

# EXHIBIT B

## Technical and System Specifications

### CCTV CAMERA ASSEMBLY

#### 1. GENERAL

Section 87-9 includes specifications for constructing closed circuit television cameras.

A complete and fully functioning CCTV Camera system includes:

- 1) CCTV cameras installed on existing streetlight poles
- 2) Equipment installed in cabinets mounted on existing streetlight poles
- 3) Cabling
- 4) Splicing
- 5) Licenses
- 6) Operating manuals/system documentation
- 7) Training
- 8) Testing
- 9) System integration

The CCTV Camera system shall enable communications between the field camera and remote servers operated by NVTA, which will include streaming of camera feeds from each camera over new 4G wireless connections to an existing remote storage server in NVTA's facilities.

#### 2. MATERIALS

##### 2.1 General

The Contractor shall furnish and install, where shown on the Plans, a fully functional and operational CCTV camera system fully inter-operable with NVTA's existing Genetec server including remote communication and storage of video streams.

The Contractor is required to supply the necessary CCTV assemblies and units required for testing purposes to demonstrate that the CCTV system performs as specified.

The Contractor shall conduct testing in the presence of the ENGINEER, or Engineer designated representative, as described below under "System Operation" during the signal test period. The Contractor shall give the ENGINEER a minimum of two working days' notice prior to performing the tests.

##### 2.2. CCTV Camera

The CCTV camera shall be the Axis P3727-PLE or approved equivalent and shall meet the following technical specifications.

##### Camera

Image sensor

- 4 x 1/2.8" progressive scan RGB CMOS

Lens

- Varifocal, 3–6 mm, F1.8–2.6
- 4x1080p capture mode:
- Horizontal field of view: 96°–49°
- Vertical field of view: 53°–27°

- Diagonal field of view: 113°–55°
- Fixed iris, IR corrected, remote zoom and focus

#### Day and night

- Automatically removable infrared-cut filter

#### Minimum Illumination

- With Forensic WDR and Lightfinder:
- Color: 0.17 lux at 50 IRE, F1.8
- B/W: 0 lux at 50 IRE, F1.8

#### Shutter speed

- 1/32500 s to 2 s with 50 Hz
- 1/32500 s to 2 s with 60 Hz

#### Camera angle adjustment

- Pan  $\pm 90^\circ$ , tilt +25 to +95°, rotation  $-5$  to +95°, twist  $\pm 20^\circ$

### System on chip (SoC)

#### Model

- ARTPEC-7

#### Memory

- 1024 MB RAM, 512 MB Flash

#### Compute capabilities

- Machine learning processing unit (MLPU)

### Video

#### Video compression

- H.264 (MPEG-4 Part 10/AVC) Baseline, Main and High Profiles
- H.265 (MPEG-H Part 2/HEVC) Main Profile
- Motion JPEG

#### Resolution

- 4x 1920x1080 (4x 2 MP) to 4x 640x360

#### Frame rate

- Up to 25/30 fps (50/60 Hz)

#### Video streaming

- Multiple, individually configurable streams in H.264, H.265 and Motion JPEG
- Axis Zipstream technology in H.264 and H.265
- Controllable frame rate and bandwidth
- VBR/ABR/MBR H.264/H.265
- Low latency mode

#### Image settings

- Saturation, contrast, brightness, sharpness, Forensic WDR, white balance, day/night threshold, tone mapping, exposure mode, exposure zones, compression, rotation: 0°, 90°, 180°, 270° including Corridor Format, mirroring, dynamic text and image overlay, polygon privacy masks

## Audio

### Audio input/output

- Audio features through portcast technology: two-way audio connectivity, voice enhancer
- A 30 W midspan or higher is required between AXIS T61 Audio and I/O Interfaces and AXIS P3727-PLE.

### Network

- IP address One IP address for all channels
- Security IP address filtering, HTTPSa encryption, IEEE 802.1x (EAP-TLS) network access control, user access log, centralized certificate management, signed video, Axis Edge Vault, Axis device ID, secure keystore (CC EAL4 certified), TPM (FIPS 140-2 certified)

### Network protocols

- IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPSa, HTTP/2, TLSa, QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, NTS, RTSP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, RTCP, DHCPv4/v6, SSH, LLDP, CDP, MQTT v3.1.1, Secure syslog (RFC 3164/5424, UDP/TCP/TLS), Link-Local address (ZeroConf)

## Approvals

### EMC

- EN 55035, EN 55032 Class A, EN 50121-4, EN 61000-6-1, EN 61000-6-2
- Australia/New Zealand: RCM AS/NZS CISPR 32 Class A
- Canada: ICES-3(A)/NMB-3(A)
- Japan: VCCI Class A
- Korea: KC KN35, KC KN32 Class A
- USA: FCC Part 15 Subpart B Class A
- Railway: IEC 62236-4

### Safety

- CAN/CSA C22.2 No. 60950-22, CAN/CSA C22.2 No. 62368-1, IEC/EN/UL 62368-1 ed. 3, IEC/EN/UL 60950-22, IEC 62471, IS 13252

### Environment

- IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14,
- IEC 60068-2-27, IEC 60068-2-78, IEC/EN 60529 IP66/IP67,
- IEC/EN 62262 IK09, NEMA 250 Type 4X, NEMA TS 2 (2.2.7-2.2.9)

### Network

- NIST SP500-267

### Cybersecurity

- ETSI EN 303 645

## 3. CONSTRUCTION

### 3.1 CCTV Camera Assembly Installation

The Contractor shall install, configure and test the CCTV cameras to allow remote communications and video streaming to a remote storage server. The Contractor shall follow step-by-step instructions provided by the equipment manufacturer and supplier to provide a fully functional installation. This includes all of the electrical connections and splicings, the installation of communication cabinets, and the installation, configuration and testing of the 4G modems.

The Contractor shall demonstrate that all of the components of the system are compatible and will perform satisfactorily as a system.