



Correctional Service Canada
Facilities Branch
Electronics Security Systems



2015-06-16

STATEMENT OF TECHNICAL REQUIREMENTS
FOR THE UPGRADE OF THE
DOOR CONTROL AND MONITORING SYSTEM
AT
GRANDE CACHE INSTITUTION

AUTHORITY

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the Door Control and Monitoring System at Grande Cache Institution.

Recommended corrections, additions or deletions should be addressed to the Design Authority at the following address:

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TABLE OF 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

Abbreviation	Expansion
RTEO	Regional Technical and Engineering Officer
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

TABLE OF 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

#	Term	Example(s)	Description	Function
				over which they have Control
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 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.	

#	Term	Example(s)	Description	Function
20	Off-the Shelf		Equipment currently on the market with available field reliability data, manuals, engineering drawings and parts price list.	
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 preconfigured 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 and upgrade the Door control Systems in 8 Living Units and the Intercom Room at Grande Cache Institution (GCI) located in Grande Cache Alberta. This STR will cover the general and site specific technical requirements for the required work.

1.2 Scope

The contractor must design, supply, install, integrate, test, and train maintenance personnel on the installed equipment, as described in this Statement of Technical Requirements (STR). The contractor must provide acceptable documentation and AS Built drawings for the operation and the maintenance of this equipment. Provide spares as per Appendix I.

1.3 Requirement/Purpose

This STR is being issued to support the procurement and installation of Electronic Security Systems and equipment to be installed in a CSC Facility. The STR provides prospective suppliers with sufficient information that they can define the scope of the system architecture, equipment, installation, testing, acceptance, training and handover steps required to deliver a fully functioning Door Control and Management System.

The STR provides information with respect to replacement of existing Door Control Equipment throughout the institution which has reached the end of its service life. Remote I/O is no longer supported in the living units 4, 6, 8 and 10. A PLC requires replacement in H electrical. This work will have to be accomplished with minimum disruption to the daily operation and security of GCI.

This STR will also indicate the extent to which both general and particular CSC specifications are applicable to the implementation of this requirement. Bidders must comply with the STR and the listed specifications and standards unless identified in this STR. The STR takes precedence over the subordinate documents such as a Statement of Work, a Specification or a Standard.

1.4 Background

1.4.1 Location

Grande cache institution is a medium-security facility located in Grande Cache Alberta. Grande Cache is located on highway 40, 143 km north of Hinton Alberta and 191 km south of Grande Prairie Alberta.

1.4.2 System Function

Each of the Units is equipped with a PLC that is a networked Door Control and Monitoring System that provides operators with the ability to activate the electric actuators to open and close cell doors and range barriers throughout these living units. The installed door hardware, including actuators, motors and door position switches are typically in good working condition and will not need to be replaced.

1.5 Description of Existing Door Control System

A brief description of the elements of the existing Door Control System follows:

- a) The current system was supplied and installed by Delco Automation.
- b) PLCs are located in electrical rooms associated to living units 1, 3, 5, 7, 9. **Remote I/O** is installed from each respective living unit to control adjacent units 2, 4, 6, 8 and 10.
- c) PLCs are also located in electrical rooms associated to Segregation, Special Handling, Remand, Health Care and the remainder of the site.
- d) Each PLC controls respective doors. All PLCs are networked to the MCCP.
- e) There are two Graphical User Interface (GUI) units at the MCCP. All other units have 1 GUI each in their respective control post.
- f) All PLCs contain 1 computer.
- g) Cabinets for control panels, I/O modules and power supplies are in located respective electrical rooms H, J, K, L, M, N, O, P, Q and R.
- h) The PLC in H electrical is a **Omron CV1M**
- i) All other PLCs are Omron CS1W
- j) KVM (Keyboard-video-mouse) extenders are used to communicate between the GUI touch screen Monitors and the CPUs.
- k) Cell door locks in Living Units are all 24VDC, External doors are 120 VAC.
- l) Refer to Appendix H for existing DCS system drawing and requirement.
- m) Refer to Appendix D, E, F and G site drawings.

1.6 Site Visits/Survey

The Design Authority, or their authorized representative, will coordinate a site visit, and identify to the potential bidders the exact locations of the user interfaces, the system servers, any peripheral PLC or control interfaces, power supplies, interconnecting cable and any other associated electronic equipment. Wherever possible, drawings and documentation will be made available.

The visit may be useful to determine:

- a) The exact location and mounting of the user interfaces, as required,
- b) Mounting location of the electronic equipment or system servers,
- c) Existing Network equipment,
- d) Layout of existing LU Control Posts,
- e) Conduit and cabling requirements, and
- f) General layout and operating environment of the site

1.7 Technical Acceptability

CSC operational environment is unique for its diversity of locations, climate exposures and the physical restrictive construction techniques of penal institutions. Maintaining national security, the safety of staff and offenders alike is CSC's commitment to the government and public. Electronic security systems operating in this unique environment must maintain very high standards of dependability and reliability.

CSC Facilities Branch has established Statements of Work (SOW), technical specifications and standards for electronic security electronic systems, which are based on very specific, and restrictive operational performance criteria. Technical acceptability of these systems means that the systems equipment and components comply with the pertinent CSC SOWs, specifications and standards.

2.0 APPLICABLE DOCUMENTS

2.1 Applicability

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

2.2 Applicable Standards and Specifications

ES/SOW-0101	Statement of Work for Electronic Systems for the Correctional Service of Canada Institutions
ES/SOW-0102	Statement of Work for Quality Control for the Installation of Electronic Security Systems in Federal Correctional Institutions
ES/SOW-0110	Statement of Work for Structured Cable Systems for Electronic Security Installations for the Correctional Service of Canada Institutions
EIA-310-C	Electronic Industry Association Standard for Racks, Panels and Associated Equipment
ES/SPEC-0006	Electronics Engineering Specification - Conduit, Space and Power Requirements for Security Systems for use in Federal Correctional Institutions
CAN/CSA-E61131-2-06	Programmable Logic Controllers Part 2: Equipment Requirements, and Tests

3.0 REQUIREMENTS

3.1 System Architecture

No change to existing system architecture

3.2 Scope of Work

The Contractor must:

- a. Install new PLCs in units 4, 6, 8 & 10.
- b. Wire new PLC to existing IO blocks.
- c. Replace obsolete Remote PLC Inputs and Outputs (I/O) with a new PLC that will also increase redundancy.
- d. Replace existing Remote PLC Inputs and Outputs communication wiring with CAT6 communication cable for the new PLC.
- e. Connect new PLCs to existing corresponding unit PLCs. (3 to 4, 5 to 6, 7 to 8 and 9 to 10)
- f. New PLCs will operate as a dumb remote IO for existing PLCs.
- g. Replace H electrical PLC (Omron CV1M) with an Omron CS1W.
- h. Replace all KVM extenders.
- i. Configure all PLCs as required.
- j. Provide spares.

3.3 System Technical Requirements

The addition or removal of hardware will not change the existing GUI.

3.3.1 Operational Requirements

The Contractor must:

- a. Provide a Door Control System that allows an operator in the Living Unit Control Post to remotely control, through a pair of Touch Screen User Interfaces, electrically operated doors and barriers and to monitor the status of all doors, barriers and hatches in defined areas, including Living Units, of a correctional facilities.
- b. The system will function such that for any system failures, power loss or reboot on any of the CPUs, all doors must revert to the secure (locked) state.

3.3.2 Software Requirements

No change to the existing software.

3.3.3 Testing Requirements

The Contractor must:

- a. Test all hardware prior to delivery to site.
- b. Test all system functions after installation
- c. Provide test results to CSC.

3.3.4 Hardware Requirements

The Contractor must supply all equipment, not limited to, necessary for a complete PLC solution including the following equipment for each of the 4 Living Units and H electrical:

Item	Manufacturer	QTY	Part Number	Description
1	OMRON	1	CS1W-ETN21	Ethernet Card
2	OMRON	4	XW2Z-2008	2M Cable
3	OMRON	4	XW2B-40G4	Wiring Base
4	OMRON	4	G79-0200C-175	2mConnecting Cable for Output Module to Relay Block
5	OMRON	4	G79-0100C-75	1m 32pt output cable
6	OMRON	1	CS1W-ETN21	Ethernet Card
7	OMRON	2	CS1W-0D261	64pt Output Module
8	OMRON	2	CS1W-ID261	64pt Input Module
9	OMRON	1	CS1W-CN226	Peripheral Port Cable
10	OMRON	1	C200HW-PA204R	Power Supply
11	OMRON	1	CS1W-BC053	5 slot Backplane
12	OMRON	1	CS1G-CPU42H	CS1 CPU

3.3.5 Network Infrastructure

No Change to the existing network infrastructure.

3.3.6 Warranty Support – Hardware and Software Lifecycle Management Requirements

The Contractor must:

- a. Provide systems that are designed such that CSC can easily transfer the software to new computers or hard drives.
- b. Ensure that all software is transferable and provide a hard disk copy of all DCS hard drives via “Ghost” or similar back-up method.

3.3.7 System Configuration requirements

The Contractor must:

- a. Ensure that the new PLCs are configured as not to change the current functionality of the system.
- b. Work shall be conducted with minimal disruption to the institution.

The contractor shall complete all work and make system operational before leaving the site.

3.3.8 Component, cable and connector replacement requirements

The Contractor must:

- a. Replace all the existing KVM extenders in the Living Units. (Note: Fibre or CAT6 KVM extenders are acceptable.)
- b. Ensure that KVM extender have at least one video, one audio, RS232 port, and two USB ports.
- c. Review the documents related to the existing systems to ensure compatibility with the proposed system components for the existing field service devices and wiring, clearly indicating compliance in response to this requirement.

3.4 Touch Screen Operator User Interface

- a. There will be no changes to the existing touch screens.

4.0 SITE SPECIFIC REQUIREMENTS

4.1 Installation

The Contractor must adhere to the following installation requirements:

4.1.1 Available Documentation

The Contractor must:

- a. Review the documents related to the existing systems to ensure compatibility with the proposed system components for the existing field service devices and wiring, clearly indicating compliance in response to this requirement. (Note: If available, these documents will be provided by CSC following contract award.)
- b. Review carefully the O&M manuals, "As-Built" drawings, and other documents related to the existing systems.

4.1.2 Installation Schedule

The Contractor must:

- a. Complete the installation of the equipment and ensure that the new system is operational
- b. Provide bi-weekly updates at site meetings. (Note: Meetings must include status of work, current or updated completion dates, and other issues identified as work progresses. Date and time must be set as to when CSC may review functional checks of the equipment prior to installation.)
- c. Prepare a final implementation plan for review and approval by CSC prior to the commencement of installation addressing, as a minimum, the following topics and clearly explain the implementation process from start to finish.
 - i. An introductory overview of the implementation process.
 - ii. The degree of involvement required of Institutional staff.
- d. Hold, after contract award, an on-site meeting with management and union representatives to discuss implementation plan.
- e. All employees of the Contractor working on-site must meet the security requirements of the Institution prior to attempting to gain access to the facility.
- f. Plan and coordinate this work carefully as this project is in a correctional environment. (Note: The Work must be carefully planned and coordinated with CSC and the Institution to minimize the disruption of daily security operations and inmate movement.

4.1.3 Existing Installation and Hardware

The Contractor must:

- a. Examine hardware, wiring, controllers, software, operating protocols, and all relevant details of the existing systems to develop a full understanding of the existing system prior to starting the project.
- b. Test the existing systems, especially the components that are not being replaced as part of the scope of this project. Provide a written report confirming whether the systems work properly and if there are any problems.

4.1.4 Project Review Meetings

Not required.

4.1.5 Cut Over Planning

The Contractor must:

- a. Ensure that at no time any entire living unit is without an operating Door Control and Management System. If it is necessary, the institution will be notified to make suitable arrangements. Arrange with institution a suitable time for the cut over.
- b. Ensure that when there is a changeover from the existing system to the new system in any building, it is completed in manageable stages, e.g. one range at a time.
- c. Provide at least 48 hours advance notice of any disruptions in service.
- d. Make provisions for the possibility that, while all necessary preparations may be conducted during regular working hours, the final changeover for living unit ranges might need to be between 23:00 and 06:00.
- e. Ensure that the existing Door Control and Monitoring System, including the GUI's at the control posts in any of the living units, remain operational until the migration from the old system to the new system is completed for the entire living unit.

4.2 On Site Communications

The Contractor must adhere to the following Communications Requirements:

- a. Communications between the contractor, the Institutional Representative and the Maintenance Technicians is of the utmost importance during interruptions to existing systems to ensure that additional and/or alternative security procedures can be taken by the Institution during the interruption of individual systems.
- b. The contractor must work closely with the Maintenance Technician during interruptions to existing systems. (Note: The on-site National Maintenance Service Provider responsible for the maintenance of all security systems with the Institution is currently "ADGA". If the service provider changes during the course of these projects, this information will be provided to the Contractor.)
- c. Prior to commencement of each work period contractor shall advise the Institutional Representative and Maintenance Technician of the work that will be performed during that period.
- d. During the work day, the Institutional Representative and Maintenance are to be kept regularly informed of the progress being made and will be notified prior to any required disruption in system availability.
- e. As a minimum the parties will meet at the beginning and end of the working day.

4.3 Institution Operations

The Contractor must adhere to the following on site Operational Requirements:

- a. The contractor must take every precaution to minimize any disturbance to institutional operations.
 - b. Equipment and systems operational down time must be kept to a minimum.
 - c. All down time must be coordinated with the Assistant Warden Operations on site or designate.
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- d. 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.
 - e. The contractor and his staff on site must cooperate fully with operational staff and conform to all security requirements.

4.4 Testing and Acceptance Procedures

The Contractor must adhere to the following on site Testing Requirements:

- a. The contractor shall 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
- b. The test procedure will outline tests and procedures to be undertaken by the contractor and witnessed by Design authority, Institutional Representative and Maintenance Technician to demonstrate that each system is fully functional and operational as it was prior to relocation to new equipment cabinet.
- c. The Design Authority will review test procedures, and may request additional tests to ensure all required tests are performed prior to accepting as completed.
- d. Test procedures are to be provided by the contractor to the Design Authority in an itemized format indicating each test to be performed and the method in which it is to be performed.
- e. The contractor shall complete one hundred percent of the tests outlined in the ATP prior to the ATP testing being carried out by the DA.
- f. The contractor shall 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 shall include all of the results of the tests carried out.
- g. In the case where subcontractors have been used, the contractor shall provide written confirmation that the work of their subcontractor has been inspected and verified. This verification shall be sent to the DA or his designated representative, by fax or email, at least two days prior to the start of the ATP.
- h. Testing may be carried out by the DA, a designated representative or a third party contractor.
- i. The DA may repeat all of the ATP tests done by the contractor or a percentage of them. During the ATP, if an unacceptable level of failed tests is encountered, the ATP testing will be halted until the contractor has corrected the failures.
- j. If the DA during the ATP testing finds a minor deficiency that does not affect the operational effectiveness of the equipment or system, the ATP testing may continue. If a major deficiency is found during the ATP testing that does affect the operational effectiveness of the equipment or system; the testing must cease until the deficiency has been corrected.
- k. 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.
- l. 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.
- m. 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.

- n. Any deficiencies noted by CSC during this two (2) week operational testing period will be communicated to the Contractor, who will then be required to correct the deficiencies. The two (2) week operational testing period will begin again after all deficiencies have been cleared.
- o. Equipment warranty period will start on the date the system is formally accepted.

4.5 Labelling

The Contractor must adhere to the following on site Labelling Requirements:

- a. Bold face laser quality printed labels, black print on white background must be provided.
- b. The labels must be self adhesive, one piece, label and clear cover wrapped around cable.
- c. The wording on labels must be approved by design authority prior to manufacture.
- d. The Contractor will install labels on each end of cable.
- e. The Contractor must install labels not less than 150 mm from termination end of cable.
- f. All labels must be clearly visible and readable after final termination of cables without having to move or rotate cables.

4.6 Mounting

The Contractor must adhere to the following on site Mounting Requirements:

- a. Install all existing equipment in the new console or in security equipment cabinets in the CER as indicated.
- b. Route all cabling through cable chases and neatly fasten using Velcro type tie-wraps.

5.0 SUPPORT AND TRAINING

5.1 Support

The Contractor must meet the following support requirements:

- a. The Contractor is fully responsible for all work performed by a Contractor-provided subcontractor.
- b. System Support:
 - I. The Contractor must provide full support of the system through completion and acceptance by CSC and for one full year after acceptance (warranty period).
 - II. This support must include system upgrades (as they become available), troubleshooting, the correction of any system bugs or deficiencies, and the resolution of any operating problems.

5.2 Training

The Contractor must provide 16 hours of technical training in accordance with CSC document ES/SOW-0101. There will be no changes to the GUI. As such, operational training is not required. The Contractor must also provide all manuals and as-built drawings for the training sessions.

6.0 DOCUMENTATION

6.1 Manuals and Drawings

The contractor must provide at least four sets of complete documentation including 4 CD's or DVD's, which must include operation manuals, service manuals, and as-built documentation for the system in English; including drawings in AutoCAD 2013 and PDF format. This documentation must be provided be in accordance with CSC document ES/SOW-0101 unless superseded by this STR.

In addition to the requirements defined in the above documents, the documentation must also meet these requirements:

- a. Operator's manuals must include both a complete binder with all detailed information, and a single laminated sheet with Condensed instructions.
- b. Condensed Instructions shall be laminated for durability.
- c. Provide at least 10 operator's manuals including the Condensed Instructions.
- d. Maintenance Manual: Upon completion of the project submit to CSC three (3) electronic copies (DVD disk) containing PDF files and three (3) paper copies (in loose leaf binder) of operation and maintenance manual. Include all operational and maintenance documents. Manual must include but not limited to:
 - I. Contractor/Suppliers list
 - II. System Description and Operation Data clearly explaining all system features and functions.
 - III. Detailed System Parts Specifications and Information.
 - IV. All as-built drawings c/w detailed block and wiring diagrams, schematics and software documentation.
 - V. Details of a site specific hardware or software must be supplied as part of the documentation.
 - VI. Testing and Commissioning (T & C) Reports.
- e. All Manuals will be mailed to the CESM at Regional Headquarters, Prairie Region, P.O. Box 9223 Station Main, Saskatoon, SK, S7K 3X5 or shipped to the CESM at Regional Headquarters, Prairie Region, 3427 Faithful Avenue, Saskatoon, SK S7K 8H6.
- f. Electronic manuals must be structured based on a database framework with direct links to the appropriate PDF files. Document retrieval and viewing must be executed through a menu driven approach. All PDF files must be enhanced with appropriate bookmarks to facilitate searching of information within the document or linked 10 other relevant documents for references.
- g. Provide a handover report which includes details of the equipment, dates of warranties, contractor contact information and other project information.