

Part 1 General

1.1 RELATED WORK

- .1 This Section of the Specification forms part of the Contract Documents and is to be read, interpreted and coordinated with all other parts.
- .2 Refer to Section 26 05 00 Common Work Results.
- .3 Refer to Section 26 05 21 Wire and Cables.

1.2 REFERENCES

- .1 Canada Border Services Agency (CBSA) Security Design and Specification Documents for Stewart Port Redevelopment (R1, 2015-02-27).
- .2 CSA C22.1 Canadian Electrical Code, Part 1 - 2012.
- .3 National Building Code / Provincial Building Code
- .4 CAN/CSA C22.2 No. 232-M Optical Fibre Cables
- .5 ANSI/TIA-606-B Administration Standard for Commercial Telecommunications
- .6 ANSI/TIA-607-B Commercial Building Grounding and Bonding requirements for telecommunications.
- .7 BICSI Telecommunications Distribution Method Manual - most current edition.
- .8 BICSI Information Transport System Manual – most current edition.
- .9 CAN/ULC S102.4-M – (1987) Test for Fire and Smoke Characteristics of electrical Wiring and Cable
- .10 ANSI/TIA-455-61, FOTP-61 Measurement of Fibre or Cable Attenuation
- .11 ANSI/TIA-526-14A, OFSTP14A (1998) Optical Power Loss Measurement of Installed Multimode Fibre Cable Plant.
- .12 ANSI/TIA-604-3, FOCIS 3 Fibre Optic Connector Intermateability Standard.
- .13 ANSI Z136.2, American Standards For The Safe Operation Of Optical Fibre Communication Systems Utilizing Laser Diode And LED Sources.
- .14 Treasury Board Information Technology Standard (TBITS) No. 6.9 – Profile for the Telecommunications Wiring System in Government Owned and Leased Buildings.
- .15 ANSI/TIA-568-C.0 Generic Telecommunication Cabling for Customer Premises.
- .16 ANSI/TIA-568-C.1 Commercial Building Telecommunications Cabling Standard.

- .17 ANSI/TIA-568-C.2 Balanced Twisted Pair Telecommunications Cabling and Components Standard.
- .18 TIA-569-C Commercial Building Standard for Telecommunications Pathways and Spaces

1.3 SYSTEM DESCRIPTION

- .1 Provide complete security system consisting of field devices, control panels, conduits, outlet boxes, cover plates, pull boxes, pull strings, wiring, and all other mounting hardware and trim items required to complete the systems function as indicated on drawings and specified herein.
- .2 Provide security systems as indicated on drawings, and refer to CBSA Security Design and Specification Documents for Stewart Port Redevelopment (R1, 2015-02-27), for product and installation specifications for the following systems:
 - .1 Intrusion Alarm System
 - .2 Duress Panic Alarm System
 - .3 CCTV / VMS (Video Management Software) System
- .3 Provision of programming and commissioning of the electronic security systems shall be by qualified pre-approved contractor/vendor.

1.4 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 26 05 00.
- .2 Include:
 - .1 Overall system riser and wiring diagram identifying equipment initiating signaling circuits; identifying terminations, terminal numbers, conductors and raceways.
 - .2 Details for devices.
 - .3 Details and performance specifications for control and peripherals with item by item cross reference to specification for compliance.

1.5 SCOPE

- .1 Canada Border Services Agency (CBSA) electronic security systems will include intrusion alarm and may include, panic duress alarm, card access, intercom, CCTV and Perimeter Alarm systems, where applicable.
- .2 For the purposes of these specifications CBSA shall mean CBSA or their appointed representative PWGSC (Public Works and Government Services Canada).
- .3 Provide new security system devices at locations as indicated on drawings.
- .4 Division 26 is to provide all necessary conduit rough in materials and labor to support the security system components.
- .5 Program the intrusion and panic alarm system to meet the door interlocking and monitoring requirements of the CBSA as shown on the drawings and described herein.

- .6 Integrate the new areas with existing system and match existing operations as per the requirements of the CBSA.

1.6 OPERATING MANUALS

- .1 Operating manuals to be furnished as specified in Section 26 05 00 - Common Work Results.

1.7 GENERAL REQUIREMENTS

- .1 All new system components are to match existing system components. Contractor shall confirm on site all system component used prior to bid submission.
- .2 Systems to be complete with all necessary components to provide functions required whether or not each and every item is necessarily mentioned. All components to be production proven models. System to be supplied and installed by an established firm that is approved by the Owner and vendor.
- .3 Selection of system to be made on the basis of quality and suitability of equipment, service facilities available, experience, capabilities, and past performance of the contracting firm.
- .4 Before proceeding with installation, successful system installer to submit to the consultant for approval a complete detailed proposal as outlined in Section 26 05 00 - Common Work Results.
- .5 All wiring for systems to be PVC insulated, shielded, twisted pair, multi conductor or coaxial, as called for or as required. All wiring for systems to be plenum rated where required. System wiring to be terminated by Security Contractor.
- .6 Selection of type of cable to be at discretion of system installer but the system, when complete, must perform to the complete satisfaction of the Consultant and must be free of all interference from cross-talk, hum, switch and relay noise, etc. All wiring to be terminated on terminal strips or blocks, and to be neatly installed, laced and tagged where required. All terminals in terminal panels and junction boxes to be made with solderless connectors to terminal blocks with a separate terminal for each conductor.
- .7 Contractor shall be fully trained and factory certified on all security systems as required by this document.
- .8 All hardware required to make programming changes to the system(s) shall be included with the system.
- .9 All systems shall be locally managed and may require the ability to be remotely controlled and configured.
- .10 CBSA will have complete control of the operation of the system(s) while the building is occupied by CBSA or its tenants.
- .11 All equipment shall remain the sole property of CBSA and the installing company will not retain ownership or control of the system.

- .12 All systems shall be configured to be managed onsite. Certain systems may require the ability to be remotely controlled and configured (as specifically identified on a site by site basis).
- .13 Coordinate and cooperate with other trades for timely completion of the Work.
- .14 All exceptions to these standards and specifications (including the determination of equivalencies) shall be at the sole discretion of CBSA.

1.8 LICENCES, APPROVALS, PERMITS, & STANDARDS

- .1 The contractor shall be responsible for all permits, licenses, inspections and related fees.
- .2 Prior to execution of work, the Contractor shall obtain all necessary permits and licenses for compliance with Federal, Provincial and Municipal laws and regulations.
- .3 The contractor must be provincially licensed by the Security Services Act of the Ministry of Public Safety and Solicitor General to install alarms (SSA - 2007).
- .4 The installation and commissioning of all electronic security systems shall be by qualified alarm service technicians who shall be licensed by the Security Services Act of the Ministry of the Solicitor General (SSA - 2007).
- .5 The contractor shall not sub-contract any portion of the installation without prior approval of CBSA or PWGSC.

1.9 WORK WITH OTHERS - COORDINATION

- .1 Security installation contractor(s) shall coordinate work with CBSA and their appointed representatives to insure alarm systems are installed, programmed, tested, commissioning and verified fully operational with Central Monitoring Station to the satisfaction of CBSA.

1.10 CLOSEOUT SUBMITTALS

- .1 Provide operation and maintenance data for security systems for incorporation into manual specified in Section 26 05 00.
- .2 Include:
 - .1 Instructions for complete each security system to permit effective operation and maintenance.
 - .2 Technical data - illustrated parts lists with parts catalogue numbers.
 - .3 Copy of approved shop drawings with corrections completed and marks removed except review stamps.
 - .4 List of recommended spare parts for system.

1.11 TRAINING

- .1 Training shall be provided for each individual system as required by this document. Training shall include a minimum of two (2) hours per individual system and shall be conducted at a time that is mutually agreeable to both the contractor and CBSA.

1.12 WARRANTY

- .1 The warranty period with respect to the Contract is one (1) year from the certified date of Substantial Performance of Work.
- .2 Defective equipment to be repaired at site, and failing this a suitable replacement unit shall be supplied to keep the system operational until the original unit is returned.
- .3 Warranty certificate must include all Company contact information (address, contact person(s), telephone (regular hours and emergency after hours, fax and email) with master Maintenance Manuals.

1.13 WASTE MANAGEMENT AND DISPOSAL

- .1 In accordance with Section 26 05 00 and Division 01.

Part 2 Products

2.1 OPERATIONAL REQUIRMENTS

- .1 Electronic security systems installed in Canada Border Services Agency (CBSA) facilities shall operate on a 24-hour basis throughout the year.
- .2 All systems shall include sufficient back up power supply to operate all devices simultaneously without drawing more than 80% of the capacity of the power supply. The backup power system shall have sufficient capacity to operate the entire system for a minimum of 24 hours under normal operating conditions. (All batteries to be minimum 7 amp hour).
- .3 Each system shall have sufficient power supply to operate the system and the manufacturers' recommended power for the system shall be less than 80% of the power supply rated power output.

2.2 PRODUCTS - GENERAL

- .1 All products being delivered shall be from reputable industry recognized manufacturers regularly engaged in the production of models and types of equipment used in the electronics security, computer, and telecommunications industries. Products shall be quality control tested and verified for the intended operation prior to installation at site.
- .2 Products shall conform to the standards of the Canadian Standards Association or CSA recognized approved equivalent. All materials, including hardware and software being supplied, shall be new and of the latest version or production model.
- .3 Equipment specifications are intended to provide a baseline reference for the type of materials that are to be installed. Contractor shall insure that all equipment being offered meets or exceeds the minimum requirements for intended operation.

- .4 Reference manufacturer's products have been approved as standard equipment for installation at CBSA facilities and shall not be substituted or replaced with unapproved alternates without written approval from CBSA.

2.3 INTRUSION ALARM SYSTEM

.1 General

- .1 Intrusion protection shall be provided by way of door contact switches, and motion sensors. (Note: glass break detectors used only in consultation with CBSA). The intrusion alarm system is designed to detect unauthorized entry into protected spaces.
- .2 The intrusion alarm system may be divided into separate partitions (areas).
- .3 The intrusion alarm control panel shall have a sufficient number of zone inputs so that each device shall be connected to a single zone (double doors may be grouped as a single zone).
- .4 Home-run all devices to the alarm panel - do not gang or group devices.
- .5 The system shall have the capacity to provide one access code per person for the full occupancy of the protected space. Each user or user group to have an individual user code.
- .6 When partitioned, each partition of the intrusion alarm system will have as a minimum the following devices:
 - .1 Full LCD keypad
 - .2 Door contact
 - .3 Motion Detector
- .7 Security panel make and model shall be approved in advance by CBSA.
- .8 The panel shall be non-proprietary (i.e. – available to all alarm contractors).
- .9 The panel power transformer shall be a minimum 37 VA. It shall be hardwired to a dedicated, non-switched source (i.e. no plug-in type transformers) and the electrical circuit # be clearly identified on both the electrical panel directory and on the alarm panel.
- .10 Battery backup shall be gel-cell type, minimum 7 amp/hour. Battery installation date shall be marked on the battery and panel cover.
- .11 All devices (including the panel) shall be supervised with tamper switches and end of line resistors.
- .12 EOL devices shall be installed at the device – not in the panel.
- .13 A copy of the zone descriptors shall be left inside the alarm panel.
- .14 Installation includes field equipment, mounting hardware, wiring, terminations and I/O modules required to support the various alarm points and/or alarm systems, programming and setup of all field devices.
- .15 Telecommunication closets shall be protected by the intrusion alarm system and shall be included in the overall main office intrusion alarm system. Each telecommunication room to have the following equipment:
 - .1 All doors equipped with door contacts.
 - .2 Allow for one motion detector to be installed in each telecommunications closet.

- .16 All environmental alarms to be 24-hour zones, activated for continuous monitoring.
- .17 Provide siren in the protected space, to alert staff of an alarm condition.
- .18 Acceptable products:
 - .1 DSC 4020, 1832 and 1864 series (or most current versions)
- .2 Programming
 - .1 The contractor shall be responsible for all programming of the alarm system. This includes all user codes; all zone definitions and establishing a connection to the SSBC monitoring station.
 - .2 SSBC shall supply the contractor with all access codes and phone numbers to be programmed into the alarm system.
 - .3 The panel shall be programmed in SIA or CID format.
 - .4 The contractor shall program the following:
 - .1 User code required to bypass zones
 - .2 Daily test transmission (after 00:01 – 5:00, but not on the hour)
 - .3 Bell time-out shall be set at 4 minutes
 - .4 Home-away enabled
 - .5 Disable reporting of partition opening/closing. All reporting is to be by user only
 - .6 All panels shall be programmed to auto-arm at 23:00 daily
 - .7 Remote download access enabled
 - .8 Access & panel upload codes left at default
 - .9 Installer code left at default
 - .5 The contractor shall not install a contractor's lockout enable and shall not program Forced Arming or Auto-Disarming without prior approval from CBSA.
 - .6 Upon completion of programming the installer shall initiate an upload of the panel programming to CBSA authorized monitoring agent.
 - .7 Once the system installation is completed, the contractor shall not access the system either physically or electronically without CBSA approval.
- .3 Monitoring
 - .1 CBSA retains the right to monitor their alarm systems in the manner of their choice and will not be locked into any other monitoring arrangements as a result of alarm system installations.
 - .2 Contractor shall provide connectivity (hardware & software) with an approved monitoring station as directed by CBSA. Methods include, but are not limited to:
 - .1 Network connection, with telephone backup;
 - .2 Network connection, with cellemetry (in the event that both network and phone line fail) and telephone communicator setup as the 3rd level of backup;
 - .3 Telephone connection with cellemetry backup.

- .4 All options must be set up with single primary reporting path. Backup communicators will operate as secondary path if the primary communication path fails to operate successfully
- .5 Monitoring is arranged by CBSA.
- .6 In the event that the client's fax line is to be used as the primary communications line, the demarcation point must be marked "Do Not disconnect without informing CBSA". Do not use VOIP communication for any security monitoring applications.
- .7 All telephone jacks used for alarm/security systems shall be wired to USOC RJ31 industry standards. All position eight (8) jacks shall be installed with a tamper loop, ahead of the demark block.
- .8 CBSA shall issue all phone numbers for monitoring and downloading. All intrusion alarm systems shall be connected to analogue telephone lines - no VOIP (voice over internet) lines.
- .4 Keypads
 - .1 No global keypads - each partition will have its own keypad
 - .2 All keypads shall be LCD alpha (full English) type (unless otherwise specified)
 - .3 All keypad panic buttons shall be disabled
 - .4 All keypads to be set up for "Quick Arming" ("*-0")
 - .5 All keypads to be installed at 1.372m (54") above finished floor.
- .5 Network Alarm Communicator
 - .1 Where required, contractor shall provide network alarm communicator interconnected to intrusion alarm system for reporting alarms over client LAN/WAN Ethernet infrastructure.
 - .2 Network alarm communicator shall connect to the Building Utility Subnet (BUS). The BUS enclosure to be a separate zone on the overall intrusion alarm system.
 - .3 Communicator specifications:
 - .1 128-bit AES encryption (NIST approved)
 - .2 Supports DHCP (dynamic IP addresses)
 - .3 Low network bandwidth
 - .4 Compatible with 10/100BaseT networks
 - .5 Reports events to 2 different receiver IP addresses
 - .6 Polling and hardware substitution protection
 - .7 4 on-board programmable inputs and 2 programmable voltage outputs as stand-alone module
 - .8 Programmable through the T-Link Console software
 - .4 Acceptable products: DSC TL-250
- .6 Sirens/Strobes
 - .1 The system shall include sufficient interior alarm sirens to provide an audible alarm warning throughout the protected space; more than one siren may be required. The contractor shall supply any additional sirens should the space require them to meet the above criterion. (Interior sirens to be minimum 15 watts)

- .2 All sirens and strobes to be on an isolated power supply.
- .3 All systems shall be programmed for 4 minute bell duration.
- .4 Strobe shall be latched so that the panel must be reset to turn it off. (The strobe will provide staff with a warning that the alarm system has been activated.)
- .5 An audible warning shall be provided when the system is armed or during the exit delay period. The armed warning tone shall be different from the alarm siren sound and shall be audible throughout the protected space.
- .6 Additional sirens or tone devices to be located throughout the protected space so that all staff can hear the alert.
- .7 Acceptable products:
 - .1 Interior Sirens – Honeywell WAVE-2F, Ademco 747
 - .2 Exterior strobe/siren (blue) - Amseco SSX 52SB, ATW PR-DOBERMAN
- .7 Motion Detectors
 - .1 Motion detectors shall only be dual technology type (PIR and microwave).
 - .2 All motion detectors shall be field-adjusted as per manufacturer's specifications for full coverage pattern of the protected spaces. Dual tech 360° detectors may be installed where applicable.
 - .3 All motion detectors shall have LED's disabled after initial testing is done.
 - .4 Acceptable products:
 - .1 Optex MX Series, DSC LC-104, Honeywell DT series;
 - .2 360° Motion Detector: Bosch DS9360
- .8 Glass Break Devices
 - .1 All devices shall be installed and field-adjusted as per manufacturer's specs.
 - .2 Acceptable products:
 - .1 GE SR-5815NT, Honeywell FG1625
- .9 Door/Window Contacts
 - .1 Every door which leads to the protected space shall be fitted with a door contact switch.
 - .2 All grade level or easily accessible opening windows shall be equipped with a contact.
 - .3 All door contacts shall be installed at the top of the door, opposite the hinge side of the door.
 - .4 All door and window contacts must be "wide gap" type.
 - .5 All door and window contacts must be concealed unless otherwise directed. If installed in wood or similar material, allow for expansion. Fill all voids with RTV silicone or equivalent.
 - .6 Acceptable products:
 - .1 GE Sen1078 series, Amseco AMS-25A/B,
 - .2 Overhead doors: GE SEN2200, GE2315A-L, Amseco ODC-59A/B

2.4 PANIC ALARMS

.1 General

- .1 Panic alarms shall be activated by a hardwired panic button(s).
- .2 Panic buttons to be strategically located, suitably sized and identified/clearly labeled for "security emergency".
- .3 All panic buttons shall be clearly identified by a label (Brother P2000 or equivalent).
- .4 All panic buttons located on movable furniture shall be connected using an RJ 12 wall jack and a telephone patch cord to the jack. The wall jack shall be clearly identified by a label marked "Panic System" (Brother P2000 or equivalent).

.2 Local Response Systems (Not monitored)

- .1 Unless specified, the panic alarm system shall be a separate, standalone system and will not be monitored.
- .2 Local panic systems will not be integrated into the main intrusion alarm panel.
- .3 When the panic alarm push button is pressed, a flashing light and chime (or other unique audible signal) shall sound in a remote designated area (signal should not be within sight or hearing of push button location).
- .4 Where multiple panic alarm locations are provided, a standalone panel shall be installed.
- .5 Each standalone panic alarm panel will be controlled by an LED keypad that will clearly identify the location of each panic button.
- .6 If more than 16 panic buttons are required then the panic alarm system shall annunciate to appropriately sized LED graphic annunciator panels
- .7 Make and model of panic button shall be decided in consultation with SSBC.
- .8 Acceptable products:
 - .1 Multi-zone non-monitored panel: DSC 1832 or 4020
 - .2 Annunciator panels (16 + zones or more): DSC 4632 and DSC 4664
 - .3 Panic button: Potter HUB-M (non-latching), HUB-DL-L (Latching LED), GE
 - .4 Sentrol 3045 (non-latching LED)

.3 Monitored Panic Alarm Systems

- .1 As per above specifications except that each panic button shall be connected to the main intrusion alarm system panel and each panic button shall be identified as an individual zone. If more than 16 panic buttons are required then the panic alarm system shall annunciate to appropriately sized LED graphic annunciator panel(s).
- .2 CBSA and/or the client is to be consulted as to whether or not monitored panic buttons will also report locally. (Note that most monitored panic alarms do not report locally - either audibly or with a strobe).

.4 Wireless Panic Alarm Systems

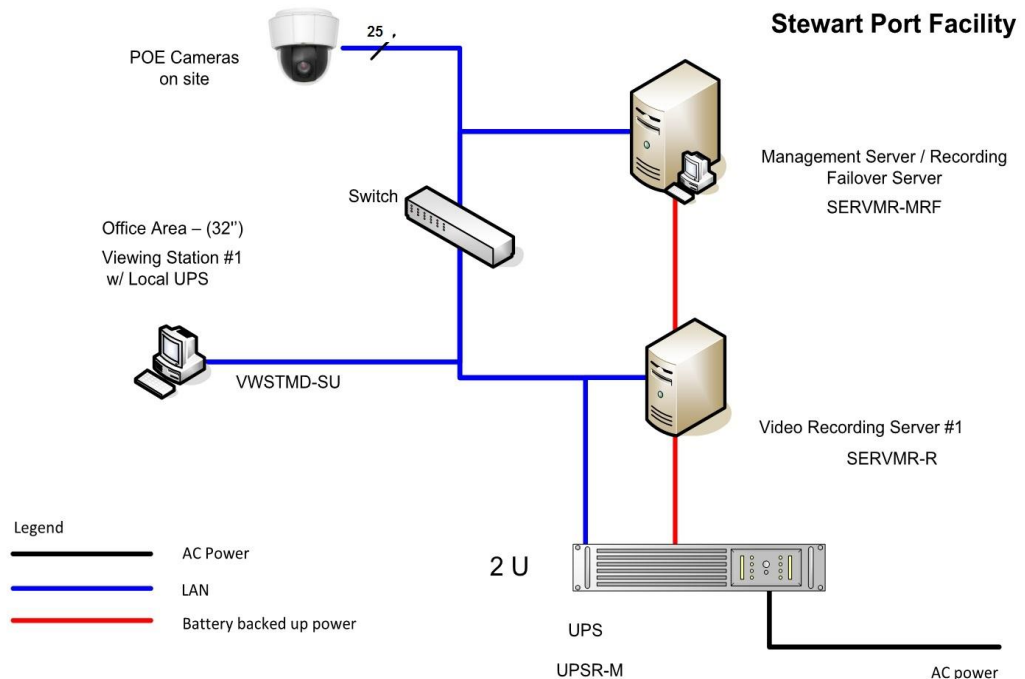
- .1 Wireless panic alarms shall only be installed at the direction of CBSA.
- .2 All wireless panic alarms must be tested throughout the entire protected area so as to ensure that the panic buttons work in all locations
- .3 Acceptable products:
 - .1 Visonic MCT 201, MCT 124
 - .2 Honeywell 5802 MN2
 - .3 Innovonics EchoStream

2.5 CLOSED CIRCUIT TELEVISION (CCTV) SYSTEMS

.1 General

- .1 The supplied equipment and services must meet or exceed all of the specifications defined below. The supplied equipment is to be new, not used or refurbished. Systems not meeting all the following Mandatory Specifications will be considered non-compliant.
- .2 Compliance with the stated criteria must be demonstrated by submission of supporting documentation, such as technical literature, brochures, operating manuals, and/or written statement describing how each requirement is met. If a bidder only states "comply" without any further details, this is not considered as a demonstration of compliance.
- .3 Proposal evaluation will be based upon the information supplied with the bid only. Failure to demonstrate compliance with any area of the criteria will render your proposal non-responsive and no further consideration will be given. References are to be specific to supporting documentation (ex. document title, page, and paragraph number).
- .4 CCTV systems shall not violate the rights of privacy and other legal rights of persons under observation. Signs shall be provided where routine surveillance is conducted, advising that the space is under electronic surveillance. Signage should be in the languages spoken in the area. Cameras shall not be installed where there is a reasonable expectation of privacy; i.e. washrooms, change-rooms or other similar spaces.
- .5 CCTV system to be on separate, standalone network and will not be connected to the government network. Cameras shall not be monitored at any off-site location.
- .6 The CCTV system shall include all equipment necessary for a fully functioning system.
- .7 Closed circuit television systems shall be designed and installed by certified personnel.
- .8 Cameras installed in high sensitivity areas will provide full visibility of person(s) entering the area. Cameras must be mounted at suitable height for the required field of view, for clear unobstructed viewing.
- .9 Cameras shall be monitored either by an operator and recorded locally. Output must be available for viewing by authorized persons. Cameras shall not be monitored at any off-site location.
- .10 Indoor/outdoor camera enclosures must be vandal resistant domes constructed of high impact polycarbonate material.

- .11 Outdoor cameras will include thermostatically controlled heaters that allow operation in extreme temperatures.
 - .12 CCTV workstation(s) will include an LCD monitor installed at designated operator locations.
 - .13 Where IP network cameras are installed, wiring shall be UTP CAT6A data cable in compliance with ANSI/TIA-568 Standards.
 - .14 Cables placed in underground ducts and outside of buildings shall be rated for outdoor use with water blocking members.
 - .15 CCTV systems shall be protected from lightning and power surges.
- .2 CCTV System Architecture Requirements
- .1 The diagram below presents the CCTV system architecture for the CBSA Controlled Areas of the Project.
 - .2 The CCTV system will require minimum 25 cameras and one Video Management/ Recording Failover server with a second Recording Server to ensure required Availability.
 - .3 Provide one viewing station #1 in the General Office which will allow the user to see the images captured on live or on play back from any camera on the site.
 - .4 The CCTV system is interconnected on a Local Ethernet Network, through a high speed switch.
 - .5 The CCTV System, including the Video Management/ Recording Failover server, second Recording Failover Server and the POE switch with attached Cameras, will have power supplied via a UPS.



CCTV System Architecture Diagram

.3 CCTV System Equipment List

Id	LOCATION	EQUIPMENT	REFERENCE #
1	Vestibule	Camera 1	D-1.2MP-80/VE-WDR
2	Public Lobby	Camera 2	D-1.2MP-100/V
3	Interview Room	Camera 3	D-1.2MP-100:AU/V
4	Cell	Camera 4	C-1.5MP-120/V
5	Cell Corridor	Camera 5	D-1.2MP-100/V
6	Bond Room	Camera 6	D-1.2MP-100/V
7	Arming Room	Camera 7	D-1.2MP-100/V
8	Corridor outside LAN Room	Camera 8	D-1.2MP-100:CORR
9	Public Counter	Camera 9	D-1.2MP-100/V
10	High Level PIL Booth Exterior	Camera 10	D-1.2MP-80/VE-WDR
11	Low Level PIL Booth Exterior	Camera 11	D-1.2MP-80/VE-WDR
12	Rear of Covered PIL	Camera 12	IN-D-5MP-80/VE-WDR
13	Front of Covered PIL	Camera 13	IN-D-5MP-80/VE-WDR
14	Port Runner, Northbound, (post primary)	Camera 14	D-1.2MP-80/VE-WDR
15	Port Runner, Southbound (vehicle & Pedestrian)	Camera 15	D-1.2MP-80/VE-WDR
16	Port Runner, Northbound (vehicle & Pedestrian)	Camera 16	D-1.2MP-80/VE-WDR
17	Approach to Office Building	Camera 17	D-1.2MP-80/VE-WDR
18	Approach close to Covered PIL Building (Vehicle & Pedestrian)	Camera 18	D-1.2MP-80/VE-WDR
19	Vehicle Approach to Covered PIL (South facing)	Camera 19	D-1.2MP-80/VE-WDR
20	Secondary, South West Pole	Camera 20	D-1.2MP-80/VE-WDR
21	Secondary North West Pole	Camera 21	D-1.2MP-80/VE-WDR
22	Secondary Rear Approach	Camera 22	D-1.2MP-80/VE-WDR
23	Seized Vehicle Compound	Camera 23	D-1.2MP-80/VE-WDR
24	Blind side of Covered PIL Building, South Facing	Camera 24	D-1.2MP-80/VE-WDR
25	Blind side of Covered PIL Building, North Facing	Camera 25	D-1.2MP-80/VE-WDR
26	Server Room	Management Server / Recording Failover Server	SERVMR-MRF
27	Server Room	Recording Server #1	SERVMR-R
28	Server Room	UPS	UPSR-M
29	Server Room	Wall Rack mount	RACKWM-M
30	General Office	Workstation A (24")	VWSTMD

Summary of cameras used

D-1.2MP-80/VE-WDR	15
D-1.2MP-100/V	5
D-1.2MP-100:AU/V	1
D-1.2MP-100:CORR	1
C-1.5MP-120/V	1
IN-D-5MP-80/VE-WDR	2

Total number of cameras	25
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.4 General Camera Requirements

- .1 The supplied equipment and services must meet or exceed all of the specifications defined below. The supplied equipment is to be new, not used or refurbished. Systems not meeting all the following Mandatory Specifications will be considered non-compliant.
- .2 Bidder must provide with their proposal, technical literature, brochures, operating manuals, and/or other written documentation (such as a description of system components and capabilities) etc. to demonstrate compliance with each area of the criteria stated below at time of bid closing. Compliance must be demonstrated. If the bidder only states "comply" without any further detail, this is not considered as a demonstration of compliance.
- .3 All cameras shall be powered from a CSA (or equivalent rated) approved camera manufacturer power supply. All connections shall be crimped.
- .4 All exterior cameras shall utilize surge protectors to protect against lightning strikes.
- .5 Acceptable products:
 - .1 Axis Communications
 - .2 American Dynamics
 - .3 Pelco

General Camera Requirements		Reference to bid document (document name, page, and paragraph number)
<i>All stated requirements are mandatory</i>		
Open Architecture	<ul style="list-style-type: none"> Cameras must be IP Cameras must support ONVIF profile S 	
Video	Camera must support the following video settings: <ul style="list-style-type: none"> Multiple compressions formats, including but not limited to H.264 and MJPEG. Camera must be able to output at least two video streams simultaneously and must also support simultaneous streaming of multiple formats. Frame rate must be controllable for each stream. 	
Power	Camera must be POE or High POE compatible.	

Audio	<ul style="list-style-type: none"> Camera must have at least one audio input port that uses a standard 3.5mm plug, so that a microphone may be connected to the camera to receive audio. The audio on all cameras must be disabled unless otherwise specified. 	
Exposure Settings	<ul style="list-style-type: none"> Must be configurable for different lighting conditions such as shutter speed, and gain. Must allow an automatic compensation of the image level with regard to the lighting conditions variations 	
Enclosure	Cameras must be contained in housing and securely mounted.	
Disabled Audio	All cameras which are audio capable must have audio capability disabled from the camera or video management software (VMS), unless otherwise noted.	

.5 Interior Camera Requirements:

Reference: D-1.2MP-100/V Interior Camera 1.2MP Wide Angle <i>All stated requirements are mandatory</i>		Reference to bid document (document name, page, and paragraph number)
Enclosure	Cameras must be contained in housing and securely mounted. These cameras must be resistant to vandalism and tampering, and where dome cameras are preferred. Cameras which are not dome cameras require additional enclosures. Must be rated IK10 or better	
Environment	Camera assembly must be dustproof and must be rated IP52 or better. A custom enclosure may not be provided to meet this requirement.	
	Camera assembly must have an operating temperature range between -10 to +40 C.	
Field of View	Must provide a range of field of view that covers at least 80 to 100 degree horizontal.	
Focus	Must have remote focus.	
Frames Per Second	Camera must support at least 30 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	Camera must have about 1.2 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Zoom	The camera must support at least a 2X optical zoom.	
Example	Cameras such as Axis P3364-V, 6mm or similar can be used.	

Reference: D-1.2MP-100:AU/V Interview room Camera 1.2MP, Wide angle, with Audio <i>All stated requirements are mandatory</i>		Reference to bid document (document name, page, and paragraph number)
Enclosure	Cameras must be contained in housing and securely mounted. These cameras must be resistant to vandalism and tampering. Cameras which are not dome cameras require additional enclosures. Must be rated IK10 or better.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP66 or better. Only a compliant manufacturer approved enclosure may be considered acceptable	
Field of View	Must provide a range of field of view that covers at least 80 to 100 degree horizontal.	
Focus	The camera must have remote focus.	
Frames Per Second	Camera must support at least 15 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	The camera must have approximately a 1.2 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Zoom	The camera must support at least a 2X optical zoom.	
Audio Capability	The camera must contain an audio input jack.	
Example	Cameras such as Axis P3364-V 6mm or similar can be used.	

Reference: D-1.2MP-100:CORR Indoor Camera 1.2MP Wide Angle, Corridor Format <i>All stated requirements are mandatory</i>	
Enclosure	The camera must be contained in housing and securely mounted. The camera must be resistant to tampering. Cameras which are not dome cameras require additional enclosures.
Environment	The camera assembly must be dustproof and waterproof and must be rated IP52 or better. Only a compliant manufacturer approved enclosure may be considered acceptable
Field of View	Must provide a range of field of view that covers at least 80 to 100 degree horizontal.
Focus	The camera must have remote focus.
Frames Per Second	The camera must support at least 15 frames per second at the minimum resolution specified above.
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.

Resolution	The camera must have approximately a 1.2 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.
Zoom	The camera must support at least a 2X optical zoom.
Rotation	The camera must support a rotation of 0°, 90°, 180° and 270°. The camera must be installed and configured to be in corridor mode where the orientation is vertical "portrait".
Example	Cameras such as Axis P3354 6mm or P3364 6mm, or similar can be used.

.6 Special Camera Requirements:

Reference: C-1.5MP-120/V Indoor Corner-mount Camera 1.5MP <i>All stated requirements are mandatory</i>		Reference to bid document (document name, page, and paragraph number)
Enclosure	Cameras must be contained in housing and securely mounted. These cameras must be resistant to vandalism and tampering. Cameras which are not dome cameras require additional enclosures. Must be rated IK10 or better.	
Environment	Camera assembly must be waterproof and must be rated IP65 or better. Camera assembly must have an operating temperature range between -10 to +40 C. A custom enclosure may not be provided.	
Field of View	Must provide a horizontal field of view of at least 120 degrees.	
Frames Per Second	Camera must support at least 15 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter. The camera must also be equipped with integrated IR illumination for use at night, with a range of at least 9m (30 ft).	
Privacy	Must support privacy mask	
Resolution	Camera must have approximately a 1.5 mega pixel (MP) resolution @ $\pm 10\%$ tolerance.	
Example	Cameras such as Bosch Flexidome corner 9000MP or similar can be used.	

.7 General Outdoor Dome Camera which requires Wide Dynamic Range

Reference: D-1.2MP-80/VE-WDR Interior Camera 1.2MP , Wide Dynamic Range <i>All stated requirements are mandatory</i>		Reference to bid document (document name, page, and paragraph number)
Enclosure	Cameras must be contained in housing and securely mounted. These cameras must be resistant to vandalism and tampering. Cameras which are not dome cameras require additional enclosures. Must be rated IK10 or better.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP65 or better. The camera assembly must have an operating temperature range between -40 to	

	+40 C. A custom enclosure may be provided so that a camera can operate within this temperature range but should be expressly noted.	
Field of View	The camera must provide a range of field of view that covers at least 40 to 80 degrees horizontal.	
Focus	The camera must have remote focus.	
Frames Per Second	The camera must support at least 15 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	The camera must have approximately a 1.2 mega pixel (MP) resolution @ \pm 10% tolerance.	
Zoom	The camera must support at least a 2X optical zoom.	
WDR	The camera must feature up to 120 dB of 'Wide Dynamic Range'	
Example	Cameras such as Axis P3384-VE, or similar can be used.	

Reference: D-5MP-80/VE-WDR Indoor Camera 5MP <i>All stated requirements are mandatory</i>		Reference to bid document (document name, page, and paragraph number)
Enclosure	Cameras must be contained in housing and securely mounted. These cameras must be resistant to vandalism and tampering. Cameras which are not dome cameras require additional enclosures. Must be rated IK10 or better.	
Environment	The camera assembly must be dustproof and waterproof and must be rated IP65 or better. The camera assembly must have an operating temperature range between -40 to +40 C. A custom enclosure may be provided so that a camera can operate within this temperature range but should be expressly noted.	
Field of View	Must provide a range of field of view that covers at least 40 to 80 degrees horizontal.	
Focus	Must have remote focus.	
Frames Per Second	Camera must support at least 12 frames per second at the minimum resolution specified above.	
Night Capability	The camera must be a true Day/Night camera with a mechanical IR cut filter.	
Resolution	Camera must have approximately a 5 mega pixel (MP) resolution @ \pm 10% tolerance.	
Zoom	The camera must support at least a 2X optical zoom.	

WDR	The camera must feature 'Wide Dynamic Range'.	
Example	Cameras such as Axis P3367-VE or similar can be used.	

2.6 VIDEO MANAGEMENT SOFTWARE (VMS) SYSTEMS

.1 VMS System Specifications:

Video Management Software Specifications <i>All stated specifications are mandatory.</i> <i>Intention is to provide an open standards based video management system which can scale up to at least 200 cameras and can support multiple video storage servers. The video management system must also support the export and handling of video suitable for evidence.</i> <i>The word "product" in these specifications means VMS</i>		Reference to bid document (document name, page, and paragraph number)
Software Specifications	The software used to control and manage the cameras must offer a client-server model. The server application is in a remote location and provides camera control (live viewing) and video archiving functions. The client application connects to the server to access: live video from cameras, and archived videos. The individual specifications for the server and client applications are outlined below.	
Open standards	<ul style="list-style-type: none"> The product must support "Open Standards" architecture to interoperate with a variety of cameras, encoders, and IT infrastructure. The product must be "ONVIF profile S" compliant. The product must have a Software Development Kit (SDK) available. The product must support commercial off the shelf (COTS) client workstations, servers, and customer selected archiving system. The product must be compatible with open architecture industry leading camera manufacturers including but not limited to: Sony, Axis, Panasonic and Bosch. All camera connected to the VMS must be approved and certified by the manufacturer. The product must be able to support an application programming interface (API) for integration of third party software such as video analytics or license plate recognition. 	
Scalability / future expansion	<ul style="list-style-type: none"> The product must be upgradeable without migration to another platform. The server application must be scalable, i.e. the same application must be able to support up to 200 cameras, without additional application upgrades or purchases. VMS grouping: <ul style="list-style-type: none"> The product must be able to join multiple independent systems together in order to view videos from sources connected to these multiple independent systems. The viewing procedure of the remote cameras must be transparent to the user. 	
Architecture	<ul style="list-style-type: none"> The product must be able to group cameras in logical group. It must be possible to select one or more groups within the programmed hierarchy and go directly to that camera group's views. It must be possible to use a traditional CCTV keyboard and connect it to the control center PC to allow full virtual matrix control without the need for PC keyboard and mouse control. The server and client application must be Microsoft Windows 	

	<ul style="list-style-type: none"> compatible. The product must support multicast and unicast transmission. The product must support multiple streams from the same camera at different resolution. The product must provide redundancy features to ensure access to all live data at all times and to ensure recording of all cameras in the event of server failure. 	
Video Archiving and Retrieval	<ul style="list-style-type: none"> The product must support management, distribution and storage of video surveillance data in a centralized and distributed network environment. The product must support multiple recording modes and formats: <ul style="list-style-type: none"> Always recording, on motion recording, pre and post motion recording, and scheduled recording. These modes must be available for all compatible cameras. The product must support video recording in multiple standard compression formats including but not limited to H.264, configured at the camera level. The product must be able to record audio that is synchronized with the video. The product supports internal and external storage devices, including but not limited to servers, NAS / SAN solutions. The product must provide advanced search functions, including but not limited to time-line search, event search, and motion search. The product must provide different levels of application access control at individual and user group levels. 	
Configuration function or tool	<ul style="list-style-type: none"> The camera settings including frame rate, resolution and compression must be configurable by the VMS. The camera settings including motion detection must be configurable by the VMS. The VMS configuration function must be inaccessible for specific user or group without permissions. The VMS must provide a hardware discovery tool. 	
Alarms, Events, Logging, and Management	<ul style="list-style-type: none"> There must be an interface to define "Events" including but not limited to built-in motion detection, third party events, third party video analytics, time of day etc. Events must trigger associated alarms. The product provides user options to log text descriptions of Event Triggers, Actions, and Alarms. Alarms must be associated with user defined actions. The VMS must have log management that includes the following: <ul style="list-style-type: none"> The VMS must log user actions The VMS must log who did the action and when The VMS must log User logon/logoff action The VMS must log camera setting modification The VMS must log video export The VMS must log alarms The VMS must log disk above a threshold The VMS must log camera not working The VMS must have a user interface to display and search the log 	

Client Workstation (Application) Specifications		
Live Viewer	<ul style="list-style-type: none"> • The live viewer client application must display live video from cameras connected to the server located in a remote location. • The live viewer must have these features: <ul style="list-style-type: none"> ○ Support two languages: English and French. ○ Provide help options to locate a function or feature. ○ Must have the capability of displaying live video at 30 FPS and have an adjustable frame rate. ○ Display live video at different resolutions. ○ Provides configurable live audio functions, including but not limited to audio ON/OFF, audio synchronized with video and adjustable audio volume. ○ The operator must have the ability to choose playback layouts including 2x2, 4x4 and various customs layouts. ○ The VMS must be able to add bookmark with notes in order to tag live events. ○ Must be able to show different views on multiple monitors (up to 3) 	
Archive Player	<ul style="list-style-type: none"> • The product must provide multiple playback functions, including but not limited to play, pause, fast forward, rewind, and variable play speed functions. • The product must provide synchronized playback from multiple cameras. • The archive player must have multiple layouts to playback videos from multiple cameras e.g. It must be possible to play 2, 4, or 16 videos synchronously. • Live viewer software must have synchronous playback mode. • It must be possible to disable audio during playback. • The product must be able to export video in a non-proprietary format (such as AVI or ASF) readable on computers without the need to install additional software /codecs. • The VMS must be able to export video in an original format with watermarking and timestamp. • The VMS must also be able to export multiple video at the same time. 	
User (Client) Management	<p>The product must provide the following user authentication features:</p> <ul style="list-style-type: none"> • Must have User ID and Password protection for each client connection to the server application. • Must be able to have automatic password expiry function. • Must be able to have encryption of stored Passwords. • Must have multiple administrator and user levels. • Must be able to define hierarchy and inheritance mechanisms. • There must be a capability to control who has access to the software and camera features. These specifications relate to: <ul style="list-style-type: none"> ○ The proposed solution must support role-based access control (RBAC) or group-based access control (GBAC) where privileged users can define roles or groups and can assign users to roles or groups. ○ The proposed solution must allow the assignment of granular permissions to users, groups or roles. The granularity of these permissions must include but is not limited to: <ul style="list-style-type: none"> ▪ Archive viewing access to specific cameras 	

	<ul style="list-style-type: none"> ▪ Live viewing access to specific cameras ▪ Access to the camera configuration ▪ Access to server configuration ▪ Export of images ○ The proposed solution must be capable of enabling/disabling recording and listening of audio. ○ External vendors must have no access to any of the infrastructure or components implemented unless explicitly authorized by the CBSA technology authority. 	
Example	Video Management Systems such as Milestone XProtect Corporate, Genetec Security Center, or similar can be used.	

.2 Server Specifications:

Server General Requirements <i>All stated requirements are mandatory.</i>		Reference to bid document (document name, page, and paragraph number)
General	<p>The following servers must be provided:</p> <ul style="list-style-type: none"> • 1 X Management/Failover Server • 1 X Video Storage Server <p>A single server hosts both the management application and the failover application. Video recording for all cameras should be done on the video storage server. In the event of machine failure of the video storage server, all cameras must switch to record on the management/failover server.</p> <p>This list does not include networking equipment such as switches. UPS equipment is specified separately in the <i>UPS</i> section. The detailed requirements for each type of server are in the <i>Management/Storage Failover Server Requirements</i> section and the <i>Video Storage Server Requirements</i> section.</p> <p>The storage requirements are listed under Storage in the <i>Management/Storage Failover Server Requirements</i> section and the Video Storage Server Requirements section.</p>	
Recording/Retention	<p>All cameras must be configured by default to record 24/7 continuously at the minimum specified resolution and frame rate for each camera type. The minimum frame rate for recording is 15 FPS, unless otherwise specified. Recording on motion should not be configured unless otherwise specified.</p> <p>The retention time of all camera footage must be at least 30 days.</p>	
Write Failover	<p>The video surveillance system must continue to record all camera footage in the event of a video storage server failure.</p> <p>In the event of a machine failure of the video storage server, a failover storage server must be configured to takeover recording. The failover storage server must provide a minimum of 5 days (1.5 TB) of storage.</p> <p>Live and archived video associated with the failover storage server</p>	

	<p>must be accessible at all times.</p> <p>The management software and the failover software must reside on the same physical machine. RAID 1 is required for video failover storage, and RAID 5 is required for primary video storage. RAID 1 is required for all OS/Application drives.</p> <p>Redundant storage of recorded video on multiple servers is not required.</p>	
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.3 Storage capacity specifications:

	Storage capacity
Total storage capacity for 30 days for all cameras	9 TB usable
Storage Capacity per recording server (x1), for 30 days	9 TB usable
Drive number on each recording server, RAID5 (3TB)	4 drives x 3TB RAID 5

.4 Failed Over VMS / Recording Server Specifications:

Reference: SERVMR-MRF Video Management System / Recording Failover Server Requirements <i>All stated requirements are mandatory.</i> <i>The management application refers to the component of the video management system which contains configuration settings including product licensing, camera recording settings and user permissions.</i> <i>The management application is also responsible for user authentication as well as any logging.</i> <i>The failover application refers to the component of the video management system which takes over recording in the event of failure of the video storage server</i>			Reference to bid document (document name, page, and paragraph number)
Form Factor	Rackmount Sliding rails with cable management arm.		
Processor	Number of Processors Required	2	
	Cores	4 or more	
	Clock Speed	2.0 GHz or higher	
	Instruction Set	64-bit	
	Processor such as Intel Xeon E5-2620.		
Motherboard	Supports Dual Socket		
Memory	8GB RDIMM or higher		
RAID Controller	RAID 1 System + RAID 1 Storage 512 MB Battery Backed Cache or higher		
System/Application Drives	<p>The drives must be RAID 1 managed.</p> <p>The total usable capacity after RAID must be 300GB or higher.</p> <p>Minimum of two (2) 2.5'' or 3.5'' drives must be present.</p> <p>10K RPM or better</p> <p>SAS or better.</p>		

Recording Drives	Drives must be setup on RAID 1 mode The total usable capacity after RAID must be nine (1.5) TB or higher. Minimum of two (2) 3.5" 2TB hot swappable drives must be present. Minimum of height (8) empty additional 3.5" hot swappable bays for future expansion must be present. 7.2K RPM or better Near-line SAS or better.	
Power Supply	Must have dual, hot-plug redundant power supplies.	
OS	Must have one of Windows Server 2008 R1/R2 x64 or Windows Server 2012 x64 installed. Server must be Certified for Windows by Microsoft for the version of OS installed.	
Network	Must have dual 1Gb Ethernet.	
Software	Video Management and Failover Application must be stored on this server. The software must support the version of OS installed.	
Example	Dell PowerEdge R720xd or equivalent configured with 2 X 300 GB SAS, 2 X 2 TB Near-Line SAS	

.5 Video Recording Server Specifications:

Reference: SERVMR-R Video Recording Server Requirements <i>All stated requirements are mandatory.</i> <i>The recording application refers to the component of the video management system which receives camera data and archives this video data to disk.</i>			Reference to bid document (document name, page, and paragraph number)
Form Factor	Rackmount Sliding rails with cable management arm.		
Processor	Number of Processors Required	2	
	Cores	4 or more	
	Clock Speed	2.0 GHz or higher	
	Instruction Set	64-bit	
	Processor such as Intel Xeon E5-2620.		
Motherboard	Supports Dual Socket		
Memory	8GB RDIMM or higher		
RAID Controller	RAID 1 System + RAID 6 Storage 512 MB Battery Backed Cache or higher		

System/Application Drives	<p>The drives must be RAID 1 managed.</p> <p>The total usable capacity after RAID must be 300GB or higher.</p> <p>Minimum of two (2) 2.5'' or 3.5'' drives must be present.</p> <p>10K RPM or better SAS or better.</p>	
Recording Drives	<p>The storage must be RAID 5 managed.</p> <p>The total usable capacity after RAID must be nine (9) TB or higher.</p> <p>Minimum of four (4) 3.5'' 3TB hot swappable drives must be present.</p> <p>Minimum of six (6) empty additional 3.5'' hot swappable bays for future expansion must be present.</p> <p>7.2K RPM or better Near-line SAS or better.</p>	
Power Supply	Must have dual, hot-plug redundant power supplies.	
OS	<p>Must have one of Windows Server 2008 R1/R2 x64 or Windows Server 2012 x64 installed.</p> <p>Server must be Certified for Windows by Microsoft for the version of OS installed.</p>	
Network	Must have dual 1Gb Ethernet.	
Software	<p>Video Storage Application must be stored on this server.</p> <p>The software must support the version of OS installed.</p>	
Example	Dell PowerEdge R720xd or equivalent configured with 2 X 300 GB SAS, 4 X 3 TB Near-Line SAS	

.6 UPS Specifications:

- .1 The UPS must provide minimum 20 minutes of power to allow for the safe shutdown of all server equipment.

Reference : UPSR-M UPS Requirements <i>All stated requirements are mandatory.</i> <i>The UPS is required to provide power to allow for the safe shutdown of all server equipment.</i>		Reference to bid document (document name, page, and paragraph number)
Form Factor	''Rackmount'' standard width of 19''	
Power Rating	An uninterruptible power supply (UPS) must be able to supply all servers, the associated switches and all critical accessories embedded.	
Power runtime	The uninterruptible power supply (UPS) must be able to supply a minimum of 20 minutes of power at full power capacity during a power	

	outage.	
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Soft Shutdown	In the event of a power outage, the UPS are configured to initiate a safe shutdown of the servers based on battery capacity and/or time delay.	
Connectivity	UPS must be connected to each server through a <u>network</u> communication, in order to initiate the shutdown in case of power outage.	
Output Waveform	True sine wave output Output voltage distortion with less than or equal to 5% distortion at full load.	
Topology	The UPS must be Online Topology type, converting the power from AC to DC, then back to AC.	
Example	UPS models such as Eaton 9130 Rackmount UPS series or equivalent can be used	

2.7 SEVER ROOM / ENCLOSURE SPECIFICATIONS

- .1 This section contains the minimum performance specifications with respect to power, temperature, humidity and dust control in a server room/enclosure which contains the servers, UPS systems, switches, local workstations, etc.
- .2 For server rooms, the PWGSC Mechanical Design Guidelines - MD 15116-2006 "Computer Room Air Conditioning Systems"(<http://www.tpsgc-pwgsc.gc.ca/biens-property/sngp-npms/bi-rp/tech/telecommunications/im-id-15116-06-eng.html>) is to be followed. Where a server room is not available, an environmentally controlled, secure rack enclosure is specified.
- .3 Power specifications and estimated BTU load for the server room/enclosure are to be included in vendor proposals.
- .4 Viewing Station Specifications:

Reference: VWSTMD Viewing Station <i>The viewing station is where the video management system client software is installed. This computer will be used to perform live monitoring of video</i> <i>All stated specifications are mandatory.</i>		Reference to bid document (document name, page, and paragraph number)
Monitor Resolution	Must be configured with a minimum of 1920 X 1080 image resolution on each display.	
Monitor Size	Must have 24" connected LCD or LED monitor.	
Workstation	Minimum system requirements: Windows 7 or later 8 GB RAM 1 TB Storage	
Processor	Cores	4 or more
	Clock Speed	3 GHz or greater
	Instruction Set	64-bit
	Intel Core i5 or equivalent (minimum)	

Graphic Card	Must have graphic card with at least dual DVI output able to manage two display monitors with 1920 X 1080 resolution	
DVD Burning Capability	Must have an installed DVD burner.	
USB Exporting	Must allow for the files to be exported and saved onto a USB (in addition to being exported and saved onto a DVD).	

Reference: SWT Switches <i>All stated specifications are mandatory.</i>		
Power	Must provide Power Over Ethernet or High Power Over Ethernet.	
Performance	<p>The switches must support all the traffic of video stream for viewing and recording and particularly :</p> <p>Must allow the CCTV system to record all cameras at the frame rate specified by each camera table</p> <p>and</p> <p>Allow all viewing stations to display all cameras at a time with a frame rate of 30 Frames per second.</p>	

.5 Enclosure Requirements:

Reference : RACK-L Video surveillance enclosure <i>All stated requirements are mandatory</i>		Reference to bid document (document name, page, and paragraph number)
Standard	The enclosure must be compliant with approved safety standards for use in Canada.	
Function	The enclosure must be able to contain all servers, the UPS, gateways and switch(es) of the CCTV system.	
Form Factor	The enclosure must be a Network Rack type.	
	The enclosure must be a 4 Post Open Server Equipment Rack Enclosure type.	
	The enclosure must have vertical Wire Managers.	
	The enclosure must have solid panels on the sides and vented panel at the rear and front door so that there is no unauthorized access to the embedded equipment.	
Size	The enclosure must be a « Rackmount » standard with a width of 19''	
	The depth of the enclosure must be sufficient to contain all the CCTV system equipment including all servers, UPS, gateway, the network switch (es).	

	The usable height of the enclosure must be sufficient to contain all the CCTV system equipment including all servers, UPS, gateway, and the network switch.	
Knockouts	The enclosure must have electrical knockouts on removable rear panel at the top and bottom.	
Lock	The enclosure must have a front door that can be locked by key.	
Ventilation	The enclosure must have vented panels on top and rear and /or side panel (s).	
	The enclosure must have at least one (1) fan.	
Stability of the enclosure	The enclosure must not have wheel installed.	
Example	An enclosure such as the ERK-4425KD / 10FT / VFD / KO-VT3 series with appropriate accessories from Middle Atlantic or better can be used	

**Reference: SWT
Switches**

All stated specifications are mandatory.

Power	Must provide Power Over Ethernet or High Power Over Ethernet.
Performance	<p>The switches must support all the traffic of video stream for viewing and recording and particularly :</p> <p>Must allow the CCTV system to record all cameras at the frame rate specified by each camera table</p> <p>and</p> <p>Allow all viewing stations to display all cameras at a time with a frame rate between 20 to 30 Frames per second.</p>

Part 3 Execution

3.1 INSTALLATION

- .1 Installation shall be in accordance with the manufacturer's specifications and installation procedures and fully comply with all applicable Codes & Regulations.
- .2 Contractor shall test and commission fully operational and functional systems prior to turnover to the CBSA. CBSA reserves the right to verify the contractor's test results to determine if system operation is satisfactory and contractor will be responsible to correct any deficiencies at no additional cost to CBSA.

.3 General Installation Specifications

Installation Specifications <i>All stated specifications are mandatory</i>		Reference to bid document (document name, page, and paragraph number)
Conduit	All exposed cabling must be contained within conduit.	
Cabling	Must meet all applicable fire and building codes. Includes the use of plenum rated cabling where required by code.	
Warranty	All cameras must carry one year (minimum) manufacturer's warranty covering parts and labor. Installing contractor is primary warranty contact for CBSA.	
Testing	All cameras must be thoroughly tested prior to installation.	
Specification sheets	Detailed specification sheets must be provided to contracting authority with bid/proposal, and also provided to end-user upon installation of system.	

.4 All cables shall be permanently identified and listed on as-built drawings as follows:

- .1 Cable number
- .2 Source
- .3 Destination

.5 Electrical panel circuit number shall be clearly identified on all system panels.

.6 All work shall be installed in a neat and workmanlike manner. The contractor is responsible for clean-up and disposal of all garbage and debris caused as a result of their work.

.7 Wiring penetrating any horizontal or vertical assembly required to have a fireresistance rating shall be in accordance with the local AHJ. Conduits or cables shall be tightly fitted and fire stopped where necessary to maintain fire rating.

.8 Contractor shall repair at no cost to CBSA, any surfaces, finishes, equipment or structures damaged by the execution of their contract to its original condition.

.9 CCTV System Installation Requirements:

Equipment	Reference #	Set up
(General specifications*)		<ul style="list-style-type: none"> All camera parameters that are not mentioned must be setup by default Setup the day/night filter to auto Setup the shutter speed to auto Setup the Automatic Gain Control (AGC) to auto Set the focal length at the nominal distance in order to have the appropriate Field of View Adjust the focus of the lens for each camera Setup recording mode as continuous at the frame rate specified on each camera table, except when other recording mode is specified Set up the viewing frame rate at 20 frames per second by default for all cameras if applicable <p>The audio on all cameras must be disabled unless otherwise specified.</p>
Camera 1	D-1.2MP-80/VE-WDR	Nominal Focal Length: 3.0 mm, WDR must be enabled

Camera 2	D-1.2MP-100/V	Nominal Focal Length: 2.5 mm, WDR must be enabled
Camera 3	D-1.2MP-100:AU/V	Nominal Focal Length: 2.5 mm, WDR must be enabled
Camera 4	C-1.5MP-120/V	Interior Corner Mount: Nominal Focal Length: 2.0 mm
Camera 5	D-1.2MP-100/V	Nominal Focal Length: 2.5 mm
Camera 6	D-1.2MP-100/V	Nominal Focal Length: 2.5 mm
Camera 7	D-1.2MP-100/V	Nominal Focal Length: 2.5 mm
Camera 8	D-1.2MP-100:CORR	Corridor Mode
Camera 9	D-1.2MP-100/V	Nominal Focal Length: 3.0 mm, WDR must be enabled
Camera 10	D-1.2MP-80/VE-WDR	Nominal Focal Length: 3.0 mm, WDR must be enabled
Camera 11	D-1.2MP-80/VE-WDR	Nominal Focal Length: 3.0 mm, WDR must be enabled
Camera 12	IN-D-5MP-80/VE-WDR	Nominal Focal Length: 3.0 mm
Camera 13	IN-D-5MP-80/VE-WDR	Nominal Focal Length: 3.0 mm
Camera 14	D-1.2MP-80/VE-WDR	Nominal Focal Length: 8.0 mm, WDR must be enabled
Camera 15	D-1.2MP-80/VE-WDR	Nominal Focal Length: 6.35 mm, WDR must be enabled
Camera 16	D-1.2MP-80/VE-WDR	Nominal Focal Length: 8.0 mm, WDR must be enabled
Camera 17	D-1.2MP-80/VE-WDR	Nominal Focal Length: 3.0 mm, WDR must be enabled
Camera 18	D-1.2MP-80/VE-WDR	Nominal Focal Length: 3.0 mm, WDR must be enabled
Camera 19	D-1.2MP-80/VE-WDR	Nominal Focal Length: 3.0 mm, WDR must be enabled
Camera 20	D-1.2MP-80/VE-WDR	Nominal Focal Length: 4.0 mm, WDR must be enabled
Camera 21	D-1.2MP-80/VE-WDR	Nominal Focal Length: 6.0 mm, WDR must be enabled
Camera 22	D-1.2MP-80/VE-WDR	Nominal Focal Length: 3.0 mm, WDR must be enabled
Camera 23	D-1.2MP-80/VE-WDR	Nominal Focal Length: 3.0 mm, WDR must be enabled
Camera 24	D-1.2MP-80/VE-WDR	Nominal Focal Length: 3.0 mm, WDR must be enabled
Camera 25	D-1.2MP-80/VE-WDR	Nominal Focal Length: 3.0 mm, WDR must be enabled
Video Management Server/Recording Failover Server	SERVMR-MRF	<p>Install and set up the Video Management Software on the System partition and assign the cameras</p> <p>Assign the recording space on the Recording partition.</p> <p>Audio must be disabled on cameras outside of interview rooms.</p> <p>Wet cells must have toilet area masked out.</p> <p>Installation log to be provided to technical authority for approval.</p> <p>Configuration file must be backed up in secondary location.</p> <p>Setup Administrator, Superintendent, BSO roles</p>
Video Recording Server	SERVMR-R	<p>Install and set up the recording server software and assign cameras to the recording server.</p> <p>Setup Administrator, Superintendent, BSO roles</p>

Viewing Station #1	VWSTMD	Install and setup the client software of the VMS chosen for Dawson Airport Setup Administrator, Superintendent, BSO roles
UPS	UPSR-M	UPS must be configured to safely shut down servers prior to exhaustion of UPS battery.

** General specifications applies to all cameras except when specific setting are mentioned*

3.2 SECURITY TERMINATION

- .1 All security system control panels shall be located in a secure, accessible location within the protected space (i.e. – panels and equipment shall not be mounted in electrical or data rooms that are not within the protected space). Head-end security equipment for Access Control and CCTV shall be mounted at locations designated by CBSA.

3.3 GROUNDING AND BONDING FOR ELECTRONIC SECURITY

- .1 Ground security equipment as per manufacturer's recommendations.
- .2 Bonding conductor shall be green PVC jacketed, stranded copper, soft conductor, unless otherwise noted.
- .3 Follow ANSI/TIA-607-B Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications and the most current version of the CEC.

3.4 PATHWAYS FOR ELECTRONIC SECURITY

- .1 Unless otherwise specified, CBSA security systems wiring shall be run in conduits and concealed unless otherwise authorized by SSBC.
- .2 All wiring and cable installed and connected to any piece of security equipment that is accessible to the public shall be installed in conduit or protective covering. Conduit connecting to field devices such as camera enclosure shall be terminated and secured up to the enclosure to conceal all wiring and connections. Where applicable, the security contractor shall coordinate installation of conduit and raceways with electrical contractor to meet these requirements. Conduit not to be filled past 40% capacity.

END OF SECTION