
Note to the Designer/Architect/Engineer: These Specifications are basic minimum criteria to be met in preparing the final project specifications for this section, which is the responsibility of the Designer

York University Building Standards

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1.0 GENERAL

1.0 Conditions

1.1 Scope of Work

Closed Circuit Television systems (CCTV)

1.2 Guiding Principles:

.1 Closed Circuit Television (CCTV) cameras are strategically located in parking lots, pedestrian tunnels, the York Lanes retail mall, computer labs and other areas of the university. These cameras are monitored twenty-four hours a day by student CCTV operators and Security Services staff who work in conjunction with the Security Control Centre officer. Cameras are also used tactically in conjunction with Blue Light Emergency Phone calls and security officer response to reported incidents. In addition to the crime prevention benefits, CCTV cameras provide an in-colour video recording of incidents that can be utilized for investigation purposes

1.3 Related York University Standards

- .1 York University Telecom Standard, University Information Technology (UIT)
- .2 Proximity Card Access Systems Section 28 13 00

1.4 References

All installed equipment must meet most recent applicable CSA/ANSI standards
All cables must adhere to applicable NF standards
ULC Standards
Ontario Building Code
Canadian and Ontario Electrical Code
CSA z85 Abbreviations for Scientific and Engineering Terms
Ontario Electrical Safety Code Bulletins (in force at the time of system installation)
Open Network Video Interface Forum (ONVIF)

1.5 Power Requirements

- .1 24 VDC or POE

1.6 Wire Supervision

- .1 An alarm shall occur if any system wiring is cut or shorted to the other wires in the system and if the system devices are tampered with. The system shall detect tampering on a line and annunciate open and short conditions even if the device has been shunted (disarmed).

1.7 Lightning Protection

- .1 Lightning protection must be installed for exterior mounted fixed and PTZ cameras
- .2 Lightning protection must be installed at the building entrance or communications room entrance for any external communication wiring

1.7 Tamper Protection

- .1 Detectors and sensors, the panel containing the multiplex control, signal transmission equipment and lines and auxiliary devices shall be so designed, constructed and installed as to resist attack and to minimize vulnerability to countermeasures. The system shall be so designed so that it will be difficult to "jumper out" or by-pass sections, loops or devices of the system.
- .2 All electronic components and points-of-connection shall be contained within a metal panel suitable for wall mounting. Panel doors shall have locks, keyed to match other portions of the system already in use. Tamper resistant screws shall be used

1.8 Warranty (Standard Warranty and Extended Warranty)

- .1 Provide warranty on both product and installation for a period of one year from the date of system acceptance in writing from York University.

1.9 Submittals

- .1 Shop drawings and equipment technical sheets indicating the complete system design, and all components shall be submitted as a package for approval prior to release of order or installation. As a minimum, the shop drawings shall include a floor plan of the installation area, a wiring diagram indicating all components connected and the number type and size of the conductors between each component. Technical information sheets (or Cut Sheets) of each piece of equipment shall be included in the shop drawing submittal package.
- .2 Three hard copies and one set of electronic files of the "as built"

record drawings shall be provided to the University upon completion of the work. The drawings shall reflect the final "as built" arrangement and configuration of the system. They shall be accompanied by illustrated technical supporting literature on all equipment comprising the installation including operating and maintenance instructions for all components.

- .3 As built drawings and wiring diagrams shall be produced by AutoCad version 2010 (earlier version such 2008, 2009 are also acceptable) and supplied to York University's Planning & Architecture Design Services, Campus Services and Business Operations, and Infrastructure Operations, UIT on disk.
- .4 Shop drawing to include a complete materials list with manufacturer, style, model and quantity.

1.10 Qualifications (P.Q.):

- .1 The installer of electronic hardware must be a firm with at least 5 years experience with these types of products, have manufacturers' references and a good knowledge of the products specified.

2.0 PRODUCTS

2.1 CCTV Cameras

- .1 Device Location
 - .1 Video surveillance cameras shall generally be installed in common space areas both internally and externally to a building normally accessed by students, staff, faculty and visitors. These areas include but are not limited to the following:
 - .1 Building entrances/exits
 - .2 Food courts
 - .3 Common study areas
 - .4 Loading docks
 - .5 Pedestrian pathways leading to and away from the building
 - .6 Public transit stops
 - .7 Elevators
 - .8 Any area that, after a review of the proposed building floor plan and intended space use, the Coordinator, CCTV and Access Control, Security Services deems

should to require video surveillance in an effort to protect the safety of the University community and property

- .2 Normally, installed indoors in corridors, common areas for general surveillance
Fixed cameras are also installed in classrooms and/or labs where high value content exists. Fixed cameras are ceiling mounted, and in some cases wall mounted. Ceiling or wall mounted, vandal resistant smoke dome housing is required.
 - .3 CCTV cameras shall be installed either wall or ceiling mounted for indoor/outdoor applications. For outdoor applications pole mounted is also acceptable depending on circumstances
 - .4 A standard 45° or wider viewing angle must be achieved as part of CCTV camera installation and location
 - .5 In an effort to reduce glare and light distortion, CCTV camera shall be faced away from available light source
 - .6 Pole mounted cameras
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- .2 Pole mounted cameras.
 - .1 Pole height shall be dependent of specific applications and circumstances, project representative shall consult Coordinator CCTV and Door Access Technology, Security Services, CSBO
 - .2 Poles shall not be wood
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- .2 Wiring
 - .1 Number 18 (minimum FT4 rated) wire for power
 - .2 RG59U (minimum FT4 rated) co-axial cable for video signal fixed camera. Cable to be home run to monitoring equipment, concealed pathway. Maximum wire length must not exceed 225 metres unless specified
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- .3 Device Features
 - .1 Fixed and PTZ cameras must be IP-based and shall be compliant with latest iteration of ONVIF standard for such devices
 - .2 Fixed and PTZ IP-based shall be interoperability with Honeywell MaxPro NVRs as well as other branded NVRs

- .3 Fixed and PTZ IP-Based cameras shall be capable of being controlled via mouse or Honeywell control/joystick

Fixed high-resolution color camera installed in a vandal proof smoke dome housing. Camera shall have a day/night capabilities and minimum lens dimension that is dependent on specific application.

- .2 Cameras shall be enclosed in a vandal proof and weather resistant housing acceptable for both day and night operation with 540 TVL high resolution colour
- .3 High-resolution P/T/Z camera with day and night operation and an optical zoom lens, having wide dynamic range
- .4 24 VAC or 12 VDC operation 1/3" CCD image sensing
- .5 NTSC scanning standard (minimum 525 lines, 30 frames/second) Horizontal resolution 470 TV lines
- .6 Minimum illumination 2 LUX/F1.2 (colour), 0.1 LUX/F1.2 (black & white) Video output 1.0V, 75~ composite
- .7 Backlight compensation
- .8 Adjustable white balance
- .9 Automatic grain control
- .10 Electric iris, or fixed iris (under stable lighting conditions), Internal sync/line lock. BNC connections

- IP based cameras fixed or PTZ shall at least these features:
 - Viewing and recording at 1080p (1920 X 1080) resolution @ 30 frames per second (for PTZ ...through a continuous 360° pan rotation, minimum 220°
 - SD/SDHC slot for local storage that can be used if network connectivity is lost
 - Ability to support multiple video streams
 - Video stream compression capability to MJPEG and H.264
 - 1/2.8-inch CMOS for increased sensitivity
 - low light technology that allows the cameras to compensate for low light conditions
 - built-in motion detection and advanced wide dynamic range (WDR)
 - operating temperatures AC 24V: -40°C to 55°C, POE -40° to 55°C

2.2 Video Matrix Switcher

.1 Device Location

- .1 The matrix switcher is located in the Security Control Data Centre in the basement of William Small building. In addition, there is a

mirror/duplicate matrix switch located in the alternate Security Data Centre located in the Bennett Centre for Student Services

.2 Wiring

.1 Each camera is wired into the matrix switch video input bay via 1 RG59U video co-axial cable.

.3 Features

.1 main matrix switch/CPU which controls all video inputs and monitor outputs. This matrix device allows the operator to call up via a system keyboard any camera and assign to any monitor. The matrix switch shall support a minimum of 1028 video inputs.

2.3 Video Recorder

.1 Device Location

- .1 The Network Video Recorders (NVRs) for the CCTV cameras are located in the Security Control Data Centre located in the William Small Centre.
- .2 Digital Video Recorders are not acceptable, Hybrid NVR that permit analog and IP-based CCTV cameras to be connected, recording and to be control for both types of devices are acceptable

.2 Wiring

.1 Video signal to recorder shall be fed from the multiplex via RG59U FT4 rated co-axial cable (FT6 rated if required). BNC connections. Powered from 120VAC outlet, with a dedicated breaker (preferably)

.3 Device Features

- .1 Server or Client based video recorder/monitor/control device
- .2 Ability to view multiple cameras from a single point (security Control Centre) while recording functions are in effect
- .3 Role-based operator privileges
- .4 Auto discovery of any ONVIF compliant IP-based PTZ or Fixed cameras
- .5 Ability to define and run macros to run pre set operations
- .6 Surrounding camera mode to permit following of subjects of interest across multiple cameras

- .7 Ability to search video recordings through event view and time stamping
- .8 Ability to block out segments of field of view from a camera(s) privacy screen
- .9 Video search via keyboard or client software.

2.4 Power Transformer

- .1 Device Location
 - .1 The power transformer for the CCTV system (recorded and matrix switch) is located in the Security Control Data Centre located in the William Small Centre.
- .2 Wiring
 - .1 Each camera is wired to power supply with 1 #18 cable FT4 rated
 - .2 Home run directly to control panel
- .3 Device Features
 - .1 Power supply sized for 1, 4, 6 or 8 camera inputs.
 - .2 Power transformer shall be fully certified Class 2 rated, ULC and CSA approved
 - .3 Shall have a fail-safe in the event of current overload or short circuit
 - .4 Each device to be individually fused

2.5 Video Monitor

- .1 Device Location
- .2 Wiring
 - .1 Adhere to NF standard, video signals to monitor fed from multiplexes via RG59U FT4 rated, co-axial cable (FT6 rated if required).
 - .2 BNC or VGA connections
 - .3 Powered from 120VAC outlet, dedicated breaker (if possible)
- .3 Device Features

2.6 PTZ Keyboard controller

- .1 Keyboard controller shall employ both keyboard controls and easy operation joystick
- .2 Keyboard controller must control every function of PTZ and other types of CCTV cameras
- .3 Keyboard controller must have easy to read LCD displays to

- identify cameras
- .4 PTZ keyboard controllers are USB or on screen

3.0 EXECUTION

- .1 Cable sizing, installation, identification and termination shall be provided in accordance with the manufacturer's technical installation guidance, in addition to applicable codes
- .2 Where manufacturer's technical instructions do not cover installation or wiring selection, contractor shall ensure that the cable selected meets all technical requirements of the equipment to be installed
- .3 CCTV system contractor shall provide full system programming, graphical user interface, system testing, validation, and commissioning.
- .4 The CCTV system contractor shall provide all necessary system programming and testing such that York University inherits a fully functioning stand-alone system that meets the design intent. CCTV system shall be tested prior to connection to the York University Private Security Network
- .5 All system programming variables shall be programmed to the University's documented requirements and applicable standards

3.5 Coordination

- .1 It is the CCTV system contractor's responsibility to coordinate all work with device manufacturer, local distributors, CSBO Planning and Renovations, Security Services and relevant University Information Technology departments

Installation (University Standard)

3.6 System Testing Verification and Adjustments

- .1 Final system acceptance tests shall be performed in the presence of representatives from York University Security Services, including at a minimum the Manager Security Operations, York University Security Services, the Coordinator, CCTV & Door Access Technology and representatives from University Information Technology.

- .2 Acceptance testing and training shall include discussion on the system design with the building's Card Access Coordinators, testing of all individual components, programming of the system software and acceptance of the installation.
- .3 Final system acceptance shall include the delivery of system training by installer, system product manuals, and training manuals, tamper proof keys, cabinet keys, and passwords.

End of Section