

**Part 1 General**

**1.1 RELATED REQUIREMENTS**

- .1 Section 01 33 00 – Submittal Procedures.

**1.2 REFERENCES**

- .1 Canada Green Building Council (CaGBC)
  - .1 LEED Canada-NC Version 1.0-2004, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Package For New Construction and Major Renovations (including Addendum [2007]).
  - .2 LEED Canada-CI Version 1.0-2007, LEED (Leadership in Energy and Environmental Design): Green Building Rating System Reference Guide For Commercial Interiors.
- .2 Underwriters Laboratories of Canada (ULC)
  - .1 ULC-S316-2014, Standard for Performance of Video Surveillance Systems.

**1.3 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
  - .1 Submit manufacturer's instructions, printed product literature and data sheets for video surveillance equipment and include product characteristics, performance criteria, physical size, finish and limitations.
  - .2 Submit:
    - .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 Shop Drawings:
  - .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
  - .2 Submit shop drawings to indicate project layout, camera locations, point-to-point diagrams, cable schematics, risers, mounting details and identification labeling scheme.
  - .3 Submit zone layout drawings indicating number and location of zones and areas covered.
- .4 Samples:
  - .1 Submit for review and acceptance of each unit.
  - .2 Samples will be returned for inclusion into work.
  - .3 Submit 1 sample of each camera selected complete with housing, brackets and mounting hardware.
  - .4 Camera will be returned for incorporation into work as appropriate.

- .5 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".
- .6 Test and Evaluation Reports:
  - .1 Submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.
- .7 Manufacturer's Instructions: submit manufacturer's installation instructions.
- .8 Manufacturer's Field Reports: submit manufacturer's written reports within 3 days of review, verifying compliance of Work.

#### **1.4 CLOSEOUT SUBMITTALS**

- .1 Operation and Maintenance Data: submit maintenance data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals. Include following:
  - .1 System configuration and equipment physical layout.
  - .2 Functional description of equipment.
  - .3 Manufacturer's Instructions for operation, adjustment and cleaning.
  - .4 Illustrations and diagrams to supplement procedures.

#### **1.5 DELIVERY, STORAGE AND HANDLING**

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions].
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
  - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
  - .2 Store and protect video surveillance materials from nicks, scratches, and blemishes.
  - .3 Replace defective or damaged materials with new.

#### **1.6 WARRANTY**

- .1 For all materials the 12 month warranty period prescribed in subsection GC 32.1 of General Conditions is applicable
- .2 Manufacturer's Warranty: submit, for Departmental Representative's acceptance, manufacturer's standard warranty document executed by authorized company official.

## **Part 2 Products**

### **2.1 DESIGN CRITERIA**

- .1 System must be compatible with existing Lenel system.
- .2 Support: camera functions such as pan/tilt and zoom fully supported by Closed Circuit Television (CCTV) system.
  - .1 Provide operator with ability to control all camera functions.
- .3 Alarm point monitoring: system capable, upon alarm recognition, of switching CCTV cameras associated with alarm point.
- .4 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.
- .5 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.
- .6 Enter and edit CCTV programs and save them for future use.
- .7 Set dwell time for viewing of any camera picture.
- .8 Define sequence for viewing cameras on each monitor.
- .9 Bypass cameras in system during sequencing to monitor.
- .10 Provide ability to display stored 'video image' of cardholder, and switch real-time camera to card reader location for specific card usage.
- .11 Overall control of CCTV provided through software control, which provides complete integration of security components.
- .12 Environment: design video components and systems to operate with specified requirements under following ambient temperatures:
  - .1 Indoor installations:
    - .1 Temperature: 0 degrees C to 30 degrees C.
    - .2 Humidity: 10 to 90%.
  - .2 Outdoor installations:
    - .1 Temperature: -40 degrees C to 60 degrees C.
    - .2 Humidity: 10 to 100%.

### **2.2 CHARACTERISTICS**

- .1 Video Camera:
  - .1 100 % Compatible with existing system
  - .2 Colour.
  - .3 2.0 Megapixel resolution;

- .4 Adaptive IR technology;
- .5 Dual Exposure Wide Dynamic Range;
- .6 Integrated IR LEDs for operation at 0 Lux up to maximum 10 metres;
- .7 ONVIF Compliant for integration with existing VMS;
- .8 Sensitivity: lighting requirements, Measured in 5 LUX for useable video image.
- .9 Resolution: 2.0 Megapixels.
- .10 Environment: indoor and outdoor refer to drawings for locations.
- .11 Mounting: ceiling mount.
- .2 Image Performance:
  - .1 Image Sensor: 1/2.8" Progressive Scan CMOS;
  - .2 Aspect Ratio: 16:9;
  - .3 Active Pixels (H x V): 1920 (H) x 1080 (V);
  - .4 Image Area (H x V): 3.7 mm x 3.0 mm, 0.145" x 0.118";
  - .5 Image Rate: 30 fps;
  - .6 Minimum Illumination with IR: 0.01 lux in color mode; 0 lux (F/1.2) in monochrome mode;
  - .7 Minimum Illumination without IR: 0.01 lux in color mode; 0.002 lux (F/1.2) I monochrome mode;
  - .8 IR Illumination: 10m (33 ft) max. distance at 0 lux;
  - .9 Dynamic range: 100dB;
  - .10 Resolution Scaling: Down to 384 x 216;
  - .11 3D Noise Reduction Filter: Yes
- .3 Lenses:
  - .1 2.8mm, F1.2, IR Corrected
  - .2 Aspect Ratio: (5.4) 94°; (16:9) 100°; (4:3)100°.
  - .3 Motorized Zoom Lens.
- .4 Image Performance:
  - .1 Image Compression: H-264 ( MPEG-4 Part 10/AVC), Motion JPEG
  - .2 Streaming: Multi-stream H-264 and Motion JPEG;
  - .3 Bandwidth Management: HDSM; HDSM SmartCodec; Idle Scene Mode;
  - .4 Motion detection: Pixel;
  - .5 Tamper Detection: Yes;
  - .6 Iris Control: Fixed;
  - .7 Day/Night Control: Automatic, Manual;
  - .8 Flicker Control: 50Hz, 60Hz;
  - .9 White Balance: Automatic, Manual;
  - .10 Backlight Compensation: Adjustable;
  - .11 Privacy Zones: Up to 64 zones.
- .5 Network:

- .1 Network: 100BASE-TX
- .2 Cabling Type: CAT5;
- .3 Connector: RJ-45;
- .4 ONVIF: ONVIF Compliant with version 1.02, 2.00, Profile S;
- .5 Security: Password protection, HTTPS encryption, digest authentication, WS Authentication, user access log, 802.1x port based authentication.
- .6 Protocols: IPv6, IPv4, HTTP, HTTPS, SOAP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMP, DHCP, Zeroconf, ARP;
- .7 Streaming Protocols: RTP/UDP, RTP/UDP multicast, RTP/RTSP/TCP, RTP/RTSP/HTTP/TCP, RTP/RTSP/HTTP/TCP, HTTP;
- .8 Device Management Protocols: SNMP v2c, SNMP v3.

## **2.3 CAMERA HOUSINGS**

- .1 Indoor: Refer to drawings for details and mount.
- .2 Domes: indoor.
- .3 Outdoor: equipped with heater/blower.
- .4 Transmission Methods: coax or twisted pair.

## **2.4 CAMERA POWER SUPPLY**

- .1 Power supply: custom designed for all cameras requiring 24 VAC power, locate inside equipment cabinet; fused (each input and output); capable of providing correct voltage to overcome real and circulated system power loss for all cameras and to provide future expansion of 25%. Permanently mount power supply.

## **2.5 JUNCTION BOX**

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

# **Part 3 Execution**

## **3.1 EXAMINATION**

- .1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for video surveillance installation in accordance with manufacturer's written instructions.
  - .1 Visually inspect substrate in presence of Departmental Representative.
  - .2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
  - .3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

## **3.2 INSTALLATION**

- .1 Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheet.
- .2 Install video surveillance equipment and components in accordance with ULC-S316.

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

### 3.3 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services:
  - .1 Obtain written reports from manufacturer verifying compliance of Work, in handling, installing, applying, protecting and cleaning of product.
  - .2 Submit 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 Upon completion of Work, after cleaning is carried out.

### 3.4 SYSTEM STARTUP

- .1 Perform verification inspections and test in the presence of Departmental Representative.
  - .1 Provide all necessary tools, ladders and equipment.
  - .2 Ensure appropriate subcontractors and manufacturer's representatives 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 ADJUSTING**

- .1 Remove protective coverings from cameras and components.
- .2 Adjust cameras for correct function.

### **3.6 CLEANING**

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
  - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
  - .1 Clean camera housing, system components and lens, free from marks, packing tape, and finger prints, in accordance with manufacturer's written cleaning recommendations.
- .3 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
  - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

### **3.7 PROTECTION**

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by video surveillance installation.

**END OF SECTION**