1. **GENERAL**
	1. **Coordination Requirements**
		1. BCIT Safety, Security and Emergency Management (SSEM).
		2. BCIT Facilities and Campus Development (FCD).
		3. BCIT Information Technology Services (ITS).
	2. **Description**
		1. BCIT SSEM supports BCIT’s strategy to provide a safe and healthy environment for our employees, students, and for the communities where we live and operate. The guidelines herein have been created by SSEM to clarify the design and installation process of closed-circuit television (CCTV) systems on the BCIT campuses.
		2. The guidelines are intended to foster cooperation between all parties involved whether they be BCIT related or not.
		3. Special consideration must be given to the security industry as being technology based. Industry advancements have an evolutionary effect on the design and manufacturing of security equipment. It is therefore critically important that SSEM remain flexible in its implementation of BCIT standards and guidelines.
		4. These guidelines provide reference to particular types, grades and models of products. In general, the references include both generic descriptions and specific product details. These references shall not be construed as a directive to sole-source products from any particular vendor except where this is specifically stated.
		5. This document must be read, interpreted and coordinated with all other related Sections to deliver a complete electronic security system.
		6. Security systems to be installed as part of newly constructed buildings or as part of renovations within existing buildings shall always reflect the intent of SSEM standards and guidelines.
		7. SSEM is the BCIT group solely responsible for the consultation, design installation, verification, maintenance, and management of all electronic safety and security on campus.
		8. Any and all proposed changes to these standards shall be subject to approval in writing by BCIT and SSEM prior to implementation.
	3. **Terminology**
		1. *Coax Cable* - A type of cable typically used in CCTV installations that has a central conductor, surrounded by a shield sharing the same axis.
		2. *Focal Length* - The distance between the center of a lens and the imaging sensor. Lower lengths give a greater field of view (FOV) and less magnifications, while longer lengths give a narrower FOV and greater magnification.
		3. *Infrared (IR)* - Low frequency light below the visible spectrum. IR is used in surveillance cameras to provide a light source to record images in dark and zero light conditions.
		4. *Autofocus* - The lens continuously adjusts to the correct focus automatically for the sharpest picture.
		5. *AutoIris* - The lens iris opening is automatically adjusted to allow the correct illumination of the camera sensor.
		6. *Encoder* - A device which converts the output of an analog output into a digital signal for transmission over a network.
		7. *Power over Ethernet (PoE)* - A technology for wired Ethernet networks that allows the electrical current necessary for the operation of a device to be carried by the data cable, rather than a separate power cord. Two PoE standards currently exist: 802.3af (PoE) can deliver 15.4 watts over Cat5 while 802.3at (PoE+) can deliver up to 30 watts over Cat5 with 25.5 watts available to the device.
		8. *Closed Circuit Television (CCTV) System* - A video management system that consists of cameras, computer servers, and software which manages live and previously-recorded video.
		9. *Mid-span Injector* - A device that provides inline PoE/PoE+ to a structured data run.
		10. *Video Management System (VMS)* - A video management system is a component of a security camera system that collects video from cameras, records / stores that video to a storage device, and provides an interface to both view the live video and access recorded video.
2. **CONTRACTOR and/or CONSULTANT RESPONSIBILITIES**
	1. **General**
		1. The contractor and/or consultant has the responsibility to ensure that all provisions of these Standards are met and to specifically advise the Institute in writing of any contemplated exceptions and obtain approval from BCIT and SSEM for all contemplated changes**.**
		2. The installer is responsible for warranty for the first year for any equipment failure, after which time it would fall to SSEM’s current maintenance provider.
		3. Software licences are to be provided by BCIT’s current maintenance contractor.
	2. **BCIT Procedure**
		1. FCD shall facilitate the communications and efforts of the contractor with SSEM.
	3. **System Design**
		1. The security system shall be designed through consultation with and approval by SSEM**.**
	4. **System Infrastructure**
		1. FCD and the project architect/engineer must ensure that the contractor provides the correct security infrastructure for the building. This infrastructure shall include:
			1. Cable pathway.
			2. Installation of conduit and junction boxes (JB) where required.
			3. Communication lines (Network, coordinated with BCIT ITS).
			4. Preparation of walls, ceilings, etc to accept security devices and hardware.
		2. All safety and security system cabling will be installed in conduit unless a cable tray is present. The use of J-hooks is permitted, as needed, when cables are run above ceiling tiles.
	5. **System Installation**
		1. All electronic access control and CCTV system equipment final connections and system programming are completed by the SSEM contractor who holds the current maintenance agreement. The contractor must use technicians qualified in the specific VMS software.
	6. **System Verification**
		1. System verification shall be performed by SSEM. The contractor must ensure and coordinate through FCD the verifications of all security related equipment and its performance as an integrated part of the security system (i.e. fire alarm interface, elevator interface, door hardware, etc.).
	7. **Contract Documents**
		1. Facilities and IT Services project standards are to be met.
	8. **Shop Drawings**
		1. Before commencing with the installation of a CCTV project, SSEM requires that the consultant or contractor supply BCIT and SSEM with design and installation details in the form of shop drawings (i.e. proposed location of cameras, cable and conduit path, type of camera, etc.). The shop drawings must be approved by SSEM to ensure it meets the needs of the Institute/Occupants/end-users.
		2. The contractor shall be responsible for all errors or omissions in the shop drawings and for meeting all requirements of the contract documents.
		3. Where a new communications/telecom room is being installed, at least one CCTV camera will be installed. This is dependent on the number of network racks being installed to ensure camera coverage is not blocked by network equipment**.**
3. **SSEM RESPONSIBILITIES**
	1. **General**
		1. SSEM will assist departments in determining their security requirements and act as the agent to: ensure quality and consistency, ensure justification for the system installation, ensure adherence to the Institute guidelines, and provide basic end-user training.
	2. **Consultation**
		1. Consult, coordinate, and/or supervise the consultation of CCTV cameras connected to the enterprise system**.**
	3. **System Design**
		1. Design, coordinate, and/or supervise the design of on-campus security systems.
	4. **System Installation**
		1. Coordinate activation of Network VLANs and installation of network drops for safety and security systems with ITS Department.
	5. **System Verification**
		1. Verify, coordinate, and/or supervise the verification of on-campus CCTV installations.
	6. **Post Installation**
		1. Create service tickets for the contractor who holds the current maintenance agreement unless the failure of a hardware component is covered under warranty with the original installer.
		2. Receive the updated floor plans and project drawings to be copied on the SSEM network share.
4. **SYSTEM DESIGN**
	1. **General**
		1. The system design shall produce a consistent outcome to increase safety and security for the Institute, reduce risk, provide a deterrent, and allow for evidence collection in the event a criminal act has taken place. SSEM provides consultative input to project teams and user stakeholders to ensure the successful application of security technology with operational requirements.
		2. Building entry points should, when possible, be fit with an Axis P3715-PLVE dual sensor camera in order to capture individuals entering and exiting from the building entry point.
	2. **Operational Function**
		1. The following functional requirements shall be identified prior to the design of any security system to be installed on a campus:
			1. Space ownership and usage.
			2. Location of all perimeter doors.
			3. Location of primary entrances/exits (daytime and after hours).
			4. Identification of special areas (i.e. containing high-value assets, chemical storage, etc).
			5. Building hours of operation.
			6. Location of vulnerable personnel.
	3. **Application**
		1. The following requirements shall be included in the consideration and design of any security system on campus**:**
			1. *Camera Type* - Camera types can include fixed, pan-tilt-zoom (PTZ), or multi-sensor.
			2. *Camera Lens* - A camera lens with appropriate focal length will be selected to determine the optimal field of view to capture the area within CCTV range.
			3. *Camera Mount* - Mounting options include: corner, wall, ceiling, pendant, or pole. Whenever possible, camera should be faced away from available light source. Exact location and viewing angle shall be confirmed by SSEM.
			4. *Megapixel* - The minimum megapixel for an interior fixed camera is 2MP (1920x1080).
			5. *Camera Connection* - New installations will use IP cameras that communicate over ITS approved cables (Cat5e/Cat6). No new camera installations will be permitted which use coax cable connected to encoders.
			6. *Camera Power* - Cameras will be powered via PoE. If the distance between a camera and the nearest network switch is close to exceeding the maximum distance (100 metres/328 feet), a midspan injector can be used to boost the power.
			7. *Camera Features* - PTZ Cameras should be equipped with AutoFocus and AutoIris capabilities to minimize the number of adjustments made by personnel monitoring the system. Cameras should not require an IR illuminator, and if such a case exist, upgraded lighting in the area will be required.
			8. *Camera Compatibility* - New cameras must be ONVIF compliant and be supported by the Institute’s enterprise CCTV VMS, currently Genetec Security Center 5.7 SR5.
			9. *Video Compression* - Minimum H.264.
5. **EQUIPMENT SPECIFICATIONS**
	1. **General**
		1. The following list of equipment defines the current standards in use at the Institute as well as the intended purpose:
			1. PTZ Camera.
				1. Exterior Camera;

The current standard for an exterior camera is the Axis Q-6128E 8MP/4K. Cameras by other manufacturers may be considered by SSEM in the future should the same specifications be met (or higher).

* + - 1. Fixed Camera.
				1. Interior Camera;

4MP Axis M3066-V mini dome.

5MP Axis P3267-V dome (if area calls for higher resolution).

8MP Axis P3727-PLE multidirectional camera 360-degree coverage.

15MP Axis P3719-PLE multidirectional camera with IR for 360° coverage.

15MP Axis M5000-G multidirectional camera with 360° coverage and additional 2MP PTZ camera.

2x2MP Axis P3715-PLVE to cover areas requiring more than 1 camera (eg: entrances, stairwells).

* + - * 1. Elevator Camera;

3MP Axis P9106-V Network Camera.

* + - * 1. Ethernet and POE over Coax Adaptor (For Use In Elevator Installations);

VHW-HWPS-B Highwire Powerstar Base Unit.

VHW-HWPS-C Highwire Powerstar Camera Unit.

VPSU-57V-800-US Highwire 57V DC 800mA power supply.

\*\*\* END OF VIDEO SURVEILLANCE SECTION \*\*\*