

## CONTRACTOR QUALIFICATIONS AND REQUIREMENTS

Contractor shall design and provide all materials and labor for the following scopes of work:

- Complete Structured data cabling solution including cabling, faceplates, jacks, patch panels, 2 post network equipment racks, and any necessary J hooks or other ceiling supports
- Security cameras and associated licenses (Axis brand cameras) that will connect to the existing S2 system.
- 'Turn-Key' Installation of security cameras and all associated cables
- Key Card installation of door access control end points including all necessary cabling, nodes, and ADA door interconnections and software configuration needed to connect to College's existing S2 system
- 'Turn-Key' Installation and configuration of added key card access doors and readers to existing S2 system
- Audio Visual cabling structured cabling
- Installation of wireless access points. All wireless access points and licenses will be provided by the College. The College will provide all wireless access point mounting hardware for all interior wireless access points. The Contractor shall provide wireless access point mounting hardware for the (2) exterior wireless access points
- Contractor shall work with College staff to adjust and tune all cameras as needed (motion sensitivity, FPS, focus, light settings, physical camera views and angles)
- S2 NetVR 700 [series server](#) supporting at least 70 cameras and 64 TB storage

The contractor shall be responsible for providing communications infrastructure compliant to current standards, including the procurement of products, installation of cabling infrastructure, fire stopping, verification of performance, and documentation. In addition, the contractor must be an S2 authorized vendor and be able to properly configure all installed security cameras and door access points to integrate with the College's existing S2 NetBox Extreme infrastructure.

Contractor must possess a valid NC contractor's license, and BICSI Certification

Contractor employees shall act in a professional manner, and dress appropriately for the task. No person shall bring alcoholic beverages, controlled substances, firearms, tobacco, or animals to the jobsite.

All packing material shall be disposed of at the end of each day. The Owner will not be responsible for the loss, theft, or damage of any equipment or material.

Contractor shall follow the security policies and procedures defined by the Owner and College staff. This may include BRCC College staff providing key access, and/or a keycard to access the College's main IT server room located in the renovated portion of the building. Contractor will need physical access to the server room for portions of the job involving S2 system, and fiber optic cabling.

The Contractor shall take all precautions necessary to protect existing structures. Any items that are damaged during the course of the work shall be repaired or replaced by the contractor at no cost to the Owner.

Contractor is responsible for warranties only on material they provide. Contractor will be provided with wireless access points by the College and we do not expect the contractor to be responsible for the warranty of those products. Otherwise, Contractor shall only provide new, undamaged material. Contractor shall not provide refurbished or used materials.

Owner expects the workmanship to be of high quality. All equipment shall be plumb and true with the structure. All materials shall be firmly secured in place, adequately supported, and permanent.

Owner will consider the project complete when all work has been completed, the final documentation has been delivered, and the work site has been cleaned to the Owners satisfaction.

Contractor agrees to replace or repair, as new, any defective work or materials, which are identified by the Owner within 2 years of final payment.

Contractor agrees to charge the same or equivalent per-unit rate for any additions of items including cable runs, security cameras, AV cables, and additional door access.

Contractor shall include in their bid response a detailed line-item list that denotes all the the following information:

- List of the security camera models proposed
- Exact model, storage capacity and line-item price of S2 NetVR security camera server
- Unit price to add/delete camera by location and/or camera type
- Unit price to add/delete network drop
- Unit price to add/delete AV cable drop

## E. System Specifications and Standards

### Data port wall jacks:

- 2, 4, 6, or 8 position faceplates shall be installed at each location as designated on Special Systems Floor Plan (pages designated ETnnn) and in accompanying worksheet
- Modular CAT 6 jacks should be used
- All faceplates should be labelled following a standard scheme including the telecom room number, patch panel, and port number (123-A-1, 123-B-1, etc.)

### Patch Panels:

- 24 port CAT 6 patch panels by Panduit or equivalent
- Patch panels should be labeled with letters
- Ports in patch panels should be labeled with numbers

### Network equipment racks:

- Racks should be installed and bolted to floor and walls with appropriate ladders, vertical wire managers, and wiring supports in each Equipment Room.
- Should be mounted to the floor and oriented so that the front and back are accessible
- Should be mounted at least 6-inches from the nearest wall.
- Fiber optic patch panels should be installed at the top of the rack
- Copper cable patch panels should be installed below fiber patch panels
- Panels should be mounted with a 2 U gap between panels such that a 2 U network switch can be installed directly under patch panels
- Vertical cable management should be installed on one side of rack
- Contractor will install network switches in rack units between patch panels
  - 24 port switches should be fed from panel directly above
  - Contractor will install patch cables from panel to switch

### Data Cable standards:

- All CAT 6 cable should be blue regardless of end use
- All patch cables should be non-booted (i.e. not have any material covering the clip)
- Patch cables for the network closets should be blue and 1 foot in length

- Cables connecting to access points and security cameras in ceiling should be terminated in a standard modular jack in the ceiling and a patch cable shall be used to connect the jack to the device
- Cable in the ceiling is to be kept at least 8-inches above the finished ceiling.
- Cable is to be left loose, without cable ties or tape, in cable trays.

#### Fiber Cable Standards:

- Each data/telecom room shall interconnect back to the College's core network infrastructure in Patton room 154F using 12 strand (6 pair) of OS2 single mode fiber optic cable
- All fiber optic shall conform to OS2 Single Mode Fiber specifications
- All fiber optic cable shall have LC connectors on both ends
- Fiber optic cables should have sufficient slack to minimize the risk of a pinched cable
- Where indicated, network closets should also interconnect between floors using fiber optic cable standards outlined above

#### Standard Audio Video Cabling Scheme:

- 2 HDMI cables from designated workstation (generally indicated by PAV on diagram) to designated TV or projector location
- All HDMI cables must conform to the HDMI 2.1 "Ultra High Speed HDMI" standard
- 1 USB cable that follows the same path as HDMI cables
- The cables should be properly terminated in a modular jack and faceplate at the designated PAV box location
- The cables should have at least 2' of slack at the TV end to ensure the cables can plug into ports on the TV

#### Security Cameras:

- Include turn-key purchase and installation of a S2 NetVR 700 series server supporting at least 70 cameras and with 64 TB of storage
- All security cameras must be Axis brand cameras
- All cameras must include standard and reasonable anti-vandalism measures
- All exterior security cameras must have appropriate weatherproofing to minimize the risk of damage from weather events
- All security cameras should be recent models produced by the vendor and not near end of product life
- All security cameras must be able to capture clear images day and night

- All security cameras should provide coverage adequate to cover viewing angles and regions noted in floor plan addendum and as noted in the accompanying network, security camera, door access, AV detail worksheet attachment to the RFP
- Except where noted, all cameras should be high quality dome-style cameras with tint or other measures to make it difficult to see the exact viewing angle(s) of the camera(s) inside
- The contractor is responsible for obtaining, configuring and installing all needed software licenses and performing all configuration tasks to add the security cameras to the College's existing S2 infrastructure
- Cables from patch panels to security cameras located in the ceiling should be terminated in the ceiling near the designated location using a standard modular jack in the ceiling. An appropriate length patch cable shall be used to connect the jack to the actual device

Security Camera Minimum Resolution Summary Table

Camera Type	Minimum Resolution @ FPS	Total Quantity
Interior Dome (1- Direction)	(2592 x 1944) 25-30fps	8
Interior Dome (2-Direction)	2x (1920 x 1080) 25-30 fps	9
Interior Dome (3-Direction)	3x (2560 x 1920) 25-30 fps	7
Interior Dome (4-Direction)	4x (2560 x 1440) 25-30 fps	13
Interior Dome (Fish Eye)	(2016 x 2016) 25-30 fps	2
Exterior Dome (1-Direction) w/ Weather Hood	(2592 x 1944) 25-30 fps	6
Exterior Dome (180 degree Panoramic) w/ Weather Hood	(8192 x 1728) 25-30 fps	2
Exterior Dome (4-Direction)	4 x (2560 x 1440) 25-30 fps	6
Exterior Bullet	(3712 x 2784) 25-30 fps	4

#### Wireless Access Points:

- Cables connecting to access point locations should be terminated in a standard modular jack in the ceiling and a patch cable shall be used to connect the jack to the device
- Wireless access points shall be properly mounted in the ceiling near the locations indicated on the provided floor plans
- The College will provide all wireless access points and wireless access point mounting hardware for interior access points as well as licenses for all wireless access points
- Provided wireless access points will be Cisco 9105i series or similar

#### Door Access Locations:

- Note: Delete door access from room 139 (New structure) and room 154A (renovated structure)
- Owner will provide conduit and basic door hardware
- All door access locations will be electric strike.
- All door access locations must properly integrate with assistive technology / automatic door opener hardware such that when the door is locked, the auto opener is disabled and won't try to open an unlocked door
- Door locations where there are multiple leaves, all leaves should be connected to door system so that they all lock / unlock at the control of the S2 system

### **F. Execution**

Patton building on the campus of Blue Ridge Community College

This project will involve two stages:

- Existing Patton building cabling work to be performed ASAP after contract signed
- New Patton building addition cabling work to be performed November/December 2021

Furnish and install as needed, Cat6 cabling, cabling hangers, j-hooks, jacks, wall boxes, plates, patch panels, equipment racks, and all needed appurtenances, for all network, security cameras, wireless access points, and door access locations.

Requests for minor changes such as the addition of network port locations must be provided at the same unit price as the original bid, with no additional up-charges

Contractor must coordinate installation with site General Contractor and Owner

## **G. Documentation**

The contractor shall provide documentation certifying the installation of all network cabling, both optical fiber and copper.

1. End-to-end testing shall be from wall port to patch panel port
2. Test results should show:
  - a. Overall cable length.
  - b. System continuity.
  - c. Proper connectivity.
  - d. Open pairs.
  - e. Short circuits.
  - f. Reversed pairs.
  - g. EMI noise induction.
  - h. DC (PoE) resistance unbalance.
  - i. Attenuation load in dB.
  - j. NEXT in dB.
3. The results shall be provided in hard and soft copy formats.
  - a. The soft copy results shall be provided on CD-R or USB media and in a non-proprietary format.

## **H. Products**

All products shall be installed in compliance with the manufactures' instructions. The Owner has identified products, which are approved for this installation. All data cabling equipment should be UL listed and/or TIA/EIA certified. No substitutions of identified products shall be allowed without prior, written, approval. This will ensure a quality installation, guarantee performance, and reduce on-going maintenance costs for the life of the solution.

This is not a complete parts list. Additional products may be required to complete this installation.

1. Horizontal Cabling
  - a. The horizontal cabling solution must conform to the Category 6 Cabling Specification.

- b. Plenum cable shall be used.
  - c. UTP Cable should be blue
  - d. All cable is to be solid (not stranded) 100% copper
- 2. Termination
  - a. Jacks should be standard keystone type and blue in color.
  - b. All jacks, whether designated as data or voice, should be terminated as for data.
- 3. Faceplates
  - a. The faceplates shall be the white with the appropriate number of keystone connectors (1, 2, 3, 4 or 6 ports, as needed)
- 4. Patch Panels
  - a. The patch panels shall be 24-port modular (keystone) patch panels
  - b. Patch panels should be straight
- 5. Equipment Racks
  - a. The Equipment racks should be standard, black, EIA-310-D network racks, utilizing #12-24 screws, similar to Chatsworth item #66353-703 rack.
  - b. A single 6-inch-wide vertical cable manager, similar to Panduit item #PR2VD06
- 6. Security Cameras
  - a. All security cameras shall be Axis brand cameras compatible with the S2 NetVR system in use by the College
  - b. All security cameras shall support day/night operation
  - c. Outdoor security cameras shall include all proper mounting equipment, waterproofing and anti-vandalism features
  - d. Security cameras should support minimum resolutions as defined in table above
  - e. Contractor shall include all licensing, configuration and installation costs in proposal
- 7. Security Camera Server
  - a. S2 NetVR 700 series server with 64 TB RAID 5 storage to support the cameras
  - b. Contractor shall configure the S2 NetVR server to integrate with the College's existing S2 NetBox Extreme system
- 8. Door access locations
  - a. The Owner will provide all doors and hardware within the door necessary for electronic control. The contractor does NOT need to provide door hardware.
  - b. Contractor shall include all necessary S2 nodes, expansion blades, etc to support door hardware



- c. Contractor shall include all labor and services necessary to configure desired door operation in the S2 system
- d. All door access locations shall properly integrate with any accessibility / door opening technology so that the door access system properly overrides any door opening hardware when the door is in a locked state
- e. All door hardware shall be installed to ensure the ADA entrance door is controlled by the door access system
- f. All doors at an exterior vestibule door location shall be controlled by the door access system so all doors are locked / unlocked by a single keycard at the exterior vestibule location
- g. Specified door access location in the Chemistry storage room shall include a card reader and a keypad for PIN entry