

**Correctional Service Canada
Technical Services Branch
Electronics Systems**

2015-01-08

**STATEMENT
OF
TECHNICAL REQUIREMENTS

REPLACEMENT

of the

MOTION DETECTION SYSTEM

and

PIDS PA HEAD END SYSTEM

AT

PACIFIC INSTITUTION**

This Statement of Technical Requirements is approved by the
Correctional Service of Canada for the replacement of the Motion
Detection System at Pacific Institution.

Prepared by:

**Wayne Hunken
National Electronics Project Officer
Electronic Security Systems**

Reviewed by:



**Edwin Morton
Electronic Security Systems and Installation Engineer,
Electronic Security Systems**

Approved by:



**Marc St-Amand
Director,
Electronic Security Systems**

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ABBREVIATIONS

Abbreviation	Expansion
ACL	Access Control List
API	Application Programming Interface
ATP	Acceptance Test Procedure
BIFMA	Business & Industrial Furniture Manufacturers Association
CA	Contract Authority
CCDA	Command Control and Data Acquisition
CCTV	Closed Circuit Television
CD	Commissioner's Directive
CER	Common Equipment Room
COS	Class of Service
COTS	Commercial-Off-The- Shelf
CSA	Canadian Standards Association
CSC	Correctional Service Canada
DCMS	Door Control and Monitoring System
DES	Director Engineering Services
DCS	Door Control System
DSCP	Differentiated Services Code Point
EIA	Electronic Industries Association
ESS	Electronic Security Systems
FAAS	Facility Alarm Annunciation System
FAR	False Alarm Rate
FDS	Fence Disturbance Detection System
FIU	FAAS Interface Unit
GFE	Government Furnished Equipment
GUI	Graphical User Interface
IP	Internet Protocol
IEEE	Institute of Electronic and Electrical Engineers
MCCP	Main Communications and Control Post
IVRMS	Inmate Voice Recording and Management System
MDS	Motion Detection System
MTBF	Mean Time Between Failure
MTTR	Mean Time to Repair
NAR	Nuisance Alarm Rate
NTP	Network Time Protocol
PA	Public Address
PC	Personal Computer
Pd	Probability of Detection
PIDS	Perimeter Intrusion Detection System
PIU	Perimeter Intrusion Detection System Integration Unit
PLC	Programmable Logic Controller
RFP	Request for Proposal
RTEO	Regional Technical and Engineering Officer

Abbreviation	Expansion
PPA	Portable Personal Alarm
PPAL	Portable Personal Alarm Locatable
QoS	Quality of Service
RTE	Request to Exit
SCC	Security Control Centre
SIO	Security Intelligence Officer
SOW	Statement of Work
SPB	Shortest Path Bridging
STR	Statement of Technical Requirements
TOS	Type of Service
TCP/IP	Transport Control Protocol/Internet Protocol
TCP-UDP	Transport Control Protocol – Small For-Factor
TER	Telecommunications Equipment Room
UPS	Uninterruptible Power Supply
V&C	Visits and Correspondence
VDU	Video Display Unit
VID	VLAN Identification
VIRS	Visits Intercept and Recording System
VMS	Video Management System

DEFINITIONS

#	Term	Example(s)	Description	Function
1	Administrative User Interface		Monitor and Software that supports task specific User Interaction for System Administrators, located in a secure area	Provides Administrative Personnel with the ability to map enrolled users to the functional domains that they are allowed to access and change
2	Application	Cell Call Management, PA Management	Software that is used to deliver Application Support functionality for a sub-system	Software that provides the Operator Interface and supporting logic that allows a sub-system (Control Domain) to be managed
3	CCTV Monitor	PIDS or Range CCTV Monitor	Computer Monitor Hardware	Displays CCTV images for Operator viewing
4	Client		Rack mounted computer located in a secure area away from a Control Post or Control Desk.	Runs software and supports one or more Application
5	Configuration Data	Site floor plans showing quantity of cameras, doors, cells etc. Camera locations. Number of User Interfaces required in a Post.	Site and System specific information typically supplied by CSC that defines how a sub-system Application is to be set-up for a site, location within a site, or post.	The configuration data provides the information that a sub-system application requires to tailor it to meet site, location within a site, or post user requirements.
6	Configuration User Interface		Monitor and Software that supports task specific User Interaction, located in a secure area	Allows suppliers or qualified personnel to add, delete and modify Application Configuration
7	Contract Authority		Public Works and Government Services Canada (PW&GSC) is responsible for all contractual matters associated with the system design and implementation.	
8	Contractor		The company selected as the successful bidder.	
9	Control Console	MCCP Console, Living Unit Control Post Console	Console, typically located in a Control Post. Serves as the physical support infrastructure for Operator User Interfaces	Contains User Interfaces or Control Panels used by staff to execute their management responsibilities and interact with the Domains over which they have Control
10	Control Desk	Living Unit Control Desk	Desk, typically located in a Control Post or Office. Serves as the physical support infrastructure for Operator User Interfaces	Equipped with User interfaces used by staff to execute their management responsibilities and interact with the Domains over which they have Control

#	Term	Example(s)	Description	Function
11	Control Domain	Cell Call, Guard Tour, Public Address	A group of Physical and Virtual devices or objects, often supported by specialized hardware and software, that performs a set of related functions	Collect information, or activate capabilities in their operational domain
12	Control Panel	PACP, Fire Alarm	Hardware and Software device that provides an Operator Interface (I/O device), located in a Control Post	Allows Operators to manage one or more Domain
13	Control Post	Living Unit Control Post/MCCP	Room or a area, typically located in a secure area in an institution	Room used by staff to execute their management responsibilities and interact with the Domains over which they have Control
14	Custom Equipment		Equipment designed and/or manufactured specifically for a specific contract.	
15	Design Authority		Director, Electronic Security Systems (DES) Correctional Service of Canada (CSC) is responsible for all technical aspects of the system design and implementation.	
16	Device	CCTV Camera, Managed Door, Call Origination Device	A specialized device, typically consisting of hardware and software	Provides data collection or activate functions associated with a specific system or sub-system
17	Enrolment User Interface		Monitor and Software that supports task specific User Interaction, located in a secure area	Allows Designated Personnel to enroll and delete Users from the Command, Control and Data Acquisition System.
18	Maintenance User Interface		Monitor and Software that supports task specific User Interaction, located in the CER or Maintenance Service Provider Office	Provides Maintenance Personnel with the ability to interact with one or more Systems to carry out their day to day tasks to troubleshoot and maintain Systems and Subsystems
19	Notification	Notification that a door is opened, or a door is closed, or a sensor is in alarm	A notification is a message that can be shown on a User Interface and/or logged in a database that represents a change in state or a command initiated by an operator.	
20	Off-the Shelf		Equipment currently on the market with a available field reliability data, manuals, engineering drawings and parts price list.	

#	Term	Example(s)	Description	Function
21	Operator User Interface	PIDS Display, Door Control and Monitoring System Display	Computer Monitor and Software that supports User Interaction (I/O device)	Provides an Operator with the ability to interact with one or more Systems to carry out their day to day tasks at a Control Console or Control Desk
22	Project Officer		A CSC employee or a contracted person designated by DES to be responsible for the implementation of the project.	
23	Reporting User Interface		Monitor and Software that supports task specific User Interaction, located in a secure area	Provides Management Personnel with the ability to access pre configured reports and to create custom reports
24	Server	Network Video Recorder	Rack mounted computer that runs software and is located in an equipment room such as a CER or TER	Runs software that is used to deliver services that support Command and Control Applications to connect to sub-systems
25	State		The state of a device as reported to a sub-system or system	This is a logical representation of the state of a device that is being monitored or managed
26	Sub-system	Cell Call, Guard Tour	A group of Physical and Virtual devices or objects, often supported by specialized hardware and software, that perform a specific set of related functions	Collects information, or activates capabilities in their operational domain
27	System	PIDS	A group of Physical and Virtual devices or objects, often supported by specialized hardware and software, including devices from sub-systems that perform a more general set of related functions	Collects information, or activates capabilities in their operational domain
28	Touch Screen User Interface	Door Control and Monitoring System User Interface	Typically an LCD Monitor with touch screen technology	Allows an Operator to view and interact with the Systems presented on the Monitor
29	Workstation		Rack mounted computer located in a secure area away from a Control Post or Control Desk	Runs software that is used to deliver Command and Control Capabilities

1.0 INTRODUCTION

1.1 General

CSC has a requirement to replace the existing buried cable volumetric Motion Detection System (MDS) and Head End switching equipment associated with the PID PA system at Pacific Institution.

The existing MDS was installed in 2000 and is reaching the end of its service life. It should be noted that Sectors 1, 2 and 16 of the MDS were changed in 2002, including sensor modules and cables.

The existing PIDS PA system was installed in 2002. The PA speakers along the perimeter of the Institution and the associated cabling to the switcher in the CER are still functioning and do not need to be replaced. However, the PA Amplifier, switching capability and the connection to the PIDS/FAAS need to be replaced.

Pacific Institution

The Pacific Institution/Regional Treatment Centre is a multi-level security facility, located two kilometers south of Abbotsford in the central Fraser Valley on the Matsqui Complex, about 60 kilometers east of Vancouver. The Institution opened in 1972 as the Regional Psychiatric Centre and, following significant renovations and additions reopened as Pacific Institution/ Regional Treatment Centre in April 2003 now known as Pacific Institution.

1.2 Scope

The contractor must design, supply, install, test, and provide documentation and training for a Motion Detection System (MDS) in accordance with the Standards, Specifications and Statements of Work specified in SP0404, and as described in this STR. The contractor must provide acceptable documentation and as-built drawings for the maintenance of this equipment.

The contractor must design, supply, install, test and provide documentation and training for a Perimeter Intrusion Detection System Public Address (PIDS PA) system in accordance with the applicable sections of the Standards, Specifications and Statements of Work specified in SP0402, and as described in this STR. The contractor must provide acceptable documentation and as-built drawings for the maintenance of this equipment.

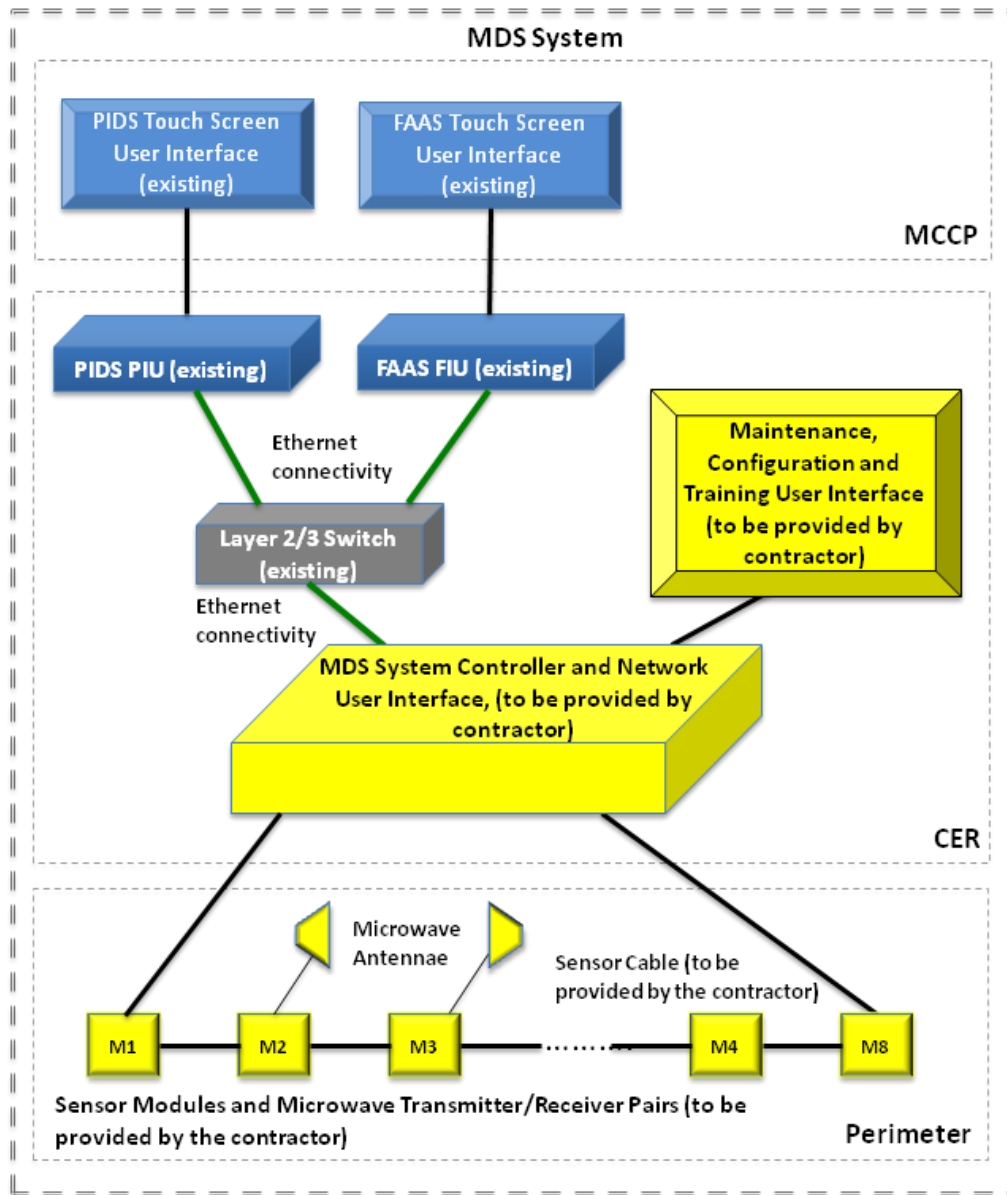
1.3 Requirement

The purpose of this STR is to define the technical aspects for the removal and installation of the existing MDS equipment and the replacement of the existing PIDS PA Head End system. This STR will indicate the extent to which both general and particular CSC specifications are applicable to the implementation of this requirement.

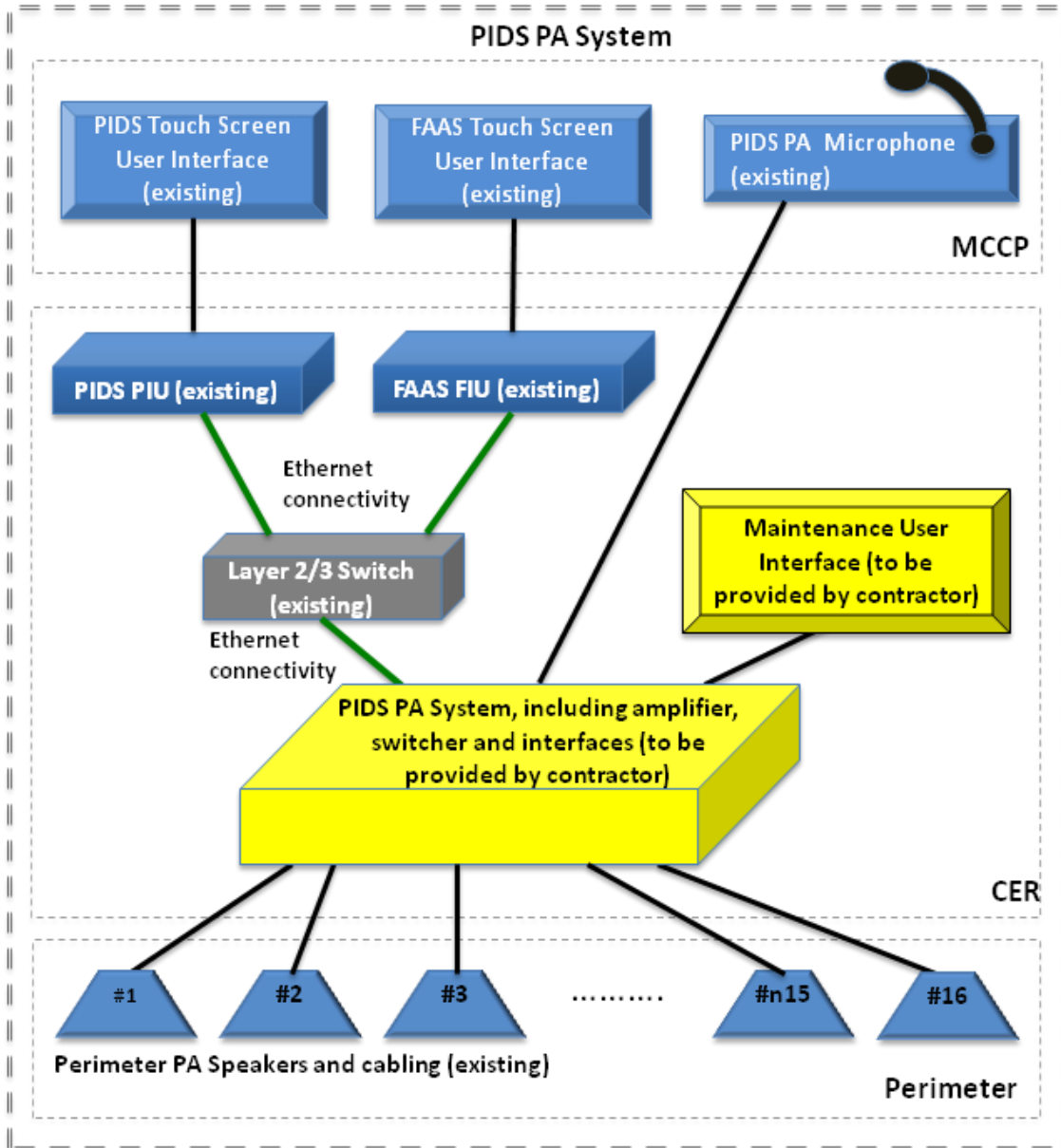
The primary purpose of the MDS is to detect attempts by an intruder to penetrate the perimeter around a facility. The primary purpose of the PIDS PA is to provide the Main Communication and

Control Post (MCCP) operator with the ability to direct one-way voice announcements into each sector of the PIDS-protected perimeter under the control of the PIDS User Interface.

1.4 System Architecture – MDS



1.5 System Architecture – PIDS PA



2.0 APPLICABLE DOCUMENTS

2.1 Applicability

The provisions contained in the documents listed in the following paragraphs apply to all aspects of this requirement, unless these provisions have been exempted or modified by this STR.

2.2 Applicable Standards and Specifications

- a. ES/SOW-0101 Electronics Engineering Statement of Work - Procurement and Installation of Electronic Security Systems
- b. ES/SOW-0102 Electronics Engineering Statement of Work - Quality Control for Procurement and Installation of Electronic Security Systems
- c. ES/SPEC-0401 Electronics Engineering Specification – Perimeter Intrusion Detection Systems Integration Unit for use in Federal Correctional Institutions
- d. ES/SPEC-0402 Electronics Engineering Specifications – PIDS Public Address Systems for use in Federal Correctional Institutions
- d. ES/SPEC-0404 Electronics Engineering Specification - Motion Detection System for use in Federal Correctional Institutions
- e. ES/SPEC-0409 Electronics Engineering Specification – Perimeter Intrusion Detection Systems for the use in Federal Correctional Institutions

2.3 Drawings

Site construction drawings will be available for review at the site visit, along with a recent site services scan. The contractor must verify the accuracy of the drawings and for recommending any changes to the Design Authority.

2.4 Language

The language at all Pacific Region Institutions is English. Any User Interfaces for the system must be provided in English. The operator, maintenance manuals and as-built drawings must also be provided in English. Training and documentation must be provided as per Paragraphs 5.1 through 5.4.

3.0 OPERATIONAL CRITERIA

3.1 General

The operational parameters of the installed MDS and PIDS PA Head End equipment must meet the performance and operational requirements in accordance with the Specifications and Standards listed in paragraph 2.2. unless these provisions have been exempted or modified by this STR.

4.0 TECHNICAL REQUIREMENTS

4.1 Removal of Equipment and Cable

A number of cables and equipment items in the CER and possibly outside the CER will be rendered obsolete as a result of this project. The contractor must remove all of these items after the new systems have been installed. Care must be taken to ensure that any cables and conduits of other systems are not damaged. The contractor must dispose of all of the equipment removed from the site in an environmentally friendly way.

4.2 System Installation

MDS

The contractor must install temporary microwave detection to cover all MDS sectors before the existing MDS cable is removed. CSC will provide twenty (20) pairs of microwave transmitters and receivers, the contractor must provide the required number of microwave detectors to complete the temporary installation as well as providing two (2) sets of spares. Refer to attached drawing # 1 for details of the perimeter sectors and layout.

Once the temporary microwave based MDS system has been installed, tested, and verified by the CSC representative the contractor will be permitted to remove the existing MDS cable.

The contractor must remove the top four inches of the gravel sand and soil from the surface of the ground between the inner and outer fences. After installation of the new MDS cable, three inches of crushed gravel must be installed over the sectors. Refer to attached detail provided in drawing #2.

Sector 1 is equipped with two existing microwave transmitter/receiver pairs and an MDS sensor to provide complete coverage. The contractor must equip this sector with a new buried cable sensor and new microwave transmitter receiver pairs and the existing technology removed. Refer to attached detail provided in drawing #2.

Sector 10 is equipped with an existing microwave transmitter receiver pair as there was no MDS cable installed initially. The contractor must equip this sector with a buried cable sensor and the permanent microwaves removed. Refer to attached detail provided in drawing #2.

The contractor must remove all of the existing MDS cable and associated equipment that will not be reused in the new installation.

The temporary Microwave MDS system must remain operational until the new MDS cable is installed, tested, and accepted by the CSC representative.

PIDS PA

The contractor must replace the existing head end and control equipment that provides PA coverage around the perimeter of the Institution. The PA speakers are grouped into sectors that correspond to the Perimeter Intrusion sectors. Each sector is individually addressable and the sector selection is controlled by the PIDS PIU in such a manner that the PA sector that is activated when the microphone push to talk button is pressed corresponds to the active sector being viewed on the PIDS CCTV monitors. Only one sector at a time may be selected.

Prior to installation of the new head end equipment, the contractor must verify the operation of all existing PIDS PA speakers and wiring associated with the PIDS PA around the perimeter, provide a written summary of the performance of the system and this must be correlated with the most recent test report. .

The PIDS PA switcher must be capable of being connected to the PIDS/FAAS system via an Ethernet connection, over CAT 6 cable, and must be capable of receiving commands and transmitting notifications to and from the PIDS PIU and the FAAS FIU using the Starcom over IP Protocol. This protocol is defined in Appendix D.

General Installation

The contractor must use existing pipe chases, existing conduit in the walls, etc., where possible. New lengths of conduit must be of the minimum necessary length.

All data cables and data jumper cables (minimum 23 gauge), jacks and connector boots installed as part of this project, whether CAT 6 or fibre optic, must be **BRIGHT GREEN** in colour. All cables must be FT4 rated.

All Ethernet patch cables are to be stranded cable with RJ45 connectors. RJ45 connectors are not to be attached to solid conductor cable.

All *installed runs of CAT6 cable are to be solid conductor cable and terminated into patch panels in equipment racks or faceplates in other locations.

* An installed cable is any cable that is run through a conduit, run from one area in a building to another area, any cable that travels farther than the adjacent equipment cabinet in a series of cabinets.

5.0 **ADDITIONAL REQUIREMENTS**

5.1 **Operator Training**

No operator training is required for this project.

5.2 **Maintenance Training**

The contractor must prepare and present two two-day training course, in English, to five persons responsible for the maintenance of the equipment. The course must concentrate heavily on the material contained in the technical manual and site manual. The course must be presented on the site within two weeks of the successful acceptance testing of the system.

5.3 **Manuals**

The contractor must provide the operator and technical manuals in accordance with the specification ES/SOW-0101 Statement of Work. The contractor must provide ten paper copies of the operator manual in English to the site. The contractor must provide one paper copy of the operator manual in English to each of the Design Authority, the Regional Telecom and Electronics Officer (CESM), and ADGA Headquarters (attn: Project Manager, CSC National Maintenance Program).

Maintenance manuals must include completed ATP forms. The contractor must provide copies of the completed Maintenance Handover Report Form contained in Appendix A.

The contractor must provide maintenance manuals and as-built drawings and the integration into the existing system.

The contractor must provide all copies of the maintenance manuals in English. The contractor must provide two copies of the maintenance manual to the site, one copy to the Design Authority, one copy to the CESM and one copy to ADGA Headquarters (attn: Project Manager, CSC National Maintenance Program).

All manuals are to be delivered in electronic format CD or DVD optical storage. All manuals are to have an interactive index that must link the table of contents to documents within the manual. All documents within the manual are to be presented in Adobe Acrobat PDF format.

5.4 **As-Built Drawings**

The contractor must provide electronic and paper copies of as-built drawings of the site installation in AutoCAD 2012 or 14 formats and in accordance with specification ES/SOW Statement of Work. The contractor must provide two copies of the as-built drawings to the site, one to the Design Authority, one to the CESM and one to ADGA Headquarters (attn: Project Manager, CSC National Maintenance Program) within 30 days of an accepted ATP.

5.5 **Spares**

The contractor must provide a list of recommended spares required for the MDS and PIDS PA.

5.6 Software

The contractor must provide CD copies of any system software in accordance with specification ES/SOW-0101 Statement of Work. The contractor must provide two copies of the software to the site, one to the Design Authority and one to the CESM.

5.7 Testing

5.6.1 The contractor must provide a detailed ATP to the DA, or his designated representative, by fax or email, for approval at least two weeks prior to the *start* of installation of the CCTV equipment and system.

5.6.2 The contractor must complete **one hundred percent** of the tests outlined in the ATP prior to the ATP testing being carried out by the DA.

5.6.3 The contractor must provide a **fully completed and signed copy** of the ATP to the DA, or his designated representative, by fax or email, at least two working days prior to the start of the final ATP testing. This copy of the ATP must include all of the results of the tests carried out in Section 5.6.2.

5.6.4 In the case where subcontractors have been used, the contractor must provide written confirmation that the work of their subcontractor has been inspected and verified. This verification must be sent to the DA or his designated representative, by fax or email, at least two days prior to the start of the ATP.

5.6.5 Testing may be carried out by the DA, a designated representative or a third party contractor.

5.6.6 The DA may repeat all of the ATP tests done by the contractor or a percentage of them.

5.6.7 If the DA during the ATP testing finds a minor deficiency that does not affect the operational effectiveness of the MDS system, the ATP testing may continue. Any minor deficiency should be rectified within 30 days; an extension may be approved by the DA and or the CESM. If a major deficiency is found during the ATP testing that does affect the operational effectiveness of the MDS system; the testing must cease until the deficiency has been corrected.

5.6.8 ATP testing must be done during normal working hours, 08:00 to 16:00, Monday to Friday. ATP testing at other times will only be done in an emergency situation.

5.6.9 The DA or designated representative will sign-off on the ATP, upon the successful conclusion of the testing. Any minor deficiencies noted during the testing will be indicated on the ATP form. This signature indicates the Conditional Acceptance of the system.

5.6.10 The system will be subjected to operational testing for a period of two (2) weeks following the Conditional Acceptance of the system. CSC will formally accept the system from the Contractor at the end of this two (2) week period, but only if ALL deficiencies have been corrected.

5.6.11 Any deficiencies noted by CSC during this two (2) week operational testing period will be communicated to the Contractor, who must correct the deficiencies. The two (2) week operational testing period will begin again after all deficiencies have been cleared.

5.6.12 The equipment warranty period will start on the date the system is formally accepted.

5.8 **Operational Down-Time**

Equipment and systems operational down time must be kept to a minimum. All down time must be coordinated with the Coordinator of Correctional Operations (CCO) on site or designate. The contractor's staff may be required to work during evenings, nights and/or weekends to reduce the amount of down time and to meet operational requirements.

5.9 **Institutional Operations**

The contractor must take every precaution to minimize any disturbance to institutional operations. The contractor and his staff on site must cooperate fully with operational staff and conform to all security requirements.

5.10 **Institution Address**

33344 King Road,
Abbotsford, B.C.,
V2S 4P3
Phone: 604-859-4841

5.11 **Integration Responsibility**

The contractor is responsible for providing a fully functional system, including any liaison with Senstar-Stellar in order to have the database modified to accept any information provided by the external system being installed.

5.12 **Security**

The Contractor must submit completed CPIC forms for all staff who will be working at the Institutions. The CPIC forms must be submitted to the CESM, or his designate, ten (10) working days prior to the start-up date.

5.13 **Safety**

The Contractor must comply with the document titled "Safety Regulations for Security Electronics"

Contractors Working at CSC Institutions” attached as Appendix B.

5.14 **Communication Responsibility**

The contractor is responsible for briefing institution staff prior to leaving the work site for the day. The briefing must be given to the Correctional Manager Operations (CMO), and must include, as a minimum:

- a) Work performed that day
- b) Operation status of the system, including any limitations in functionality or peculiarities
- c) Contact name and number in the event of a system failure