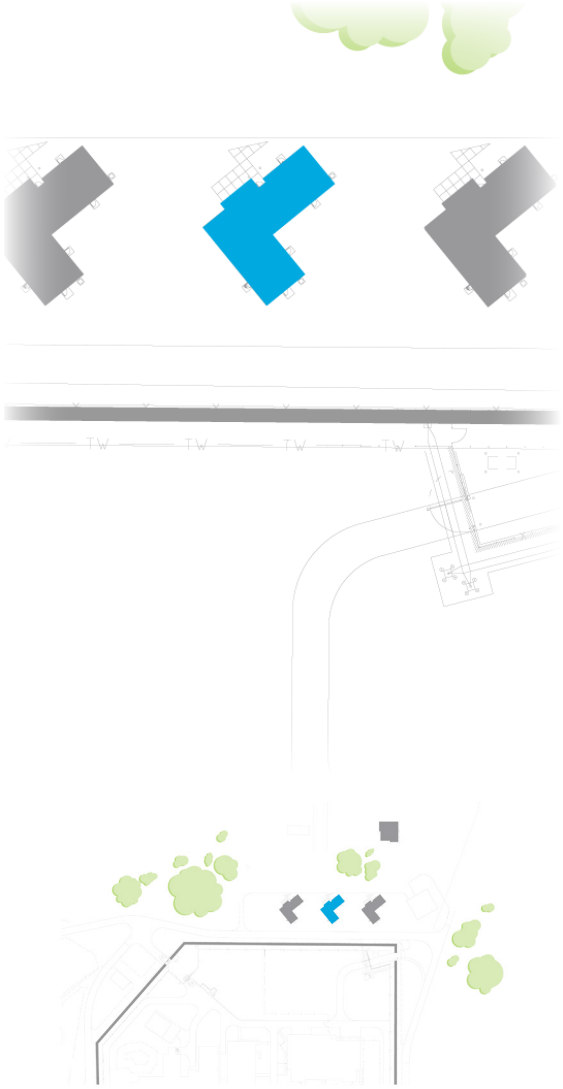
Recommendations:

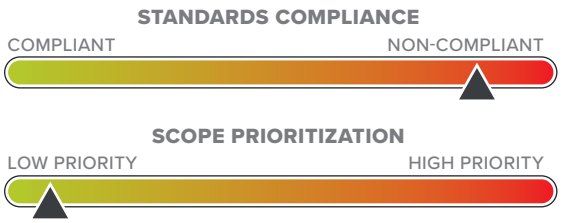
- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone to TR-A19.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar.
- Add power circuits, receptacles, and UPS power as needed.
- Add dedicated cooling system.
- Control access to authorized individuals.
- Relocate the employee workspace to allow room to be a dedicated telecom space.
- Add a wall-mounted rack to house all wall-mounted telecom equipment.

Existing Building Entrance Protection.



Existing Telecom Closet.





BAKER HOUSE (LIVING UNIT 2)

TELECOMMUNICATIONS ROOM – TR-R24

Telecommunications Room TR-R24 does not contain any racks. All telecommunications equipment is mounted on the wall. The room is connected to TR-A19 with a 6-strand OM1 multi-mode OFC. The optical fiber terminates on a wall-mounted fiber cabinet. The voice infrastructure is supported by a 25-pair Category 3 cable from the TR-A19 that terminates on a 110-block. There are no patch panels. All Category 5e cables get patched through biscuit jacks that then terminate directly to a switch on the shelf.

There is limited wall-space for expansion due to all the equipment being mounted on the wall. However, there is space to provide a wall-mounted cabinet. There is no grounding busbar present. The space does not contain any cooling or humidity control. There are a few convenience receptacles, but no dedicated equipment receptacles. UPS power is also not available for the equipment. The room does not contain access control to track access into the space.

To meet industry standards, it is recommended to upgrade the existing backbone cabling. Dedicated cooling, ladder rack, cable management, UPS, and dedicated equipment receptacles are required to meet standards. It is recommended that all wall-mounted equipment get moved to a wall-mounted rack to create room for future expansion. A telecommunications grounding busbar should also be installed to create a consistent potential across all components. The addition of card-based access control is recommended to control and track access to the space.

TELECOMMUNICATIONS ROOM – TR-R24

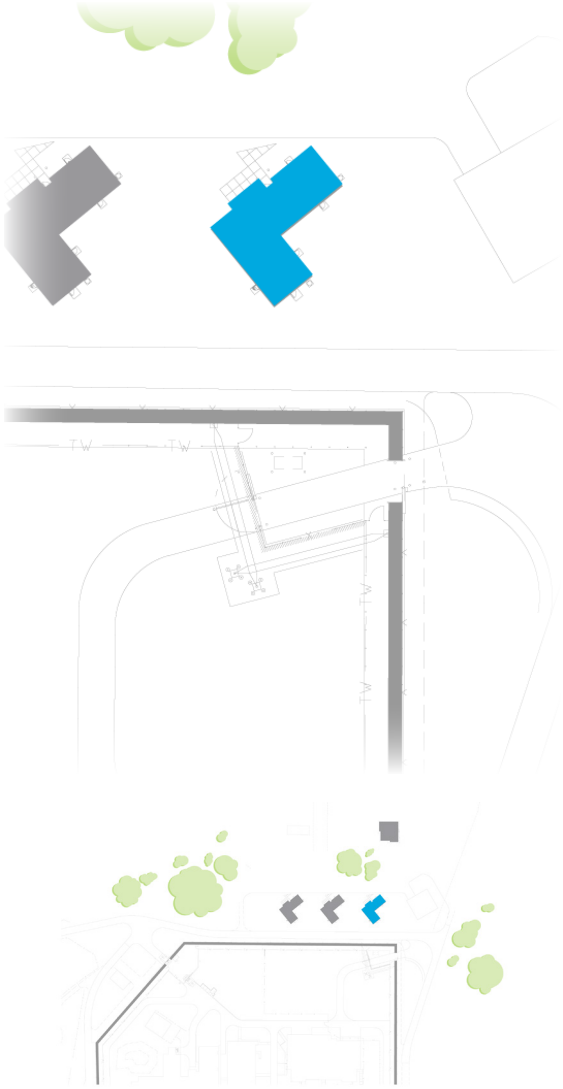
Deficiencies:

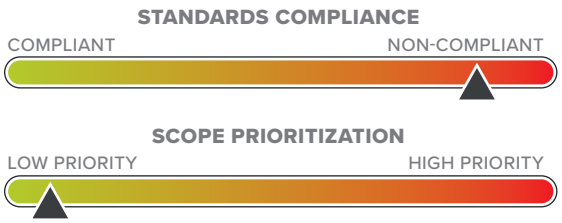
- Horizontal Cabling Infrastructure does not meet minimum standards per TIA-1179.
- Backbone Cabling Infrastructure does not meet minimum standards per TIA-1179.
- No overhead ladder tray for cable support, leading to cables being draped or placed directly on equipment.
- No grounding busbar for the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

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone to TR-A19.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar.
- Add power circuits, receptacles, and UPS power as needed.
- Add dedicated cooling system.
- Control access to authorized individuals.
- Relocate the employee workspace to allow room to be a dedicated telecom space.
- Add a wall-mounted rack to house all wall-mounted telecom equipment.

Existing Fiber Cabinet.





ADAMS HOUSE (LIVING UNIT 3)

TELECOMMUNICATIONS ROOM – TR-R24

Telecommunications Room TR-R24 does not contain any racks. All telecommunications equipment is mounted on the wall. The room is connected to TR-A19 with a 6-strand OM1 multi-mode OFC. The optical fiber terminates on a wall-mounted fiber cabinet. The voice infrastructure is supported by a 25-pair Category 3 cable from the TR-A19 that terminates on a 110-block. There are no patch panels. All Category 5e cables get patched through biscuit jacks that then terminate directly to a switch on the shelf.

There is limited wall-space for expansion due to all the equipment being mounted on the wall. However, there is space to provide a wall-mounted cabinet. There is no grounding busbar present. The space does not contain any cooling or humidity control. There are a few convenience receptacles, but no dedicated equipment receptacles. UPS power is also not available for the equipment. The room does not contain access control to track access into the space.

To meet industry standards, it is recommended to upgrade the existing backbone cabling. Dedicated cooling, ladder rack, cable management, UPS, and dedicated equipment receptacles are required to meet standards. It is recommended that all wall-mounted equipment get moved to a wall-mounted rack to create room for future expansion. A telecommunications grounding busbar should also be installed to create a consistent potential across all components. The addition of card-based access control is recommended to control and track access to the space.

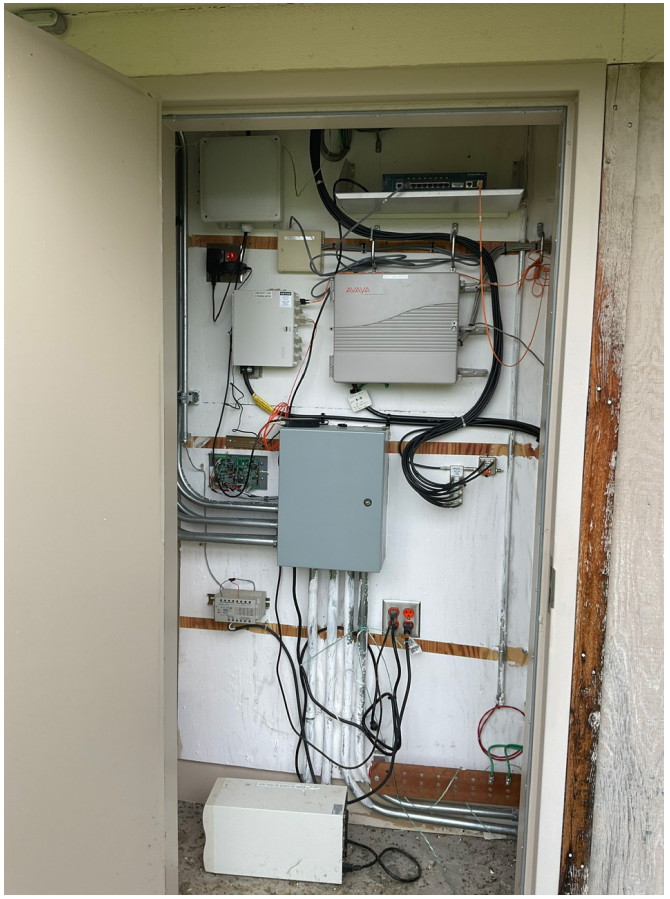
TELECOMMUNICATIONS ROOM – TR-R24

Deficiencies:

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

Recommendations:

- Upgrade existing port locations to Category 6A.
- Add additional Category 6A 8P8C RJ45 ports to meet standards.
- Provide new 12-strand OS2 single-mode and 12-strand OM4 multi-mode optical fiber backbone to TR-A19.
- Add ladder tray and cable management as needed.
- Add Telecommunications Grounding Busbar.
- Add power circuits, receptacles, and UPS power as needed.
- Add dedicated cooling system.
- Control access to authorized individuals.
- Relocate the employee workspace to allow room to be a dedicated telecom space.
- Add a wall-mounted rack to house all wall-mounted telecom equipment.



Existing Telecom Closet.

APPENDIX A: FULL COST OPINIONS

telecommunications **cost opinion**

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Telecommunications Infrastructure Assessment Recommendations
Pierce County Secure Community Transition Facility (SCTF)

BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** August 14, 2024

JOB NUMBER 24027 **CHECKED BY** Ben Helms **OVERHEAD & PROFIT** 15%

telecommunications summary	subtotal	OH&P	total
Building 1 - Pilchuck CTR (Program Support)	$ 121,733	$ 18,260	$ 139,993
Building 2 - Constance House (Living Unit #1)	$ 62,178	$ 9,327	$ 71,505
Building 3 - Baker House (Living Unit #2)	$ 61,680	$ 9,252	$ 70,932
Building 4 - Adams House (Living Unit #3)	$ 61,181	$ 9,177	$ 70,359
Sub-Total	$ 306,772	$ 46,016	$ 352,789
General Contractor OH&P **15%**			$ 52,918
Escalation **7%**			$ 28,400
Total			**$ 434,107**

EXCLUSIONS

1 - Design contingency
2 - Sales Tax

telecommunications **cost opinion**

Building 1 - Pilchuck Center (Program Support)

Telecommunications Infrastructure Assessment Recommendations

Pierce County Secure Community Transition Facility (SCTF)

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** August 14, 2024

JOB NUMBER 24027 **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	1,584	1,584	3,167	3,167	4,751	713	5,463
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	3,457	3,457			3,457	519	3,976
SECTION 271100 TELECOMMUNICATION DISTRIBUTION SYSTEM									
Adaptor Plates - LC ACP	4	EA	150	600	50	200	800	120	920
Ladder Rack	40	LF	8	300	20	800	1,100	165	1,265
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	21	EA	1,100	23,100	474	9,947	33,047	4,957	38,004
Telecommunications Device - 4-Port - Existing	8	EA	1,100	8,800	474	3,789	12,589	1,888	14,478
CAT 6A Quickport Connector	168	EA	36	6,074	25	4,200	10,274	1,541	11,815
CAT 6A Quickport Connector - Existing	64	EA	36	2,314	26	1,664	3,978	597	4,575
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	21	EA	200	4,200	150	3,150	7,350	1,103	8,453
Subtotal Low-Voltage Systems (Divisions 27)							109,028	16,354	125,382

telecommunications **cost opinion**

Building 1 - Pilchuck Center (Program Support)

Telecommunications Infrastructure Assessment Recommendations

Pierce County Secure Community Transition Facility (SCTF)

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** August 14, 2024

JOB NUMBER 24027 **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 2 - Constance House (Living Unit 1)

Telecommunications Infrastructure Assessment Recommendations

Pierce County Secure Community Transition Facility (SCTF)

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** August 14, 2024

JOB NUMBER 24027 **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	561	561	1,123	1,123	1,684	253	1,936
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	1,741	1,741			1,741	261	2,002
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	15	LF	8	113	20	300	413	62	474
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	925	LF	3	2,313	.05	46	2,359	354	2,713
12 Strand Multimode Outside Plant (OSP) OFC	925	LF	1	1,099	.05	46	1,145	172	1,317
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
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
Subtotal Low-Voltage Systems (Divisions 27)							49,473	7,421	56,894

telecommunications **cost opinion**

Building 2 - Constance House (Living Unit 1)

Telecommunications Infrastructure Assessment Recommendations

Pierce County Secure Community Transition Facility (SCTF)

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** August 14, 2024

JOB NUMBER 24027 **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 3 - Baker House (Living Unit 2)

Telecommunications Infrastructure Assessment Recommendations

Pierce County Secure Community Transition Facility (SCTF)

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** August 14, 2024

JOB NUMBER 24027 **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	561	561	1,121	1,121	1,682	252	1,934
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	1,718	1,718			1,718	258	1,976
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	15	LF	8	113	20	300	413	62	474
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	800	LF	3	2,000	.05	40	2,040	306	2,346
12 Strand Multimode Outside Plant (OSP) OFC	800	LF	1	950	.05	40	990	149	1,139
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
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
Subtotal Low-Voltage Systems (Divisions 27)							48,975	7,346	56,321

telecommunications **cost opinion**

Building 3 - Baker House (Living Unit 2)

Telecommunications Infrastructure Assessment Recommendations

Pierce County Secure Community Transition Facility (SCTF)

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** August 14, 2024

JOB NUMBER 24027 **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 4 - Adams House (Living Unit 3)

Telecommunications Infrastructure Assessment Recommendations

Pierce County Secure Community Transition Facility (SCTF)

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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** August 14, 2024

JOB NUMBER 24027 **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	560	560	1,120	1,120	1,680	252	1,932
Basic Materials and Methods (Consumables, Small Tools, Equip Rental, Grounding, Identification, etc.)	1	LS	1,695	1,695			1,695	254	1,949
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	15	LF	8	113	20	300	413	62	474
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	675	LF	3	1,688	.05	34	1,721	258	1,979
12 Strand Multimode Outside Plant (OSP) OFC	675	LF	1	802	.05	34	836	125	961
Telecommunications Device - 4-Port - Existing	2	EA	1,100	2,200	474	947	3,147	472	3,619
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
Subtotal Low-Voltage Systems (Divisions 27)							48,477	7,271	55,748

telecommunications **cost opinion**

Building 4 - Adams House (Living Unit 3)

Telecommunications Infrastructure Assessment Recommendations

Pierce County Secure Community Transition Facility (SCTF)

HARGIS
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seattle, washington 98101
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BASIS OF OPINION Pre-Design **PREPARED BY** Tin Vo **DATE** August 14, 2024

JOB NUMBER 24027 **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