

**Part 1            General**

**1.1                SECTION INCLUDES**

- .1      Control panel.
- .2      Detection Accessories.
- .3      Communications.
- .4      Environmental monitoring.

**1.2                REFERENCE DOCUMENTS**

- .1      National Fire Protection Association (NFPA)
  - .1      NFPA 70, National Electric Code.
  - .2      NFPA 101, Life Safety Code.
- .2      Electronic Industries Association (EIA)
  - .1      REC 12749, Power Supplies.
  - .2      RS 16051, Sound Systems.

**1.3                REFERENCE STANDARDS**

- .1      Underwriters Laboratories of Canada (ULC)
  - .1      CAN/ULC-S302, Installation and Classification of Burglar Alarm Systems for Financial and Commercial Premises, Safes and Vaults.
  - .2      CAN/ULC-S303, Local Burglar Alarm Units and Systems.
  - .3      CAN/ULC-S304, Intrusion Detection.
  - .4      CAN/ULC-S306, Intrusion Detection Units.
  - .5      ULC-S318, Power Supplies for Burglar Alarm Systems.
  - .6      ORD-C634, Connectors and Switches for Use with Burglar Alarm Systems.
- .2      Underwriters' Laboratories (UL)
  - .1      UL 603, Standard for Power Supplies For Use With Burglar-Alarm Systems.
  - .2      UL 639, the Standard for Intrusion-Detection Units.

**1.4                DEFINITIONS**

- .1      PIR: Passive Infrared Detectors.

**1.5                DESIGN PERFORMANCE REQUIREMENTS**

- .1      Design intrusion detection system using ULC/UL Listed products.
- .2      Design intrusion detection system using, company specializing in intrusion detection systems.

- .3 Design intrusion detection system as a certified alarm system.
- .4 Design system as alarm monitoring system expandable, and easily modified for inputs, outputs and remote control stations.
  - .1 Design components in accordance with CAN/ULC-S306 and be capable of:
    - .1 Annunciating undesirable, abnormal or dangerous condition.
    - .2 Prioritizing alarms by alarm type; i.e. panic/duress, intrusion and tamper.
    - .3 Determining zone where alarm occurred.
    - .4 Annunciating power failure and power restoration.
    - .5 Annunciating low battery condition.
    - .6 Operate continuously for minimum period of 4 hours in the event of a power failure.
- .5 Equip control panels with continuous tamper detection on door and wall.
  - .1 Tamper detection to trigger alarm.
- .6 Design system with:
  - .1 Alarm masking.
  - .2 Remote maintenance or diagnostics with password activation and callback modem.
  - .3 Unique identifier for each authorized person.
  - .4 Arming and disarming capabilities: manual and automatic by time of day, day of week, or by operator command.
  - .5 Support both manual and automatic responses to alarms entering system.
  - .6 Zone or alarm location annunciated at monitoring station.
- .7 Communications link: security level of I as described in CAN/ULC-S304.
- .8 Signal link: Security level of I as described in CAN/ULC-S304.
- .9 Alarm condition: Design system to provide maximum time for an alarm to be communicated of 60 seconds from alarm initiation to annunciation at remote monitoring location.
- .10 Junction boxes: tamper proof with continuous tamper-detection capability.
- .11 Design system power supplies rated to provide cumulative load of all systems components plus safety factor of 50% or greater.

## 1.6 SUBMITTALS

- .1 Product Data: Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section E3.

- .1 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section E3.
- .2 Submit manufacture's literature for each control panel and detection accessory device.
- .3 Submit:
  - .1 Functional description of equipment.
  - .2 Technical data for all devices.
  - .3 Device location plans and cable lists.
  - .4 Devices mounting location detail drawings.
  - .5 Typical devices connection detail drawings
- .4 Submit shop drawings to indicate project layout, mounting heights and locations, wiring diagrams, detection device coverage patterns, contact operating gaps.
- .5 Submit zone layout drawing indicating number and location of zones and areas covered.
- .2 Maintenance Data: Submit maintenance data for incorporation into manual specified in Section E4.
  - .1 Include:
    - .1 System configuration and equipment physical layout.
    - .2 Functional description of equipment.
    - .3 Instructions of operation of equipment.
    - .4 Illustrations and diagrams to supplement procedures.
    - .5 Operation instructions provided by manufacturer.
    - .6 Cleaning instructions.

**Part 2 PRODUCTS**

**2.1 MATERIALS**

- .1 Control Panel: ULC approved, expandable [and designed for multiplexed expansion].
  - .1 Zones (protection inputs):16 to 128
  - .2 Fixed Zones: 8.
  - .3 Expandable: 16-128 zones.
  - .4 Number of user codes required: 10.
  - .5 Number of Areas/Partitions required: 10.

- .6 Keypads: LCD (liquid crystal display).
- .7 Alarm: Monitored.
- .8 System: Wired.
- .9 Number of programmable outputs required: 5.
- .10 System supervision: telephone line, battery, and AC power.
- .11 Siren output.
- .12 Number of devices per zone: as required.
- .13 DCS Maxsys, PC 4020 Main Control Module c/w cabinet, power supply, dual line dialer
- .2 Detection Accessories: and
  - .1 Passive Infrared Detectors (PIR's) and Microwave:
    - .1 Bosch Security, DS9360
    - .2 Glassbreak Detector: Bosch Security, DS1101i
    - .3 Door Contacts:
      - .1 GE MagneticContact, 2700 series (2707A)
    - .4 Notification Devices:
      - .1 Commander, 371DST-012-024B
  - .3 Communications: telephone
  - .4 Connectors and switches: to ORD-C634.
  - .5 Power supplies: to ULC-S318 or UL 603.

**Part 3 EXECUTION**

**3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions, and datasheet.

**3.2 INSTALLATION**

- .1 Install panels, intrusion detection system and components in accordance with manufacturer's written installation instructions to locations, heights and surfaces shown on reviewed shop drawings.
- .2 Install panels, intrusion detection system and components secure to walls, ceilings or other substrates.
- .3 Install required boxes in inconspicuous accessible locations.
- .4 Conceal conduit and wiring.

### **3.3 FIELD QUALITY CONTROL**

- .1 Manufacturer's Services:
  - .1 Have manufacturer of products, supplied under this Section, review Work involved in the handling, installation/application, protection and cleaning, of its product[s] and submit written reports, in acceptable format, to verify compliance of Work with Contract.
  - .2 Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
  - .3 Schedule site visits, to review Work, at stages listed:
    - .1 After delivery and storage of products, and when preparatory Work, or other Work, on which the Work of this Section depends, is complete but before installation begins.
    - .2 Twice during progress of Work at 25% and 60% complete.
    - .3 Upon completion of the Work, after cleaning is carried out.
  - .4 Obtain reports, within [3] days of review, and submit, immediately, to Contract Administrator.

### **3.4 VERIFICATION**

- .1 Perform verification inspections and test in the presence of Contract Administrator.
  - .1 Provide all necessary tools, ladders and equipment.
  - .2 Ensure appropriate subcontractors and manufacturer's representatives and security specialists are present for verification.
- .2 Visual verification: Objective is to assess quality of installation and assembly and overall appearance to ensure compliance with Contract Documents. Visual inspection to include:
  - .1 Sturdiness of equipment fastening.
  - .2 Non-existence of installation related damages.
  - .3 Compliance of device locations with reviewed shop drawings.
  - .4 Compatibility of equipment installation with physical environment.
  - .5 Inclusion of all accessories.
  - .6 Device and cabling identification.
  - .7 Application and location of ULC approval decals.
- .3 Technical verification: Purpose to ensure that all systems and devices are properly install and free of defects and damage. Technical verification includes:
  - .1 Measurements of coverage patterns
  - .2 Connecting joints and equipment fastening.

- .3 Compliance with manufacturer's specification, product literature and installation instructions.
- .4 Operational verification: Purpose to ensure that devices and systems' performance meet or exceed established functional requirements. Operational verification includes:
  - .1 Operation of each device individually and within its environment.
  - .2 Operation of each device in relation with programmable schedule and or/specific functions.

**3.5 CLEANING AND ADJUSTING**

- .1 Remove protective coverings from control panels, detection accessories and components.
- .2 Adjust all components for correct function.
- .3 Clean housings and system components, free from marks, packing tape, and finger prints, in accordance with manufacturer's written cleaning recommendations.

**END OF SECTION**

## **Part 1 General**

### **1.1 SECTION INCLUDES**

- .1 Video cameras.
- .2 Video handling.
- .3 Recording devices.
- .4 Transmission methods.

### **1.2 REFERENCE DOCUMENTS**

- .1 National Fire Protection Association (NFPA)
  - .1 NFPA 70, National Electric Code.
  - .2 NFPA 101, Life Safety Code.
- .2 Electronic Industries Association (EIA)
  - .1 REC 12749, Power Supplies.
  - .2 RS 16051, Sound Systems.

### **1.3 REFERENCE STANDARDS**

- .1 Canadian Standards Association (CSA International)
  - .1 CSA C22.2No.206, Lighting Poles.
- .2 Canadian Standards Association (CSA International)
  - .1 CSA C22.1-12, Canadian Electrical Code, Part 1 (22nd edition) Safety Standard for Electrical Installations.
  - .2 CAN/CSA-C22.3 No.1-10, Overhead Systems.
- .3 National Fire Protection Association (NFPA)
  - .1 NFPA 70, National Electric Code.
- .4 Underwriters' Laboratories (UL)
  - .1 UL 294, Standard for Safety for Access Control System Units.
  - .2 UL 1076, Standard for Safety for Proprietary Burglar Alarm Units and Systems.
- .5 Underwriters Laboratories of Canada (ULC)
  - .1 ULC-S317-96, Installation and Classification of Closed Circuit Video Equipment (CCVC) Systems for Institutional and Commercial Security Systems.

### **1.4 DEFINITIONS**

- .1 CCTV: Closed Circuit Television.
- .2 CCVC: Closed Circuit Video.

- .3 CCD: Charge Coupled Device.
- .4 FOV: Field of View.

## **1.5 DESIGN PERFORMANCE REQUIREMENTS**

- .1 Support: Camera functions such as pan/tilt and zoom fully supported by CCTV system.
  - .1 Provide operator with ability to control all camera functions.
- .2 Alarm point monitoring: System capable, upon alarm recognition, of switching CCTV cameras associated with alarm point.
- .3 Switching:
  - .1 Provision to switch any camera in system to any monitor in system manually or automatically.
  - .2 Provision to switch system video recorders to selective monitor outputs in system.
- .4 Control: Provision for any camera equipped with pan, tilt, and/or motorized zoom lens:
  - .1 Manually control pan, tilt and lens functions.
  - .2 Set pan and tilt home position.
  - .3 Set and clear movement limits of pan and tilt mechanism.
  - .4 Adjust motorized zoom lens.
- .5 Enter and edit CCTV programs and save them for future use.
- .6 Set dwell time for viewing of any camera picture.
- .7 Define sequence for viewing cameras on each monitor.
- .8 Bypass cameras in system during sequencing to monitor.
- .9 Provide ability to display stored 'video image' of cardholder, and switch real-time camera to card reader location for specific card usage.
- .10 Overall control of CCTV provided through software control, which provides complete integration of security components.
- .11 Environment: Design video components and systems to operate with all specified requirements under following ambient temperatures:
  - .1 Indoor installations:
    - .1 Temperature: 0° C to 30° C.
    - .2 Humidity: 10 to 90%.
  - .2 Outdoor installations:
    - .1 Temperature: -40° C to 55° C.
    - .2 Humidity: 10 to 100%.

## 1.6 SUBMITTALS

- .1 Product Data: Submit manufacturer's printed product literature, specifications and datasheet in accordance with Section E3.
- .2 Shop Drawings: Submit in accordance with Section E3.
  - .1 Submit shop drawings to indicate project layout, camera locations, point-to-point diagrams, cable schematics, risers, mounting details and identification labeling scheme including:
    - .1 Functional description of equipment.
    - .2 Technical data sheets of all devices.
    - .3 Device location plans and cable lists.
    - .4 Video camera surveillance chart.
    - .5 Video interconnection detail drawings.
- .3 Quality Assurance Submittals: Submit the following in accordance with Section E3.
  - .1 Test Reports: Submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
  - .2 Certificates: Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
    - .1 Submit UL Product safety Certificates.
    - .2 Submit verification Certificate that service company is "UL List alarm service company".
    - .3 Submit verification Certificate that monitoring facility is "UL Listed central station".
    - .4 Submit verification Certificate that video surveillance system is "Certified alarm system".
  - .3 Instructions: Submit manufacturer's installation instructions.
  - .4 Manufacturer's Field Services: Submit copies of manufacturer's field reports.
- .4 Maintenance Data: Submit maintenance data for incorporation into manual specified in Section E4 to include following:
  - .1 System configuration and equipment physical layout.
  - .2 Functional description of equipment.
  - .3 Instructions on operation, adjustment and cleaning.
  - .4 Illustrations and diagrams to supplement procedures.
  - .5 Manufacturer's operation instructions

## 1.7 WARRANTY

- .1 For the materials and labour the 12 month warranty period prescribed in Section D39 is extended to 60 months.
- .2 Extended warranty period must include warranty against lightning, weather, physical damage meeting specified performance requirements, for specified time period.
- .3 Manufacturer's Warranty: Submit, for Contract Administrator's acceptance, manufacturer's standard warranty document executed by authorized company official.

## Part 2 PRODUCTS

### 2.1 MATERIALS

- .1 Video Camera Characteristics:
  - .1 White Colour with Polycarbonate transparent cover.
  - .2 Sensitivity: Lighting requirements. Measured in 22 LUX for useable video image.
  - .3 Camera hardware:
    - .1 Axis P3367-VE
    - .2 Axis P3384-VE
    - .3 Axis P3006-V
    - .4 Axis Q6045-E
  - .4 Environment:
    - .1 P3367-VE: Outdoor
    - .2 P3384-VE: Indoor
    - .3 P3006-V: Outdoor
    - .4 Q6045-E: Outdoor
  - .5 Mounting: Visible.
    - .1 Provide all mounting hardware required, including housing, brackets, etc.
  - .6 Lens functions:
    - .1 P3367-VE: Vari-focal lens with maximum resolution of 5 mega pixels
    - .2 P3384-VE: Vari-focal
    - .3 P3006-V: fixed wide angle lens with digital zoom
    - .4 Q6045-E: autofocus
  - .7 Addition features: Backlight compensation.
  - .8 Operational voltage:
    - .1 P3367-VE, P3384-VE, & P3006-V: Power over Ethernet IEEE 802.3af/802.3at

- .2 Q6045-E: High power over Ethernet (High PoE)
- .9 Current consumption:
  - .1 P3367-VE, P3384-VE, & P3006-V: 12.1 watts
  - .2 Q6045-E: 60 watts
- .10 Operation temperature: -10° C to 50° C.
- .2 Lenses
  - .1 Variable Focal Length:
    - .1 P3367-VE, P3384-VE, & P3006-V: 3-9mm
    - .2 Q6045-E: 4.45-89mm
- .3 Network Video Recorder Hardware
  - .1 One (1) 669257-B21 HP DL380e Gen8 Base System-includes: 4 port 1GB Ethernet-12 Drives
  - .2 One (1) 6611 28-L21 HP DL380e Gen8 E5-2420 1.9GHz/6-core processor
  - .3 One (1) 6611 28-B21 HP DL380e Gen8 E5-2420 1.9GHz/6-core processor
  - .4 Four (4) 647893-B21 HP 4GB 1Rx4 PC3L-10600R-9 Kit
  - .5 Two (2) 652615-B21 HP 450GB 6G SAS 15K 3.5in hard drive
  - .6 Six (6) 652757-B21 HP 2TB 6G SAS 7.2K rpm LFF (3.5-inch) Hard Drive
  - .7 One (1) 661404-B21 HP DL380eGen8 CPU1 Riser Kit
  - .8 One (1) 672250-B21 HP DL380e Gen8 Smart Array Cable Kit
  - .9 One (1) 631670-B21 HP Smart Array P420/1GB FBWC Controller
  - .10 One (1) 720864-B21 HP 2U LFF BB Gen8 Rail Kit
  - .11 One (1) 652232-B21 HP 12.7mm Slim SATA DVD-ROM JackBlack Optical Drive
  - .12 Two (2) 512327-B21 HP 750W CS Gold Ht PIg Pwr Supply Kit (RPS)
  - .13 One (1) 667855-B21 HP DL380eGen8 HP Fan Kit
  - .14 One (1) U6E21 E HP Care Pack- 3 years - on-site, 9x5, NBD for ProLiant DL380e GenB
  - .15 One (1) P73-06285 Microsoft Windows Server 2012 R2 Standard License - 2 processors -MOLP
  - .16 One (1) 228-09884 OM picerons Boufts SinQ L Server Standard License 2 processors MOLP: Open Business
- .4 Network Video Recorder Software
  - .1 Supply and install Genetec Version 4.8 software
  - .2 Archiving support for 50 cameras.
  - .3 One (1) Gateway-5 client/.user connections

- .4 One (1) Virtual Matrix,
  - .1 Camera sequences
  - .2 One (1) keyboard connection
  - .3 Alarm management module
  - .4 Database reporting
  - .5 Edge recording and trickling support
  - .6 All languages support
- .5 Licences for 22 camera connections
- .6 Three year SMA for GBASE Software and 22 camera connections
- .5 Fibre Optic Convertor: Omnitron Systems Technology Gigabit media converter with GPOE/S and high power PoE + GPOE/S as specified on Drawings
- .6 POE, LongSpan
- .7 Camera Housings
  - .1 Indoor: Ceilingcorner mount.
  - .2 Domes: Indoor and Outdoor.
  - .3 Outdoor: Equipped with heater as specified on drawings
  - .4 Covert
- .8 Transmission Methods: Ethernet.

## 2.2 CAMERA SCHEDULE

- .1 The cameras supplied shall match the following schedule.
  - .1 V1-01 Axis P3367-VE
  - .2 V1-02 Axis P3367-VE
  - .3 V1-03 Axis P3384-VE
  - .4 V1-04 Axis P3367-VE
  - .5 V1-05 Axis P3006-V
  - .6 V1-06 Axis P3384-VE
  - .7 V1-07 Axis P3384-VE
  - .8 V1-08 Axis P3367-VE
  - .9 V1-09 Axis P3367-VE
  - .10 V1-10 Axis P3367-VE
  - .11 V1-11 Axis P3367-VE
  - .12 V1-12 Axis P3367-VE
  - .13 V1-13 Axis Q6045-E

- .14 V1-14 Axis P3384-VE
- .15 V1-15 Axis P3384-VE
- .16 V1-16 Axis P3384-VE
- .17 V1-17 Axis P3384-VE
- .18 V1-19 Axis P3367-VE

### **2.3 JUNCTION BOX**

- .1 Metal, sized to handle all system conduit interconnections with appropriate expansion.

### **2.4 CAMERA STEEL POLES**

- .1 Steel poles: to CSA C22.2No.206 designed for underground wiring and:
  - .1 Mounting on concrete anchor base.
  - .2 Style: monotube, minimum 3.0 mm thick, tapered round, square or octagonal.
  - .3 Straight for one or two camera mounting bracket.
  - .4 Access handhole 600 mm above pole base for wiring connections, with welded-on reinforcing frame and bolted-on cover.
  - .5 Size: change size from 10 m to 6 m
  - .6 Anchor bolts: minimum four steel with shims, nuts and covers.
  - .7 Finish: change from bronze to galvanized steel.
  - .8 Grounding lug.
- .2 Steel poles: designed for maximum deflection of less than 6.35 mm with a 100kmph wind.
- .3 Mounting brackets steel.

## **Part 3 EXECUTION**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalog installation instructions, product carton installation instructions, and datasheet.

### **3.2 INSTALLATION**

- .1 Install video surveillance equipment and components in accordance with ULC-S317.
- .2 Install cable, boxes, mounting hardware, brackets, video cameras and system components in accordance with manufacturer's written installation instructions.
- .3 Install components secure, properly aligned and in locations shown on reviewed shop drawings.
- .4 Connect cameras to cabling in accordance with installation instructions.
- .5 Install ULC labels where required.

### 3.3 FIELD QUALITY CONTROL

- .1 Manufacturer's Services:
  - .1 Have manufacturer of products, supplied under this Section, review Work involved in the handling, installation/application, protection and cleaning, of its products and submit written reports, in acceptable format, to verify compliance of Work with Contract.
  - .2 Manufacturer's Field Services: Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
  - .3 Schedule site visits, to review Work, at stages listed:
    - .1 After delivery and storage of products, and when preparatory Work, or other Work, on which the Work of this Section depends, is complete but before installation begins.
    - .2 Twice during progress of Work at 25% and 60% complete.
    - .3 Upon completion of the Work, after cleaning is carried out.
  - .4 Obtain reports, within 3 days of review, and submit, immediately, to Contract Administrator.

### 3.4 VERIFICATION

- .1 Perform verification inspections and test in the presence of Contract Administrator.
  - .1 Provide all necessary tools, ladders and equipment.
  - .2 Ensure appropriate subcontractors and manufacturer's representatives and security specialists are present for verification.
- .2 Visual verification: Objective is to assess quality of installation and assembly and overall appearance to ensure compliance with Contract Documents. Visual inspection to include:
  - .1 Sturdiness of equipment fastening.
  - .2 Non-existence of installation related damages.
  - .3 Compliance of device locations with reviewed shop drawings.
  - .4 Compatibility of equipment installation with physical environment.
  - .5 Inclusion of all accessories.
  - .6 Device and cabling identification.
  - .7 Application and location of ULC approval decals.
- .3 Technical verification: Purpose to ensure that all systems and devices are properly installed and free of defects and damage. Technical verification includes:
  - .1 Measurements of tension and power.
  - .2 Connecting joints and equipment fastening.
  - .3 Measurements of signals (dB, lux, baud rate, etc.).

- .4 Compliance with manufacturer's specification, product literature and installation instructions.
- .4 Operational verification: Purpose to ensure that devices and systems' performance meet or exceed established functional requirements. Operational verification includes:
  - .1 Operation of each device individually and within its environment.
  - .2 Operation of each device in relation with programmable schedule and or/specific functions.
  - .3 Operation control of camera lens, pan, tilt and zoom.
  - .4 Switching of camera to any monitor.
  - .5 Switching of system video recorder to selective monitor.
  - .6 Set dwell times.
  - .7 Demonstrate:
    - .1 Sequence viewing of cameras on each monitor.
    - .2 Bypass capability.
    - .3 Display of stored image to cardholder.

### **3.5 CLEANING AND ADJUSTING**

- .1 Remove protective coverings from cameras and components.
- .2 Adjust cameras for correct function.
- .3 Clean camera housing, system components and lens, free from marks, packing tape, and finger prints, in accordance with manufacturer's written cleaning recommendations.

**END OF SECTION**