

**Correctional Service Canada
Technical Services Branch
Electronics Systems**

**Issue 2
26 July, 2017**

**STATEMENT
OF
TECHNICAL REQUIREMENTS**

UPGRADE

of the

CCTV SYSTEM

at

Keele Community Correctional Centre

AUTHORITY

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the CCTV System at Keele Community Correctional Centre.

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- D1 - ES/SOW-0101 - Electronics Engineering Statement of Work - Procurement and Installation of Electronic Security Systems
- D2 - ES/SOW-0102 - Electronics Engineering Statement of Work - Quality Control for Procurement and Installation of Electronic Security Systems
- D3 - ES/SOW-0110 - Electronics Engineering Statement of Work – Structured Cable Systems for Electronic Security Systems
- D4 - ES/SPEC-0006 - Electronics Engineering Specification - Conduit, Space and Power Requirements for Security Systems for use in Federal Correctional Institutions
- D5 - ES/STD-0221 - Electronics Engineering Standard, Fixed Network Colour Closed Circuit Television Camera
- D6 - ES/STD-0222 - Electronics Engineering Standard, Indoor Network Colour Dome Camera, with Pan/Tilt/Zoom, Closed Circuit Television

D8 - ES/STD-0227 - Electronics Engineering Standard, LCD Colour Computer Monitor,
Closed Circuit Television

ABBREVIATIONS

The following abbreviations are used in this specification:

ATP	Acceptance Test Plan
CCC	Community Correctional Centre
CSC	Correctional Service Canada
CCTV	Closed Circuit Television
DA	Design Authority
FOV	Field of View
IP	Internet Protocol
NTSC	National Television System Committee
NVUS	Network Video User Station
NVR	Network Video Recorder
PoE	Power Over Ethernet
P/T/Z	Pan/Tilt/Zoom
REPO	Regional Electronics Program Officer
SOW	Statement of Work
STR	Statement of Technical Requirements
UPS	Uninterruptible Power Supply
UTP	Unshielded Twisted Pair

DEFINITIONS

The following definitions are used throughout this specification:

Design Authority: Director, Engineering Services, Correctional Service Canada (CSC)

Contract Authority: Public Works & Government Services Canada

Contractor: The company selected as the successful bidder on the contract.

1.0 INTRODUCTION

1.1 General

The Correctional Service of Canada (CSC) has a requirement for the replacement of cameras and equipment associated with the existing Genetec Omnicast 4.3 CCTV system installed at Keele Community Correctional Centre. This Statement of Technical Requirements (STR) will cover the technical requirements for the proposed work.

Keele Community Correctional Centre (KCCC) is a facility located in Toronto, Ontario. Work must be accomplished with minimum disruption to the daily operation and security of the institution. To satisfy this requirement, the existing system must remain operational to ensure the integrity of the security systems.

1.2 Scope

The contractor must supply, install, test, and provide operational and maintenance training on the CCTV system, as described in this STR. The contractor shall provide acceptable documentation for the operation and the maintenance of this system. The contractor must provide all equipment, licensing and programming necessary to provide an operational system as defined in this STR.

1.3 Requirements

The purpose of this STR is to define the technical aspects and describe specific work requirements for the upgrade of the CCTV system at Keele Community Correctional Centre to Genetec Security Centre for CCTV, intercom and door monitoring.

This STR will indicate the extent to which both general and particular CSC specifications are applicable to the implementation of this requirement.

1.4 Technical Acceptability

The CSC operational environment is unique for its diversity of locations, climate exposures and the physical restrictive construction techniques of penal institutions. Maintaining national security, the safety of staff and offenders alike is CSC's commitment to the government and public. Electronic security systems operating in this unique environment must maintain very high standards of dependability and reliability.

The CSC Engineering Services Division has established Statements of Work (SOW), technical specifications and standards for electronic security systems, which are based on very specific, and restrictive operational performance criteria. Technical acceptability of these systems means that the systems equipment and components comply with the pertinent CSC SOWs, specifications and standards.

2.0 APPLICABLE DOCUMENTS

2.1 Applicability

The provisions contained in the documents listed in the following paragraphs must apply to all aspects of this requirement, unless these provisions have been exempted or modified by this STR.

2.2 Applicable Statements of Work, Specifications and Standards

- A. ES/SOW-0101 Electronics Engineering Statement of Work - Procurement and Installation of Electronic Security Systems
- B. ES/SOW-0102 Electronics Engineering Statement of Work - Quality Control for Procurement and Installation of Electronic Security Systems
- C. ES/SOW-0110 Electronics Engineering Statement of Work – Structured Cable Systems for Electronic Security Systems
- D. ES/SPEC-0006 Electronics Engineering Specification - Conduit, Space and Power Requirements for Security Systems for use in Federal Correctional Institutions
- E. ES/STD-0221 Electronics Engineering Standard, Fixed Network Colour Closed Circuit Television Camera
- F. ES/STD-0222 Electronics Engineering Standard, Indoor Network Colour Dome Camera, with Pan/Tilt/Zoom, Closed Circuit Television
- G. ES/STD-0223 Electronics Engineering Standard, Outdoor Network Colour Dome Camera, with Pan/Tilt/Zoom, Closed Circuit Television
- H. ES/STD-0227 Electronics Engineering Standard, LCD Colour Computer Monitor, Closed Circuit Television

2.3 **Language**

The language at Keele Community Correctional Centre is English. All CCTV system display and control indicators and information must be in English only. The operator manuals, maintenance manuals and as-built documents must be provided in English only. Documentation must be provided as per Paragraphs 5.1 through 5.4.

3.0 **OPERATIONAL CRITERIA**

3.1 **General**

The operational parameters of the installed equipment must meet the performance and operational requirements in accordance with the SOW's, Specifications and Standards listed in paragraph 2.2.

3.2 **System Specifics**

This project must see a turn-key digital CCTV system installed into the KCCC at Toronto, Ontario. This system must be complete with all necessary mounts, cable dressing brackets and straps. All conduit and cable provided must meet CSC – Electronics standards and specifications. All new equipment provided must seamlessly integrate into the digital CCTV equipment. The project must result in the replacement of the existing GENETEC Omnicast 4.3 Video Management System with a GENETEC Security Centre version 5.3, or current at the time of the issue of this document, including all applicable licenses. All current Omnicast licenses must be transferred to the Security Centre application and the cost of these license upgrades must be included in the bid.

The NVUS viewing location in the Security office (Type 1) must include 2 (two) 27 inch desk mounted monitors. The monitors must be connected to a desktop computer. This workstation must be used for viewing live video and must be configured to be capable of viewing synchronised archived video from up to 4 cameras for investigation purposes. This workstation must have the ability to extract video data from the archive and save such information via USB or on the included DVD-RW drive. Any additional software required for this function is to be included. This workstation must be connected to a desktop UPS station located in the office and must be capable of maintaining the operation of the unit for up to 20 minutes.

The NVUS located at the commissioner's desk (Type 2) must include 2 (two) 27 inch monitors mounted using a dual arm bracket. The monitors may be connected to a remotely located computer which must be mounted in the rack along with the NVRs. This workstation must be for live viewing only and must have no ability to view archived video or extract data. All camera control functions must be via mouse and there must be no means for the operator to exit the application. This computer must be connected to a UPS station located in the rack and the monitors must be connected to a local desktop UPS capable of maintaining the operation of the associated hardware for up to 20 minutes.

Video monitors must conform to ES/STD-0227.

The system shall include IP based intercom units which must be incorporated into the CCTV network and include the facility to record all conversations on the CCTV archive. The unit located at the commissioner's desk must not be able to initiate a hands free call to monitor any slave station.

4.0 TECHNICAL REQUIREMENTS

4.1 Concept of Operation

Video surveillance of certain sensitive areas is required to maintain a safe and secure environment for both staff and inmates. CCTV cameras must be installed at various locations in the Centre's portion of the building to provide the required video surveillance.

All control functions such as selection and control of any Pan/Tilt/Zoom (PTZ) and spot monitor selection of a camera must be through the use of a mouse.

4.2 Existing Camera Systems

The contractor must test the operational characteristics of all existing equipment and systems, whose equipment is in proximity to where work will be carried out prior to installation of any equipment and provide a written record of these tests to the Crown.

The contractor must identify any operational deficiency of equipment or be held accountable for any systems deficiencies.

4.3 Removal of Equipment and Cables

The contractor must remove all of the redundant cables located in the building. Care must be taken to ensure that any cables and conduits of other systems are not damaged. The contractor must dispose of all of the removed cables and conduit off site in an environmentally friendly way.

All electronic equipment must be handed over to CSC in good condition.

The contractor must provide, to the Design Authority, a list of all equipment removed. This list must contain the following information as a minimum; location, make, model and serial number. This information will be used to ensure the removal of the equipment from the maintenance contract and its proper disposal.

Any and all electronic equipment removed must be turned over to the local ADGA workshop for evaluation and disposal.

4.4 System Installation

The contractor must provide, install and test a complete and fully functional IP based CCTV system. The CCTV system must meet or exceed all of the performance and operational requirements contained in the SOW's, specifications and standards listed in Section 2.2.

The contractor must avoid, as much as possible, the use of conduit in inmate accessible areas. The contractor must utilize existing pipe chases, existing conduit in the walls, etc., where possible. New lengths of conduit must be of the minimum necessary length. All newly installed conduits carrying video for this project must be identified, except in inmate accessible areas, by prominent labels with **BRIGHT GREEN** wording. These labels must be located at each end of the conduit run, on both sides of any penetration of a wall, and at 3.5 metre points along its length.

All data cables and data jumper cables (minimum 23 gauge), jacks and connector boots installed as part of this project, whether CAT 6 or fibre optic, must be **BRIGHT GREEN** in colour. All cables must be minimum FT4 rated.

All patch cables must be stranded cable with RJ45 connectors. RJ45 connectors must not be attached to solid conductor cable.

All *installed runs of CAT6 cable must be solid conductor cable and terminated into patch panels in equipment racks or faceplates in other locations.

* An installed cable is any cable that is run through a conduit, run from one area in a building to another area, any cable that travels farther than the adjacent equipment cabinet in a series of cabinets. Note: Equipment cabinets must be abutting without side panels to open connection to be considered adjacent.

4.5 Cameras and Lens

All cameras to be provided fall into 4 categories. Each camera provided must meet all operating specifications listed associated Electronics Engineering Standards unless specifically otherwise stated in this statement of technical requirement.

4.5.1 All cameras provided must provide a minimum of 1 x H.264 video stream in 800x600 resolution.

4.5.2 All new CCTV cameras must be powered via PoE over the interconnecting Ethernet cable, outdoor PTZ cameras may be powered by separate rack mount PoE, PoE+ or PoE++ injecting power supplies located at the closest NODE or electronics equipment cabinet to the camera. It is preferred all cameras are powered via PoE directly from the supporting network switch. Where separate PoE, PoE+ and PoE++ injectors are necessary they must be securely rack mounted, if more than 4 PoE injectors are necessary in a cabinet, they must be mounted into a manufacturer designed chassis designed specifically to host the injectors and reduce cabinet density.

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- 4.5.3 The lenses must be of the same manufacturer as the cameras, or approved by the camera manufacturer. Unproven third party lenses are not acceptable.
- 4.5.4 There are 4 sub categories of fixed network colour dome camera. All fixed network colour dome cameras must meet all of the requirements detailed in Electronics Engineering Standard ES/STD-0232 unless specifically detailed differently in this Statement of Technical Requirements.
- 4.5.4.1 **Camera Type #1 (Fixed Dome, Outdoor Environmental)**
The contractor must provide a Network Colour Camera that meets all of the requirements detailed in Electronics Engineering Standard ES/STD-0221 (Fixed Network Colour Camera for Enclosure) and Electronics Engineering Standard ES/STD-0205 (Fixed Outdoor Camera Enclosure). This camera must incorporate the Class 3 POE, 2.5-6mm varifocal lens, H.264, HDTV 720p, operate from -40c to 55c and be equipped with a same manufacture adapter for the mounting method required.
- 4.5.4.2 **Camera Type #2 (Fixed Dome, Outdoor Environmental)**
The contractor must provide a Network Colour Dome Camera. The provided camera must meet all of the requirements detailed in Electronics Engineering Standard ES/STD-0221 (Fixed Network Colour Camera for Enclosure) and Electronics Engineering Standard ES/STD-0205 (Fixed Outdoor Camera Enclosure). This camera must incorporate Class 3 PoE, 3.3-12mm varifocal lense, H.264, IP66 rating, HDTV 760p, operate from -40c to 55c and be equipped with a same manufacture adapter for the mounting method required.
- 4.5.4.3 **Camera Type #3 (Fixed Dome)**
The contractor must provide a Network Colour Dome Camera which shall incorporate a 2.8mm lens, providing panoramic views at 1920x720, quad view at 1920x1440 and individual streams for each quadrant at 1920x1440. The camera must have remote focus/zoom capability, have a threaded conduit port and H.264.
- 4.5.4.4 **Camera Type #4 (Fixed Dome, Corner Mount)**
The contractor must provide a Network Colour Camera. The provided camera must meet all of the requirements detailed in Electronics Engineering Standard ES/STD-0221 (Fixed Network Colour Camera for Enclosure) and Electronics Engineering Standard ES/STD-0205 (Fixed Outdoor Camera Enclosure). This camera must incorporate Class 3 PoE, 2.5-6mm varifocal lense, remote focus and zoom, H.264, IP66 rating, 1280x960 resolution, operate from 0c to 50c and be suitable for corner mounting.

4.6 Camera Power

- 4.6.1 Wherever possible all PoE camera power must be provided from PoE equipped network switches located in the electronics equipment cabinets specified for the camera as defined in Annex C of this document. Where separate PoE, PoE+ and PoE++ injectors are necessary they must be securely rack mounted, if more than 4 separate PoE injectors are necessary in a cabinet, they must be mounted into a manufacturer designed chassis designed specifically to mount the injectors and reduce cabinet density. If the associated power supply has multiple outputs for several cameras, the supplied supply must be equipped with separate fused outputs for each camera, and an indicator panel on the front of the rack mounted supply indicating the status of each power output port.

The contractor must supply and install new power supplies that must provide the required voltage and amperage to power to all cameras detailed in this document. The power supplies must be installed in the electronic equipment rooms or in secure locations identified in this document or by the project authority.

All cameras must remain operational during power failures until the NVRs and NVUSs have been shut down manually or by software.

4.7 Network Architecture

The KCCC CCTV system requires an upgraded network infrastructure which must be capable of providing integrated support for multiple Electronic Security System (ESS) sub systems. Initially, for this deployment, this network infrastructure must support the deployment of CCTV cameras and associated client computers. The system must be expandable in scale to support additions to this CCTV network infrastructure and/or addition of further ESS sub-systems within the institution as required in the future. This network infrastructure must provide an integrated, end-to-end “virtualized” architecture for the systems connected to it, using state of the art techniques for the network operation and configuration as described in sections below.

The new network switching infrastructure must be sourced by one switch vendor with the ability to interface in a multi-vendor manner to other vendors’ equipment should future requirements deem this necessary.

CSC, ESS systems network traffic is predominantly streaming video from CCTV camera operation. The provided network infrastructure must be optimized for (H.264) multicast video operation for both cameras covered by this deployment and the addition of further cameras which may be added in the future; optimization including the perspectives of:

- 4.7.1.1 simplicity and efficiency of protocols involved;
- 4.7.1.2 efficient video streaming with required low latency, high bandwidth and network resiliency for predictable, always on connectivity
- 4.7.1.3 Connectivity to the associated video management system (VMS), storage and viewing stations (NVUS).

The system must be capable of supporting thousands of independent streams.

The network infrastructure must provide an open system, multi-vendor capable, communication environment utilizing IEEE 802.1aq Shortest Path Bridging (SPB) to forward and control traffic between switches.

The new network switches to be provided must replace existing switches deployed for the support of the CCTV cameras.

The contractor is responsible for taking all steps to minimize the number of network equipment devices required to minimize sparing requirements.

All switches must include QoS (Quality of Service) and robust security capabilities. Each switch must have the ability to classify, mark and prioritize traffic into priority queues, and/or weighted round robin queues on every port, and maintain QoS across the virtual / stack backplane. Classification controls and ACL (Access Control List) strategies must include the ability to sort traffic based on: MAC Address, 802.1Q VLAN Identification (VID), IP Address, TCP/UDP Ports, 802.1p CoS (Class of Service), ToS (Type of Service), and DSCP (Differentiated Services Code Point).

The contractor is responsible to confirm that all network switches within the network infrastructure are mountable in 19" mounting rail racks, and that the switches do not exceed the depth of the contractor supplied equipment rack which shall be located in Rm 263.

The contractor must supply network switches to meet the needs of all ESS network requirements.

Each switch must support end-to-end (system-wide) network infrastructure support for a flexible and robust, optimally high availability and reliable (Best in class mean time between failure) network (that is always on), with a bandwidth of at least 56 Gbps for an evolving, high performance CSC Security Network Infrastructure.

Technical requirements:

- 4.7.1.4 POE switches must be able to concurrently deliver up to POE+ per port with a POE budget of 384 watts.
- 4.7.1.5 Must support up to 24 POE+ Ethernet ports (24 port version)
- 4.7.1.6 Must provide software support for Ipv4 and Ipv6

Temperature range of operation: 0°C to 50°C

Operating humidity range: 0 to 95% relative humidity

4.8 Network Video Recorder

- 4.8.1 The contractor must provide and install a Network Video Recorder (NVR) into a contractor supplied lockable equipment rack which must be located in Rm 263. The environmental, power, mechanical and technical requirements for the NVR are specified in ES/STD-0229. Where this

document differs from the specification this document will be the reference. For the purposes of this document, the term NVR may be used to define a combination of a separate archiver and storage solution. The NVR must be equipped with as a minimum:

- 4.8.1.1 Dual redundant power supplies, each supply to be hot swappable
- 4.8.1.2 Minimum Intel Core i7 3770 4 core processor or equivalent
- 4.8.1.3 Minimum 8GB DDR3 RAM
- 4.8.1.4 Minimum 2 X 256GB SATA3 SSD configured in a RAID 1 array for redundancy. These drives shall be for OS use only.
- 4.8.1.5 Minimum 2 X 6TB SATA Western Digital Red drives configured in a RAID 1 array for redundancy. These drives shall be for data storage only.
- 4.8.1.6 Minimum 2 X 1Gb Ethernet NICs
- 4.8.1.7 Minimum 16x DVD+/- RW drive
- 4.8.1.8 The provided NVR shall be equipped with Windows 7 Professional

4.8.2 The NVR must meet but not be limited to the following criteria:

- 4.8.2.1 The provided NVR must be a Genetec certified storage solution
- 4.8.2.2 The provided NVR must employ IP attached storage with redundant Gigabit Ethernet interfaces;
- 4.8.2.3 The provided NVR must record using Mirrored Write to Overlapping Pairs of Disks;
- 4.8.2.4 The provided NVR must allow for duplication of data to two storage arrays
- 4.8.2.5 Storage solutions must use less than 180 watts per mirrored storage array pair.
- 4.8.2.6 The provided NVR storage solution must have automatic failover in case of drive failure (RAID configurations are NOT considered redundant archiving).
- 4.8.2.7 Mirrored storage array pair must be able to use any type of 3.5" or 2.5" SATA hard drives in any capacity and from any disk manufacturer and must be able to mix different hard drive sizes, makes and models across the mirrored storage array; all hard drives must be of the same form factor.
- 4.8.2.8 The provided NVR must be SATA based; all video archiver drives must be spinning drives, SSD are not acceptable for video storage. For compatibility with existing spares, Western Digital Red drives are preferred. Drive specifications must accompany submissions.
- 4.8.2.9 The provided NVR storage solution must provide up to 24TB raw storage per 4U vertical rack space
- 4.8.2.10 The provided NVR storage solution must allow hardware replacement without interrupting data access including replacing disk drives, power supplies, fan modules, whole appliances and network switches;
- 4.8.2.11 The provided NVR storage solution must write the same video to 2 disks simultaneously e.g., drive 1&2. When the disks reach capacity, the system must begin to write in the same pattern on disks 2&3 cascading until all disks in the unit are full, then the process will repeat. These strings of drives will be referred to as arrays.
- 4.8.2.12 The NVR storage solution must be synchronised to a contractor provided PoE powered master NTP time server which shall use the GPS satellite system as its source.

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- 4.8.3 The provided NVR must be controlled by separate contractor provided, installed and integrated directory server operating the Genetec Security Centre VMS. The directory must be equipped with as a minimum:
- 4.8.3.1 Dual redundant power supplies, each supply to be hot swappable.
 - 4.8.3.2 Minimum Intel Core i7 3770 4 core processor or equivalent
 - 4.8.3.3 Minimum 8GB DDR3 RAM
 - 4.8.3.4 Minimum 2 x 256GB SATA3 SSD configured in a RAID 1 array for redundancy
 - 4.8.3.5 Minimum 2 x 1Gb Ethernet NICs
 - 4.8.3.6 Minimum 16x DVD+/- RW drive
- 4.8.4 The provided NVR must have sufficient capacity to record up to 30 cameras at 800x600 pixels, assuming a data rate of 6Mbit/second, at a frame rate of 15 fps for a minimum time period of 720 hours. The compression method shall be H-264.
- 4.8.5 The contractor must provide an additional 2 Genetec camera licenses and 1 Genetec NVUS workstation license to provide capacity for future expansion.
- 4.8.6 The directory servers must be synchronised to a PoE powered master NTP time server which must use the GPS satellite system as its source.

4.9 Network Video User Stations

- 4.8.1 Network Video User Stations (NVUS) must be located in the areas identified in Appendix C of this document. The contractor must provide new NVUS for all video displays detailed in the document.
- 4.9.3 NVUS clients must meet or exceed the following in four categories of NVUS client:
- 4.9.4 Type 1 NVUS client – Dynamic Security Display:
- 4.9.4.1 The provided NVUS must display up to 8 images on two LED monitors or a maximum of 9 images on a single monitor. The monitors must be fed video signal directly from the associated NVUS or via a video extension device.
 - 4.9.4.2 The NVUS must consist of:
 - 4.9.4.2.1 Minimum Intel Core i7 3770 4 core processor or equivalent
 - 4.9.4.2.2 Minimum 8GB DD3 RAM
 - 4.9.4.2.3 Minimum 2 X 256GB SATA3 SSD configured in a RAID 1 array for redundancy. These drives shall be for OS use only.
 - 4.9.4.2.4 Minimum 2 X 6TB SATA Western Digital Red drives configured in a RAID 1 array for redundancy. These drives shall be for data storage use only
 - 4.9.4.2.5 Minimum 1 x 1Gb Ethernet NIC
 - 4.9.4.2.6 Minimum 16x DVD+/- RW drive
 - 4.9.4.2.7 Two compatible HD video ports for connection to monitors.

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- 4.9.4.2.8 Desktop or tower enclosure. TBD at time of start-up meeting.
 - 4.9.4.3 The provided NVUS must be capable of displaying live images and processing archived video. Playback and video extraction must be possible from this NVUS.
 - 4.9.4.4 The provided NVUS must be equipped with Windows 7 Professional.
 - 4.9.4.5 The provided NVUS must be synchronised to a PoE powered master NTP time server which must use the GPS satellite system as its source
 - 4.9.5 Type 2 NVUS client – Dynamic Operational Display:
 - 4.9.5.2 The provided NVUS must display up to 8 images on two LED monitors or a maximum of 9 images on a single monitor. The monitors must be fed video signal directly from the associated NVUS or via a video extension device.
 - 4.9.5.3 The NVUS must consist of:
 - 4.9.5.3.1 Minimum Intel Core i7 3770 4 core processor or equivalent
 - 4.9.5.3.2 Minimum 8GB DD3 RAM
 - 4.9.5.3.3 Minimum 2 x 256GB SATA3 SSD. One configured for OS and application data, the other for temporary storage.
 - 4.9.5.3.4 Minimum 1 x 1Gb Ethernet NIC
 - 4.9.5.3.5 Minimum 16x DVD+/- RW drive
 - 4.9.5.3.6 Two compatible HD video ports for connection to monitors.
 - 4.9.5.3.7 Rackmount enclosure.
 - 4.9.5.4 The provided NVUS must provide a mouse for PTZ control and/or display change or switching on/off of display of specific images on the monitor.
 - 4.9.5.5 All provided mouse devices must be USB wired directly to the NVUS or via a USB extension device and any USB ports shall be programmed such that they can restrict the usage of USB memory devices.
 - 4.9.5.6 The provided NVUS must display only live images. No playback or video extraction will be possible from an operational display NVUS. This NVUS must be programmed for auto-login to the Control Post configuration with the USB ports restricted to mouse/keyboard capability. The use of USB memory devices must only be possible by logging in as Maintenance or Administrator
 - 4.9.6 All NVUS Clients and associated monitors must be supported by the associated UPS in the designated installation location.
 - 4.9.7 The provided NVUS must be equipped with Windows 7 Professional.
 - 4.9.8 The provided NVUS must be synchronised to a PoE powered master NTP time server which must use the GPS satellite system as its source.

4.10 Monitors

4.10.1 The monitors provided must meet the environmental, power, mechanical and technical requirements for the monitors as specified in ES/STD-0227.

- 4.10.1.1 Type 1 Monitor – Advanced User Monitor 27” LED

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- 4.10.1.2 Monitors provided will meet the following criteria:
 - 4.10.1.3 Have a minimum resolution of: 1920x1080
 - 4.10.1.4 Aspect Ratio: 16:9
 - 4.10.1.5 Response Time: 5ms or better
 - 4.10.1.6 Contrast Ratio: 3000:1
 - 4.10.1.7 Input Connectors: D-Sub & HDMI
 - 4.10.1.8 178° / 178° Viewing Angle (Horizontal / Vertical)
 - 4.10.1.8 VESA compliant mount

4.11 IP Intercom Stations

- 4.11.1 The intercom stations must be IP based and must be fully integrated and compatible with the Genetec VMS.
- 4.11.2 All intercom stations must be powered from the PoE switch.
- 4.11.3 The integration of the intercom stations into the VMS must include the ability to record and retain communications for 30 days.
- 4.11.4 The master station must not be able to initiate calls to the remote stations and monitor the remote location. It must only be possible to acknowledge and communicate with remote stations that initiate calls to the master.
- 4.11.5 The communications path must time-out after a pre-determined length of time if the path is not manually disconnected.
- 4.11.6 The remote stations must be surface mounted in flush mount surface boxes that will not expose any sharp edges of the faceplate. This unit must also incorporate a video camera which shall be integrated into the VMS and viewable on the post monitors. All wiring must be in conduit.
- 4.11.7 It must be acceptable to have the master and remote operate in a point-to-point fashion without the use of a PBX.

4.12 Uninterruptible Power Supplies

- 4.12.1 The contractor must supply rack-mounted, uninterruptible power supplies (UPS) or provide expansion to the existing UPS where approved by the project authority. All UPS must be installed in the equipment cabinets unless specifically detailed otherwise in this document or by the project authority in writing. The UPS must be of sufficient capacity to provide 20 minutes of emergency back-up power unless specifically detailed otherwise in this document or by the project authority in writing.
- 4.12.2 All UPS units provided to support remote NVUS (clients) equipment must be connected with the UPS client software to allow the UPS to command a controlled shutdown of the client when the UPS has reached 10% of capacity. These units must be desktop units
- 4.12.3 The NVR UPS units must be connected with the UPS client software to allow the UPS to command a controlled shutdown of the NVR when the UPS has reached 10% of capacity. These units must be rack mount units.

4.13 Expandability

- 4.13.1 It must be possible to expand the system beyond the originally installed capacity through the installation of additional hardware. The system expandability must not be limited in this regard.
- 4.13.2 It must be possible to use the digital backbone for other applications in the future, such as Voice Paging, Voice Intercom, Access Control, Door Control, etc. These systems may be installed by a different manufacturer than installed the original IP video system.

4.14 Finishing

- 4.14.2 Where walls are cut, opened or damaged the contractor must repair the wall to its original appearance, including taping, sanding and colour matching existing paint.
- 4.14.2 Where the contractor must use wire mold or expose conduit in office areas or other work areas the contractor must paint the exposed conduit to colour match the office where it is installed.
- 4.14.3 Where the contractor has removed equipment or damaged ceiling tiles in any way, the contractor must replace the tiles.

5.0 **ADDITIONAL REQUIREMENTS**

5.1 **Operator Training**

The contractor must prepare onsite training to the operators and individuals responsible to train staff for the operation of the system in accordance with the specification ES/SOW-0101 Statement of Work. The course must concentrate on the features and proper operation of the installed system. The course must be presented on the site within two weeks of the successful acceptance testing of the system. The course must consist of two, one hour sessions for basic users and one four hour session for advanced (SIO) users. Each session must be presented in English to a group of up to six persons. Training sign-in sheets must be included in the final documentation package and they must clearly identify; name of training, date of training, location of training (institution), printed name of attendee, signature of attendee, and attendee's comments on training.

5.2 **Maintenance Training**

The contractor must prepare and present a three day onsite training course to individuals responsible for the maintenance of the system. The course shall concentrate heavily on the material contained in the technical manual and as-built drawings. The course shall be presented on the site within two weeks of the successful acceptance testing of the system. The course shall be presented in English to one group of six persons. The course syllabus will be presented to the REPO for approval at least two weeks prior to training commencement. Training sign-in sheets must be included in the final documentation package and they must clearly identify; name of training, date of training, location of training (institution), printed name of attendee, signature of attendee, and attendee's comments on training.

5.3 **Manuals**

The contractor must provide the operator and technical manuals in accordance with the specification ES/SOW-0101 Statement of Work. The contractor must provide ten copies of the operator manual in English, and two copies of the maintenance manual in English to the site. The contractor must provide one copy of the operator manual in English and one set of both hard and soft copies of the maintenance manual in English to each of; the Design Authority, the Regional Electronics Project Officer (REPO), the local CSC Authorized Service Contractor workshop, and the CSC Authorized Service Contractor Headquarters. Maintenance manuals must all include completed Acceptance Test Program (ATP) forms.

5.4 **As-Built Drawings**

The contractor must provide as-built drawings of the site installation in AutoCAD 2000 format and in accordance with specification ES/SOW-0101 Statement of Work. The contractor must provide two copies of the as-built drawings to the site, one to the Design Authority, one to the REPO, one to the local CSC Authorized Service Contractor workshop, and one to the CSC Authorized Service

Contractor Headquarters.

5.5 **Software**

The contractor must provide CD/DVD copies of any system software in accordance with specification ES/SOW-0101 Statement of Work. The contractor must provide one copy of all software to the site's local CSC Authorized Service Contractor workshop.

5.6 **Testing**

- 5.6.1 The contractor must provide a detailed ATP to the DA, or his designated representative, by email for approval at least two weeks prior to the start of installation of the CCTV equipment and system.
- 5.6.2 The contractor must complete one hundred percent of the tests outlined in the ATP prior to the ATP testing being carried out by the DA.
- 5.6.3 The contractor must provide a fully completed and signed copy of the ATP to the DA, or his designated representative by email, at least five working days prior to the start of the final ATP testing. This copy of the ATP shall include all of the results of the tests carried out in Section 5.6.2.
- 5.6.4 In the case where subcontractors have been used, the contractor must provide written confirmation that the work of their subcontractor has been inspected and verified. This verification must be sent to the DA or his designated representative by email, at least five days prior to the start of the ATP.
- 5.6.5 Testing may be carried out by the DA, a designated representative or a third party contractor.
- 5.6.6 The DA may repeat all of the ATP tests done by the contractor or a percentage of them. If an unacceptable level of failed tests are encountered during the ATP testing by the DA; the ATP testing will be halted until the contractor has corrected the failures.
- 5.6.7 If the DA during the ATP testing finds a minor deficiency that does not affect the operational effectiveness of the CCTV equipment or system, the ATP testing may continue. If a major deficiency is found during the ATP testing that does affect the operational effectiveness of the CCTV equipment or system; the testing must cease until the deficiency has been corrected.
- 5.6.8 ATP testing must be done during normal working hours, 08:00 to 16:00, Monday to Friday. ATP testing at other times will only be done in an emergency situation.

5.6.9 The DA or designated representative will sign-off on the ATP, upon the successful conclusion of the testing. Any minor deficiencies noted during the testing will be indicated on the ATP form. This signature indicates the Conditional Acceptance of the system.

5.6.10 The system must be subjected to operational testing for a period of two (2) weeks following the Conditional Acceptance of the system. CSC will formally accept the system from the Contractor at the end of this two (2) week period, but only if ALL deficiencies have been corrected.

5.6.11 Any deficiencies noted by CSC during this two (2) week operational testing period must be communicated to the Contractor, who must then be required to correct the deficiencies. The two (2) week operational testing period will begin again after all deficiencies have been cleared.

5.6.12 The equipment warranty period must start on the date the system is formally accepted.

5.7 **Operational Down-Time**

Equipment and systems operational down time must be kept to a minimum. All down time must be coordinated with the site's management or designate. The contractor's staff may be required to work during evenings, nights and/or weekends to reduce the amount of down time and to meet operational requirements.

5.8 **Institutional Operations**

The contractor must take every precaution to minimize any disturbance to institutional operations. The contractor and his staff on site shall cooperate fully with operational staff and conform to all security requirements.

5.9 **Institution Address**

Keele Community Correctional Centre
330 Keele St, Second Floor
Toronto, Ontario
M6P 2K7

Institutional Contact:

Sheriff Giwa
Parole Officer
Tel: (416) 762-1749
Fax 416-952-0998

Regional Contact:

Tom Fisher
Regional Electronic Project Officer
Correctional Services Canada
Regional Headquarters, Ontario
443 Union St W.
Kingston, ON. K7L 4Y8

Tel. (613) 536-4742

5.10 Security

The Contractor must submit completed CPIC and tool list forms for all staff who will be working at the Institutions. The CPIC and tool list forms must be submitted to the Regional Electronics Program Officer (REPO), ten (10) working days prior to the start-up date.

5.11 Safety

The Contractor must comply with the document titled "Safety Regulations for Security Electronics Contractors Working at CSC Institutions" attached as Appendix B.

5.12 Spares

The bidder's proposal must include provision of the following spares: When percentage is less than 1 spare the quantity must be rounded up to 1. When spare quantity is greater than 1 the quantity must be rounded down to the nearest whole number.

5.12.1. Spare PTZ cameras must be provided at a ratio of 10% of each quantity provided.

5.12.2. Spare network switches must be provided at a ratio of 10% of each quantity provided.

5.12.3. Spare fixed camera domes must be provided at a ratio of 10% of each quantity provided.

5.12.4. Spare KVM extension devices must be provided at a ratio of 10% of each quantity provided.

5.12.5. Spare Monitors must be provided at a ratio of 5% of each quantity provided.

5.12.6. Spare power supplies must be provided at a ratio of 10% of each quantity provided. For sparing purposes these will be defined as any power supply that is not attached or installed to the device in question. This applies specifically to AC-adaptor power supplies.

5.12.7. 1 Spare Type 1 NVUS client must be provided. Spare NVUS will be provided complete with keyboard and mouse.

5.12.8. 1 Spare Type 2 NVUS client must be provided. Spare NVUS will be provided complete with keyboard and mouse.

5.12.9. 1 archiver array chassis must be provided.

A complete list of all spares, make, model, quantity and serial numbers must be confirmed and

signed off by the project authority upon delivery. An electronic version of the list must also be provided which will also include project number; cost and warranty information. Spares must be delivered directly to the ADGA electronic maintenance workshop at Collins Bay to be held in Regional inventory within two weeks of the start of equipment installation. The contractor must only remove delivered spare equipment to replace a defective component during installation with the express written consent of the project authority.

CORRECTIONAL SERVICE OF CANADA
TECHNICAL SERVICES BRANCH
ELECTRONICS SYSTEMS
MAINTENANCE HANDOVER REPORT FORM

INSTITUTION:

DATE:

SYSTEM/EQUIPMENT:

APPLICABLE CONTRACT NO:

DSS FILE NO:
SPECIFICATIONS:

EQUIPMENT SUPPLIER (NAME AND ADDRESS):

SUPPLIER CONTACT (NAME AND TELEPHONE):

WARRANTY DETAILS:

Expiry date on materials/parts:
Expiry date on installation:
Expiry date on factory labour:

Travel & living expenses during the warranty period:

chargeable to CSC

not chargeable to CSC

Equipment transportation costs are paid by CSC for:

sending to the supplier

returning from the supplier

Negotiated rates for emergency repairs at site due to misuse/abuse during warranty period are as follows:

Not applicable.

Negotiated rates for labour at site after warranty period are as follows:

Not applicable.

DEFICIENCIES:None remain List attached **DOCUMENTATION:**

Maintenance manual:

Supplied

Due by ;

As-built drawings, cabling and wiring diagrams:

Supplied

Due by ;

Acceptance test results:

Supplied

Due by ;

DISTRIBUTION OF DOCUMENTATION:

1 copy to CESM sent on:

1 copy to RATIS/REPO sent on:

2 copies to institution sent on:

SPARES:All delivered

Delivery must be completed by ;

EQUIPMENT LIST:See attached list. **MAINTENANCE TRAINING:**Completed

Scheduled for ;

SIGNATURE: Project Manager**DISTRIBUTION:** CESM, NHQ
RATIS/REPO, RHQ
AWMS, Institution

SAFETY REGULATIONS FOR SECURITY ELECTRONICS CONTRACTORS
WORKING AT CSC INSTITUTIONS

1. Acts and Regulations

- a. The contractor must, at all times, be in full compliance with the latest issue of the following Acts and Regulations:
 1. The Occupational Health and Safety Act of the province where the work is being carried out,
 2. The Canada Labour Code Part II,
 3. The National Building Code Part VIII,
 4. The Workers' Compensation Board regulations of the province where the work is being carried out,
 5. Safety regulations and procedures prepared by the Institution where the work is being carried out,
 6. All other safety regulations in effect at the work site.

- b. In the event of conflict between any provisions of the above authorities the most stringent shall apply.

2. Safety Plan

- a. The contractor is responsible to ensure that a site specific Safety Plan has been completed and maintained on site. The contractor must provide the Safety Plan, when requested, to Institution Staff and the Safety Officers and Inspectors authorized by the Acts and Regulations listed in Paragraph 1.a. above. The Safety Plan shall include a hazard assessment, controls, an emergency plan and a communications strategy.

- b. The contractor shall complete a hazard assessment. All critical tasks and the associated hazards shall be identified.

- c. Once hazards are identified, controls shall be put in place to minimize the risks. The controls shall include but not be limited to Safe Work Practices, Standard Operating Procedures and safety inspections.

- d. An emergency plan shall be prepared that takes into consideration all of the identified hazards and the potential problems that could arise during the project. The emergency plan shall outline the emergency procedures to be taken in the event of an accident and shall include the contact names and telephone numbers of emergency response persons and services. The list of emergency response persons and services should include but not be limited to the following:
Ambulance,
Fire Department,
Police Department,
Institutional Safety Officer

- e. A communications strategy shall be put in place that will ensure that information concerning hazards, controls and the emergency plan is communicated to all of the contractor's staff, sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies working at the institution.

SAFETY REGULATIONS FOR SECURITY ELECTRONICS CONTRACTORS
WORKING AT CSC INSTITUTIONS CONT.

- f. The Safety Plan shall address and conform to the Acts and Regulations identified in Paragraph 1.a. above.
- g. The submission of the Safety Plan to Correctional Service Canada shall not relieve the Contractor of any legal obligations as specified by the Acts and Regulations listed in Paragraph 1.a. above.

3. Safety Training

All of the contractor's staff , sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies working at the institution shall have received the required safety training as mandated in the Acts and Regulations listed in Paragraph 1.a. above.

SITE SPECIFIC REQUIREMENTS**CCTV Cameras Installation Details:****Outdoor Cameras**

1. SW Corner Annette Street Laneway

The contractor must supply and install a fixed dome outdoor network colour camera and enclosure that meets the following requirements:

- Location – This camera must be mounted on the SW corner of the roof of the building using a non-intrusive dome swivel arm roof mounted bracket which must be placed on a Styrofoam SM pad consisting of 2 layers of 1” Styrofoam wrapped in geo-tex cloth to protect the roofing material and must be weighted down with concrete blocks. The camera must overhang the alleyway leading from Annette Street to the loading docks.
- NODE – Camera C-1 must be connected to the VMS via a contractor installed CAT6 link to a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the laneway on the west side of the building. This camera must be aimed in such a way as to view the laneway beside the building and the rear loading docks with minimal view of any private property.
- Camera – The provided camera must be Type #2 as detailed in section 4.5.4.2 of this statement of technical requirements.
- Enclosure – The provided enclosure must be equipped with a heater and shall be waterproof.

2. SW Corner Annette Street Walkway

The contractor must supply and install a fixed dome outdoor network colour camera and enclosure that meets the following requirements:

- Location – This camera must be mounted on the SW corner of the roof of the building using a non-intrusive dome swivel arm roof mounted bracket which must be placed on a Styrofoam SM pad consisting of 2 layers of 1” Styrofoam wrapped in geo-tex cloth to protect the roofing material and must be weighted down with concrete blocks. The camera must overhang the walkway leading from the alley on Annette Street to Keele Street.
- NODE – Camera C-2 must be connected to the VMS via a contractor installed CAT6 link to a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the south walkway on Annette Street adjacent to the building. This camera must be aimed in such a way that there is minimal view of the adjacent residential properties and the roadway on Annette Street or Keele St. Camera – The provided camera must be Type #2 as detailed in section 4.5.4.2 of this statement of technical requirements.
- Enclosure – The provided enclosure must be equipped with a heater and shall be waterproof.

3. Front Door – SE – Keele Street

The contractor must supply and install a fixed dome outdoor network colour camera and enclosure that meets the following requirements:

- Location - This camera must be mounted on the NE corner of the roof of the building using a non-intrusive dome swivel arm roof mounted bracket which must be placed on a Styrofoam SM pad consisting of 2 layers of 1” Styrofoam wrapped in geo-tex cloth to protect the roofing material and must be weighted down with concrete blocks.

- NODE – Camera C-3 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the front door at the south end of the east side of the building and must include the flagpole located at the front of the building. This camera must be aimed in such a way that there is minimal view of the adjacent sidewalks, properties and the roadway on Keele Street.
- Camera – The provided camera must be Type #2 as detailed in section 4.5.4.2 of this statement of technical requirements.
- Enclosure – The provided enclosure must be equipped with a heater and shall be waterproof.

4. Front Door - East – Keele Street

The contractor must supply and install a fixed dome outdoor network colour camera and enclosure that meets the following requirements:

- This camera must be mounted on the NE corner of the roof of the building using a non-intrusive dome swivel arm roof mounted bracket which will be placed on a Styrofoam SM pad consisting of 2 layers of 1” Styrofoam wrapped in geo-tex cloth to protect the roofing material and must be weighted down with concrete blocks.
- NODE – Camera C-4 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the front doors at the southern end of the east side of the building and must include the flagpole located at the front of the building. This camera must use the corridor view and be aimed in such a way that there is limited view of the public sidewalk.
- Camera – The provided camera must be Type #2 as detailed in section 4.5.4.2 of this statement of technical requirements, equipped with a varifocal lens to provide the aforementioned coverage.
- Enclosure – The provided enclosure must be equipped with a heater and shall be waterproof.

5. NE Corner, Keele Street Laneway

The contractor must supply and install a fixed dome outdoor network colour camera and enclosure that meets the following requirements:

- This camera must be wall mounted on the north side of the building approximately 2 feet above the windows where the 2 storey building meets the one storey building. The final position must be such that the camera will provide a view of a person walking toward the exterior door of the building.
- NODE – Camera C-5 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the side door located in the laneway. This camera must use the corridor view and be aimed in such a way that there is limited view of the public sidewalk.
- Camera – The provided camera must be Type #2 as detailed in section 4.5.4.1 of this statement of technical requirements, equipped with a varifocal lens to provide the aforementioned coverage.
- Enclosure – The provided enclosure must be equipped with a heater and shall be waterproof.

6. Main Level, Rear Loading Docks.

The contractor must supply and install a fixed dome outdoor network colour camera and enclosure that meets the following requirements:

- Location – This camera must be mounted on the brick wall under the overhang of the loading area in the location of the existing analogue camera

- NODE – Camera C-6 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the three doorways along the outside of the north wall of the building. This camera must be aimed in such a way that there is minimal view of the adjacent residential properties.
- Camera – The provided camera must be Type #1 as detailed in section 4.5.4.1 of this statement of technical requirements.
- Enclosure – The provided enclosure must be equipped with a heater and shall be waterproof.

Indoor Cameras

7. Main Level, Front Entrance

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted in the location of the existing camera.
- NODE – Camera C-7 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the main entrance of the building and the intercom station located on the opposite wall.
- Camera – The provided camera must be Type #4 as detailed in section 4.5.4.4 of this statement of technical requirements.
- Special Considerations - This ceiling in the adjacent area has been tested and found positive for asbestos content in the plaster. The contractor must ensure that all safety measures have been taken during any work in this area.

8. Main Level, Foyer

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be mounted on the wall over the closet door in the main foyer.
- NODE – Camera C-8 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the main entrance of the building, the Programs hallway door and the lower portion of the stairway to the CCC.
- Camera – The provided camera must be Type #4 as detailed in section 4.5.4.4 of this statement of technical requirements.
- Special Considerations - This ceiling in this area has been tested and found positive for asbestos content in the textured plaster. The contractor must ensure that all safety measures have been taken during any work in this area

9. Main Level, Programs Corridor East

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted to the east of the elevator in the Programs corridor facing west.
- NODE – Camera C-9 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the Programs corridor from the elevator toward the shipping doors and must ensure proper focus on the staircase door at the end of the hall.
- Camera – The provided camera must be Type #2 as detailed in section 4.5.4.2 of this statement of technical requirements.

10. Main Level, Programs Corridor West

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted approximately 5 metres from the doors to the main foyer facing east.
- NODE – Camera C-10 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the Programs corridor from the area outside Program Room A to the TSU Secure Waiting Area.
- Camera – The provided camera must be Type #2 as detailed in section 4.5.4.2 of this statement of technical requirements.

11. Second Floor, Entry Corridor, Rm C203

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted centred on the glass doors at the top of the stairs and set back the the wall of Rm 261.
- NODE – Camera C-11 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must be set up to record the 4 individual quadrants as well as the 360 view.
- Camera – The provided camera must be Type #3 as detailed in section 4.5.4.3 of this statement of technical requirements.

12. Second Floor, Existing Common Central Corridor, Rm 201.

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted directly opposite the Central hallway.
- NODE – Camera C-12 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the door to the elevator lobby, corridor doors from the entryway and commissionaires pass-through and shall be set up to record the desired individual quadrants as well as the 360 view.
- Camera – The provided camera must be Type #3 as detailed in section 4.5.4.3 of this statement of technical requirements.

13. Second Floor, Existing Common Area NE, Rm 206.

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted to the east of the control post door facing south.
- NODE – Camera C-13 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the door to the washroom, corridor into the Dining area and the residence doors on the east side of the room.
- Camera – The provided camera must be Type #1 as detailed in section 4.5.4.1 of this statement of technical requirements.

14. Second Floor, Existing Common Area, Rm 206.

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted in the centre of the common area to provide omni-directional view.
- NODE – Camera C-14 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must be set up to record the desired individual quadrants as well as the 360 view.
- Camera – The provided camera must be Type #3 as detailed in section 4.5.4.3 of this statement of technical requirements.

15. Second Floor, Kitchen, Rm 224.

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be wall mounted in the corner location close to the original unit so as to provide the same level of coverage.
- NODE – Camera C-15 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must be aimed such that it shall have the widest view of the kitchen and dining hall with minimal view of the ceiling.
- Camera – The provided camera must be Type #4 as detailed in section 4.5.4.4 of this statement of technical requirements.

16. Second Floor, Dining Area, Rm 223.

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be corner mounted in the SW corner.
- NODE – Camera C-16 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must be aimed such that it shall have the widest view of the kitchen and dining hall with minimal view of the ceiling.
- Camera – The provided camera must be Type #4 as detailed in section 4.5.4.4 of this statement of technical requirements.

17. Second Floor, Existing Common Area West-1, Rm 228.

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted centred on the east end of the common area.
- NODE – Camera C-17 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the pool table and seating area of the common area as well as the residence doors surrounding the area.
- Camera – The provided camera must be Type #2 as detailed in section 4.5.4.2 of this statement of technical requirements.

18. Second Floor, Existing Common Area West-2, Rm 228

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted in the south west corner of the common area.
- NODE – Camera C-18 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.

- FOV – This camera must observe the common area, residence rooms closest to C13 and provide coverage to the junction of the Common Area West, Existing Commons Central and Control Post.
- Camera – The provided camera must be Type #2 as detailed in section 4.5.4.2 of this statement of technical requirements.

19. Second Floor, Laundry

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted adjacent to the existing camera.
- NODE – Camera C-19 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must provide the same coverage as the existing units, which monitors the freight elevator and windows in the area.
- Camera – The provided camera must be Type #1 as detailed in section 4.5.4.1 of this statement of technical requirements.

20. Second Floor, Emergency Exit Hallway

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted in the NE corner of the hallway.
- NODE – Camera C-20 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must observe the corridor, laundry room door and all residence doors on the west end of the common area.
- Camera – The provided camera must be Type #1 as detailed in section 4.5.4.1 of this statement of technical requirements.

21. Second Floor, Existing Common Area West-3, Rm 228

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be ceiling mounted in the centre of the common area to provide omni-directional coverage.
- NODE – Camera C-21 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must be set up to record the desired individual quadrants as well as the 360 view.
- Camera – The provided camera must be Type #3 as detailed in section 4.5.4.3 of this statement of technical requirements.

22. Second Floor, Residents Lounge, Rm 259

The contractor must supply and install a fixed dome network colour camera that meets the following requirements:

- Location – This camera must be corner mounted in location of the existing camera.
- NODE – Camera C-21 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at Node #1.
- FOV – This camera must be set to its widest settings to maximise the viewing area and shall be centred on the opposite wall.
- Camera – The provided camera must be Type #4 as detailed in section 4.5.4.4 of this statement of technical requirements.

Network Intercom Stations

Master Station

1. Second Floor, Control Post

The contractor must provide and install a master intercom station that meets the following requirements:

- Location –The exact location of this station must be determined after award at the time of the site meeting, but must be kept within the physical confines of the specified office.
- NODE – IC-1 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at the Node #1 location.
- Purpose – This intercom must be able to receive calls from the remote stations connected to the system and activate the door strike at the associated door, if so equipped. There must be no facility to originate calls to the remote stations.
- Intercom – The provided intercom must be as detailed in section 4.11 of this statement of technical requirements.

Remote Stations

2. Main Level, Front Entrance Doors

The contractor must provide and install a remote intercom station that meets the following requirements:

- Location –The exact location of this station must be determined after award at the time of the site meeting, but must be on the outside wall facing the street.
- NODE – IC-2 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at the Node #1 location.
- Purpose – This intercom must only be able to originate calls to master station IC-1. The master station must be able to activate the existing door strike on the outer and inner doors.
- Intercom – The provided intercom must be as detailed in section 4.11 of this statement of technical requirements.

3. Main Level, Loading Doors

The contractor must provide and install a remote intercom station that meets the following requirements:

- Location –The exact location of this station must be determined after award at the time of the site meeting, but must be kept within the area of the loading dock man door.
- NODE – IC-3 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided PoE switch installed at the Node #1 location.
- Purpose – This intercom must only be able to originate calls to master station IC-1. The master station must be able to activate any existing door strike, should one exist.
- Intercom – The provided intercom must be as detailed in section 4.11 of this statement of technical requirements.

Network Video User Stations:

Dynamic Security Display

1. Second Floor, Administration/Investigation Office.

The contractor must provide and install a NVUS that meets the following requirements:

- Location –The exact location of this station must be determined after award at the time of the site meeting, but must be kept within the physical confines of the second floor office area.
- NODE – NVUS-1 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided switch installed at the Node #1 location.
- Purpose – This NVUS must include 2 (two) 27 inch desk mounted LED monitors. This workstation must be used for viewing live video and shall configured to be capable of viewing synchronised archived video from up to 4 cameras for investigation purposes. This workstation must have the ability to extract video data from the archive and save such information via USB or on the included DVD-RW drive. Any additional software required for this function must be included. This workstation must be connected to the UPS station located in the equipment rack and shall be capable of maintaining the operation of the unit for at least 20 minutes.
- NVUS – The provided NVUS must be Type #1 as detailed in section 4.9.4 of this statement of technical requirements.

Dynamic Operational Display

2. Second Floor, Control Post.

The contractor must provide and install a NVUS that meets the following requirements:

- Location –The exact location of the monitors must be determined after award at the time of the site meeting, but must be kept within the physical confines of the specified office. The workstation must be located in the equipment rack located in Rm 263.
- NODE – NVUS-2 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided switch installed at the Node #1 location.
- Purpose – This NVUS must include 2 (two) 27 inch monitors mounted to the work surface using one dual or two single monitor mounts which must be determined at the time of site meeting . The monitors must be connected to a mini form factor computer attached to the rear of one of the monitors with a manufactured bracket. This workstation must be for live viewing only and shall have no ability to view archived video or extract data. All camera control functions must be via mouse and there must be no means for the operator to exit the application. This workstation must be connected to a UPS station capable of maintaining the operation of the unit for up to 20 minutes.
- NVUS – The provided NVUS must be Type #2 as detailed in section 4.9.5 of this statement of technical requirements.

UPS

1. Second Floor, Control Post

The contractor must provide and install a UPS that meets the following requirements:

- Location –The exact location of this free standing UPS must be determined after award at the time of the site meeting, but must be kept within the physical confines of the specified office.
- NODE – UPS-1 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided switch installed at the Node #1 location.
- Purpose – This UPS must be capable of maintaining the operation of the NVUS components located in this office for a minimum of 20 minutes. The UPS must have the ability to signal and perform the safe shutdown of all associated equipment connected to the UPS prior to the UPS ceasing operation.

2. Second Floor, Rm 263

The contractor must supply and install a UPS that meets the following requirements:

- a. Location – This UPS must be rack mounted in the contractor supplied rack housing the NVRs and all associated network and NVUS equipment.
- b. NODE – UPS-2 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided switch installed at the Node #1 location.
- c. Purpose – This UPS must be capable of maintaining the operation of the associated components located in this rack for a minimum of 20 minutes. The UPS must have the ability to signal and perform the safe shutdown of all associated equipment connected to the UPS prior to the UPS ceasing operation. The system must be programmed to safely power down the system when the batteries are at 10% of their capacity. In the event of a power-down scenario, once the power is restored and the power is turned on to the systems, all computers must automatically log in and resume normal operation.

Time Server

4. Second Floor
 - Location – The exact location of this unit must be determined after award at the time of the site meeting, but the antenna unit is to be located in a plastic NEMA box on the outside of the building on the second floor with the server unit located inside the building within a suitably sized enclosure..
 - Node – TS-1 must be connected to the VMS via a contractor installed CAT6 link from a contractor provided switch installed in Rm 263.
 - Purpose – The time server must be capable of maintaining the accuracy of the clocks on the entire system to within +/-1ms at the moment of synchronization.