

**RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:**

**Bid Receiving - PWGSC / Réception des
soumissions - TPSGC**

**11 Laurier St. / 11, rue Laurier
Place du Portage, Phase III
Core 0A1 / Noyau 0A1
Gatineau, Québec K1A 0S5
Bid Fax: (819) 997-9776**

**REQUEST FOR PROPOSAL
DEMANDE DE PROPOSITION**

**Proposal To: Public Works and Government
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Title - Sujet LIFE SIGN MONITORING SYSTEM	
Solicitation No. - N° de l'invitation 21120-124209/B	Date 2012-08-30
Client Reference No. - N° de référence du client 21120-124209	
GETS Reference No. - N° de référence de SEAG PW-\$\$HN-323-61124	
File No. - N° de dossier hn323.21120-124209	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2012-10-12	Time Zone Fuseau horaire Eastern Standard Time EST
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Dubeau, Stéphane	Buyer Id - Id de l'acheteur hn323
Telephone No. - N° de téléphone (819) 956-1533 ()	FAX No. - N° de FAX (819) 953-4944
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Joyceville Institution Kingston, Ontario K7L 4X9	

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address

**Raison sociale et adresse du
fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution

Electrical & Electronics Products Division
11 Laurier St./11, rue Laurier
6B1, Place du Portage, Phase III
Gatineau, Québec K1A 0S5

Delivery Required - Livraison exigée See Herein	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

THIS BID SOLICITATION CANCELS AND SUPERSEDES PREVIOUS BID SOLICITATION NUMBER 21120-124209/A DATED 2010-05-10 WITH A CLOSING OF 2010-06-26 AT 02:00 PM.

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The following annexes and others attachments forms part of this requirement:

List of annexes:

- Annex "A" - Pricing Sheet Purchase of the LSMS at the Joyceville Institution.
Annex "B" - Bid Scoring Grid
Annex "C" - Point Rated Technical Criteria
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List of other attachments:

- Statement of Technical Requirements for LSMS at Joyceville Institution - STR LSMS, Revision 5 dated 17 August, 2012
- Electronics Engineering Specification for LSMS - ES/SPEC-0507, Revision 4 dated 17 August, 2012
- Electronics Engineering Specification, Conduit, Space and Power Requirements for Security Systems for Use in Federal Correctional Institutions, ES/SPEC-0006, Revision 2 dated 14 January, 2002
- Electronics Engineering Statements of Work, Procurement & Installation of Electronic Security Systems - ES/SOW-0101, Revision 3 dated 15 April, 2004
- Electronics Engineering Statements of Work, Quality Control for Procurement and Installations of Electronic Security Systems - ES/SOW-0102, Revision 6 dated 1 May 2008
- Electronics Engineering Statements of Work, Structured Cable Systems for Electronic Security Installations - ES/SOW-0110, Revision 1 dated 24 June 2008
- Electronics Engineering Standards, LCD Colour Computer Monitor Closed Circuit Television - ES/STD-0227, Revision 0 dated 12 April 2004
- Electronics Engineering Specification, Facility Alarm Annunciation System Integration Unit for use in Federal Correctional Institution - ES/SPEC-0603 Revision 2 dated 17 January, 2002
- Electronics Engineering Standards, Data Logger - ES/STD-0102, Revision 2 dated 20 February 2002

PART 1 - GENERAL INFORMATION

1. Introduction

The bid solicitation and resulting contract document is divided into seven parts plus annexes as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation and states that the Bidder agrees to be bound by the clauses and conditions contained in all parts of the bid solicitation;
- Part 3 Bid Preparation Instructions: provides bidders with instructions on how to prepare their bid;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, if applicable, and the basis of selection;
- Part 5 Certifications: includes the certifications to be provided;
- Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

You are reminded that this solicitation requires the compliance and/or completion of requirements attached as an Annexes and Attachments and forming part of this document. Refer to Table of Contents.

2. Requirement

2.1 Summary

The Correctional Service of Canada (CSC) has a requirement to purchase one (1) life monitoring system (LSMS) at the Joyceville Institution, Kingston, Ontario, K7L 4X9.

The Joyceville Institution is a medium security institution. Work will have to be accomplished with minimum disruption to the daily operation and security of the institution.

The work includes the design, supply, installation, testing and provision of operational and technical training on the LSMS as described in the Statement of Technical Requirements (STR), Revision 5 dated 13 August, 2012.

There is a security requirement associated with this requirement. For additional information, see Part 6 - Security, Financial and Other Requirements, and Part 7 - Resulting Contract Clauses.

2.2 Delivery Requirement (Item 001 of Annex A - Pricing Sheet)

Delivery is requested to be completed within ten (10) weeks from any resulting contract.

2.2.1 Delivery Offered (Item 001 of Annex A - Pricing Sheet)

While delivery is requested as indicated above, the best delivery that could be offered is ____calendar days from the effective date of the Contract.

2.2.2 Installation and testing (Item 002 of Annex A - Pricing Sheet)

Installation and testing are requested to be completed ____calendar days of delivery. State your best installation and testing schedule. Installation and testing will be carried out within ____calendar days of delivery date of item 001 (Item 002 of Annex A - Pricing Sheet) and be completed within ____calendar days.

2.2.3 Training (Item 004 of Annex A - Pricing Sheet)

Training will be completed within ____calendar days of installation and testing. Provide complete details of training e.g., duration, scope, etc. (attach separately, if required)

2.3 Contractor Contacts

Name and telephone number of the person responsible for :

General enquiries

Name: _____
 Telephone No.: _____
 Facsimile No.: _____
 E-mail address: _____

Delivery follow-up

Name: _____
 Telephone No.: _____
 Facsimile No.: _____
 E-mail address: _____

2.4 Warranty Repairs

It may be necessary for warranty repairs to be performed on site. You are requested to provide response time and location of nearest office/depot providing staff for this work. Response time shall not exceed forty-eight (48) hours. The contact person is as follows:

Response Time: _____
 Name: _____
 Telephone No.: _____
 Facsimile No.: _____
 Email/Internet Address: _____

2.5 Emergency Services/Repairs

If requested by Correctional Service of Canada, the Bidder must be required to provide on-site emergency service/repairs not covered under the warranty provision of the General Conditions 2030 dated 2012-03-02 during the contract period. The emergency crew must be paid as indicated herein. The response time must not exceed four (4) hours. The contact person is as follows:

Name: _____
 Telephone no.: _____
 Facsimile no.: _____
 Email/internet address: _____

2.6 Lifetime Spares

It must be a condition of any contract resulting here from that the Contractor undertakes to supply spare parts/replaceables for the equipment proposed during the life expectancy of the equipment.

The Bidder must indicate the number of years for the life of the equipment. _____ years.

2.7 Point of Manufacture (Shipping)

The bidder must state the point of manufacture/shipping of product(s) proposed;

Location: _____ Postal Code: _____

2.8 Product (s) proposed

Bidders must indicate the make and model number of the products offered (identify specific components which make up the system and option(s))

Name of manufacturer: _____
 Model/Part Number: _____
 Component(s)/option(s): _____
 Literature attached: Yes:(____) No:(____)

3. Debriefings

After contract award, Bidders may request a debriefing on the results of the bid solicitation. Bidders should make the request to the Contracting Authority within 15 working days of receipt of notification that their bid was unsuccessful. The debriefing may be provided in writing, by telephone or in person.

PART 2 - BIDDER INSTRUCTIONS

1. Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the Standard Acquisition Clauses and Conditions (<https://buyandsell.gc.ca/policy-and-guidelines/>) Manual issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2012-07-11) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: sixty (60) days

Insert: ninety (90) calendar days

Section 8 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows: Insert: Upon request by Canada, the bidder must send written confirmation of the bid within five (5) working days.

2. Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation. Due to the nature of the bid solicitation, bids transmitted by facsimile to Public Works and Government Services Canada will not be accepted.

3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than ten (10) calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a "proprietary" nature must be clearly marked "proprietary" at each relevant item. Items identified as proprietary will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

4. Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario. Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

5. Mandatory Site Visit

It is mandatory that the Bidder or a representative of the Bidder visit the work site. Arrangements have been made for site visit as per indicated below. Interested Bidders must meet at the Principal Entrance. Bidders will be required to sign an attendance form at the site visit. Bidders should confirm in their bids that they have attended the site visit. Bidders who do not attend or send a representative to the site visit will not be given an alternative appointment and their bids will be rejected as non-compliant. Any clarifications or changes to the bid solicitation resulting from the site visit will be included as an amendment to the bid solicitation.

The onus is on the Bidders to arrive at the site visit in a timely manner. Bidders arriving late may not be permitted to attend the site visit.

The Bidder must have at least one attendee at the site visit.

DATE	TIME	INSTITUTION ADDRESS
21 September 2012	1:30 PM	Joyceville Institution, Kingston, Ontario

It is also a mandatory condition of this requirement that all attendees have a site clearance prior to the site visit. To apply for the site clearance, the Bidders must complete a CPIC Clearance Request form (preferably in typed format) and submit the duly completed and signed form by each participant, by fax to (819) 953-4944 or by e-mail to stephane.dubau@pwgsc-tpsgc.gc.ca. It is a mandatory condition that the CPIC Clearance Request be submitted for the site visit. It is requested that the CPIC Clearance Requests be received by this office no later than September 16th, 2012. Site Clearance Request Form received after September 16th, 2012 may not be accepted. A site clearance obtained for work performed under similar requirements is not acceptable. Bidders are requested to clearly identify the name of the participant, the name of the company they represent, telephone number, facsimile number and e-mail address.

Bidders should submit in writing to the Contracting Authority, a list of issues that they wish to table and the language they would like to address questions and answers, no later than five (5) calendar days prior to the scheduled site visit.

Bidders are advised that any clarifications or changes resulting from the site visit must be included as an amendment to the bid solicitation document through MERX.

As proof of attendance, the Bidder must sign the attendance form provided by the Correctional Service of Canada representative at the site visit.

PART 3 - BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (4 hard copies)
 Section II: Management Bid (4 hard copies)
 Section III: Support Bid (4 hard copies)
 Section IV: Financial Bid (1 hard copy)

Prices must appear in the financial bid, Annex A - Pricing sheet only. No prices must be indicated in any other section of the bid.

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation;
- (c) include the certifications as a separate section of the bid.

The Technical, Management and Support Bids should be concise and address, but not necessarily be limited to, the points that are subject to the evaluation criteria against which the bid will be evaluated. Bidders should address these evaluation criteria in sufficient depth in their bid. Simply repeating the statement contained in the solicitation document is not sufficient. Bidders should explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

In order to facilitate the evaluation of the bid, Canada requests Bidders to address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, Bidders may refer to different sections of their bid by identifying the specific paragraph and page number where the subject topic has already been addressed.

THE BIDDER MUST ADDRESS ON A PARAGRAPH BY PARAGRAPH BASIS THE STATEMENT OF TECHNICAL REQUIREMENTS, THE ELECTRONIC ENGINEERING SPECIFICATIONS, THE STATEMENT OF WORK AND STANDARDS, BY INDICATING WHERE APPLICABLE "COMPLY, UNDERSTOOD, NOTED, OR NOT APPLICABLE". WHERE REQUIRED, THE BIDDER SHOULD PROVIDE ADDITIONAL INFORMATION.

Section I: Technical Bid

In their technical bid, bidders must demonstrate their understanding of the requirement and describe how they intend to meet the technical requirements.

THE TECHNICAL PROPOSAL MUST MEET ALL OF THE TECHNICAL REQUIREMENTS OF THE STATEMENT OF TECHNICAL REQUIREMENTS, THE ELECTRONIC ENGINEERING SPECIFICATIONS, THE STATEMENT OF WORK AND STANDARDS. FAILURE TO MEET THE TECHNICAL REQUIREMENTS WILL RENDER YOUR BID NON- RESPONSIVE AND NO FURTHER CONSIDERATION WILL BE GIVEN.

Section II: Management Bid

In their management bid, bidders must describe their capability and experience, the project management team and provide client contact(s).

Section III: Support Bid

In their support bid, bidders must demonstrate their understanding of the requirement and describe how they intend to meet the support requirements (operator / maintenance training, manuals, spare parts list and plan).

Section IV : Financial Bid

1.1 Bidders must submit their financial bid on Annex "A" - Pricing Sheet in accordance with the following Basis of Pricing:

1.2 Basis of Pricing

All prices must be firm in Canadian dollars, Delivery Duty Paid, Joyceville Institution, Kingston, Ontario K7L 4X9, Goods and Services Tax or the Harmonized Sales Tax extra, transportation costs to destination and all applicable Custom Duties and Excise Taxes included.

1.2.1 Design and Equipment

Bidders must submit a firm lot price for the design and related equipment for the LSMS at the Joyceville Institution, excluding spare parts/replaceable/test equipment.

1.2.2 Installation and Testing Costs

1. The bidder must submit a firm lot price. The price must include all costs, excluding travel and living, related to the installation and testing of the equipment.

2. Installation and Testing of Equipment for Emergency Repairs, Delays and Design Changes.

The bidder must submit a firm hourly rate for installation and testing during and outside normal working hours for each labour category required.

These hourly rates will apply for emergency repairs, delays and design changes and will be in effect for the entire length of any resulting contract.

Normal working hours are Monday to Friday, 7:30 to 16:30 with exception of statutory holidays.

1.2.3 Travel and living expenses associated with the installation of the equipment

The bidder must indicate if there are travel and living expenses associated with the installation and testing of the equipment (excluding training). Where applicable, the bidder must submit a firm lot price, the estimated number of employee and the estimated number of days (excluding training).

1.2.4 On-site training as detailed in the STR, paragraphs 5.1 and 5.2.

The bidder must submit a firm lot price for on-site training session including any associated travel expenses.

1.2.5 Documentation

The bidder must submit a firm lot price for the following:

5.1 As-built drawings as detailed in STR, paragraph 5.4.

5.2 Operator and Maintenance Manuals as detailed in STR, paragraph 5.3.

1.2.6 Software/Integration

The bidder must submit a firm lot price for the software/integration as detailed in STR, 5.5.

1.2.7 Spare parts/Replaceable/Test Equipment List (s)

The bidder must submit a Spare Parts/ Replaceable/ Test Equipment List identifying each recommended spare parts and/or test equipment required. The bidder must also submit a firm unit price for each recommended spare part required.

1.3 SACC Manual Clauses

C3011T (12/05/08), Exchange Rate Fluctuation

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

1. Evaluation Procedures

(a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical, management, support and financial evaluation criteria specified below.

(b) An evaluation team composed of representatives of Canada will evaluate the bids.

1.1 Technical Evaluation

1.1.1 Mandatory Technical Criteria

To be declared responsive, a bid must:

- a) Address on a paragraph by paragraph basis the Statement of Technical Requirements, the Statement of Work and the technical specifications, by indicating where applicable "comply, understood, noted, or not applicable". Where required, the bidder should provide additional information;
- b) comply with all of the technical requirements of the statement of requirement; applicable electronic engineering specifications, statement of work and standards as well as all amendments to the bid solicitation issued prior to bid closing date;
- c) obtain the required minimum points (70%) for the technical, management and support evaluation criteria which are subject to point rating.

1.1.1.1 Point Rated Technical Criteria

The Technical Bid will be evaluated and rated as follows:

The bidder must obtain an overall pass score of 70 percent of the Technical Proposal. The rating is performed on a scale of 100 points. The Technical Proposal should include, but not be limited to:

Point Rated Technical Criteria	Maximum Points
1) An understanding of the technical requirements of the system which could include preliminary drawings, diagrams, photographs and sketches showing system architecture, equipment configuration, and technical information/literature/brochure on products offered. 1.1 Technical Information	20
2) Description for each paragraph of the Statement of Technical Requirements, Statements of Work, Specifications and Standards of how each requirement will be met. Maximum points are broken down as follows: 2.1 Technical Approach and Methodology	50
3) Quality Assurance and Acceptance Test Plan. Description of the proposed, quality assurance procedures/processes, and acceptance test plan(s) to ensure quality requirements are met and to demonstrate to CSC the correct functioning of the system, both in the plant and after installation. Maximum points are broken down as follows: 3.1 Quality Assurance 3.2 Acceptance Test Plan	10 10
4) Risk Elements. How the Bidder intends to meet the technical requirements, a description of the technical risks elements detailing how the bidder can mitigate them. Maximum points are broken down as follows: 4.1 Technical Risk mitigation	10
TOTAL	100

1.1.1.2 Point Rated Management Criteria

The Management Bid will be evaluated and rated as follows:

The bidder must obtain an overall pass score of 70 percent for the Project Management Proposal. The rating is performed on a scale of 100 points. The Project Management Proposal should include, but not be limited to:

Point Rated Management Criteria	Maximum Points
<p>1) Identification of the bidder, project manager, project supervisor, electrician and technician; and detailed description of the qualification and previous experience pertaining to similar projects in terms of size, tasks, clients, responsibilities etc. Maximum points are broken down as follows:</p> <p>1.1 Experience of the bidder within the last four (4) years: Similar project(s) must have been completed successfully; experience pertaining to the following:</p> <p>a. Similarity of project in terms of scope and/or clients b. dollar value over \$ 25K; c. installation; d. training; e. drawings, and; f. manuals.</p> <p>1.2 Range of experience within the last four (4) years with the improvement of a LSMS (design, integration & installation)</p> <p>1.3 Project Manager's overall Experience (years, size of project & complexity) and Qualifications</p> <p>1.4 Supervisor's overall Experience (years, size of project & complexity) and Qualifications</p> <p>1.5 Technicians' overall Experience (years, size of project & complexity) and Qualifications</p>	<p>10</p> <p>10</p> <p>10</p> <p>5</p> <p>5</p>
<p>2) Project management structure and procedures describing the implementation of this project. Maximum points are broken down as follows:</p> <p>2.1 Project Management Organization and Responsibilities. This refers only to management personnel and the way that the bidder plans to organize the project team for this contract.</p> <p>2.2 Project Management Procedures. This factor will rate the bidders on their systems used to implement project management.</p>	<p>10</p> <p>20</p>
<p>3) Schedule and Milestones. A project schedule/schedule of events for all deliverables with milestones and rationale of how realistic and achievable they are.</p>	<p>20</p>

4) Project Risks. A description of the project risks related to the proposed approach and processes for managing all project risk elements (such as resources, cost, schedule and external elements) of the project detailing how well the Bidder understands the project risks and can mitigate them.	10
TOTAL	100

1.1.1.3 Point Rated Support Criteria

The Support Bid will be evaluated and rated as follows:

The bidder must obtain an overall pass score of 70 percent for the Support Proposal. The rating is performed on a scale of 100 points. The Support Proposal should include, but not be limited to:

Point Rated Support Criteria	Maximum Points
1) An understanding of the Operator Training requirements. Description of the proposed training plan, approach, team and information to meet the operator training requirements.	
1.1 Operator training plan outline	15
1.2 Training approach, methodology and team	15
1.3 Manuals	15
2) An understanding of the Maintenance Training requirements. Description of the proposed training plan, approach, team and information to meet the Maintenance training requirements.	
1.1 Maintenance training plan outline	15
1.2 Training approach, methodology and team	15
1.3 Manuals	15
3) Spare Plan and Spare Parts List.	10
TOTAL	100

1.2 Financial Evaluation

1.2.1 Mandatory Financial Criteria

The following Mandatory factors will be taken into consideration in the evaluation of each bid;

Compliance with Basis of Pricing;

Prices must be submitted for all items listed in the Annex "A" - Pricing Sheet.

The Aggregate Bid Price will be determined by adding the firm lot prices for items 1, 2.1, 3, 4, 5.1, 5.2, and 6 in Annex "A" - Pricing sheet.

2. Basis of Selection

The responsive bidder with the lowest evaluated aggregate bid price will be recommended for award of a contract.

PART 5 - CERTIFICATIONS

Bidders must provide the required certifications to be awarded a contract. Canada will declare a bid non-responsive if the required certifications are not completed and submitted as requested.

Compliance with the certifications bidders provide to Canada is subject to verification by Canada during the bid evaluation period (before award of a contract) and after award of a contract. The Contracting Authority will have the right to ask for additional information to verify the bidders' compliance with the certifications before award of a contract. The bid will be declared non-responsive if any certification made by the Bidder is untrue, whether made knowingly or unknowingly. Failure to comply with the certifications or to comply with the request of the Contracting Authority for additional information will also render the bid non-responsive.

1. Certifications Precedent to Contract Award and Certifications Required with the Bid

Bidders must submit the certifications as provided below:

1.1 Certifications Precedent to Contract Award

The certifications listed below should be completed and submitted with the bid but may be submitted afterwards. If any of these required certifications is not completed or submitted as requested, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

1.1.1 Federal Contractors Program - Certification

Federal Contractors Program - over \$25,000 and below \$200,000

Suppliers who are subject to the Federal Contractors Program (FCP) and have been declared ineligible contractors by Human Resources and Skills Development Canada (HRSDC) are no longer eligible to receive federal government contracts over the threshold for solicitation of bids as set out in the Government Contracts Regulations. Suppliers may be declared ineligible contractors either as a result of a finding of non-compliance by HRSDC, or following their voluntary withdrawal from the FCP for a reason other than the reduction of their workforce to less than 100 employees. Any bids from ineligible contractors, including a bid from a joint venture that has a member who is an ineligible contractor, will be declared non-responsive.

The Bidder, or, if the Bidder is a joint venture the member of the joint venture, certifies its status with the FCP, as follows:

The Bidder or the member of the joint venture

- (a) ☐ is not subject to the FCP, having a workforce of less than 100 full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada;
- (b) ☐ is not subject to the FCP, being a regulated employer under the Employment Equity Act, S.C. 1995, c. 44;

- (c) () is subject to the requirements of the FCP, having a workforce of 100 or more full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada, but has not previously obtained a certificate number from HRSDC, having not bid on requirements of \$200,000 or more;
- (d) () has not been declared an ineligible contractor by HRSDC, and has a valid certificate number as follows: _____.

Further information on the FCP is available on the HRSDC Web site.

Signature

Date

1.2 Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

1.2.1 Status and Availability of Resources

The Bidder certifies that, should it be awarded a contract as a result of the bid solicitation, every individual proposed in its bid will be available to perform the Work as required by Canada's representatives and at the time specified in the bid solicitation or agreed to with Canada's representatives. If for reasons beyond its control, the Bidder is unable to provide the services of an individual named in its bid, the Bidder may propose a substitute with similar qualifications and experience. The Bidder must advise the Contracting Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the purposes of this clause, only the following reasons will be considered as beyond the control of the Bidder: death, sickness, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Bidder has proposed any individual who is not an employee of the Bidder, the Bidder certifies that it has the permission from that individual to propose his/her services in relation to the Work to be performed and to submit his/her résumé to Canada. The Bidder must, upon request from the Contracting Authority, provide a written confirmation, signed by the individual, of the permission given to the Bidder and of his/her availability. Failure to comply with the request may result in the bid being declared non-responsive.

Signature

Date

1.2.2 Education and Experience

The Bidder certifies that all the information provided in the supporting materials submitted with its bid, particularly the information pertaining to education, achievements, experience and work history, has been verified by the Bidder to be true and accurate. Furthermore, the Bidder warrants that every individual proposed by the Bidder for the requirement is capable of performing the Work described in the resulting contract.

Signature

Date

1.3 Code of Conduct Certifications - Consent to a Criminal Record Verification**1.3.1** Bidders must submit with their bid, by the bid solicitation closing date:

- (a) a complete list of names of all individuals who are currently directors of the Bidder;
- (b) a properly completed and signed form Consent to a Criminal Record Verification (PWGSC-TPSGC 229) <http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/229-eng.html>, for each individual named in the list.

PART 6 - SECURITY AND FINANCIAL REQUIREMENTS

1. Security Requirement

A site clearance is required prior to the site visit and prior to admittance to the institution. For additional information, see Part 2, Article 5 - Mandatory Site visit and Part 7, article 3, Security Requirement.

2. Financial Capability

1. Financial Capability Requirement: The Bidder must have the financial capability to undertake this requirement. To determine the Bidder's financial capability, the Contracting Authority may, by written notice to the Bidder, require the submission of some or all of the financial information detailed below during the evaluation of bids. The Bidder must provide the following information to the Contracting Authority within fifteen (15) working days of the request or as specified by the Contracting Authority in the notice:

- (a) Audited financial statements, if available, or the unaudited financial statements (prepared by the Bidder's outside accounting firm, if available, or prepared in-house if no external statements have been prepared) for the Bidder's last three fiscal years, or for the years that the Bidder has been in business if this is less than three years (including, as a minimum, the Balance Sheet, the Statement of Retained Earnings, the Income Statement and any notes to the statements).
- (b) If the date of the financial statements is more than five months before the date of the request for information by the Contracting Authority in (a) above, the Bidder must also provide the last quarterly financial statements (consisting of a Balance Sheet and a year-to-date Income Statement) as of two months before the date on which the Contracting Authority requests the information.
- (c) If the Bidder has not been in business for at least one full fiscal year, the following must be provided:
 - (i) the opening Balance Sheet on commencement of business (in the case of a corporation, the date of incorporation); and
 - (ii) the last quarterly financial statements (consisting of a Balance Sheet and a year-to-date Income Statement) as of two months before to the date on which the Contracting Authority requests the information.
- (d) A certification from the Chief Financial Officer or an authorized signing officer of the Bidder that the financial information provided is complete and accurate.
- (e) A confirmation letter from all of the financial institution(s) that have provided short-term financing to the Bidder outlining the total of lines of credit granted to the Bidder and the amount of credit that remains available and not drawn upon as of one month prior to the date on which the Contracting Authority requests this information.
- (f) A detailed monthly Cash Flow Statement, covering all the Bidder's activities (including the requirement) for the first two years of the requirement that is the subject of the bid solicitation. This statement must detail the Bidder's major sources and amounts of cash and the major items of cash expenditures on a monthly basis, for all the Bidder's activities. All assumptions made should be explained as well as details of how cash shortfalls will be financed.

-
- (g) A detailed monthly Project Cash Flow Statement covering the first two years of the requirement that is the subject of the bid solicitation. This statement must detail the Bidder's major sources and amounts of cash and the major items of cash expenditures, for the requirement, on a monthly basis. All assumptions made should be explained as well as details of how cash shortfalls will be financed.
2. If the Bidder is a joint venture, the financial information required by the Contracting Authority must be provided by each member of the joint venture.
3. If the Bidder is a subsidiary of another company, then any financial information required by the Contracting Authority in 1. (a) to (f) must be provided by each level of parent company, to and including the ultimate parent company. Provision of parent company financial information does not satisfy the requirement for the provision of the financial information of the Bidder and the financial capability of a parent cannot be substituted for the financial capability of the Bidder itself, unless a duly executed Parental Guarantee is provided with the required information.
4. Other Information: Canada reserves the right to request from the Bidder any other information that Canada requires to conduct a complete financial capability assessment of the Bidder.
5. Confidentiality: Should the Bidder provide the information required above to Canada in confidence while indicating that the disclosed information is confidential, then Canada will treat the information in a confidential manner as permitted by the Access to Information Act, R.S., 1985, c. A-1, Section 20(1) (b) and (c).
6. Security: In determining the Bidder's financial capability to undertake this requirement, Canada may consider any security the Bidder is capable of providing, at the Bidder's sole expense (for example, an irrevocable letter of credit from a registered financial institution drawn in favour of Canada, a performance guarantee from a third party or some other form of security, as determined by Canada).

3. Condition of Materiel

SACC Manual clause B1000T (2007-11-30) Condition of Materiel

PART 7 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

1. Requirement

The Contractor must design, supply, install, test and provide operational and technical training on the LSMS as described in the Statement of Technical Requirement (STR). The contractor must provide acceptable documentation for the maintenance of this system.

Refer to Attachments for Statement of Technical Requirement (STR), Electronic Engineering Specifications, Statements of Work and Standards. The purpose of the STR document defines the technical aspects for the LSMS at the Joyceville Institution. The STR indicates the extent to which both general and particular CSC specifications are applicable to the implementation of this requirement.

1.1 Additional Work

The Design Authority may, at any time before issuing the final acceptance notice, order work or material in addition to that provided for in the Statement of Work. The Contractor must perform the work in accordance with such orders, deletions and changes pursuant to Part 7, Article 13 - Design Change, Additional Work of New Work and on the same Terms and conditions contained or referenced herein.

1.2 Option to Purchase Spare, Replaceable Parts and Test Equipment

- a) The Contractor hereby grants to Canada and Canada shall retain an irrevocable option exercisable at any time during the Contract to procure any or all of the spare parts and/or test equipment described in the supplier's proposal.
- b) The Contractor shall be given a minimum of thirty (30) calendar days notice in writing by the Contracting Authority indicating that Canada intends to exercise the option.
- c) The option may only be exercised by the Contracting Authority, and the exercise of the option will be evidenced through a formal Contract Amendment.
- d) Price support may be requested.

2. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the Standard Acquisition Clauses and Conditions Manual issued by Public Works and Government Services Canada (PWGSC). The Manual is available on the PWGSC Website: <http://sacc.pwgsc.gc.ca/sacc/index-e.jsp>.

2.1 General Conditions

2030 (2012-07-16) General Conditions - Higher Complexity - Goods

2.2 Supplemental General Conditions

4003 (2010-08-16) Licensed Software

4006 (2010-08-16) Contractor to Own Intellectual Property Rights in Foreground Information

2.3 SACC Manual Clauses

SACC Reference	Section	Date
B1501C	Electrical Equipment	2006-06-16
A9068C	Site Regulations	2010-01-11
A2000C	Foreign Nationals (Canadian Contractor)	2006-06-16
A2001C	Foreign Nationals (Foreign Contractor)	2006-06-16

3. Security Requirement**3.1 Site clearance**

A site clearance is required prior to admittance to the Joyceville Institution. The Contractor must submit completed CPIC forms for all staff who will be working at the institution. The duly completed and signed CPIC forms must be submitted ten (10) working days prior to start-up date as stipulated in the Statement of Technical Requirement.

3.2 Classification of this document is "Not Classified".

1. NIL security screening required, no access to sensitive information or assets. Contractor personnel will be escorted in specific areas of the institution as /where required, by authorized CSC personnel.

2. Contractor personnel shall submit to a local verification of identity/information, by CSC, prior to admittance to the institution. CSC reserves the right to deny access to the institution, of any Contractor personnel, at any time.

4. Term of Contract**4.1 Period of Contract****4.1.1 Delivery of LSMS (Item 001 of Annex A - Pricing Sheet)**

The system design, the delivery of all related equipment is to be completed at the Institution on or before *(Delivery as offered and as accepted will be inserted at contract award)*

NOTE : Date of delivery will be of the essence of any resulting contract. Your attention is drawn to article 10 of General Conditions, 2030 dated 2012-07-16.

The Contractor must submit a final delivery and installation schedule within ten (10) calendar days after the contract award date.

4.2 Installation and testing (item 002 of Annex A - Pricing Sheet) to be filled in only at contract award by the Contracting Authority)

Installation and commissioning will be carried out within _____ calendar days of delivery date of item 001 and be completed within _____ calendar days from the effective date of the Contract.

4.3 On-site operator training (Item 004 of Annex A - Pricing Sheet)

On-site training will be completed within _____ calendar days of installation and testing.

4.4 Shipping Instructions - Delivery at Destination

1. Shipment must be consigned to the destination specified in and delivered:

DDP Delivered Duty Paid, Joyceville Institution, Kingston, Ontario, Incoterms 2000 for shipments from a commercial supplier.

4.5 Inspection and Acceptance

- 1) Inspection

Inspection must be carried out by the Design Authority or the authorized representative at destination.

- 2) Final Acceptance

a) The Contractor must be required to present the work, for final acceptance, when such work has been designed, manufactured, delivered to site and installed and has successfully passed all tests in strict accordance with the specification and terms and conditions, and the Contractor has performed all other work and complied with all the terms and conditions of the contract.

b) Upon verification of the above, the Design Authority will by written notice to the Contractor so acknowledge, and such notice shall constitute final acceptance.

Final Inspection and acceptance will take place at destination when all goods are delivered/ services rendered, and after all deficiencies identified by the Design Authority or the authorized representative are rectified and accepted.

5. Authorities

5.1 Contracting Authority

The Contracting Authority for the Contract is:

Stéphane Dubeau
Supply Specialist
Public Works and Government Services Canada
Acquisitions Branch
Logistics, Electrical, Fuel and Transportation Directorate
"HN" Division
7B3, Place du Portage, Phase III
11 Laurier Street
Gatineau, QC, K1A 0S5

Telephone: (819) 956-1533
Facsimile: (819) 953-4944
E-mail address: stephane.dubeau@pwgsc-tpsgc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

5.2 Technical Authority (or Design Authority)

The Technical Authority for the Contract is:

(Name of Technical Authority): will be inserted at contract
 (Title): will be inserted at contract
 (Fill in Organization): will be inserted at contract
 (Fill in address): will be inserted at contract
 Telephone: will be inserted at contract
 Facsimile: will be inserted at contract
 E-mail address: will be inserted at contract

The Technical Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority; however, the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

5.3 Contractor Contacts

Name and telephone number of the person responsible for :

General enquiries

Name: will be inserted at contract
 Telephone No.: will be inserted at contract
 Facsimile No.: will be inserted at contract
 E-mail address: will be inserted at contract

Delivery follow-up

Name: will be inserted at contract
 Telephone No. will be inserted at contract
 Facsimile No. will be inserted at contract
 E-mail address: will be inserted at contract

5.4 Warranty Repairs

The contact person for warranty repairs to be performed on site as it may be necessary is as follows:

Response Time: will be inserted at contract
 Name: will be inserted at contract
 Telephone No.: will be inserted at contract
 Facsimile No.: will be inserted at contract
 Email/Internet Address: will be inserted at contract

5.5 Emergency Services/Repairs

If requested by Correctional Service Canada, the Contractor shall be required to provide on-site emergency service/repairs not covered under the warranty provision of the General Conditions 2030 during the contract period. The emergency employee (s) will be paid as indicated herein. The response time must not exceed four (4) hours. The contact person is as follows:

Name: will be inserted at contract
Telephone No.: will be inserted at contract
Facsimile No.: will be inserted at contract
Email/Internet Address: will be inserted at contract

6. Payment

6.1 Basis of Payment

The Contractor will be paid the firm lot prices for the equipment, installation and testing, travel expenses, on-site training, as-built drawings and manuals for the LSMS as specified in the Contract. Customs duties are included and Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

The Contractor will be paid a firm hourly rate for each labor category specified for the installation and testing for normal and outside working hours associated with emergency repairs, delays, design changes and unscheduled work arisings.

Travel and living expenses for emergency repairs, delays and design changes during the performance of the contract will be paid without any allowance for overhead or profit. These costs will be reimbursed in accordance with Treasury Board directives in effect at time of travel. The payments are subject to Government Audit. All travel must receive prior authorization from the Project Authority.

6.2 Limitation of Price

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

6.3 Insurance

The Contractor is responsible for deciding if insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any insurance acquired or maintained by the Contractor is at its own expense and for its own benefit and protection. It does not release the Contractor from or reduce its liability under the Contract.

6.4 Method of payment

6.4.1 Milestone Payments

1. Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract, up to 90 percent of the amount claimed and approved by Canada if:

- (a) an accurate and complete claim for payment using form PWGSC-TPSGC 1111 (<http://www.pwgsc.gc.ca/acquisitions/text/forms/forms-e.html>) and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- (b) the total amount for all milestone payments paid by Canada does not exceed 90 percent of the total amount to be paid under the Contract;
- (c) all the certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives;
- (d) all work associated with the milestone and as applicable any deliverable required have been completed and accepted by Canada.

2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of all Work required under the Contract if the Work has been accepted by Canada and a final claim for the payment is submitted.

6.4.2 Schedule of Milestones

The schedule of milestones for which payments will be made in accordance with the Contract is as follows:

- 1st milestone: design of the system and delivery of equipment (less 10% holdback);
- 2nd milestone: installation and testing costs including travel and living expenses (less 10% holdback);
- 3rd milestone: on-site training costs including travel and living expenses (less 10% holdback);
- 4th milestone: cost of documentation and holdbacks.

6.5 Method of Payment - Emergency repairs, delays and design changes payments

6.5.1 Single Payment

Canada will pay the Contractor upon completion and delivery of the Work in accordance with the payment provisions of the Contract if:

- a) an accurate and complete invoice and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b) all such documents have been verified by Canada;
- c) the Work delivered has been accepted by Canada.

6.5.2 Travel and living Expenses - Emergency repairs, delays and design changes payments

The Contractor will be reimbursed its authorized travel and living expenses reasonably and properly incurred in the performance of the Work, at cost, without any allowance for profit and/or administrative overhead, in accordance with the meal, private vehicle and incidental expenses provided in Appendices B, C and D of the Treasury Board Travel Directive (http://www.tbs-sct.gc.ca/pubs_pol/hrpubs/TBM_113/td-dv_e.asp), and with the other provisions of the directive referring to "travelers", rather than those referring to "employees".

All travel must have the prior authorization of the Technical Authority.

All payments are subject to government audit.

7. Invoicing Instructions

7.1.1 Invoicing Instructions - Progress Claim

1. The Contractor must submit a claim for payment using form PWGSC-TPSGC 1111 (<http://www.pwgsc.gc.ca/acquisitions/text/forms/forms-e.html>).

Each claim must show:

- (a) all information required on form PWGSC-TPSGC 1111;
- (b) all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;
- (c) the description and value of the milestone claimed as detailed in the Contract.

2. Goods and Services Tax or Harmonized Sales Tax (GST/HST), as applicable, must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no GST/HST payable as it was claimed and payable under the previous claims for progress payments.

3. The Contractor must prepare and certify one original and two (2) copies of the claim on form PWGSC-TPSGC 1111, and forward it to the Technical Authority identified under the section entitled "Authorities" of the Contract for appropriate certification after inspection and acceptance of the Work takes place.

The Technical Authority will then forward the original and two (2) copies of the claim to the Contracting Authority for certification and onward submission to the Payment Office for the remaining certification and payment action.

4. The Contractor must not submit claims until all work identified in the claim is completed.

7.1.2 Invoicing Instructions - Emergency repairs, delays and design changes payments

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the claim is completed.
2. Claims must be distributed as follows:
 - (a) The original and two (2) copies must be forwarded to the following address for certification and payment:

Correctional Service Canada - NHQ
340 Laurier West
Ottawa, Ontario
K1A 0P9
Attention: _____
 - (b) One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

8. Certifications

Compliance with the certifications provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the entire contract period. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

9. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Ontario.

10. Meetings

A meeting will be convened after contract award at a location to be determined by the Contracting Authority to review contractual and technical requirements. The Contractor will be responsible for the preparation and distribution of the minutes of meeting. Those minutes will be reviewed and approved by the technical Authority. The meeting will be held with representatives of the Contractor, the Department of Public Works and Government Services and Correctional Service Canada.

11. Contractor's Facilities

The Contracting Authority and the Design Authority, or their delegated representative shall be afforded access to the Contractor's plant and all other premises where pertinent processes are being performed.

12. Delay by Canada

In the event that an installation personal proceeds to the site but is unable to perform the work due to an inmate disturbance or other delays caused by Canada at the site, the Contractor shall immediately notify the Design Authority. The cost of holding the installation crew on standby shall be paid as indicated herein. In no event shall a crew remain on standby for more than four (4) hours per day without prior authorization.

13. Procedures for Design Change or Additional Work

These procedures must be followed for any design change or additional work.

1. When Canada requests design change or additional work:
 - (a) The Technical Authority will provide the Contracting Authority with a description of the design change or additional work in sufficient detail to allow the Contractor to provide the following information:
 - (i) any impact of the design change or additional work on the requirement of the Contract;
 - (ii) a price breakdown of the cost (increase or decrease) associated with the implementation of the design change or the performance of the additional work using either the form PWGSC-TPSGC 1686, Quotation for Design Change or Additional Work, or the form PWGSC-TPSGC 1379, Work Arising or New Work, both of which are available on the PWGSC Website <http://www.pwgsc.gc.ca/acquisitions/text/forms/forms-e.html> or any other form required by Canada;
 - (iii) a schedule to implement the design change or to perform the additional work and the impact on the contract delivery schedule.
 - (b) The Contracting Authority will then forward this information to the Contractor.
 - (c) The Contractor will return the completed form to the Contracting Authority for evaluation and negotiation. Once agreement has been reached, the form must be signed by all parties in the appropriate signature blocks. This constitutes the written authorization for the Contractor to proceed with the work, and the Contract will be amended accordingly.
2. When the Contractor requests design change or additional work:
 - (a) The Contractor must provide the Contracting Authority with a request for design change or additional work in sufficient detail for review by Canada.
 - (b) The Contracting Authority will forward the request to the Technical Authority for review.
 - (c) If Canada agrees that a design change or additional work is required, then the procedures detailed in paragraph 1 are to be followed.
 - (d) The Contracting Authority will inform the Contractor in writing if Canada determines that the design change or additional work is not required.

3. Approval

The Contractor must not proceed with any design change or additional work without the written authorization of the Contracting Authority. Any work performed without the Contracting Authority's written authorization will be considered outside the scope of the Contract and no payment will be made for such work.

14. Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) Supplemental General Conditions 4003 (2010-08-16) - Licensed Software;
- (c) Supplemental General Conditions 4006 (2010-08-16) - Contractor to Own Intellectual Property Rights in Foreground Information;
- (d) General Conditions 2030 (2012-07-16) General Conditions - Higher Complexity - Goods;
- (e) Statement of Technical Requirement
- (f) Annex "A", Pricing Sheet;
- (g) the Contractor's bid dated (*will be inserted at contract*), as amended _____ (*date(s) of amendment(s) if applicable will be inserted at contract*)

15. After Sales Services

The Contractor certifies that it is capable of providing after sales service, subsequent to the warranty period, including servicing personnel and facilities during the lifetime expectancy of the equipment.

16. Lifetime Spares

It shall be a condition of any contract resulting herefrom that the Contractor undertakes to supply spare parts for the equipment proposed during the life expectancy of the equipment.

Life of the equipment: (*will be inserted at contract*) years.

Should the Contractor discontinue the manufacture of the equipment being procured during the life expectancy of the equipment, it shall notify Canada sufficiently in advance to permit the purchase of spares for the remaining life of the equipment or, at the discretion of Canada, either make satisfactory arrangements with a third party to establish a continuing source of spares or provide to Canada, at no charge, a non-exclusive royalty free license to manufacture and have manufactured for its own use spare parts, and provide copies of all drawings, technical information, specifications, manufacturing instructions and patterns necessary to manufacture the spares.

17. Disclosure of Information

The Contractor shall keep confidential and shall not publish or otherwise reuse, release, disclose or make available to any third party any Background or Foreground Information concerning "**as built drawings**", **site drawings and manuals**, except as may be necessary to carry out the work under the Contract in which case the Contractor shall impose the same obligation of confidentiality on any person to whom the information is disclosed.

18. T1204 - Information Reporting by Contractor

1. Pursuant to paragraph 221 (1)(d) of the Income Tax Act, R.S.C. 1985, c.1 (5th Supp.), payments made by departments and agencies to contractors under applicable services contracts (including contracts involving a mix of goods and services) must be reported on a T1204 Government Service Contract Payments slip.

2. To enable departments and agencies to comply with this requirement, the Contractor must provide the following information within 45 calendar days from date of contract award:

(a) the legal name of the Contractor, i.e. the legal name associated with its business number or Social Insurance Number (SIN), as well as its address and postal code;

(b) the status of the Contractor, i.e. an individual, a sole proprietorship, a corporation, or a partnership;

(c) the business number of the Contractor if the Contractor is a corporation or a partnership and the SIN if the Contractor is an individual or a sole proprietorship. In the case of a partnership, if the partnership does not have a business number, the partner who has signed the Contract must provide its SIN;

(d) in the case of a joint venture, the business number of all parties to the joint venture who have a business number or their SIN if they do not have a business number.

3. The information must be sent to the person and address specified below. If the information includes a SIN, the information should be provided in an envelope marked "PROTECTED".

Contact: (to be determined by client)

Address:

ANNEX "A"**PRICING SHEET*****Purchase of the LSMS at Joyceville Institution***

All prices must be firm in Canadian dollars, Delivery Duty Paid (Joyceville Institution, Kingston, Ontario), Goods and Services Tax or the Harmonized Sales Tax extra, transportation costs to destination and all applicable Custom Duties and Excise Taxes included.

1. DESIGN AND EQUIPMENT

Firm Lot Price for the design and all related equipment, excluding spare parts.

FIRM LOT PRICE \$ _____

2. INSTALLATION AND TESTING COSTS

- 2.1** The price must include all costs excluding travel and living expenses, related to the installation and testing of the equipment as per STR, Paragraph 4.4 and 5.6.

FIRM LOT PRICE \$ _____

2.2 INSTALLATION AND TESTING OF EQUIPMENT (FIRM HOURLY RATES)

Labour Categories	Hourly Rate During	Hourly Rate Outside
_____	\$ _____	\$ _____
_____	\$ _____	\$ _____
_____	\$ _____	\$ _____
_____	\$ _____	\$ _____

The bidder must submit a firm hourly rate for installation and testing during and outside normal working hours for each labour category required.

The labour rates identified above will apply for emergency repairs, delays and design changes.

3. TRAVEL AND LIVING EXPENSES ASSOCIATED WITH THE INSTALLATION AND TESTING OF THE EQUIPMENT

Institution	FIRM LOT PRICE
JOYCEVILLE INSTITUTION	
Travel required ____yes ____no	\$ _____
Estimated Number of Individuals _____	
Estimated Number of Days _____	

4. ON-SITE OPERATOR TRAINING

Firm Lot Price including travel and living expenses as per STR paragraphs 5.1 and 5.2.

FIRM LOT PRICE \$ _____

5. DOCUMENTATION**5.1 AS-BUILT DRAWINGS**

Firm lot price for As-Built drawings as per STR, paragraph 5.4.

FIRM LOT PRICE \$ _____

5.2 OPERATOR AND MAINTENANCE MANUALS

Firm lot price for all operator and maintenance manual documentation packages as per STR, paragraph 5.3.

FIRM LOT PRICE \$ _____

6. SOFTWARE/INTEGRATION

Firm Lot Price the software/integration as indicated in the STR, 5.5.

FIRM LOT PRICE \$ _____

OPTION**7. SPARE PARTS/ REPLACEABLE/TEST EQUIPMENT**

The bidder must submit a spare parts and/or test equipment list identifying each recommended spare parts and/or test equipment required. The bidder must also submit a firm unit price for each recommended spare parts and replaceable parts required in order to meet ES/SPEC-0507.

FIRM LOT PRICE \$ _____

Solicitation No. - N° de l'invitation

21120-124209/B

Amd. No. - N° de la modif.

File No. - N° du dossier

hn32321120-124209

Buyer ID - Id de l'acheteur

hn323

Client Ref. No. - N° de réf. du client

21120-124209

CCC No./N° CCC - FMS No/ N° VME

Annex B

Bid scoring grid

Solicitation : 21120-124209/A

Life Sign Monitoring System (LSMS)

Joyceville Institution located in Kingston, Ontario.

Total score:_____

Bidder's name:_____

Evaluators:

Solicitation No. - N° de l'invitation
21120-124209/A
Client Ref. No. - N° de réf. du client
21120-124209

Amd. No. - N° de la modif.
File No. - N° du dossier
hn32321120-124209

Buyer ID - Id de l'acheteur
hn323
CCC No./N° CCC - FMS No/ N° VME

Point rated - Technical Criteria (Maximum 100 points - Minimum 70 points)			
	Max. Points	Score	Comments
1.1 An understanding of the technical requirements of the system which could include preliminary drawings, diagrams, photographs and sketches showing system architecture, equipment configuration, and technical information/literature/brochure on products offered.			
1.1 Technical Information	20		
2. Description for each paragraph of the Statement of Technical Requirements, Statements of Work, Specifications and Standards of how each requirement will be met. Maximum points are broken down as follows:			
2.1 Technical Approach and Methodology	50		
3) Quality Assurance and Acceptance Test Plan. Description of the proposed, quality assurance procedures/processes, and acceptance test plan(s) to ensure quality requirements are met and to demonstrate to CSC the correct functioning of the system, both in the plant and after installation. Maximum points are broken down as follows:			
3.1 Quality Assurance	10		
3.2 Acceptance Test Plan	10		
4) Risk Elements. How the Bidder intends to meet the technical requirements, a description of the technical risks elements detailing how the bidder can mitigate them. Maximum points are broken down as follows:			
4.1 Technical Risk mitigation	10		
Total points	100		

Point Rated - Management Criteria (Maximum 100 points - Minimum 70 points)			
	Max. Points	Score	Comments
<p>1) Identification of the bidder, project manager, project supervisor, electrician and technician; and detailed description of the qualification and previous experience pertaining to similar projects in terms of size, tasks, clients, responsibilities etc. Maximum points are broken down as follows:</p> <p>1.1 Experience of the bidder within the last four (4) years: Similar project(s) must have been completed successfully; experience pertaining to the following:</p> <p>a. Similarity of project in terms of scope and/or clients b. dollar value over \$ 25K; c. installation; d. training; e. drawings, and; f. manuals.</p> <p>1.2 Range of experience within the last four (4) years with the improvement of a LSMS (design, integration & installation)</p> <p>1.3 Project Manager's overall Experience (years, size of project & complexity) and Qualifications</p> <p>1.4 Supervisor's overall Experience (years, size of project & complexity) and Qualifications</p> <p>1.5 Technicians' overall Experience (years, size of project & complexity) and Qualifications</p>	<p>10</p> <p>10</p> <p>10</p> <p>5</p> <p>5</p>		

2) Project management structure and procedures describing the implementation of this project. Maximum points are broken down as follows:			
2.1 Project Management Organization and Responsibilities. This refers only to management personnel and the way that the bidder plans to organize the project team for this contract.	10		
2.2 Project Management Procedures. This factor will rate the bidders on their systems used to implement project management.	20		
3) Schedule and Milestones. A project schedule/schedule of events for all deliverables with milestones and rationale of how realistic and achievable they are.	20		
4) Project Risks. A description of the project risks related to the proposed approach and processes for managing all project risk elements (such as resources, cost, schedule and external elements) of the project detailing how well the Bidder understands the project risks and can mitigate them.	10		
Total points	100		

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Point rated - Support Criteria (Maximum 100 points - Minimum 70 points)			
	Max. Points	Score	Comments
1) An understanding of the Operator Training requirements. Description of the proposed training plan, approach, team and information to meet the operator training requirements.			
1.1 Operator training plan outline	15		
1.2 Training approach, methodology and team	15		
1.3 Manuals	15		
2) An understanding of the Maintenance Training requirements. Description of the proposed training plan, approach, team and information to meet the Maintenance training requirements.			
1.1 Maintenance training plan outline	15		
1.2 Training approach, methodology and team	15		
1.3 Manuals	15		
3) Spare Plan and Spare Parts List	10		
Total points	100		
Evaluator's signature:_____		Date of evaluation:_____	
Print name:_____			

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Note - Minimum passing mark of 70% in each category and an overall passing mark of 70 points on a scale of 100 points				
Summarize Strong and Weak points of Proposal - Information is needed to debrief unsuccessful bidders				

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Annex C

Point Rated Criteria

Solicitation : 21120-124209/A

Life Sign Monitoring System (LSMS)
Joyceville Institution located in Kingston, Ontario.

1. Point Rated Technical Criteria

The Technical Bid will be evaluated and rated as follows:

The bidder must obtain an overall pass score of 70 percent of the Technical Proposal. The rating is performed on a scale of 100 points. The Technical Proposal should include, but not be limited to:

1.1 Technical Information

An understanding of the technical requirements of the system which could include preliminary drawings, diagrams, photographs and sketches showing system architecture, equipment configuration, and technical information/literature/brochure on products offered.

	0-6 points	7-13 points	14-20 points
Demonstrated understanding of LSMS specification	Has limited knowledge of LSMS	Has some knowledge of LSMS	Has extensive knowledge of LSMS

1.2 Technical Approach and Methodology

Description for each paragraph of the Statement of Technical Requirements, Statements of Work, Specifications and Standards of how each requirement will be met. Maximum points are broken down as follows:

	0-10 points	11-30 points	31-50 points
Adequacy of the proposed methodology	Weak to demonstrate approach & methodology	Address the core functionality required for a LSMS	All of the core and optional requirements have been met

1.3 Quality Assurance

Quality Assurance and Acceptance Test Plan. Description of the proposed, quality assurance procedures/processes, and acceptance test plan(s) to ensure quality requirements are met and to demonstrate to CSC the correct functioning of the system, both in the plant and after installation. Maximum points are broken down as follows:

	0-3 points	4-6 points	7-10 points
The company has the abilities to deliver quality products & services	Don't have quality plan and or don't have documented development process.	Have documented Roles & Responsibilities, development process, but not consistent with quality records	Have documented Roles & Responsibilities, development process and store quality records

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1.3.1 Acceptance Test Plan

	0-3 points	4-6 points	7-10 points
Have procedure in place to ensure product meets all of its requirements upon delivery	Acceptance test plan partially covers the required functionality	Acceptance test plan covers a part of the required functionality	Acceptance test plan fully covers the required functionality.

1.4 Technical Risk mitigation

Risk Elements. How the Bidder intends to meet the technical requirements, a description of the technical risks elements detailing how the bidder can mitigate them. Maximum points are broken down as follows:

	0-3 points	4-6 points	7-10 points
The bidder understands the technical risks associated with the product and contingency plan to mitigate.	Delivery plan doesn't show a good understanding of technical risks and is missing a contingency plan.	Delivery plan includes a partial understanding of technical risks and the contingency plan doesn't assure us delivery of a fully working product.	Delivery plan includes a good understanding of technical risks and has a good contingency plan to assure us delivery of a fully working product.

2. Point Rated Management Criteria

The Management Bid will be evaluated and rated as follows:

The bidder must obtain an overall pass score of 70 percent for the Project Management Proposal. The rating is performed on a scale of 100 points. The Project Management Proposal should include, but not be limited to:

2.1 Management Information

Identification of the bidder, project manager, project supervisor, electrician and technician; and detailed description of the qualification and previous experience pertaining to similar projects in terms of size, tasks, clients, responsibilities etc. Maximum points are broken down as follows:

2.1.1 Experience of the bidder within the last four (4) years:

Similar project(s) must have been completed successfully; experience pertaining to the following:

- a. Similarity of project in terms of scope and/or clients;
- b. dollar value over \$ 25K;
- c. Installation;
- d. Training;
- e. drawings, and;
- f. manuals.

	0-3 points	4-6 points	7-10 points
Experience of the bidder within the last four (4) years	Has little or no experience in delivery of a similar product	Has experience with the delivery of 2 or more similar products	Has experience with the delivery of 3 or more similar products

2.1.2 Range of experience within the last four (4) years with the design & improvement of a LSMS (design, integration & installation)

	0-3 points	4-6 points	7-10 points
Range of experience with the design & improvement of a LSMS	Has little or no experience and is just entering into this market	Has delivered at least one and has a competitive product.	Is a leader in the design and delivery

2.1.3 Project Manager's overall Experience (years, size of project & complexity) and Qualifications

	0-3 points	4-6 points	7-10 points
Project Manager's overall Experience (years, size of project & complexity) and Qualifications	Has little or no delivery experience of project with similar complexity	Has successfully delivered at least 3 two projects of similar complexity	Has successfully delivered at least 3 three projects of similar complexity.

2.1.4 Supervisor's overall Experience (years, size of project & complexity) and Qualifications

	0-1 points	2-3 points	4-5 points
Supervisor's overall Experience (years, size of project & complexity) and Qualifications	Supervisor has little or no delivery experience of project with similar complexity	Supervisor has at least 2 years of delivery experience with similar project.	Supervisor has 3 or more years of delivery experience with similar project

2.1.5 Technicians' overall Experience (years, size of project & complexity) and Qualifications

	0-1 points	2-3 points	4-5 points
Technicians' overall Experience (years, size of project & complexity) and Qualifications	Technicians have little or no experience with LSMS technology.	Technicians have at least 2 years of experience with LSMS technology.	Technicians have 3 or more years of experience with LSMS technology.

2.2 Project Management Information

Project management structure and procedures describing the implementation of this project. Maximum points are broken down as follows:

2.2.1.1 Project Management Organization and Responsibilities. This refers only to management personnel and the way that the bidder plans to organize the project team for this contract.

	0-3 points	4-6 points	7-10 points
Project Management Organization and Responsibilities	Is an organization using inexperienced personals and without clear roles and responsibilities.	Is a organization using personals that have clear roles and responsibilities	Is a solid organization using expert matter personal with clear roles and responsibilities

2.2.1.2 Project Management Procedures. This factor will rate the bidders on their systems used to implement project management.

	0-6 points	7-13 points	14-20 points
Project procedures describing the implementation of this project	Don't used a project management tools and procedure for implementing this project	Used good project management tools and procedure for implementing this project.	Used best in class project management tools and procedure for implementing this project.

2.2.2 Schedule and Milestones. A project schedule/schedule of events for all deliverables with milestones and rationale of how realistic and achievable they are.

	0-6 points	7-13 points	14-20 points
A project schedule/schedule of events for all deliverables with milestones and rationale of how realistic and achievable	Have an incomplete project delivery schedule to deliver and test of LSMS	Have a project delivery schedule which include The majority of the tasks necessary to deliver and test of LSMS	Have a detail project delivery schedule which include all the tasks of duration of a week or less necessary to deliver and test of LSMS

2.2.3 Project Risks. A description of the project risks related to the proposed approach and processes for managing all project risk elements (such as: resources, cost, schedule and external elements) of the project detailing how well the Bidder understands the project risks and can mitigate them.

	0-3 points	4-6 points	7-10 points
The bidder understands the risks associated with his plan to deliver a fully operational product and has a contingency plan to mitigate.	Delivery plan doesn't show a good understanding of risks and is missing a contingency plan.	Delivery plan includes a partial understanding of risks and the contingency plan doesn't assure us of an on time & on cost delivery of a fully working product.	Delivery plan includes a good understanding of risks and has an associated contingency plan to deliver on time and cost.

3. Point Rated Support Criteria

The Support Bid will be evaluated and rated as follows:

The bidder must obtain an overall pass score of 70 percent for the Support Proposal. The rating is performed on a scale of 100 points. The Support Proposal should include, but not be limited to:

3.1 Operator training plan outline

An understanding of the Operator Training requirements. Description of the proposed training plan, approach, team and information to meet the operator training requirements.

	0-5 points	6-10 points	11-15 points
Operator training plan	Has an operator training plan, but has never been used in the past	Has a good operator training plan, but has never been tested in the past	Very good operator training plan, and has been used successfully in the past

3.1.1 Training approach, methodology and team

	0-5 points	6-10 points	11-15 points
Operator training approach, methodology and team	New and untested methodology and a first for this team at delivery of training	Experience team that has used this training material at least one time. Proven methodology and training material	Experience team that has used this training material at more than once. Proven methodology and training material.

3.1.2 Manuals

	0-5 points	6-10 points	11-15 points
Operator Manual	Doesn't cover all aspect of the LSMS and is hard to follow	Cover all aspect of the LSMS and is very clear and easy to understand	Very good coverage of the LSMS and is very clear and easy to understand

3.2 Maintenance Training

An understanding of the Maintenance Training requirements. Description of the proposed training plan, approach, team and information to meet the Maintenance training requirements.

3.2.1 Maintenance training plan outline

	0-5 points	6-10 points	11-15 points
Maintenance training plan outline	Has a maintenance training plan, but has never been used in the past	Has a good maintenance training plan, but has never been tested in the past	Very good maintenance training plan, and has been used successfully in the past

3.2.2 Training approach, methodology and team

	0-5 points	6-10 points	11-15 points
Maintenance training approach, methodology and team	New and untested methodology and a first for this team at delivery of training	Experience team that has used this training material at least one time. Proven methodology and training material	Experience team that has used this training material at more than once. Proven methodology and training material.

3.2.3 Manuals

	0-5 points	6-10 points	11-15 points
Maintenance manuals	Doesn't cover all aspect of the LSMS and is hard to follow	Cover all aspect of the LSMS and is very clear and easy to understand	Very good coverage of the LSMS and is very clear and easy to understand

3.3 Spare Plan and Spare Parts List

	0-3 points	4-6 points	7-10 points
Maintenance: Spare Plan and Spare Parts List	Incomplete part list and or don't have multi-source identified	Complete part list and or don't have multi-source identified	All parts included with multi-source identified

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ANNEX D
Institutional Access - CPIC Clearance Request, CSC/SCC 1279



INSTITUTIONAL ACCESS
CPIC CLEARANCE REQUEST

ACCÈS À UN ÉTABLISSEMENT
DEMANDE DE VÉRIFICATION
DU DOSSIER AU CIPC

PUT AWAY ON FILE - CLASSER AU DOSSIER
ADMINISTRATIVE OR OPERATIONAL FILE
DOSSIER ADMINISTRATIF OU OPÉRATIONNEL

► Original = 3170-12

PLEASE PRINT INFORMATION CLEARLY - VEUILLEZ ÉCRIRE EN LETTRES MOULÉES

Institution - Établissement	Request received Demande reçue le	Date (YYAA-MM-DJ)	PUT AWAY ON FILE CLASSER AU DOSSIER	► 3170-12
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A. PERSONAL INFORMATION - RENSEIGNEMENTS PERSONNELS

Surname Nom de famille	Full name (no nicknames or initials) Nom au complet (pas de surnoms ou d'initiales)	Maiden name (if applicable) Nom de jeune fille (s'il y a lieu)
Date of birth Date de naissance (YYAA-MM-DJ)	Place of birth - Lieu de naissance City/Town - Ville ou municipalité	Province/State - Province ou état
		Country - Pays

B. PHYSICAL DESCRIPTION - DESCRIPTION PHYSIQUE

<input type="checkbox"/> Male Homme	<input type="checkbox"/> Female Femme	Height - Grandeur	Weight - Poids	Eye color - Couleur des yeux	Hair color Couleur des cheveux
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C. ADDRESS - ADRESSE

Street - Rue	City/Town - Ville ou municipalité	Province	Postal Code - Code postal	Telephone number - Numéro de téléphone Home - Domicile	Work - Bureau
Representing (name of company/organization) - Représente (nom de la compagnie ou de l'organisation)					

D. GENERAL INFORMATION - RENSEIGNEMENTS GÉNÉRAUX

Have you ever been convicted of a criminal offence for which you have not been granted a pardon, or an offence for which you have been granted a pardon and such a pardon has been revoked? Avez-vous déjà été reconnu coupable d'une infraction criminelle pour laquelle on ne vous a pas octroyé un pardon ou d'une infraction pour laquelle on vous a octroyé un pardon qui a été révoqué?		<input type="checkbox"/> Yes Oui	<input type="checkbox"/> No Non
Do you personally know of any person incarcerated in a correctional facility? Connaissez-vous personnellement une personne qui est incarcérée dans un établissement correctionnel?		<input type="checkbox"/> Yes Oui	<input type="checkbox"/> No Non
Do you have any reason to believe coming into contact with this person could pose a risk to your or their personal safety? Avez-vous des raisons de croire que le fait d'entrer en contact avec cette personne pourrait présenter un risque pour votre sécurité personnelle ou la sienne?		<input type="checkbox"/> Yes Oui	<input type="checkbox"/> No Non
Are you related/associated to an inmate or on an inmate's visiting list? Êtes-vous apparenté ou associé à un détenu ou inscrit sur la liste des visiteurs d'un détenu?		<input type="checkbox"/> Yes Oui	<input type="checkbox"/> No Non

If you have answered YES to any of the above, please explain below. - Si vous avez répondu OUI à une des questions ci-dessus, veuillez fournir une explication ci-après.

E. SIGNATURE (When sections A to E are filled out completely, please return the completed form to the Institution for approval.)

(Une fois que les sections A à E ont été remplies, veuillez retourner le formulaire dûment rempli à l'établissement aux fins d'approbation.)

In making this application, I hereby give the Correctional Service of Canada my consent to use the information provided on this form to conduct such inquiries with police authorities as may be necessary to ascertain my suitability. Finally, I acknowledge that the Correctional Service of Canada has no responsibility for any harm that may come to me in the course of my activities, except where such harm is a direct result of negligence on the part of an employee(s) of the Service.

NOTE: Access may be denied for submitting false information. Passes may be issued for those receiving clearance and approval.

En soumettant la présente demande, j'autorise le Service correctionnel du Canada à se servir des renseignements fournis dans le formulaire afin de mener, auprès des services de police, toute enquête jugée nécessaire pour vérifier mon admissibilité. Par ailleurs, je conviens que le Service correctionnel du Canada ne peut être tenu responsable d'un préjudice subi dans le cadre de mes activités sauf si ce préjudice est directement attribuable à la négligence d'un ou de plusieurs employés du Service.
NOTA : Tout demandeur qui fournit de faux renseignements peut se voir refuser l'accès à l'établissement. Un laissez-passer peut être émis aux demandeurs dont la demande d'accès est approuvée.

Applicant's signature - Signature du demandeur

Date (YYAA-MM-DJ)

F. FOR OFFICE USE ONLY - RÉSERVÉ AU SCC

Reason for clearance - Motif justifiant la demande d'accès

Department making the request (please print) Unité qui soumet la demande (en lettres mouluées s.v.p.)	Signature of Division Head Signature du chef de la division	Date (YYAA-MM-DJ)
<input type="checkbox"/> No criminal record Aucun casier judiciaire	<input type="checkbox"/> A possible criminal record #: Numéro du casier judiciaire possible :	Last entry: Dernière entrée :
<input type="checkbox"/> An outstanding warrant/charge held by: Auteur du mandat non exécuté/accusation en instance :		

SIGNATURES

<input type="checkbox"/> Approved Approuvée	<input type="checkbox"/> Not approved Non approuvée	The Individual has been advised. - Le demandeur a été informé de la décision.	
<input type="checkbox"/> Yes Oui	<input type="checkbox"/> No Non	By: Par :	Date (YYAA-MM-DJ)
Security Intelligence Officer Agent de renseignements de sécurité	Date (YYAA-MM-DJ)	Institutional Head Directeur de l'établissement	Date (YYAA-MM-DJ)
		Visit Review Board Comité des visites	Date (YYAA-MM-DJ)

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

**STR LSMS
Revision 5
17 August 2012**

**Statement of
Technical Requirement**

For

Life Sign Monitoring System (LSMS)

At

Joyceville Institution

AUTHORITY

This Statement of Technical Requirement is approved by the Correctional Service Canada for the procurement and installation of a prototype Life Sign Monitoring System at Joyceville Institution.

Prepared by: Sylvio Bisson

**Reviewed by: Mark Bottomley
Edwin Morton**

**Approved by: _____
Marc St-Amand**

**Project Officer,
Electronics Systems Research**

**Director,
Engineering Services**

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue
1	4.1 .4 removed	Removing reference to a document that doesn't exist.
2	All over the doc.	Updated based from comments received from
3	Minor formatting changes	Stephane Dubeau.
4	-Section 4.3.3 Dedicated cabinet to be installed only if required space is more than 12RU -Section 5.9.1 change contact info to Dan Smith	Addressing questions that came up during the site visit at Joyceville
5	-Section4.1 improved system description. -section4.5 integration clarification -Section4.6 expendability	Improving the specification for rendering.

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ABBREVIATIONS

.1	The following abbreviations are used in this specification:	
.2	AC	Alternative Current
.3	ATP	Acceptance Test Procedure
.4	CER	Common Equipment Room
.5	COTS	Commercial-Off-The- Shelf
.6	CSA	Canadian Standards Association
.7	CSC	Correctional Service Canada
.8	DA	Design Authority
.9	DES	Director Engineering Services
.10	EIA	Electronic Industries Association
.11	ES/SOW	Electronics Systems/Statement of Work
.12	ES/SPEC	Electronics Systems/Specifications
.13	ES/STD	Electronics Systems/Standard
.14	FAAS	Facility Annunciation Alarm System
.15	GFE	Government Furnished Equipment
.16	IU	Intensive Intervention Unit
.17	ID	Identification
.18	LSMS	Life Sign Monitoring System
.19	MHz	Megahertz
.20	mW	Milli-watt
.21	MCCP	Main Communications and Control Post
.22	NSRMC	National Security Electronic Maintenance Contractor
.23	PTT	Push-to-Talk
.24	REPO	Regional Electronics Program Officer
.25	RFP	Request for Proposal
.26	RTO	Regional Technical Officer
.27	RTEO	Regional Technical Electronic Officer
.28	SDK	Software Development Kit
.29	SOW	Statement of Work
.30	TCP/IP	Transmission Control Protocol/Internet Protocol
.31	TER	Telecom Equipment Room

DEFINITIONS

- .1 The following definitions are used in this specification:
- .1 Design Authority: Director, Engineering Services (DES) ; Correctional Service Canada (CSC) is responsible for all technical aspects of the system design and implementation.
 - .2 Contract Authority: Public Works and Government Services Canada (PW&GSC) is responsible for all contractual matters associated with the system design and implementation.
 - .3 Contractor: The Company selected as the successful Contractor.
 - .4 Project Officer: A CSC employee or a contracted person designated by DES to be responsible for the implementation of the project.
 - .5 Off-the-shelf: Equipment currently on the market with available field reliability data, manuals, engineering drawings and parts price list.
 - .6 Custom Equipment: Equipment designed and/or manufactured specifically for a specific contract.

1 INTRODUCTION

1.1 GENERAL

- .1 Correctional Service of Canada (CSC) wants to reduce the number of deaths of inmate in custody. New technology is becoming available to assist in the identification and notification of the cessation of an inmate's breathing movement within a cell. Detection of cessation of breathing and prompt notification can reduce the time for staff to become aware of a problem and thus allow them to act more adequately; thereby potentially saving lives.
- .2 CSC intends to purchase a Life Sign Monitoring System (LSMS) to be installed at Joyceville Institution.
- .3 Work will have to be accomplished with minimum disruption to the daily operation and security of the institution.

1.2 SCOPE

- .1 The Contractor must design, supply, install, and test a Life Sign Monitoring System for Joyceville Institution located 20 kilometers north east of Kingston, Ontario. The Contractor must provide operational and technical training as part of the implementation of the system described in this Statement of Technical Requirements (STR). The Contractor must provide documentation for the operation and maintenance of this LSMS.

1.3 REQUIREMENTS

- .1 The purpose of this STR is to define the technical requirements for the LSMS in the institution.
- .2 This STR will indicate the extent to which both general and particular CSC specifications are applicable to the implementation of this requirement.

1.4 TECHNICAL ACCEPTABILITY

- .1 The 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.
- .2 The CSC Engineering Services Division has established technical specifications and equipment standards for specific security electronic systems which are based on very specific and restrictive operational performance criteria as detailed in its Electronic Engineering Standard. Technical acceptability of these systems means that the equipment complies with the pertinent CSC specifications and standards.

2 APPLICABLE DOCUMENTS

2.1 APPLICABILITY

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

2.2 APPLICABLE STANDARDS AND SPECIFICATIONS

- .1 The following electronics engineering documents form part of this STR:
 - .1 ES/SOW-0101 Statement of Work,
Procurement and Installation of Electronic Security Systems;
 - .2 ES/SOW-0102 Statement of Work,
Quality Control for procurement and installation of Electronic Systems;
 - .3 ES/SOW-0110 Statement of Work
Structured Cable Systems for Electronic Security Installations;
 - .4 ES/SPEC-0006 Electronics Engineering Specification,
Conduit, Space and Power Requirements for Security Systems;
 - .5 EIA-310 Electronic Industry Association Standard
for Racks, Panels and Associated Equipment;
 - .6 ES/SPEC-0507 Electronics Engineering Specification,
Life Sign Monitoring System;
 - .7 ES/STD-0102 Electronics Engineering Specification,
Data Logger;
 - .8 ES/SPEC-0603 Electronics Engineering Specification,
FAAS;

2.3 LANGUAGE

- .1 The language at Joyceville Institution is English. All LSMS display and control indicators and information must be in English only. The operator manuals, maintenance manuals and as-built documents must be provided in English only. Documentation must be provided as per Paragraphs 5.1 through 5.4 of this STR.

3 OPERATIONAL CRITERIA

3.1 GENERAL

- .1 The operational parameters of the installed solution must meet the performance and operational requirements in accordance with the SOW's, Specifications and Standards listed in paragraph 2.2.

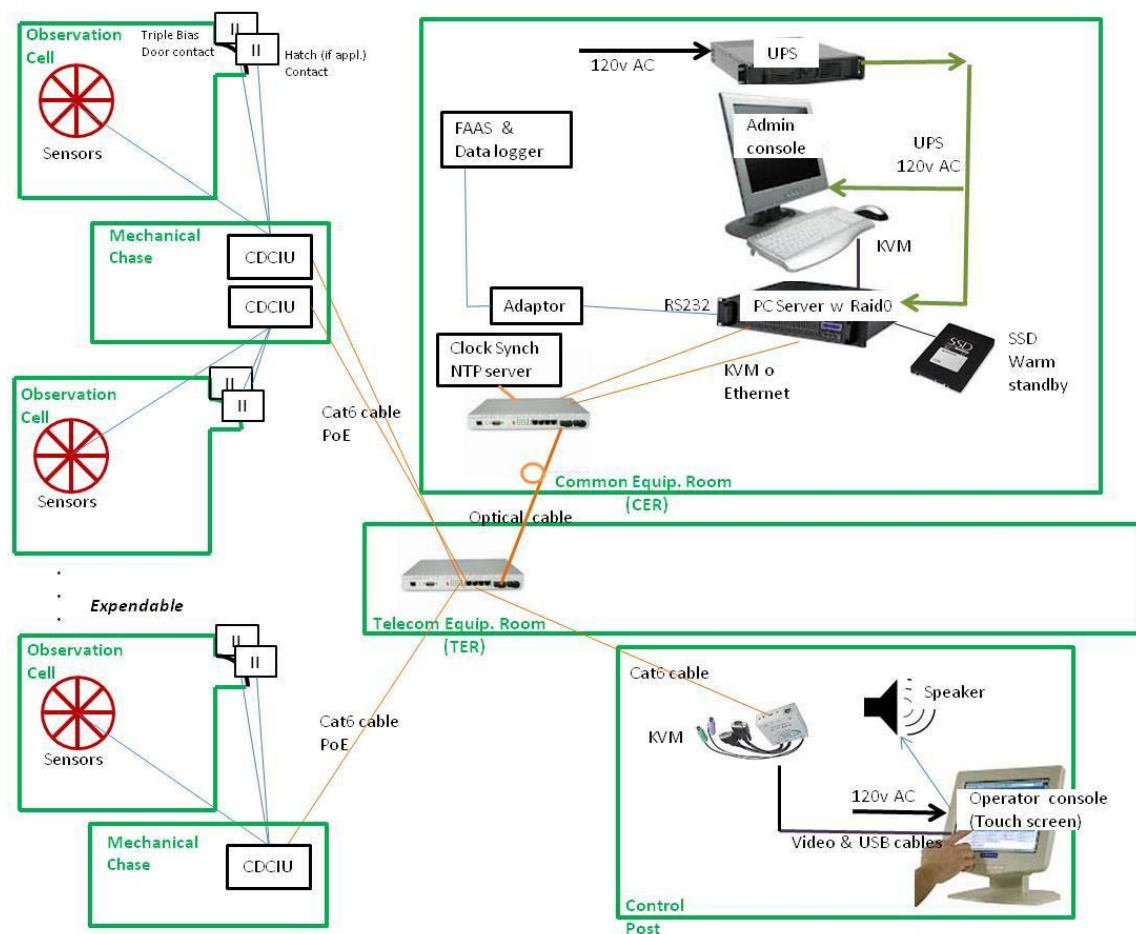
3.2 SYSTEM SPECIFICS

- .1 Annex C contains a floor plan of Joyceville institution showing the area where the LSMS will be installed. See section 4.1 for more details.

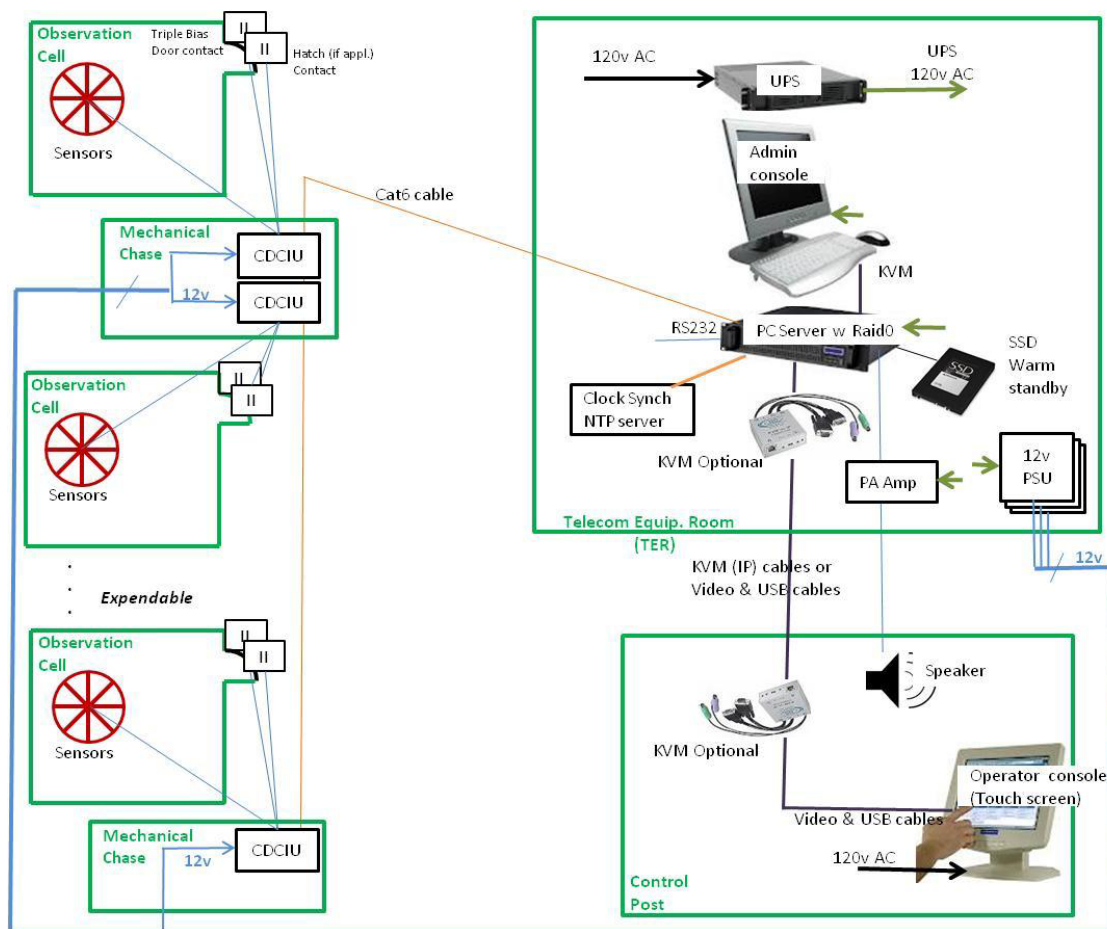
4 TECHNICAL REQUIREMENTS

4.1 CONCEPT OF OPERATION

- .1 CSC requires a LSMS to assist in the identification and notification of the cessation of movement within a cell environment. The LSMS must consist of a system used within two observation cells at the Joyceville institution.
- .2 The function of the LSMS is to notify through audible and visual alerts when no breathing movement has been detected for a predetermined period of time in an enclosed occupied observation cell environment. The objective of the LSMS is to reduce the time to the awareness of a problem and potentially saving lives.
- .3 The LSMS will consist of the following elements:
 - a) Sensors to detect movement within the observation cell;
 - b) Magnetic contacts to monitor “open” and “closed” status of the cells door;
 - c) Common Equipments; Computer System and Supporting Network;
 - d) Server with local key board, video and mouse.
- .4 Figure1: Long term or post trial system architecture



- .5 The figure1 above shows the long term target architecture to be implemented after the evaluation/trial. Figure2 shows what is viewed acceptable for the evaluation/trial unit. Note that the main difference between the two is in the location of the server equipment in the TER instead of in the CER. The CER provides an environment with temperature and humidity control to computer equipment and peripheral equipments.
- .6 Figure2: Example of an acceptable system architecture for this trial



- .7 Normally common equipment has to be deployed in the CER. But for this trial to simplify the LSMS, the common equipment could be deployed in the TER.
- .8 These system architecture diagrams represent a view of how this LSMS could be implemented but CSC will consider any other system architecture that meets the core system requirements.

4.2 DETECTION SENSORS

- .1 Using the floor plans provided as Annex C, the contractor must determine the location of a number of sensors that will create an effective array capable of detecting the inmate breathing movement. Sensors must be installed in such a way as to not be visible or accessible by inmates. This plan must be included as part of the contractor's response.

4.3 COMPUTER SYSTEM AND SUPPORTING NETWORK

- .1 The LSMS must include a workstation with all the attendant hardware – both electronic (IC boards, hard drives, internal cabling, etc.) and physical (system housing, equipment rack, connectors, etc.) – required to ensure that the system is capable of effectively receiving, processing, and analysing the data provided by the sensor array. This workstation will be housed in the Telecommunication Equipment Room 127 located in 1st floor of building, JVJ03-1 of Joyceville Institution (see Annex ‘C’).
- .2 The LSMS must include the amount and type of network appliances and cabling sufficient to ensure that the network is able to effectively transmit the data from the sensor array to the workstation without significant lag, packet loss, or corruption of data integrity.
- .3 At Joyceville Institution 12RU space is available as part of an existing cabinet. So if the LSMS with UPS occupy less than 12RU, then that space could be used, otherwise the contractor must include a suitable locking equipment cabinet for the computer system, UPS and its networking elements in the Telecommunication Equipment Room (TER). These cabinets must have locking front and rear doors, ventilation fans, and internal power distribution on separate circuits hard wired to the nearest available AC power distribution panel, where the system’s circuits will be clearly marked and locked into the on position. Cabinets must be orientated for front and rear access, all cabling entering cabinets must be in conduit and mechanically protected. Cabinets must be secured to the concrete floor.

4.4 INSTALLATION

- .1 The Contractor must provide, install, and test the LSMS. The system must meet or exceed all of the performance and operational requirements contained in the statement of work and specifications listed in Section 2.2.
- .2 Care must be taken to ensure that any existing cables and conduits of other systems are not damaged during the installation.
- .3 The Contractor must dispose of all of waste materials and packaging off-site in an environmentally friendly way.

4.5 INTEGRATION

- .1 Initially for the trial, the system is expected to operate as a standalone system but for the long term or post trial, it is expected that the LSMS will be connected to the existing Data Logger and the Facility Annunciation Alarm System (FAAS) which are located in the CER. Refer to ES/STD-0102 for Data Logger Engineering Specification, and to ES/SPEC-0603 for FAAS Engineering Specification.
- .2 Integration of system failure alarms to the existing FAAS will be required after the evaluation or trial unit. A serial interface (With alarm and log) from the LSMS should be available for future integration of the LSMS to the data logger and or to FAAS. These alarms include, as a minimum, UPS Alarms, Communication failure, I/O device failure, sensor alarm, tamper, wire cut, etc.

4.6 EXPANDABILITY

- .1 The system must be able to be extended beyond the initial capacity installed of two cells by adding hardware. The expandability of the system should not be limited in this respect.

5 ADDITIONAL REQUIREMENTS

5.1 OPERATOR TRAINING

- .1 The contractor must prepare and present a training course to individuals responsible to train staff for the operation of the system in accordance with the specification ES/SOW-0101 Statement of Work. The course must concentrate on the features and proper operation of the installed system.
- .2 The course must be presented on the site within two weeks of the successful acceptance testing of the system. The course must consist of two, three-hour sessions for basic users and one full day session for advanced users. Each session must be presented in English to a group of up to eight persons.
- .3 Training sign-in sheets must be included in the final documentation package and they must clearly identify; name of training, date of training, location of training (Joyceville institution), printed name of attendee, signature of attendee, and attendees comments on training.
- .4 The training course and training materials must be approved by the DA before the course is given. The Contractor must provide a Power Point Presentation file of the operator training.

5.2 MAINTENANCE TRAINING

- .1 The contractor must prepare and present a one-day training course to individuals responsible for the maintenance of the system. The course must concentrate heavily on the material contained in the technical manual and as-built drawings.
- .2 The course must be presented on the site within two weeks of the successful acceptance testing of the system. The course must be presented in English to one group of six persons.
- .3 The course syllabus will be presented to the RTEO for approval least two weeks prior to training commencement. Training sign-in sheets must be included in the final documentation package and they must clearly identify; name of training, date of training, location of training (Joyceville institution), printed name of attendee, signature of attendee, and attendees comments on training.
- .4 The training course and training materials must be approved by the DA before the course is given.

5.3 MANUALS

- .1 The Contractor must provide user and maintenance manuals whose content meets the requirement of ES/SOW-0101.
- .2 The Contractor must provide ten (10) copies of the user manual in English and two (2) copies of the maintenance manual in English to Joyceville Institution. The copies may be provided as one (1) printed copy and the provision of separate CD's containing a PDF file of each manual.

- .3 The contractor must provide one (1) copy of the user manual in English and one (1) copy of the maintenance manual in English to:
 - .1 The Design Authority (Electronic copy only)
 - .2 National Security Electronic Maintenance Contractor (NSRMC) Headquarters (attn: Project Manager, CSC National Maintenance Program).
 - .3 Regional Technical Electronic Officer (RTEO),
 - .4 Local CSC Authorized Service Contractor workshop,
- .4 A completed Acceptance Test Plan (ATP) forms must be included in the maintenance manuals. The Contractor must provide copies of the completed maintenance handover report form contained in appendix A.

5.4 AS-BUILT DRAWINGS

- .1 The contractor must provide as-built drawings of the site installation in AutoCAD 2005 format and in accordance with the specification ES/SOW-0101 Statement of Work.
- .2 Within 30 days of an accepted ATP, the Contractor must provide two (2) copies of the as-built drawings to Joyceville Institution (NSRMC, and RTEO).
- .3 The Contractor must also provide one (1) copy of the as-built drawings to:
 - .1 The Design Authority (Electronic copy only)
 - .2 The Regional Telecommunications and Electronics Officer (RTEO) for the Ontario Region
 - .3 ADGA Headquarters (attn: Project Manager, CSC National Maintenance Program).

5.5 SOFTWARE

- .1 The contractor must provide CD copies of any system executable software in accordance with the specification ES/SOW-0101.
- .2 The contractor must provide copies of the executable software to the site, one to the Design Authority, one to the RTEO, one to the local CSC Authorized Service Contractor workshop, and one to the CSC Authorized Service Contractor Headquarters.

5.6 TESTING

- .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 beginning of installation of the LSMS.
- .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.
- .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.

- .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 Testing may be carried out by the DA, a designated representative or a third party contractor.
- .6 The DA may repeat all of the ATP tests done by the contractor or a percentage of them. If an unacceptable level of failed tests is encountered during the ATP testing by the DA; the ATP testing will be halted until the contractor has corrected the failures.
- .7 If the DA during the ATP testing finds a minor deficiency that does not affect the operational effectiveness of the LSMS 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 LSMS equipment or system; the testing must cease until the deficiency has been corrected.
- .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.
- .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.
- .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.
- .11 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.
- .12
- .13 The equipment warranty period will start on the date the system is formally accepted.

5.7 OPERATIONAL DOWN-TIME

- .1 Equipment and systems operational down time must be kept to a minimum. All down time will be coordinated with the Correctional Manager Operations (CMO) and the Correctional Manager – Intensive Intervention Unit (IIU) 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.

5.8 INSTITUTIONAL OPERATIONS

- .1 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.

5.9 INSTITUTION ADDRESS

- .1 Joyceville Institution
Highway 15
P.O.Box 880
Kingston, Ontario, K7L 4X9
- .2 Institutional Contact:
Don Graves
Chief Plant Maintenance
Tel: 613-536-6573
Fax 613-536-6622
- .3 Regional Contact:
Daniel Smith
National Headquarters Project Leader
Correctional Services Canada
Regional Headquarters (Ontario)
443 Union Street / PO Box 1174
Kingston, ON K7L 4Y8
Tel. 613-536-4746
Cell: 613-449-1597

5.10 SECURITY

- .1 The Contractor must submit completed CPIC forms for all employee who will be working at the Institutions. The CPIC forms must be submitted to the Regional Electronics Program Officer (REPO), ten (10) working days prior to the start-up date.

5.11 SAFETY

- .1 The Contractor must comply with the document titled "Safety Regulations for Security Electronics Contractors Working at CSC Institutions" attached as Appendix B.

5.12 MAINTENANCE

- .1 The contractor must provide the following additional information:
 - .1 The location of available service facilities (after sales, service and repairs)
 - .2 The location of available replacement parts
 - .3 Response time for service calls
 - .4 The cost of service calls/cost of post warranty service contract

- .5 The location of the availability of technical expertise in case of difficulties
- .6 Recommended spare parts list

5.13 COMMUNICATION RESPONSIBILITY

- .1 The Contractor is responsible for briefing institution staff prior to leaving the work site for the day. The briefing must be given to the Chief of Plant Maintenance (CPM), or designate, and must include, as a minimum:
 - .1 Work performed that day
 - .2 Operation status of the system, including any limitations in functionality or peculiarities
 - .3 Contact name and number in the event of a system failure
 - .4 Emergency contact numbers of installation technicians

APPENDIX A

CORRECTIONAL SERVICE OF CANADA
TECHNICAL SERVICES BRANCH
ELECTRONICS SYSTEMS

MAINTENANCE HANDOVER REPORT FORM

INSTITUTION:

DATE:

SYSTEM/EQUIPMENT:

APPLICABLE CONTRACT NO:

DSS FILE NO:
SPECIFICATIONS:

EQUIPMENT SUPPLIER (NAME AND ADDRESS):

SUPPLIER CONTACT (NAME AND TELEPHONE):

WARRANTY DETAILS:

Expiry date on materials/parts:
Expiry date on installation:
Expiry date on factory labor:

Travel & living expenses during the warranty period:

chargeable to CSC ☐

not chargeable to CSC ☐

Equipment transportation costs are paid by CSC for:

sending to the supplier ☐

returning from the supplier ☐

Negotiated rates for emergency repairs at site due to misuse/abuse during warranty period are as follows:

Not applicable.

Negotiated rates for labor at site after warranty period are as follows:

Not applicable.

DEFICIENCIES:

None remain ☐

List attached ☐

DOCUMENTATION:

Maintenance manual:

Supplied ☐

Due by ;

As-built drawings, cabling and wiring diagrams:

Supplied ☐

Due by ;

Acceptance test results:

Supplied ☐

Due by ;

DISTRIBUTION OF DOCUMENTATION:

1 copy to CESM sent on:

1 copy to RATIS/RTEO sent on:

2 copies to institution sent on:

SPARES:

All delivered ☐

Delivery to be completed by ;

EQUIPMENT LIST:

See attached list. ☐

MAINTENANCE TRAINING:

Completed ☐

Scheduled for ;

SIGNATURE: Project Manager

DISTRIBUTION: CESM, NHQ
RATIS/RTEO, RHQ
AWMS, Institution

APPENDIX B

SAFETY REGULATIONS FOR SECURITY ELECTRONICS CONTRACTORS WORKING AT CSC INSTITUTIONS

1. Acts and Regulations

- a. The contractor must, at all times, be in full compliance with the latest issue of the following Acts and Regulations:
 1. The Occupational Health and Safety Act of the province where the work is being carried out,
 2. The Canada Labour Code Part II,
 3. The National Building Code Part VIII,
 4. The Workers' Compensation Board regulations of the province where the work is being carried out,
 5. Safety regulations and procedures prepared by the Institution where the work is being carried out,
 6. All other safety regulations in effect at the work site.
- b. In the event of conflict between any provisions of the above authorities the most stringent must apply.

2. Safety Plan

- a. The contractor is responsible to ensure that a site specific Safety Plan has been completed and maintained on site. The contractor must provide the Safety Plan, when requested, to Institution Staff and the Safety Officers and Inspectors authorized by the Acts and Regulations listed in Paragraph 1.a. above. The Safety Plan must include a hazard assessment, controls, an emergency plan and a communications strategy.
- b. The contractor must complete a hazard assessment. All critical tasks and the associated hazards must be identified.
- c. Once hazards are identified, controls must be put in place to minimize the risks. The controls must include but not be limited to Safe Work Practices, Standard Operating Procedures and safety inspections.
- d. An emergency plan must be prepared that takes into consideration all of the identified hazards and the potential problems that could arise during the project. The emergency plan must outline the emergency procedures to be taken in the event of an accident and must include the contact names and telephone numbers of emergency response persons and services. The list of emergency response persons and services should include but not be limited to the following:

Ambulance,
Fire Department,
Police Department,
Institutional Safety Officer.

- e. A communications strategy must be put in place that will ensure that information concerning hazards, controls and the emergency plan is communicated to all of the contractor's staff, sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies working at the institution.
- f. The Safety Plan must address and confirm to the Acts and Regulations identified in Paragraph 1.a. above.
- g. The submission of the Safety Plan to Correctional Service Canada must not relieve the Contractor of any legal obligations as specified by the Acts and Regulations listed in Paragraph 1.a. above.

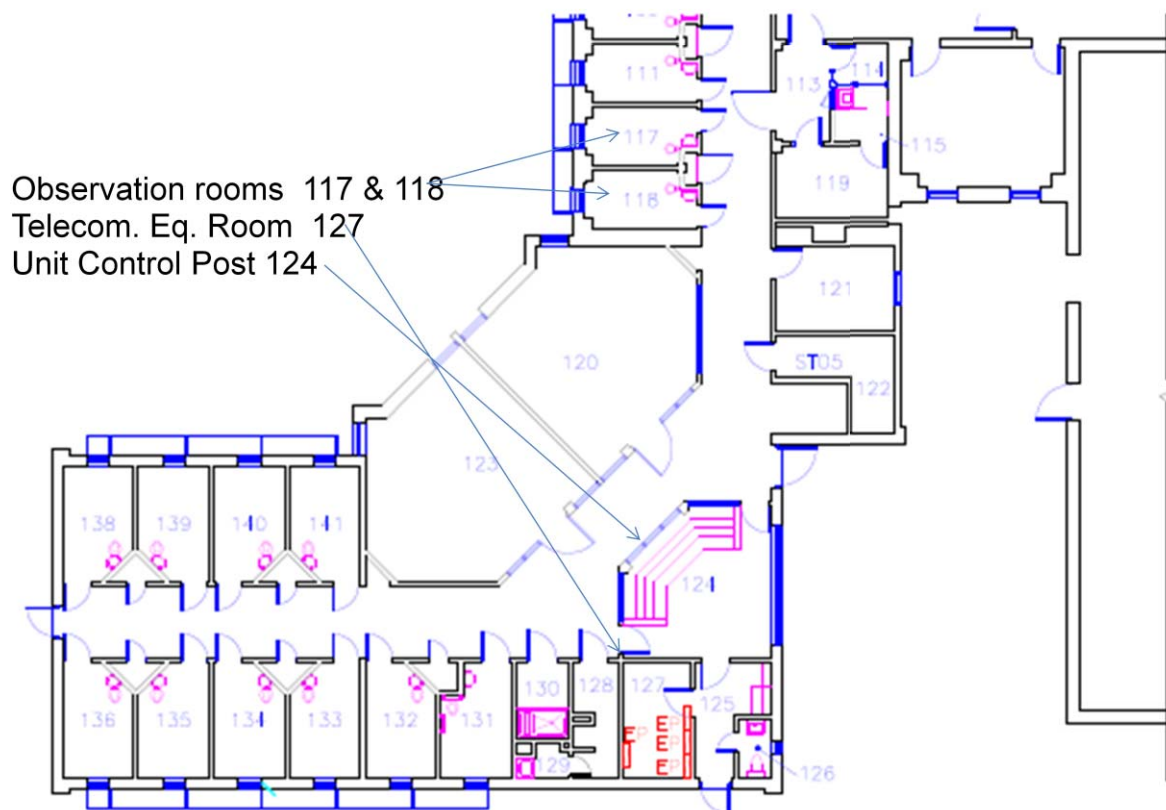
3. Safety Training

All of the contractor's staff , sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies working at the institution must have received the required safety training as mandated in the Acts and Regulations listed in Paragraph 1.a. above.

APPENDIX C

SITE SPECIFIC REQUIREMENTS

Joyceville Institution from Drawing JVJ03-1



END OF SECTION

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

**ES/SPEC-0507
Revision 4
17 August 2012**

**ELECTRONICS ENGINEERING
SPECIFICATION**

Life Sign Monitoring System (LSMS)

AUTHORITY

This Specification is approved by Correctional Service Canada for the procurement and installation of a Life Sign Monitoring System (LSMS) in Canadian federal correctional institutions.

Recommended corrections, additions or deletions should be addressed to the Design Authority at the following address: Director, Engineering Services, Correctional Service of Canada, 340 Laurier Avenue West, Ottawa, Ontario, K1A 0P9

Prepared by: Sylvio Bisson

**Reviewed by: Mark Bottomley
Edwin Morton**

**Approved by: _____
Marc St-Amand**

**Project Officer,
Electronics Systems Research**

**Director,
Engineering Services**

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue
1	All over the doc	Change shall to must
2	All over the doc.	Minor format changes
3	<p>-Adding switch at cells to enable monitoring: Section 3.8.8.1</p> <p>-Adding section 3.7.1.3 to address procedure conflict. Adding an switch at the observation cells to indicate status of the cell (occupied/Not Occupied)</p> <p>-Removing the requirement for an RFID card reader in section 3.7.1.3 and adding the an ACO in sections 3.7.1.6, 3.8.3 .x</p>	To answer questions raised during the site visit at Joyceville
4	<p>Relaxed of the availability Section3.2 from 99.99% to 99.9%.</p> <p>Improved system description in Section3.7.</p> <p>Clarification in section3.4 Supervised wire</p> <p>Changes made in Section3.8 General system requirement:</p> <p>-Removing requirement for a Switch at the cell to indicate cell is occupied by automatic SW detection feature.</p> <p>-Added Network Timing Synchronization.</p> <p>-Replacement of an ACO switch for an equivalent software audio alarm mute function.</p> <p>-Other miscellaneous clarifications</p>	Improving the specification for rendering.

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ABBREVIATIONS

.1	The following abbreviations are used in this specification:	
.2	ACO	Alarm Cut Off
.3	ATP	Acceptance Test Procedure
.4	CER	Common Equipment Room
.5	COTS	Commercial-Off-The- Shelf
.6	CSA	Canadian Standards Association
.7	CSC	Correctional Service Canada
.8	DA	Design Authority
.9	DES	Director Engineering Services
.10	EIA	Electronic Industries Association
.11	ES/SOW	Electronics Systems/Statement of Work
.12	ES/SPEC	Electronics Systems/Specifications
.13	ES/STD	Electronics Systems/Standard
.14	FAAS	Facility Annunciation Alarm System
.15	FRU	Field Replaceable Unit
.16	GFE	Government Furnished Equipment
.17	ID	Identification
.18	LSMS	Life Sign Monitoring System
.19	MHz	Megahertz
.20	mW	Milli-watt
.21	MCCP	Main Communications and Control Post
.22	NTP	Network Time Protocol
.23	PoE	Power over Ethernet
.24	PTT	Push-to-Talk
.25	REPO	Regional Electronics Program Officer
.26	RFP	Request for Proposal
.27	RTO	Regional Technical Officer
.28	RTEO	Regional Technical Electronic Officer
.29	SDK	Software Development Kit
.30	SOW	Statement of Work
.31	SSD	Solid State Drives

-
- | | | |
|-----|--------|---|
| .32 | TCP/IP | Transmission Control Protocol/Internet Protocol |
| .33 | TER | Telecom Equipment Room |

DEFINITIONS

- .1 The following definitions are used in this specification:
 - .1 Design Authority: Director, Engineering Services (DES) ; Correctional Service Canada (CSC) is responsible for all technical aspects of the system design and implementation.
 - .2 Contractor: The Company selected as the successful bidder.
 - .3 Project Officer: A CSC employee or a contracted person designated by DES to be responsible for the implementation of the project.
 - .4 Off-the-shelf: Equipment currently on the market with available field reliability data, manuals, engineering drawings and parts price list.
 - .5 Custom Equipment: Equipment designed and/or manufactured specifically for a specific contract.

1 INTRODUCTION

1.1 GENERAL

- .1 This specification defines the design, technical and performance requirements for the evaluation of a Life Sign Monitoring System (LSMS). For this evaluation the LSMS will be used as a standalone system and therefore will not be integrated with any other system.
- .2 The LSMS must incorporate the hardware necessary to perform status monitoring, alarm processing, and display and control of the system.
- .3 The contractor must be responsible for integrating all subsystems and must provide all material and labor required for the design, supply, delivery, installation, testing and commissioning of the LSMS. The contractor must provide the documentation and training to the extent described in this.

1.2 COMMERCIAL-OFF-THE-SHELF EQUIPMENT

- .1 The system must use commercial off-the-shelf (COTS) equipment and proven designs to the maximum extent possible.

1.3 TECHNICAL ACCEPTABILITY

- .1 The Correctional Service Canada (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.
- .2 The CSC Technical Services Branch, Engineering Services Division has established technical specifications and equipment standards for specific electronic security systems which are based on very specific and restrictive operational performance criteria as detailed in its Electronic Engineering Standard. Technical acceptability of these systems means that the equipment complies with the pertinent CSC specifications and standards.
- .3 The technical acceptance process must involve system and subsystem evaluation in accordance with the applicable CSC specifications in one of CSC's facilities to verify the effectiveness of the proposed technologies when subjected to the restrictive operational environment.
- .4 CSC will verify the LSMS in an observation cell and verify in depth any of the system technical specifications called up. CSC will require for the supplier to arrange for a full site demonstration. CSC may rely on manufacturer's test results for specific areas of the specification where an independent test facility has conducted the test, and the facility is deemed acceptable to CSC.

- .5 Equipment qualification is an ongoing process and can be initiated at any time by a vendor. Any vendor can have access to the CSC specifications and standards. Any new development or products should be submitted to the CSC Engineering Services Division, Technical Authority in a suitable time frame prior to any tendering process to allow for an acceptable evaluation period. The evaluation period may take up to three (3) months.

1.4 EQUIPMENT PROCUREMENT

- .1 Any ordering of equipment/material before the approval of the system design report will be undertaken at the contractor's own risk. The Design Authority may authorize the procurement of certain long lead items at, or shortly after a preliminary design review of the proposed system.

1.5 QUANTITY OF EQUIPMENT

- .1 The quantity and location of the equipment required for CSC institutions will be contained in the specification identified in the Statement of Technical Requirements (STR)

2 APPLICABLE DOCUMENTS

2.1 SPECIFICATIONS, STANDARDS, AND STATEMENTS OF WORK

- .1 The following documents of the issue in effect on the date of the Request for Proposal (RFP) must form a part of this specification to the extent specified herein:
 - .1 ES/SOW-0101 Statement of Work for Procurement and Installation of Electronic Systems
 - .2 ES/SOW-0102 Statement of Work for Quality Control of Electronic System Installations
 - .3 ES/SOW-0110 Statement of Work for Structured Cable Systems for Electronic Systems Installations
 - .4 ES/STD-0227 Standard for LCD Colour Monitors
 - .5 EIA-310 Electronic Industry Association Standard for Racks, Panels and Associated Equipment
 - .6 ES/STD-0102 Electronics Engineering Specification, Data Logger
 - .7 ES/SPEC-0603 Electronics Engineering Specification, FAAS

3 REQUIREMENTS

3.1 GENERAL

- .1 Correctional Service of Canada (CSC) wants to reduce the number of deaths of inmate in custody. New technology is becoming available to assist in the identification and notification of the cessation of an inmate's breathing movement within a cell. Detection of cessation of breathing and prompt notification can reduce the time for staff to become aware of a problem and thus allow them to act more adequately; thereby potentially saving lives.
- .2 This document specifies a Life Sign Monitoring System to be added to existing observation cells within a Federal Institution.
- .3 The LSMS must provide the operator with centralized monitoring and control capability of the observation cells. The LSMS Console must incorporate industrial quality and commercially available controllers and Video Display Units (VDU). The VDUs must display the status of monitored subsystems and provide software control of system features, to the extent specified herein.
- .4 To the maximum practical extent, off-the-shelf, Design Authority type-approved equipment must be selected for use in the system.

3.2 PERIOD OF OPERATION

- .1 The LSMS Integration Console and all associated equipment must be designed for and capable of 24 hours per day, seven days per week operation with system availability of 99.9%.

3.3 WIRES, CABLES, CONDUITS, DUCTS

- .1 The contractor must supply all necessary terminations, cross connection cabinets, conduits, wire and cabling and any other items that may be required for the satisfactory installation of the specified system. All installation workmanship must be performed in accordance with ES/SOW-0102, SOW and all applicable national, provincial, and local electrical codes.
- .2 A wiring diagram must be supplied in the installation section of the Maintenance Manual to detail where module connections terminate and how wires are routed and terminated.
- .3 Conduits, cables, ducts, trays, etc. may be either Government Furnished Equipment (GFE) or supplied and installed by the contractor depending on the particular institution. The determination will be made by the Design Authority and will be identified in the Request for Proposal.
- .4 Connectors provided on the ends of any cable must mate with the corresponding connector on the equipment. Adapters from one type of connector to another are not acceptable.

3.4 WIRING SUPERVISION

- .1 The first system to be installed at Joyceville is intended to evaluate the technology, so no extra equipment or significant cost is expected to be added to the system in an attempt to supervise all the system wiring.
- .2 Any silent failure or case where a wire is cut or open without raising an equipment system fault or a tamper alarm must be clearly documented in the support and maintenance manual.
- .3 For post trial, the wiring supervision between Field Replaceable Unit is expected. E.g. of a supervised switch wiring would include 4 states: Short, cut, switch open, switch closed.
- .4 For post trial, any system tamper attempt by unauthorized people shall be detected.

3.5 SABOTAGE, TAMPERING AND SURVIVABILITY

- .1 Elements of the system must operate in areas exposed to inmate access and shall have high resistance to damage, destruction, or conversion to other uses (including weapons). All interconnecting service must be secure against tampering or improper eavesdropping interference.

3.6 HUMAN FACTORS

- .1 Elements of the system which are used directly by staff (i.e., control panels, etc.) must conform to accepted principles of good human factors design.

3.7 GENERAL SYSTEM CONFIGURATION

- .1 The LSMS consist of the following elements:
 - .1 Redundant Sensors to detect absence of life signs
 - .1 Tamper proof unit to be deployed within a protective dome at the ceiling or hardened enclosure around the wall of an observation cell;
 - .2 Door contacts to monitor “open” and “closed” status for interfacing with the doors control system.
 - .1 Tamper proof equipment to be deployed to all doors/hatches of an observation cell.
 - .3 A cell data collector interface unit (CDCIU):
 - .1 Making the connections to cell sensors, and to the cell door contacts (Hatch included if applicable);
 - .2 Data interface that connects to the LSMS server processing unit, additional consideration will be given to system that use PoE links;
 - .3 Tamper proof equipment to be located in a mechanical chase which is typically located between two observation cells.
 - .4 Maintenance administration console:
 - .1 A screen, keyboard and mouse for administration of the system to be collocated with the LSMS server unit.
 - .5 LSMS Server shall:
 - .1 Process the data received from the sensors for 24/7 monitoring and interpretation;
 - .2 Be rack mounted server with Raid0 HD for Operating system;
 - .3 Be supplied with Solid State Drives (SSD) to be used to store the LSMS application, associated data and logs to ensure quick recovery from a server failure.
 - .4 Be connected to a remote operator console located in the Control Post; Depending on distance, it may be necessary to use remote and local KVM units to link console and server.
 - .5 Have a serial interface available for future integration with the FAAS (Alarms and logs) and data logger; Note that this interface may not be connected as part of this evaluation/trial. Refer to ES/STD-0102 for Data logger Specification. Refer to ES/SPEC-0603 for FAAS Specification.
 - .6 Be locally connected to a key board, mouse and a video interface for an Maintenance administration console. Refer to ES/STD-0227 for LCD Colour Monitors specification;
 - .6 Timing and Synchronization via NTP server,
 - .1 The system must support timing acquisition of network time via a NTP server.
 - .2 A NTP Server must be provided if a local one is not available.
 - .7 Uninterruptable Power Supply (UPS) Unit with sufficient spare capacity

- .1 Has to be able to operate for 1 hours with a 60% load;
- .2 To provide UPS power to LSMS' server and all its components necessary to ensure the system meet 99.9% system availability;
- .3 Could be done via existing UPS if it has sufficient spare capacity available;
- .8 Operator console:
 - .1 A flat screen with a keyboard and a mouse to operate the system, additional consideration will be given to a touch screen since space is limited in the command post for a mouse and keyboard;
 - .2 Speaker to provide audible alarms, additional consideration will be given to a locally connected speaker to the operator consol.
 - .3 To be located in the Unit Control Post located close to the observation cells.

3.8 LSMS FUNCTIONAL REQUIREMENT

- .1 Definitions
 - .1 A fault is a state where the system cannot perform its primary function and a maintenance action is required to fix the system.
 - .2 An alarm is a state where the life signs of the inmate are absent or compromised such as apnoea, or cessation of breathing movement.
 - .3 Events include alarms, faults, acknowledgements of alarms, faults.
- .2 LSMS must not detect movement activities from outside of the Cell walls when door is closed and cell occupied.
- .3 The system must immediately display a RED icon and audible alarm upon the detection of lack of life signs (breathing movement) for a configurable interval via the administration console (default set to 75 sec);
 - .1 An Alarm Acknowledgment function/icon must be available via the touch screen to acknowledge an alarm and to mute the audio alarm;
 - .2 Acknowledging the alarm is not required prior to clearing the alarm;
 - .3 Clearing the alarm must be done when cell door is open to attend the inmate;
- .4 The system must keep an activity log. This log must capture and retain all event activity including status changes, alarms, alarm acknowledges, alarm cancellations, monitor enable/disable, and faults for a minimum of one year;
 - .1 All events must be logged and time stamped; See data logger specification ES/STD-0102.
- .5 The system availability and maintainability must:
 - .1 Operate 24/7, meaning must have a minimum availability of 99.9%;
 - .2 Must submit a reliability model that includes all the Field Replaceable Units (FRU)' MTBF calculation and demonstrate that the system availability meet 99.9%;

-
- .3 Raise a minor fault and continue operating in the event of a single sensor failure;
 - .4 Raise a major fault in the event of a failure impacting system performance;
 - .6 The system must have a Mean Time To Repair (MTTR) below 1 hour assuming that spare FRU are in inventory:
 - .1 All FRU must be clearly labelled;
 - .2 All FRU must be easily replaceable. For example: using connectors as much as possible to quickly disconnect and reconnect the FRU during replacement;
 - .3 All FRU should have a red and a green LEDs to identify operating status (RED meaning component failed, and GREEN meaning component is up and running and active) ;
 - .4 All major components of the system that are not field replaceable within one hours must have an MTBF of 10 years or better, and have a well documented replacement procedure;
 - .5 LSMS software must be able to report to the administration console the status of each major component and or FRU;
 - .7 The system must provide the following features at the Maintenance & Administration console:
 - .1 Restrict access with a password feature;
 - .2 Allow system configuration;
 - .3 Review of event logs;
 - .4 System maintenance;
 - .5 View system status;
 - .6 Plot statistics;
 - .7 Backup event and configuration data;
 - .8 Initiate self testing functions for all the major components of the system. e.g. Sensors, computer, etc;
 - .9 Initiate cell integrity testing functions when cell is not occupied. Confirm absence of any "life signs".
 - .8 The system must provide the following features at the operator consoles:
 - .1 The initial enabling of the cell monitoring should be done automatically when the door is closed by sensing life signs within the 1st minute after the door is closed. Note that normal procedure requires that cell doors be always closed, independently of the cell being occupied or not. Therefore with this software feature no alarm will be raised when cell door is closed and unoccupied;
 - .2 Display cell physical status:
 - .1 Occupied or not occupied;
 - .2 Door/hatch open or close.
 - .3 Display system status:
 - .1 Normal: everything is up and running;
-

- .2 Degraded - Minor fault: system still functional, possibly degraded;
- .3 System Failure - Major fault, A system failure shall be deemed to have occurred when any required system is not functional and requires repair; or when any required control function cannot be performed.
- .4 Power Failure: Loss of primary power to the system.
- .5 Tampered – Wire cut, case open etc.
- .4 View Cell inmate life sign status:
 - .1 RED alarm: inmate needs immediate attention;
 - .2 YELLOW alarm: apnoea breathing pattern detected;
 - .3 GREEN: no problem detected.
- .9 The system must include a preventative maintenance procedure to ensure proper system operation;
- .10 The system must ensure materials used as part of the system in the inmate area are vandal resistant and can't be used as a weapon when broken or damaged by the inmate. I.e. sensor dome should be very soft or very hard and not breakable;
- .11 All of the required components for the system that are located in the Telecom Equipment Room (TER) must be contained within a locking cabinet and contain security features, both physical and electronic, that will indicate any unauthorized access to the system.
- .12 If applicable, all of the required components for the system that are located in the Control Equipment Room (CER), except for the administrator console, must be contained within a locking cabinet and contain security features, both physical and electronic, that will indicate any unauthorized access to the system.

4 MECHANICAL CONFIGURATION

4.1 ENVIRONMENTAL REQUIREMENTS

- .1 The LSMS Solution must operate over the following indoor environmental conditions:
 - Temperature: 0° C to +50° C
 - Humidity: 0 to 90% relative, non-condensing
 - Location: sheltered environment.

4.2 POWER FAILURE

- .1 Loss or restoration of power to the system shall not produce spurious annunciations or outputs to the data logger.
- .2 When power is returned after a power failure, the system shall resume normal operation without operator action.

4.3 POWER REQUIREMENTS

- .1 The system must use VAC power within the following limits:

- .1 Voltage: 120 VAC $\pm 10\%$;
 - .2 Frequency: 60 Hz $\pm 1.5\%$;
 - .3 Transients: up to 5 times the nominal voltage for up to 100 msec durations. Changes in the input power or any fluctuations within the above limits must not cause damage to the unit;
- .2 Total power consumption must not exceed 1,000 watts.

4.4 INSTALLATION REQUIREMENTS

- .1 The LSMS solution must be installed at the site in accordance with the ES/SOW-0101, Statement of Work and the ES/SOW-0102, Statement of Work.

4.5 DOCUMENTATION REQUIREMENTS

- .1 All final LSMS documentation must be in accordance with the ES/SOW-0101, Statement of Work.

4.6 SUPPORT REQUIREMENTS

- .1 The LSMS maintenance and spares support must be provided in accordance with the ES/SOW-0101, Statement of Work.

4.7 TRAINING REQUIREMENTS

- .1 Operator training and maintenance training on the LSMS solution must be in accordance with the ES/SOW-0101, Statement of Work.

5 QUALITY ASSURANCE

5.1 GENERAL

- .1 The LSMS Quality Assurance programme must be provided as detailed in the ES/SOW-0101, Statement of Work.
- .2 All on-site installation work, test plans and LSMS acceptance testing must be conducted in accordance with the ES/SOW-0101, Statement of Work.

6 DELIVERY

- .1 Delivery requirements for the LSMS documents, drawings, plans, manuals, etc. (where applicable) must be in accordance with the ES/SOW-0101, Statement of Work.
- .2 Delivery requirements of the LSMS equipment must be in accordance with the ES/SOW-0102, Statement of Work.

7 INTERFERENCE

- .1** Performance of the LSMS must not be affected by the use of standard electronic equipment used at the institution.
- .2** Distance limits of standard electronic equipment are as follows:
 - .1** 5 watt CB transceivers at 1 metre or more;
 - .2** 6 watt VHF and UHF transceivers at 1 meter or more;
 - .3** 25 mW 420-430 MHz Personal Portable Transmitters at 1 metre or more;
 - .4** Other radio frequency transmitting receiving and redistribution equipment at 5 meters or more; and
 - .5** Personal computer and/or computer work stations at 5 meters or more.

8 SAFETY

- .1** All LSMS electrically powered elements must be CSA, UL, ULC or CE approved, as required by law.

END OF SECTION

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

**ES/SPEC-0006
Revision 2
14 January, 2002**

**ELECTRONICS ENGINEERING

SPECIFICATION
CONDUIT, SPACE AND POWER REQUIREMENTS
FOR SECURITY SYSTEMS FOR USE IN
FEDERAL CORRECTIONAL INSTITUTIONS**

AUTHORITY

This Specification is approved by the Correctional Service of Canada for the procurement and Installation of Conduits for Electronic Security Systems in Canadian federal correctional institutions.

Recommended corrections, additions or deletions should be addressed to the Design Authority at the following address: Director, Engineering Services, Correctional Service of Canada, 340 Laurier Avenue West, Ottawa, Ontario, K1A 0P9

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ABBREVIATIONS

The following abbreviations are used in this specification:

CER	Common Equipment Room
COTS	Commercial-Off-The- Shelf
CSA	Canadian Standards Association
CSC	Correctional Service Canada
DES	Director Engineering Services
EIA	Electronic Industries Association
EMT	Electrical Metallic Tubing
GFE	Government Furnished Equipment
MCCP	Main Communications and Control Post
PVC	Polyvinyl Chloride
RFP	Request for Proposal
SOW	Statement of Work
STR	Statement of Technical Requirements
TES	Terminal Equipment Space

DEFINITIONS

The following definitions are used in this specification:

Design Authority	Director, Engineering Services (DES) - Correctional Service Canada (CSC) is responsible for all technical aspects of the system design and implementation.
Contract Authority	Public Works and Government Services Canada (PW&GSC) is responsible for all contractual matters associated with the system design and implementation.
Contractor	The company selected as the successful bidder.
Project Officer	A CSC employee or a contracted person designated by DES to be responsible for the implementation of the project.
Off-the-shelf	Equipment currently on the market with available field reliability data, manuals, engineering drawings and parts price list.
Custom Equipment	Equipment designed and/or manufactured specifically for a specific contract.

1.0 INTRODUCTION

1.1 General

This specification defines the requirements for the design and installation of conduits, cable troughs and raceways as well as space and power requirements for telecommunications and electronic security systems in the Correctional Service of Canada (CSC) facilities.

1.2 Scope

This specification has been developed to ensure high standards for the installation of conduits, cable troughs and details equipment space and power requirements for electronic systems. It defines workmanship standards which may not be fully covered in subsidiary specifications. All contractor's documentation and installation procedures shall meet this specification for reliability, maintainability, longevity, appearance and operational use.

1.3 Off-The-Shelf Equipment

The contractor shall provide commercial off-the-shelf (COTS) materials wherever possible. COTS materials shall meet or exceed the manufacturing standards as listed in this specification.

Where COTS material is unavailable or unsuitable for a specific application, the contractor may manufacture or arrange for the manufacturing of a particular item to suit the requirements. Manufactured materials shall meet or exceed the best commercial equipment manufacturing standards.

1.4 Equipment Procurement

Any ordering of material before the approval of the system design report will be undertaken at the contractor's own risk. The Design Authority may authorize the procurement of certain long lead items at, or shortly after a preliminary design review of the proposed system.

2.0 **APPLICABLE DOCUMENTS**

The following documents of the issue in effect on the date of the Request for Proposal (RFP) shall form a part of this specification to the extent specified herein.

ES/SOW-0101	Statement of Work for Procurement and Installation of Electronic Systems
ES/SOW-0102	Statement of Work for Quality Control of Electronic Systems
EIA-310-C	Electronic Industries Association Standard for Racks, Panels and Associated Equipment.
CSA C22.1	Canadian Electrical Code - Part 1 Safety Standard for Electrical Installations
CSA C22.2	Canadian Electrical Code - Part II

3.0 REQUIREMENTS

3.1 General

The contractor shall supply all necessary conduits, cable troughs and raceways and any other items that may be required for the satisfactory completion of the specified project. All installation workmanship shall be performed in accordance with the Statement of Work, Standards specified in Section 2.0 of this specification and all applicable national, provincial, and local electrical codes.

A conduit diagram shall be supplied in the installation documentation to detail where connections terminate and how conduits are routed and terminated.

Conduits, ducts, trays, etc. may be either Government Furnished Equipment (GFE) or supplied and installed by the contractor depending on the particular institution. The determination will be made by the Design Authority and will be identified in the STR.

The contractor shall provide Electronic Industries Association (EIA) standard racks, panels and associated hardware according to the space requirements of this specification.

The contractor shall provide all necessary wiring, circuit panels, circuit breakers and associated hardware according to the power requirements of this specification.

3.2 Environmental Conditions

All materials and equipment which are used in CSC installations shall be chosen with consideration being given to the intended use, safety, retention of appearance, maintainability and durability under rugged operating conditions. These materials shall perform over the following environmental ranges:

a. Indoor Equipment

Temperature: 0° C to 50° C; and

Humidity: 20% to 95% non-condensing.

b. Outdoor Equipment

Temperature: -40° C to +55° C; and

Humidity: up to 100% condensing.

3.3 Conduits, Cable Troughs and Raceways

3.3.1 Conduits

Conduits installed above ground, and accessible to the inmate population, shall be rigid steel. Metal conduits installed in secure and inmate accessible areas shall be fitted with double the normal quantity of support hangars.

In locations subject to extreme temperature changes, and/or where conduit lengths are of non-standard size, the contractor shall make provisions for the inclusion of conduit expansion joints.

Outdoor conduit shall not be damaged by combinations of direct exposure to the sun, wind, rain, lightning, hail, snow and ice as may be expected to occur at each institution location.

Rigid Polyvinyl Chloride (PVC) conduits shall be used only in buried applications. Rigid PVC conduits shall not be threaded, but may be used with approved adapters and couplings applied in a manner consistent with industry standards. PVC conduits which cross roadways shall be encased in poured concrete. The contractor shall provide a suitable means of protecting the buried conduit against damage caused by digging or excavating. The preferred method is installing a tape marker directly above the conduit path.

Electrical Metallic Tubing (EMT) conduit may be used in administrative areas, and locations which are not normally assessable to the inmate population.

Liquid-tight flexible metal conduits may be used where a flexible connection is required, ie. cameras, microwave dishes, etc. In such applications, the length of "flex" conduit shall not exceed one (1) metre.

In addition to these requirements, the latest issue of applicable industrial standards apply, including:

- a. CSA Standard C22.2 - Rigid Metal Conduit
- b. CSA Standard C22.2 - Flexible Metal Conduit

3.3.2 Cable Troughs and Raceways

Cable troughs and raceways shall be continuous and shall be constructed of metal. The contractor shall provide adequate mounting devices which will permit the use of fastening devices that will not damage conductor insulation.

Cable troughs, raceways, and fittings shall be free from burrs or other sharp edges which may cause damage to the cable or insulated conductors. All troughs and raceways shall be installed as a complete system before the conductors or cables are installed.

Cable troughs may be either ventilated or solid and unless otherwise specified, shall be equipped with covers and steel guards to protect against damage.

In addition to these provisions, the latest issue of appropriate standards shall apply, including:

- a. CSA Standard C22.2 - Cable Troughs and Fittings.
- b. CSA Standard C22.2 - Raceways and Fittings.
- c. CSA Standard C22.2 - Surface Raceways and Fittings.

4.0 **SYSTEM REQUIREMENTS**

Summary tables of the electronic security systems minimum conduit, space and power requirements are provided as Appendix A, Appendix B and Appendix C respectively to this specification.

4.1 **Perimeter Intrusion Detection Systems**

4.1.1 **Motion Detection System**

The Motion Detection System (MDS) is designed to detect motion between the fences. One system which is type approved for use in CSC uses the Leaky Coax - buried cable technology. The perimeter is divided into sectors and two sectors are controlled by a single local control module. Signal and power fed to the field mounted electronic controllers via the buried coax cables. The main MDS control modules are installed in the common equipment room (CER).

4.1.1.1 **Conduit Requirements**

Cable entry to the area between the two perimeter fences is made at a single point, usually at the gatehouse. One (1) 38 mm conduit is required from the CER to the area between the two perimeter fences. This conduit is stubbed underground between the fences several meters from the gatehouse.

4.1.1.2 **Space Requirements**

The MDS control equipment will normally occupy about half of the area of a 2.483 meter rack, usually supplied by the PIDS contractor.

4.1.1.3 **Power Requirements**

The power requirement for the MDS equipment in the CER is a 110.0 VAC, 15.0 ampere, uninterruptable power supply.

4.1.2 **Fence Disturbance Detection System**

The Fence Disturbance Detection System (FDS) is designed to detect particular movement and vibration patterns on the inner perimeter fence. This is accomplished by mounting electro-mechanical fence sensors (geophones, electret or piezoelectric vibration detectors) on the fence. The perimeter is divided into sectors and one array of sensors covers one sector. The cables from all the sectors are run along the top of the fence to the gatehouse and to the control equipment mounted in the CER.

4.1.2.1 Conduit Requirements

FDS cable entry to the inner perimeter fence is made at a single point, usually at the gatehouse. Depending on the size of the perimeter and the number of sectors, the requirement is for a minimum of one (1) 38 mm conduit from the gatehouse to the top of the inner fence. The conduit is capped with a weather proof cable outlet.

4.1.2.2 Space Requirements

The FDS control equipment will normally occupy approximately half of the area of a 2.483 m rack supplied by the contractor.

4.1.2.3 Power Requirements

The power requirement for the FDS equipment in the CER is a 110.0 VAC, 15.0 ampere, uninterruptible power supply.

4.1.3 PIDS Microwave

Bistatic microwave (beam) systems are normally installed across the pedestrian and vehicle entrance portals (sallyports) to detect movement in the area. The microwave systems are integrated into the PIDS motion detection system. These systems allow small portal sectors to be turned off to allow authorized staff and vehicle access without effecting the entire perimeter security.

4.1.3.1 Conduit Requirements

Microwave cable to each of the pedestrian and vehicle sallyport areas are required from the closest motion detection system (MDS) local control module. One buried (1) 19 mm PVC conduit is required from each sallyport to the closest perimeter MDS unit.

4.1.3.2 Space Requirements

The control equipment will normally occupy approximately 0.5 metre of rack space supplied by the contractor.

4.1.3.3 Power Requirements

The power requirement for the microwave equipment in the CER is a 110.0 VAC, 15.0 ampere, interruptible power supply.

4.1.4 PIDS Closed Circuit Television

Closed Circuit Television (CCTV) monochrome cameras are placed in strategic positions around the perimeter fence. The cameras monitor the institutional side of the inside perimeter fence and the area between the fences. When there is an alarm on the FDS and/or MDS, the CCTV cameras monitoring the appropriate sector inside fence and between the fences are selected for viewing. During an alarm period the video displayed on the monitors from the selected cameras are recorded on a time-lapse video cassette recorder.

The CCTV cameras are usually grouped at the corners of the perimeter and mounted on self supporting towers. 110 VAC power is provided to an VAC distribution panel mounted at each corner of the perimeter. VAC power is distributed to the cameras.

External vertical synchronization of the CCTV cameras is by the distribution of an independent vertical pulse to all the cameras and components of the system.

4.1.4.1 Conduit Requirements

CCTV Signal and Control. Two (2) 50 mm conduits run from the CER to the cameras in the corners of the perimeters in both directions. These conduits for the CCTV camera signal and control wiring terminate in a exterior distribution box mounted on the closest camera towers. Two (2) 50 mm conduits run around the perimeter terminating at each of the camera groups at the perimeter corners.

CCTV AC Power. Two (2) 38 mm conduits are required from the power distribution panel in the CER to the power junction box on the closet perimeter camera tower. One conduit is required to run in both directions. VAC power is required for the cameras and the heater and wipers in the camera housings. One (1) 38 mm conduit is required to run from the power junction box around the perimeter providing power to each camera group.

4.1.4.2 Space Requirements

The video distribution and switching equipment in the CER require approximately 1.0 m of rack space.

The four video monitors, wiper control and camera on/off switch panels in the MCCP console require space in one (1) EIA standard console cabinet..

A separate standalone rack in the MCCP is provided to accommodate five (5) time lapse VCRs.

4.1.4.3 Power Requirements

The power required in the CER for video switching and control equipment is one 110.0 VAC, 15.0 ampere uninterruptible power supply.

The power requirement for the perimeter cameras is a 110.0 VAC, 20 ampere supply to each group of usually four (4) cameras from the power distribution panel in the CER.

A camera and housing requires 300 watts each, including heaters, wipers and all other the environmental control units for the camera housing units.

4.1.5 **MCCP Console**

The control and annunciation equipment for the PIDS and the Facility Alarm Annunciation System are mounted in the console cabinets in the MCCP. The control and annunciation units are normally connected to processing equipment in the CER by cables running under the computer flooring. There is a requirement for rigid conduit between the MCCP and the CER for the 110 VAC uninterruptible power supply (UPS).

4.1.5.1 **Conduit Requirements**

One (1) 19 mm conduit is required from the UPS location in the CER to the MCCP console.

4.1.5.2 **Space Requirements**

The console cabinet space requirement will depend on the number of systems provided at the institution and usually consists of six console racks in the MCCP joined together to form the control console. One medium equipment rack for the maintenance video display unit (VDU) and a low profile cabinet with sliding shelves for the time-lapse VCRs and printer.

The MCCP will require a room with a floor area of no less than approx. 23.6 square metres. The CER will require a room with a floor area of no less than 9.0 square metres for the equipment and approx. 6.3 square metres for spare equipment storage and maintenance. Both rooms require computer flooring, all conduits entering will be stubbed or terminated under the computer floor. Both rooms need to be as square as possible to allow for optimum equipment placement.

The UPS will require a room with a floor area of approx. 6.3 square metres if the UPS is located at a different site to the CER. The UPS can be located in the CER within the requirement shown above. The floor may be concrete.

The ventilation system in the CER should keep the temperature below 29.0 degrees C and vent to the outside to eliminate gases that may escape during battery operation or charging.

4.1.5.3 **Power Requirements**

The power requirement for the MCCP console is two 110.0 VAC, 15.0 ampere, uninterruptible power circuits.

4.2 Facility Alarm Systems

4.2.1 Inmate Cell Call System

The ICCS is provided so that an occupant of a cell may request assistance from the control post. This is achieved by operating a call originating device (COD) mounted in the cell. The call is annunciated in the control post, the guard responds to the call and cancels the call by operating a call cancelling device (CCD) external to the cell and adjacent to the cell door.

4.2.1.1 Conduit Requirements

One (1) 15 mm conduit is required from each cell, the conduits from four cells are combined in a junction box in the pipe chase. Two or three of these junction boxes are linked together by 25 mm conduit. One (1) 38 mm conduit connects the group to the terminal equipment space (TES) where they are terminated.

One (1) 25 mm conduits are provided from the TES to the control post. These are shared by the electronics contractors with each contractor using at least one each.

The cables interconnecting the equipment in the TES to the CER are normally installed in a cable tray which runs throughout the institution.

4.2.1.2 Space Requirements

The equipment should normally occupy half the area of an one (1) 2.483 m rack in each TES.

4.2.1.3 Power Requirements

The power requirement for this system is a 110.0 VAC, 15.0 ampere circuit.

4.2.2 Fixed Point Security Alarm System

The FPSA system is provided so that an occupant of designated rooms may request assistance from the control post. This is achieved by operating a call originating device (COD) mounted on the wall or under a desk. The call is annunciated in the control post, the guard responds to the room.

4.2.2.1 Conduit Requirements

One (1) 15 mm conduit is required from each designed room, the conduits from these rooms may be combined in a junction box. Two or three of these junction boxes may be linked together. The link will be 25 mm conduit and one (1) conduit (38 mm) is then run to the CER where it is terminated under the computer flooring.

4.2.2.2 Space Requirements

The FPSA COD is mounted on a wall or under the desk in the designated room.

4.2.2.3 Power Requirements

The power requirement for this system is a 110.0 VAC, 15.0 ampere circuit.

4.2.3 Personal Portable Alarm System

The PPA system is used by CSC staff working in all areas of the institution to alert the central security post staff to serious incidents or potentially dangerous personal security or safety situations. The PPA system consists of a central controller, a central receiver and a number of portable wireless transmitting devices (transmitters) in belt worn leather cases. PPA alarms are sent to the security post when these small portable transmitters are activated by the staff member. Alarm identification, alarm time and cancellation may be recorded on a data logger.

4.2.3.1 Conduit Requirements

One (1) 15 mm conduit is required from the PPA receiver which is located in a central area of the institution to the MCCP where the PPA controller is located. This conduit will accommodate the twisted and alarm signal wires. One (1) 15 mm conduit is required between the PPA receiver and the antenna which is located on the roof, the side of a building or on an existing radio tower.

4.2.3.2 Space Requirements

The PPA receiver will be mounted in a rack or on the wall in a central location of the institution. The PPA controller will be mounted in the MCCP control or on a shelf in the CER.

4.2.3.3 Power Requirements

The power requirement for the PPA equipment in the MCCP is a 110 VAC, 15.0 ampere, uninterruptible power circuit.

4.2.4 **Portable Alarm Location System**

The PAL system operates in conjunction with the Personal Portable Alarm (PPA) system to locate an area where the PPA alarm is originating from. The PAL system consists of central monitoring equipment, a number of nodes and a number of wireless sensors distributed within an institution. PPA alarm locations can be determined and sent to the security post. Alarm identification, alarm time and cancellation are data logged.

4.2.4.1 **Conduit Requirements**

One (1) 15 mm conduit is required from each PAL node which is located throughout the institution to the CER where the PAL controller is located. This conduit will accommodate a co-axial cable for the alarm signal from each node.

4.2.4.2 **Space Requirements**

The PALS nodes and wireless sensors will be mounted in the ceilings throughout the institution. The PALS controller in the CER will require approximately three (3) feet of rack space.

4.2.4.3 **Power Requirement**

The power requirement for the PALS equipment in the CER is one 110 VAC, 15.0 ampere, uninterruptible power circuit.

4.3 **Access Control & Supplementary Systems**

4.3.1 **Door Control & Corridor Monitoring System**

This system provides room and corridor access by door control from a designated CP. The door control system is usually integrated with a CCTV system to allow staff to view the person(s) requesting access.

4.3.1.1 **Conduit Requirements**

Two (2) 15 mm conduits are required from under the CER floor or the TES to the room and corridor doors requiring controlled access. One conduit will accommodate the CCTV system for video and camera control purposes. The other conduit is required for the door access control system.

4.3.1.2 **Space Requirements**

The rack space requirement will usually consists of approximately two (2) feet of one (1) 2.483 m rack in the CER or TES and one rack in the MCCP control console or CP console.

4.3.1.3 Power Requirements

The power requirement for the door control and monitoring system is one 110.0 VAC, 15.0 ampere circuit.

4.3.2 Closed Circuit Television System

This system allows observations to be made in cells, corridors, exercise yards and other locations where there is a need. The system usually consists of several cameras mounted at these locations with monitors grouped together at a convenient point such as the control post or the MCCP.

4.3.2.1 Conduit Requirements

Two (2) 15 mm conduits are required to each camera location, one for signal wiring and the other for VAC power to the camera and housing. If the camera has pan/tilt/zoom facilities, one of the two conduits may have to be increased in size to 19 mm to accommodate possible control wiring.

4.3.2.2 Space Requirements

The only space requirement for this system is rack space in a console for the monitors and possibly a pan/tilt/zoom controller.

4.3.2.3 Power Requirements

The power requirement for the CCTV equipment is one 110.0 VAC, 15.0 ampere circuit.

4.3.3 Supplementary Intrusion Detection System

This system provides supplement outdoor intrusion detection from the MCCP. The SIDS monochrome CCD camera is usually mounted on a high tower or roof top to provide surveillance and assessment of designated area(s).

4.3.3.1 Conduit Requirements

Two (2) 15 mm conduits are required from under the CER floor to the outdoor camera location. One conduit will accommodate the CCTV system for video and camera control cables. The other conduit is required for the camera and enclosure VAC power.

4.3.3.2 Space Requirements

Rack space in the MCCP control console is required for the SIDS monitor and camera Pan/Tilt/Zoom controller. The size of the rack space will depend on the size of the monitor and controller.

4.3.3.3 Power Requirements

The power requirement for this system is a 110.0 VAC, 15.0 ampere supply.

4.3.4 Voice Recording Equipment

The Voice Recorder Equipment (VRE) records all conversations on the telephones, radios, PA and PIDS PA systems in the MCCP.

VRE wiring can be run under the computer flooring and conduit is not normally required.

4.3.4.1 Space Requirements

The VRE is self contained in its own moveable rack and requires a floor area of 650 mm square with an equal area in front and behind for operator and technician access. It can be mounted with its back against a wall if required, however this is not preferable.

4.3.4.2 Power Requirements

The power requirement for this system is a 110.0 VAC, 15.0 ampere supply.

4.3.5 Video Recording Equipment

The Video Cassette Recorders (VCR) record all video from the various CCTV cameras installed throughout the institution. VCR installed in the MCCP will record the PIDS video from the perimeter cameras. VCR install in Security CP throughout the institution will record the video from their particular areas of surveillance interest.

VCR wiring can be run under the computer flooring and conduit is not required.

4.3.5.1 Space Requirements

The VCRs are normally installed in moveable racks and requires a floor area of 650 mm square with an equal area in front and behind for operator and technician access. Due to limited space in some CP, the VCRs may be on shelves under the desks.

4.3.5.2 Power Requirements

The power requirement for this system is a 110.0 VAC, 15.0 ampere supply.

4.4 Communications Systems

4.4.1 Two Way Communications Radio

The two way radio system provides routine operational, maintenance as well as emergency response communications between control posts, guards and vehicles in and around the facility. Base station radios and Digital Interface Units are installed in standard EIA electronic equipment racks in the CER.

The MCCP base station radios are connected to a common antenna mounted on an external tower. In the repeater configuration, the base stations are connected via a series of filters to a common antenna. Rack mounted remote radio controllers are mounted in the MCCP console. Digital Interface Units (DIU) are used to configure the base station radios for digital communications

Base station radios located in security control posts and maintenance control centres are connected to their own local antennas.

4.4.1.1 Conduit Requirements

One (1) 19 mm conduit is required from the CER to the antenna tower. The conduit may terminate at the base of the tower, if the tower is mounted on the roof. In the case of a ground mounted tower the conduit will continue up the tower. The lower portion of the tower is protected by anti climb shields.

4.4.1.2 Space Requirements

Three base station radios with associated DIUs will use approximately half of a EIA standard 2.483 m equipment rack in the CER. If the radios are configured as repeaters and filters are used, another EIA standard 2.483 m rack will be required.

In the MCCP console, the remote controller will require 5¼ inches (3 U) of console cabinet space.

4.4.1.3 Power Requirements

The power requirement for this system is a 110.0 VAC, 15.0 ampere supply.

4.4.2 Public Address System

The PA system is designed to allow the entire institution to be addressed or limited areas to be addressed from various points throughout the institution.

4.4.2.1 Conduit Requirements

Loudspeakers are distributed throughout the institution in areas where they are required. They are mounted in 254 mm x 254 mm x 102 mm back boxes mounted in the walls or in the ceilings. The boxes are joined in series by 15 mm conduit for the first ten or so boxes and then by 19 mm conduit to the cable tray. Where two strings of speaker boxes combine into one the resultant conduit is usually 19 mm. A 25 mm conduit is used between a TES and its respective control post.

4.4.2.2 Space Requirements

The PA equipment requires approximately half of a 2.483 m rack in the CER or half of a 2.483 m rack in a TES.

4.4.2.3 Power Requirements

The power requirement is for a 110 VAC, 15.0 ampere supply in the CER or a 110 VAC, 15.0 ampere supply in a TES.

4.43 Limited Call Intercom System (LCIS)

The LCIS is designed to provide communications between the control posts and points such as beyond a barrier controlled by the post. The control post has a master station mounted in a console and the remote station is mounted in a back box in the wall.

4.4.3.1 Conduit Requirements

The remote station is mounted in a 102 mm x 102 mm x 65 mm back box placed 1500 mm from the floor. One (1) 15 mm conduit connects these points to the TES or the cable tray. One (1) 25 mm conduit is used between a TES and its respective control post.

4.4.3.2 Space and Power Requirements

The LCIS usually forms part of the PA. Refer to the PA section for space and power requirements.

4.4.4 Restricted Visit Intercom System

The purpose of the RVIS is to provide a means of two-way (full-duplex) voice communication between an inmate and visitor while denying physical exchange. Typically, by providing transparent partitioning between the inmate and visitor, physical access is denied while allowing visual contact between each half of a restricted visiting booth. Within each booth, telephone handset will allow voice communication between the two halves. The control post has a master station mounted in a console.

4.4.4.1 Conduit Requirements

One (1) 15 mm conduit is required from each booth to the Restricted Visit Control Post.

4.4.4.2 Space Requirements

The RVIS telephone handsets are securely mounted on the wall of the booths. The RVIS controller is mounted in the console in the Restricted Visit CP.

4.4.4.3 Power Requirements

The power requirement for this system is a 110.0 VAC, 15.0 ampere supply.

4.4.5 Entertainment Cable Television

The Entertainment Cable Television (ECTV) System distributes FM radio and television signals to each cell and various other points throughout the institution.

The signals are received off-air via an antenna array for local and satellite signals or from a cable company. A signal from a VCR can be introduced. All these signals are processed in the head-end equipment and then distributed via splitters and amplifiers distributed throughout the system.

4.4.5.1 Conduit Requirements

A conduit outlet is required in each cell and in various inmate and staff lounges. Groups of four cell block outlet boxes are connected to a junction box by 19 mm conduit. The junction boxes are linked in groups of two or three and then to the TES using 38 mm conduit.

All other locations utilize 19 mm conduit to their respective TES locations.

The cable distributing the signals to the TES from the head end location is installed in a cable tray which runs throughout the institution. One (1) 19 mm conduit is required between the head-end equipment rack and the antenna site.

4.4.5.2 Space Requirements

The head-end equipment will occupy a half of a 2.483 m rack in the equipment room closest to the antenna site. The remainder of the equipment consists of amplifiers and splitters and is accommodated in a 400 mm x 400 mm x 100 mm cabinet located in each of the pertinent TES. This cabinet can either be mounted on the wall or placed under the computer flooring.

4.4.5.3 Power Requirements

The power requirement for this system is a 110 VAC, 15.0 ampere supply.

4.5 **Control Posts (CP) and Terminal Equipment Spaces (TES)**

There are several control posts and TES's throughout the institution. They are usually paired and connected by banks of conduits to enable connection between the main equipment of the various systems and the control panels that are associated with them. The number of conduits provided is normally very generous and provides for any possible expansion or replacement of the systems.

4.5.1 **Conduit Requirements**

All the consoles in the control posts with computer flooring do not require conduits. Normally the TES and CP locations are connected by cable trays or at least one 50 mm conduit.

4.5.2 **Space Requirements**

In each TES accommodation is required for two 2.483 racks, one rack to house the cell call system and the other the PA and LCIS equipment.

4.5.3 **Power Requirements**

Two (2) 110.0 VAC, 15.0 ampere power circuits are required.

4.6 **Installation Requirements**

The conduit shall be installed at the site in accordance with the ES/SOW-0101, Statement of Work and the ES/SOW-0102, Statement of Work.

4.7 **Documentation Requirements**

All as-build drawings and documentation shall be in accordance with the ES/SOW-0101, Statement of Work.

5.0 **QUALITY ASSURANCE**

5.1 **General**

All on-site installation work, and installation acceptance shall be conducted in accordance with the ES/SOW-0101, Statement of Work.

6.0 **DELIVERY**

Delivery requirements for drawings, plans, etc. (where applicable) shall be in accordance with the ES/SOW-0101, Statement of Work.

APPENDIX A

SUMMARY OF SYSTEM CONDUIT REQUIREMENTS

System	Conduit Requirements
MDS	One 38 mm conduit from the CER to the area between the two perimeter fences.
FDS	One 38 mm conduit from the CER to the inner perimeter fence.
MICROWAVE	One 19 mm conduit from the closest local control module to the sallyport area.
PIDS CCTV	<p>Signal and Control. Two 50 mm conduits from the CER to the perimeter camera towers in both directions with junction boxes at each of the towers. One 19 mm conduit from the junction box to the cameras on the tower.</p> <p>VAC Power. Two 50 mm conduits from the electrical distribution panel in the CER to the junction box on the perimeter. One 38 mm conduit around the perimeter providing power to each camera group.</p>
PIDS PA	Two 25 mm conduits from the CER to the first group of speakers on the perimeter fence, one in each direction. One 25 mm conduit between speaker locations.
MCCP	Control and signal cables (no conduit required) under the computer flooring to the CER. VAC UPS power in 19 mm conduit from the CER.
ICCS	One 15 mm conduit from each cell to a junction box in the pipe chase. Junction boxes linked together by 25 mm conduit. One 38 mm conduit from the group junction box to the CP/TES. One 25 mm conduit from the TES to the CP.
FPSA	One 15 mm conduit from each designed room to a junction box. Junction boxes connected by 25 mm conduit. One 38 mm conduit from a main junction box to the CER.
PPA	One 15 mm conduit from the PPA receiver to the MCCP. One 15 mm conduit from the PPA receiver to the antenna.
PALS	One 15 mm conduit from each PALS node to the CER.
Door Control	Two 15 mm conduits (one for CCTV, one for power) from the CER or from the TES to the room and/or corridor doors requiring controlled access.

System	Conduit Requirements
Supp. CCTV	Two 15 mm conduits to each camera location, one for signal wiring and the other for AC power to the camera and housing. If the camera has pan/tilt/zoom facilities, one of the two conduits may have to be increased in size to 19 mm to accommodate additional control wiring.
SIDS	Two 15 mm conduits from the CER to the camera location. One conduit for video and camera control cables. The other conduit for the camera and enclosure VAC power.
MCCP/VRE	Cables under the computer flooring.
MCCP/VCR	Cables under the computer flooring.
Two-way Radio	One 19 mm conduit from the Base Station to the antenna location.
Interior PA	One 15 mm conduit between speaker locations. Combine speaker locations require one 19 mm conduit. One 25 mm conduit from the TES to the CP.
LCIS	One 15 mm conduit from remote stations to the TES or the cable tray.
RVIS	One 15 mm conduit from each booth to the RVIS CP.
ECTV	One 15 mm conduit to in each cell and various inmate lounges. Groups of cell outlet boxes are connected to a junction box by 19 mm conduit. One 38 mm conduit from junction boxes to the TES. One 19 mm conduit from the head-end equipment rack and the antenna site.
CER/TES	CER and various TES are linked by one 50 mm conduit.

APPENDIX B

SUMMARY OF SYSTEM SPACE REQUIREMENTS

System	Space Requirements
MDS	The MDS control equipment requires approximately 1.5 m of EIA standard equipment rack space in the CER.
FDS	The FDS control equipment requires approximately 1.5 m of EIA standard equipment rack space in the CER.
MICROWAVE	The microwave control equipment requires approximately 0.5 m of EIA standard equipment rack space in the CER.
PIDS CCTV	<p>The video distribution and switching equipment require approximately 1.0 m of EIA standard equipment rack space in the CER.</p> <p>The PIDS CCTV equipment in the MCCP requires approximately 1.0 m of EIA standard console cabinet space.</p> <p>A separate standalone rack is required to housed five (5) time lapse VCRs in the MCCP.</p>
PIDS PA	The PIDS PA equipment requires approximately 0.5 m of EIA standard equipment rack space in the CER.
MCCP	<p>The MCCP console usually consists of six EIA standard console cabinets joined together to form the control console.</p> <p>The maintenance video display unit (VDU) and ancillary equipment require approximately 1.0 m of EIA standard equipment rack space in the MCCP.</p> <p>The time-lapse VCRs and printer require a low profile cabinet with sliding shelves in the MCCP.</p>
ICCS	The ICCS control equipment requires approximately 1.5 m of EIA standard equipment rack space in the TES.
FP SA	The FP SA control equipment requires approximately 0.5 m of EIA standard equipment rack space in the CER.
PPA	The PPA receiver requires to be mounted on a shelf in a rack or on the wall in a central location of the institution. The PPA controller mounted on a shelf requires approximately 0.25 m of the rack space in the ancillary equipment rack space in the MCCP.

System	Space Requirements
PALS	The PALS nodes and wireless sensors will be mounted in the ceilings throughout the institution. The PALS controller requires approximately 1.0 m of EIA standard equipment rack space in the CER.
Door Control	The hall and door control equipment require approximately 1.0 m of EIA standard equipment rack space in the CER or TES. The operator control equipment requires approximately 0.25 m of rack space in the control console.
Suppl. CCTV	Video switchers, multiplexers, etc. require rack space in EIA standard equipment racks in the CER or TES. The space requirement will depend on the type and amount of video equipment being used. The space requirement in the control console for the monitors and the pan/tilt/zoom controller if applicable will depend on the type and amount of video equipment being used.
SIDS	The space requirement for the SIDS control equipment in the CER will depend on the type of equipment being used. Rack space in the control console is required for the monitors and a pan/tilt/zoom controller if applicable.
MCCP/VRE	The Voice Recording Equipment is usually self contained in its own moveable rack in the MCCP and requires a floor area of 650 mm square with an equal area in front and behind for operator and technician access.
MCCP/VCR	The Time Lapse Video Cassette Recorders are normally installed in moveable racks in the MCCP and require a floor area of 650 mm square with an equal area in front and behind for operator and technician access.
Two-way Radio	Three base station radios with associated DIUs require approximately 1.5 m of EIA standard equipment rack space in the CER. If the radios are configured as repeaters, another EIA standard equipment is required for the filters. In the MCCP console, the remote controller requires 5¼ inches (3 U) of console cabinet space.
Interior PA	The Public Address equipment requires approximately 1.5 m of EIA standard equipment rack space in the TES.

System	Space Requirements
LCIS	The Limited Call Intercom System usually forms part of the interior PA system.
RVIS	The Restricted Visit Intercom System controller is mounted in the console in the Restricted Visit CP.
ECTV	<p>The Entertainment Cable TV system head-end equipment requires approximately 1.5 m of EIA standard equipment rack space close to the antenna site.</p> <p>Amplifiers and splitters will be accommodated in the EIA standard equipment racks in the TES or amplifiers and splitters can be a small cabinet mounted on the wall or placed under the computer flooring.</p>
TES	Each TES requires two EIA standard equipment racks, one rack to house the inmate cell call system and ancillary equipment. The other rack will house the interior PA and LCIS equipment.

APPENDIX C

SUMMARY OF SYSTEM POWER REQUIREMENTS

System	Power Requirements
MDS	The power requirement for the MDS equipment in the CER is one 110.0 VAC, 15.0 ampere, uninterruptible power circuit.
FDS	The power requirement for the FDS equipment in the CER is a 110.0 VAC, 15.0 ampere, uninterruptible power circuit.
MICROWAVE	The power requirement for the microwave equipment in the CER is a 110.0 VAC, 15.0 ampere, uninterruptible power circuit.
PIDS CCTV	The power required in the CER for video switching and control equipment is one 110.0 VAC, 15.0 ampere uninterruptible power circuit. The power requirement for the perimeter cameras is a 110.0 VAC, 20 ampere circuit to each group of usually four (4) cameras from the power distribution panel in the CER.
PIDS PA	The power requirement for the PIDS PA equipment in the CER is a 110.0 VAC, 15.0 ampere, uninterruptible power circuit.
MCCP	The power requirement for the MCCP console is two 110.0 VAC, 15.0 ampere, uninterruptible power circuits.
ICCS	The power requirement for the Inmate Cell Call System equipment in the security Control Post is a 110.0 VAC, 15.0 ampere circuit.
FPSA	The power requirement for the Fixed Point Security Alarm system equipment in the CER is a 110.0 VAC, 15.0 ampere circuit.
PPA	The power requirement for the Personal Portable Alarm system equipment in the MCCP is a 110.0 VAC, 15.0 ampere circuit.
PALS	The power requirement for the Portable Alarm Location System equipment in the CER is a 110.0 VAC, 15.0 ampere circuit.
Door Control	The power requirement for the Hall, Corridor and Door Monitor and Control system in the security Control Post is a 110.0 VAC, 15.0 ampere circuit.
Suppl. CCTV	The power requirement for the Supplementary CCTV system equipment in the security Control Post is a 110.0 VAC, 15.0 ampere circuit.
SIDS	The power requirement for the Supplementary Intrusion Detection System equipment in the CER is a 110.0 VAC, 15.0 ampere circuit.

System	Power Requirements
MCCP/VRE	The power requirement for the Voice Recording Equipment in the MCCP is a 110.0 VAC, 15.0 ampere circuit.
MCCP/VCR	The power requirement for the Video Cassette Recorder equipment in the MCCP is a 110.0 VAC, 15.0 ampere circuit.
Two-way Radio	The power requirement for the Radio Communications system equipment is a 110.0 VAC, 15.0 ampere circuit.
Interior PA	The power requirement for the Interior Public Address system equipment in the security Control Post is a 110.0 VAC, 15.0 ampere circuit.
LCIS	The Limited Call Intercom System is usually part of the Interior PA system. If a standalone LCIS installed, the power requirement for this system is a 110.0 VAC, 15.0 ampere circuit.
RVIS	The power requirement for the Restricted Visits Intercom System equipment in the RV Control Post a 110.0 VAC, 15.0 ampere circuit.
ECTV	The power requirement for the Entertainment Cable TV system equipment is a 110.0 VAC, 15.0 ampere circuit.
TES	The power requirement for the Terminal Equipment Space room is two 110.0 VAC, 15.0 ampere circuits.

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

**ES/SOW-0101
Revision 3
15 April 2004**

**ELECTRONICS ENGINEERING
STATEMENT OF WORK


PROCUREMENT & INSTALLATION OF
ELECTRONIC SECURITY SYSTEMS**

AUTHORITY


This Statement of Work is approved by Correctional Service Canada for the procurement and installation of all telecommunications and electronic security systems, subsystems, and equipment in Canadian penal institutions.

Recommended corrections, additions or deletions should be addressed to the Design Authority at the following address: Director, Engineering Services, Correctional Service of Canada, 340 Laurier Avenue West, Ottawa, Ontario, K1A 0P9

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15 Apr 04

RECORD OF REVISIONS

Revision	Paragraph	Comment
3	10.1 – Manuals and Drawings	Added equipment operating software
	10.4 – Documentation Format	Added equipment operating software

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ABBREVIATIONS

The following abbreviations are used in this specification:

ATP	Acceptance Test Plan
CM	Corrective Maintenance
COTS	Commercial-Off-The-Shelf
CSC	Correctional Service Canada
DA	Design Authority
DCR	Design Change Request
DES	Director, Engineering Services
DL	Deficiency List
FDR	Final Design Report
MRT	Mean Response Time
MTBF	Mean Time Between Failures
MTTR	Mean Time To Repair
PDR	Preliminary Design Report
PM	Preventative Maintenance
PW&GSC	Public Works & Government Services Canada
QA	Quality Assurance
RFP	Request For Proposal
SOW	Statement of Work
STR	Statement of Technical Requirement

DEFINITIONS

The following definitions are used in this specification:

Design Authority	Director, Engineering Services (DES) - Correctional Service Canada (CSC) is responsible for all technical aspects of the system design and implementation.
Contract Authority	Public Works and Government Services Canada (PW&GSC) is responsible for all contractual matters associated with the system design and implementation.
Contractor	The company selected as the successful bidder.
Project Officer	A CSC employee or a contracted person designated by DES to be responsible for the implementation of the project.
Off-the-shelf	Equipment currently on the market with available field reliability data, manuals, engineering drawings and parts price list.
Custom Equipment	Equipment designed and/or manufactured specifically for a specific contract.

1.0 INTRODUCTION

This Statement of Work (SOW) defines the work and responsibilities for the design, procurement, installation, test and integration of all telecommunications and electronic security equipment in CSC Institutions.

The SOW provides guidelines, procedures and responsibilities to the contractor and/or the project officer for the implementation of all telecommunications and electronic security systems in CSC facilities.

All work performed shall adhere to this SOW, CSC Specifications, Standards and Statement of Technical Requirements (STRs).

1.1 Commercial-Off-The-Shelf Equipment

The contractor shall use commercial off-the-shelf (COTS) equipment and proven designs to the maximum extent possible. All new equipment shall meet the specified lifespan requirements. New equipment designs shall be restricted to unique interfaces and common control console.

1.2 Technical Acceptability

The Correctional Service Canada (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 shall maintain very high standards of dependability and reliability.

The CSC Engineering Services Division has established technical specifications and equipment standards for specific electronic security systems which are based on very specific and restrictive operational performance criteria as detailed in its Electronic Engineering Standard. Technical acceptability of these systems means that the equipment complies with the pertinent CSC specifications and standards.

The technical acceptance process shall involve system and subsystem evaluation in accordance with the applicable CSC specifications in one of CSC facilities or may be tested in a CSC facility to verify the effectiveness of the proposed technologies when subjected to the restrictive operational environment.

CSC shall also verify in depth any of the system technical specifications called up. CSC may when it deems necessary, request the supplier to arrange for a full site demonstration. CSC may rely on manufacturer's test results for specific areas of the specification where an independent test facility has conducted the test, and the facility is deemed acceptable to CSC.

It is the supplier's responsibility to make new developments in products available to CSC for evaluation. Equipment qualification is an ongoing process and can be initiated at any time by a vendor. Any vendor can have access to the CSC specifications and standards. Any new development or products should be submitted to the CSC Engineering Services Division, Technical Authority in a suitable time frame prior to any tendering process to allow for an acceptable evaluation period. The evaluation period may take up to sixteen (16) months.

1.3 Equipment Procurement

Any ordering of equipment/material before the approval of the final design report will be undertaken at the contractor's own risk. The Design Authority may authorize the procurement of certain long lead items at, or shortly after the preliminary design review.

1.4 Quantity of Equipment

The quantity and location of the equipment required for CSC institutions will be contained in the specification identified in the STR.

2.0 **APPLICABLE DOCUMENTS**

CSC Specifications, Standards and STRs are approved by the Director of Engineering Services (DES) for the procurement and installation of all telecommunications and electronic security systems in all CSC facilities. These documents promulgate DES policy and shall not be modified or changed without prior consultation and approval of the Director. The documents of the issue in effect will form part of the Request for Proposal (RFP) issued by the contract authority.

3.0 **REQUIREMENTS**

3.1 The contractor shall:

- a. Design, procure or manufacture, install, test and document the installation of all electronic security and telecommunications systems in accordance with the CSC specifications, standards and STR;
- b. Provide the operator and maintenance training in accordance with the CSC requirements;
- c. Provide the maintenance support and spares in accordance with the CSC maintenance requirements;
- d. Provide quality assurance (QA) to ensure equipment performance and reliability are in accordance to CSC requirements;
- e. Provide warranty coverage to include spare parts provision and equipment repair;
- f. Provide a program schedule to show all major elements from a contract award to completion of the warranty period and shall include anticipated time of occurrence, interrelationships between events, and time scale; and
- g. Be responsible for the integration of the proposed system to any existing telecommunications and electronic security systems.
- h. Provide a lightning protection system for the installation of all electronic security systems/equipment in the CSC facilities. As a minimum, surge suppression type lightning arrestors shall be required for all power, communications and antenna cables/wires entering or leaving a building.

4.0 **SYSTEM DEVELOPMENT**

The contractor shall design systems and equipment to meet all of the requirements stipulated in the applicable CSC specifications. The system design shall be modular and address the following criteria:

- a. ease of operation and maintenance;
- b. optimize and concentrate control functions and capabilities;
- c. enhance the security of the working environment, extend staff capabilities to observe and control; and
- d. minimize the number and types of display and control devices.

4.1 **Preliminary Design**

The preliminary design baseline shall be established by the review and approval of the preliminary design report (PDR) by the Design Authority (DA) or his designate. Specifications, drawings and the approved PDR shall make up the preliminary design baseline.

The contractor shall prepare and submit two (2) copies of the PDR to the Design Authority and one (1) copy to the Contract Authority at least ten (10) days prior to the PDR meeting. The PDR shall consist of:

- a. performance specifications with functional block diagrams of the proposed system. The technical analysis and equipment performance data shall verify system requirements;
- b. preliminary equipment layouts including control consoles and racks;
- c. list of off-the-shelf equipment with part number, model number, manufacturer and the quantity of each item;
- d. list of custom designed equipment with model number and the quantity of each item;
- e. functional schematics for all custom designed equipment;
- f. conceptual drawings for all custom designed equipment;
- g. a proposed product assurance plan;
- h. a proposed maintenance plan;

- i. proposed sparing plan; and
- j. proposed training plan.

4.2 Preliminary Design Review

The PDR meeting shall be convened by the contractor to review the PDR contents. The contractor shall provide the venue and all of the necessary facilities. The Design Authority will identify any portions of the PDR that are not acceptable to CSC.

4.3 Final Design

The final design baseline shall be established by the review and approval of the Design Authority of the final design report (FDR). It establishes the start of change control in equipment design and performance. The FDR shall consist of:

- a. all elements of the preliminary design baseline;
- b. control console mockups, ergonomics considerations, etc., as necessary;
- c. drawings and operational descriptions for the custom designed equipment including interface specifications;
- d. Installation drawings and instructions; and
- e. availability model and analysis updates to reflect the final system design and hardware selection.

The FDR shall be prepared to good commercial practice. Two (2) copies shall be submitted to the Design Authority at least ten (10) working days before the FDR meeting.

4.4 Final Design Review

The final design review meeting shall be convened to review the contents of the FDR. The contractor shall provide the venue and all of the necessary facilities. All of the contractor's staff responsible for the system/equipment engineering shall be available.

4.5 Design Change Control

Design changes shall be in accordance with the following procedure:

- 4.5.1 **Type I.** Changes that affect cost, schedule, reliability, maintainability, or availability shall be submitted as a design change request (DCR).

Changes shall not be actioned until specifically directed in writing by the Design Authority through the Contract Authority.

- 4.5.2 **Type II.** Changes to correct a design error without affecting cost, schedule, reliability, maintainability, or availability shall not require a DCR.

Changes shall be reported to the Design Authority and the final design baseline shall be updated by the contractor. The Design Authority will review and acknowledge the change.

4.6 **Design Change Request (DCR)**

Type I changes shall be forwarded to the Design Authority through the Contract Authority on DCRs initiated by either the contractor or the Design Authority.

DCRs shall be reviewed and approved before implementation and shall include:

- a. specification requirement being effected;
- b. final design baseline element being changed;
- c. description of the design change;
- d. reason for the change;
- e. impact on cost, schedule, reliability, maintainability and availability; and
- f. trade-off recommendations.

4.7 **In-Plant Testing**

Details of in-plant tests are contained in the ES/SOW-0102, Statement of Work. In-plant tests shall be performed according to the Design Authority approved procedures.

Equipment with deficiencies as the result of the in-plant tests shall be subject to retest. The Design Authority reserves the right to add or modify tests.

5.0 SYSTEM INSTALLATION

The contractor shall be responsible for ensuring that sufficient site utilities are available. No work will be permitted at the site before the approval of the Design Authority. All installation activities shall be conducted in accordance with ES/SOW-0102, Statement of Work.

5.1 Schedule

The contractor shall provide a detailed work schedule for the installation activities. This schedule shall reflect the complete implementation plan by identifying the nature of the work to be performed and the area affected.

5.2 On-Site Inspections

Design Authority or an appointed CSC representative shall perform ongoing inspections of the contractor's activities. These inspections shall verify compliance with the project requirements, the quality of work performed and assess the contractor's progress in relation to the approved schedule. Installation deficiencies requiring corrective action will be brought immediately to the contractor's attention in writing.

5.3 On-Site Coordination

Design Authority shall be responsible for the appointment of an on-site CSC representative. This representative will handle all site related matters and will periodically inspect the installation.

When electronic system installations are part of a construction program or a major redevelopment that involves Public Works & Government Services of Canada, the electronic system installation contractor shall coordinate all activities with the relevant site manager and shall comply with this SOW.

5.4 Facility Criteria

The contractor shall provide the facility criteria data in the proposal. Details as to the power, cooling, space and/or other requirements relating to electronic security system installation at the site must be provided. Final facility criteria information must be provided as part of the FDR.

5.5 Installation Design

The system installation design and planning shall make maximum use of existing ducts, conduits, and other cable routing facilities. Where this is not possible, the contractor shall design and install facilities in a manner acceptable to the Design Authority.

5.6 Subcontractor Supervision

The contractor shall provide an on-site supervision of all subcontractors. The subcontractors shall abide by the regulations of this Statement of Work and the conditions in the contract.

5.7 System Checkout

Before conducting the formal on-site testing for the CSC acceptance, the contractor shall conduct and document a system checkout to assure the system readiness for formal testing and on-line operations. The test sheets used for the system checkout shall be signed by a company representative and provided to the Design Authority at least seven (7) days prior to the scheduled date of the Acceptance testing. The Design Authority will verify readiness through review of the checkout report. The report may be used as reference during the formal witnessed testing for acceptance.

5.8 As-Built Drawings

Thirty (30) days after the system installation acceptance, the contractor shall deliver a complete set of equipment and installation as-built drawings for Design Authority's review and approval. Within thirty (30) days after CSC approval, two (2) complete sets of revised drawings shall be delivered to the Design Authority.

The contractor shall update these drawings throughout the warranty period by the design control procedures. Within thirty (30) days of completion of the warranty period, the contractor shall deliver one (1) set of final revised drawings reflecting all changes to the Design Authority. Upon final CSC approval, the contractor shall deliver two (2) sets of original prints of the final drawings.

6.0 SYSTEM ACCEPTANCE

System acceptance shall occur when the acceptance testing has been completed according to the ES/SOW-0102, Statement of Work and when all of the other requirements of the contract have been completed to the satisfaction of the Design Authority. A final acceptance certificate signed by the Design Authority shall certify the system acceptance.

On-site system acceptance testing shall not begin until all of the on-site installation activities have been completed.

6.1 Acceptance Test Plans (ATPs)

The contractor shall provide ATPs for all system, subsystem and equipment tests for Design Authority review and approval. The requirements for the ATP are detailed in the ES/SOW-0102, Statement of Work.

6.2 System Testing

The contractor shall conduct the approved ATP and record the results. The Design Authority or an appointed CSC representative shall witness the tests.

6.3 Deficiency Lists (DL)

The contractor shall prepare and submit a list of deficiencies divided into three categories:

- a. Visual/Mechanical,
- b. Operational, and
- c. Technical/Functional.

6.4 Technical Acceptance

Upon verifying that all of the deficiencies have been corrected, the Design Authority shall issue a letter of Technical Acceptance.

7.0 **QUALITY ASSURANCE (QA)**

The QA program shall include quality control and system tests/verification programs to verify that new design and off-the-shelf equipment requirements have been met. System tests/verification will be conducted by the contractor in-plant and on-site, and may be witnessed by the CSC representatives where appropriate. The system shall pass all tests before approval will be given to commence the operator and maintenance training programs and warranty period.

7.1 **Quality Control Program**

The contractor shall provide a description of their internal quality control programs for CSC review and approval. CSC reserves the right to audit and verify that all materials destined for use in CSC systems have been thoroughly inspected and that QA procedures are applied during production and testing.

7.2 **System Test Program**

The contractor shall prepare and provide the documents describing: number, type and details of equipment, subsystem and system tests for CSC review and approval. These documents must be approved before any formal testing and will consist of the following:

7.2.1 **System Test Plan.**

This plan shall contain the test philosophy, the tests to be conducted, the pass-fail criteria, the retest requirements, and the instructions for the validation and the sign-off of all final design baseline requirements.

Before witnessing these tests, the CSC representative will perform a visual and mechanical inspection to ensure that the system installation meets the requirements of ES/SOW-0102, Statement of Work.

7.2.2 **Test Procedures.** These procedures shall ensure that:

- a. all equipment supplied meets the performance specification;
- b. each subsystem meets the applicable performance requirements; and
- c. the overall system meets the performance requirements.
- d. test procedure contains the step sequence for each test to be conducted, and the expected results.

7.2.3 Contractor Testing.

All tests are conducted by the contractor and may be witnessed by an appointed CSC representative. Tests are conducted as stipulated in the approved plan and procedures. The contractor shall inform CSC at least five (5) working days before the test start date.

7.2.4 Test Reports.

The contractor shall submit final copies of the test results for CSC review and approval within ten (10) working days of the completion of the testing. Two copies of the report shall be submitted and shall include:

- a. a summary description of the tests;
- b. test results consisting of completed test procedures verified by a CSC representative;
- c. incident reports, including analysis and corrective action; and
- d. results of any retest.

8.0 TRAINING

The contractor shall develop, document and conduct training for both the operational and the technical staff. The training shall be conducted on-site at the institution in the period designated by the schedule.

8.1 Classroom Training

Classroom lectures and demonstrations will be conducted on-site to train operations staff in the use and technical personnel in the maintenance of the systems.

8.2 Training Documentation

The contractor shall develop and deliver a complete training plan to the Design Authority for comments and approval. This plan must be submitted to CSC at least thirty (30) days in advance of the training date to allow for CSC review. As a minimum, the training material shall contain:

- a. training plans for CSC operations trainers and technical personnel;
- b. manuals for each student to add notes;
- c. training aids; and
- d. student materials.

Training material shall be provided in the language that is dominant at the site (French in Quebec). Sufficient copies of all student materials shall be provided by the contractor at the beginning of the training course to assure one copy for each student. CSC shall stipulate the number of staffs who are to be trained. Upon approval by the Design Authority, two (2) copies of all material shall be delivered to CSC.

9.0 **MAINTENANCE and SPARES**

The contractor shall provide maintenance and spares support plans according to the ES/SOW-0102, Statement of Work for the Design Authority approval. These plans shall be submitted according to the schedule.

9.1 **Maintenance Plan**

The maintenance plan shall describe the philosophy, the Preventive Maintenance (PM) procedures and schedules, the Corrective Maintenance (CM) methods and response times, Mean-Time-To-Repair (MTTR) for all systems. The plan shall recommend tools, jigs and test equipment, and detail the recommended manning method for the system. Issue of the final maintenance support plan will be contingent on Design Authority approval.

9.2 **Spares Plan**

The spares plan shall list the required spares and recommended quantities. The quantity recommendations shall be supported by system availability and reliability analysis and available experience data. The bidder shall identify spare parts and components by their original manufacturer's code, cross-referenced to the equipment vendor's part number.

9.3 **Spares List**

The spares list shall identify the following:

- a. the spare parts and the subassemblies with the recommended quantities;
- b. the cross-reference listings between the vendors and the original manufacturer's codes;
- c. the unit and extended prices for stocking; and
- d. the expected life or the annual consumption of each part.

The contractor shall maintain the spares plan through to the end of the warranty period, and shall ensure that any changes because of approved design changes are incorporated in the spares list.

9.4 **Test Equipment**

The contractor shall provide a list of test equipment required for the on-site maintenance of the system within thirty (30) days from Design Authority's acceptance of the final design.

10.0 **DOCUMENTATION**

All final documentation in hard-copy format shall be in a 3-ring binder with all foldout pages having reinforced ring holes.

10.1 **Manuals and Drawings**

The following items make up the final documentation requirements:

- a. Operator Manual,
- b. Maintenance Manual,
- c. Installation As-built Drawings,
- d. Equipment As-built Drawings, and
- e. Equipment Operating Software.

The contractor shall prepare and submit all manuals and drawings to the Design Authority for review and approval. The manuals and drawings will be approved when all changes have been satisfactorily incorporated. All drawings must be produced with AUTOCAD (latest available version)

10.2 **List of Equipment**

The contractor shall provide a list of equipment itemizing the location, quantity, model number, serial number and revision level of all installed equipment.

10.3 **Baseline Measurements**

The contractor shall provide a copy of the final test results. These results will be used as a reference baseline measurement for monitoring system degradation over time.

10.4 **Documentation Format**

All manuals, documentation including as-built drawings, lists of equipment and baseline measurements shall be submitted as per the following schedule:

- One (1) hard-copy version of all documentation.
- One (1) electronic version of all documentation in a 'read-only' format on a 3½ inch diskette medium; suitable for duplication without any special requirements.

- One (1) electronic version of all documentation in a full 'read-write' format to serve as a master of the documents and drawings.
- all software requirements to access the electronic versions of the documentation.
- One (1) CD containing the equipment operating software.

10.5 **Operator Manuals**

The contractor shall provide CSC approved manuals to support the operation of the system in the format as outlined in section 10.4 of this specification. These manuals shall be prepared to the best commercial standards. Photo copies shall not be accepted. All hard-copy versions shall be on paper stock 8 ½" x 11" and shall be presented in a 3-ring binder. The manuals shall comply with the following format and content requirements:

- a. title page;
- b. revision notice page, lined, with columns for revision numbers, dates and initials;
- c. table of contents;
- d. warnings and cautions;
- e. introduction - general information including a description of equipment or system and summary of capabilities;
- f. theory of operation including an explanation of all major system components;
- g. detailed description and use of all user accessible computer screens; and
- h. block diagrams.

A hard copy draft version of the manual(s) shall be submitted for CSC approval on or before the date given in the schedule. Upon acceptance and approval by the Design Authority, a total of two copies shall be provided for use during the warranty period. The contractor shall update these manuals through the warranty period and provide revision bulletins to record manufacturers' recommended modifications, etc. during the life of the equipment.

Within thirty (30) days of the warranty expiry date the contractor shall submit one (1) set of final, updated manuals for CSC approval. Following the final CSC approval, the required number of sets of operator manuals shall be delivered to the Design Authority in the format as specified in section 10.4 of this Statement of Work.

10.6 Maintenance Manuals

The contractor shall provide CSC approved manuals to support the maintenance of the system in the format as outlined in section 10.4 of this specification. These manuals shall be prepared to the best commercial standards. Photo copies shall not be accepted. All hard-copy versions shall be on paper stock 8 ½" x 11" and shall be presented in a 3-ring binder. The manuals shall comply with the following format and content requirements:

- a. title page;
- b. warranty page - explaining the warranty period and expiry dates;
- c. revision notice page, lined, with columns for revision numbers, dates and initials;
- d. table of contents;
- e. introduction - general information including a full description of equipment or system, technical summary, specifications and detailed block diagrams;
- f. theory of operation including a detailed explanation of all circuits and parts;
- g. alignment and test procedures;
- h. repair procedures including step by step fault finding or fault localizing;
- i. block diagrams;
- j. circuit schematics (clear, easy to read, foldout type);
- k. complete parts list;
- l. mechanical drawings, chassis layout illustrations and wiring data lists; and
- m. drawings including as-built and as-installed drawings.

A hard copy draft version of the manual(s) shall be submitted for CSC approval on or before the date given in the schedule. Upon acceptance and approval by the Design Authority, a total of two copies shall be provided for use during the warranty period. The contractor shall update these manuals through the warranty period and provide revision bulletins to record manufacturers' recommended modifications, etc. during the life of the equipment.

Within thirty (30) days of the warranty expiry date the contractor shall submit one (1) set of final, updated manuals for CSC approval. Following the final CSC approval, the required number of sets of maintenance manuals shall be delivered to the Design Authority in the format as specified in section 10.4 of this Statement of Work.

11.0 PROJECT PROVISIONS

11.1 Monthly Progress Reports

The contractor shall submit monthly progress reports. These reports shall report the activities for the previous period. One (1) copy shall be delivered to the Design Authority and one (1) copy to the Contract Authority by the fifth (5th) day of each month. A review meeting may be required.

Monthly reports shall contain the following:

- a. summary of the month's activities;
- b. scheduled shortfalls and rescheduled dates;
- c. problem areas and proposed solutions;
- d. review of next month's activities;
- e. summary of meetings held during the month; and
- f. cash flow forecast.

11.2 Monthly Review Meetings

Review meetings shall be held at the contractor's premises, Design Authority's office, Contract Authority's office, or the site depending on the need. The contractor shall make the design staff members available upon request by the Design Authority.

11.3 Maintenance Support

During the training period, the contractor shall provide maintenance support. This support is expected to be not less than on-site coverage during the normal working day.

11.4 Shipment and Delivery

Contractor shall be responsible for the shipment and delivery of equipment and materials to the site. Packing, crating, and shipment of equipment shall be to good commercial practice, and any damage to, or loss of equipment shall be repaired or replaced to the satisfaction of CSC. The contractor must properly label all shipments to assure correct identification and disposition on arrival at the site, as specified in ES/SOW-0102, Statement of Work.

12.0 **SYSTEM AVAILABILITY**

All elements of customed and off-the-shelf equipment shall be designed to operate in a highly reliable fashion, consistent with available technology, with a minimum of system downtime due to scheduled and unscheduled maintenance. System availability will be achieved when each of the included subsystems availabilities have been proved as required.

12.1 **Common Facilities**

Where units or subsystems are integrated into common facilities no single failure of a component, assembly subassembly, or subsystem shall result in the failure of any other subsystem; nor result in reduced capacity or quality of performance of other subsystems or parts of it.

12.2 **Single Point of Failure**

The system shall be designed such that no failure of a single component, unit, subassembly or subsystem will result in failure of the next higher hierarchical elements of that subsystem or the system.

12.3 **Availability Model**

The bidder's technical proposal shall include a complete model and analysis of the availability of each subsystem and of the complete system being offered. This analysis shall include both MTBF and MTTR calculations and shall treat the Mean-Response-Time (MRT) as zero. This availability analysis may be based on either:

- a. summation of failure rates of the individual components; or
- b. the bidder's documented experience with the same equipment operating in a similar physical environment.

In either case, the source of all failure-rate shall be clearly shown.

The contractor shall maintain the availability model and analysis up-to-date throughout the contract period. A statement of impact of the proposed change would have on the availability model and analysis shall be submitted with all Type I DCRs.

12.4 **Availability**

Availability is the probability that the system, or subsystem will meet operational performance requirements at all time. Time includes the operating time, the active repair time and the administrative and logistic time. To calculate this availability, the contractor must include all of the pertinent factors such as:

12.4.1 **Mean Time Between Failure (MTBF).**

The total operating time of the equipment divided by the total number of failures of that equipment.

12.4.2 **Mean Time To Repair (MTTR).**

The repair time divided by the number of failures.

12.4.3 **Mean Response Time (MRT).**

The time to respond to a call for service divided by the number of calls.

12.5 **Expected Life Duration**

This is the time during which the equipment is expected to provide useful service, without an unusual amount of service and without becoming obsolete.

13.0 INTERFERENCE

13.1 Interference to the System

Performance of the system shall not be affected by the use of standard electronic equipment used at the institution. Distance limits of standard electronic equipment are as follows:

13.1.1 CB transceivers at 1 metre or more;

13.1.2 VHF and UHF transceivers at 1 metre or more;

13.1.3 Other radio frequency transmitting, receiving and re-distribution equipment at 5 metres or more; and

13.1.4 Personal computer and/or computer work stations at 5 metres or more.

13.2 Interference by the System

The system shall not interfere with any standard electronic equipment used at the institution, any commercial TV or radio equipment at a minimum distance of 5 metres, or any other electronic security systems at a distance of 1 metre or more.

14.0 **LIGHTNING PROTECTION**

Surge suppression-type lightning arrestors shall be installed to protect all power, communications and antenna cables or wires entering or leaving a building.

These arrestors must be installed where the cable enters the building i.e. not in the CER or other equipment room.

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

**ES/SOW-0102
Revision 6
1 May, 2008**

**ELECTRONICS ENGINEERING
STATEMENT OF WORK**

**QUALITY CONTROL FOR
PROCUREMENT AND INSTALLATIONS OF
ELECTRONIC SECURITY SYSTEMS**

AUTHORITY

This Statement of Work is approved by Correctional Service Canada for the procurement and installation of all telecommunications and electronic security systems, subsystems, and equipment in Canadian penal institutions.

Recommended corrections, additions or deletions should be addressed to the Design Authority at the following address: Director, Engineering Services, Correctional Service Canada, 340 Laurier Avenue West, Ottawa, Ontario, K1A 0P9

Prepared by:



**Manager,
Electronics Systems Research**

Approved by:

**Director,
Engineering Services**



18 Aug 08

RECORD OF REVISIONS

Revision	Paragraph	Comment
3	5.1 - Design Considerations	Tabletop or wall mount power supplies/transformers
4	3.1.1 - Wiring/Cabling Methods	Wiring/cable access
	3.2.1 - AC Wiring	Power outlet strip
		Separate circuit breakers connected to opposite phases of the AC feed
	3.2.2 - AC Power Connections	Power connections via flexible armoured cable
5	Abbreviations	Additions
	1.4 – Manufactured Equipment	Approval of custom equipment
	1.5 – Commonality of Equipment	Add security screws
	3.1.1 – Wiring and cabling	Single conductor wire only on IDC connectors
		Identification of conductors
	3.1.2 – Cable/Wiring Labelling	Acceptable labelling
	3.2.1 – AC Wiring	Mounting of power strips
	3.3.4 - Labelling	Acceptable labelling of racks, boxes, etc.
	5.1 – Design Considerations	DIN rail power supplies preferred
6	2.1 – Environmental Conditions	Expand airborne containments
	2.6 – Finish Application	Change finish material definition
	2.2.2 - Plastic	Remove last sentence
	3.1.1 – Wiring/Cabling Methods	Change “Hydro Codes” to “Electrical Authority”
	3.3.2 - Enclosures	Add requirement to meet IP64

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ABBREVIATIONS

The following abbreviations are used in this specification:

AC	Alternating Current
ATP	Acceptance Test Procedure
BER	Beyond economical repair (repair cost in excess of 60% of replacement cost)
CER	Common Equipment Room
COTS	Commercial -of-the-Shelf
CSC	Correctional Service Canada
CSA	Canadian Standards Association
DC	Direct Current
DA	Design Authority
DES	Director, Engineering Services
EIA	Electronic Industries Association
EMT	Electrical Metallic Tubing
IDC	Insulation Displacement Connector
ISO	International Standards Organization
PCB	Printed Circuit Board
PVC	Polyvinyl Chloride
QA	Quality Assurance
RFP	Request For Proposal
STR	Statement of Technical Requirements

DEFINITIONS

The following definitions are used in this specification:

Design Authority	Director, Engineering Services (DES), Correctional Service Canada (CSC) is responsible for all technical aspects of the system design and implementation.
Contract Authority	Public Works and Government Service Canada (PW&GSC) and/or the Materiel Management Division of CSC is responsible for all contractual matters associated with the system design and implementation.
Project Manager	A CSC employee and/or a contracted person designated by DES to be responsible for the implementation of the project.
Project Officer	A CSC employee and/or a contracted person designated by DES to provide technical and/or engineering services in support of the project.
Contractor	The company selected as the successful bidder.
Off-the-shelf	Equipment which is commercially, complete with field reliability data, manuals, engineering drawings and parts price list.
Custom Equipment	Equipment designed and/or manufactured specifically for a specific contract.

APPLICABLE DOCUMENTS

The following documents of the issue in effect on the date of the Request For Proposal (RFP) shall form a part of the specification to the extent specified herein.

CSA STANDARD C22.1-1986 Canadian Electrical Code - Part 1 Safety Standard for Electrical Installations

EIA STANDARD EIA-310-D Racks, Panels and Associated Equipment

CSA STANDARD C22.2 Canadian Electrical Code - Part II

EIA RS-406/IPC-C--405A Connectors, Electric, Printed Wiring Boards

Any other applicable industrial safety and control standards governing specific aspects for equipment and/or installations.

1.0 INTRODUCTION

1.1 General

This document defines the quality control requirements for the design, installation, testing and acceptance of telecommunications and electronic security systems in all Correctional Service Canada (CSC) facilities.

1.2 Scope

This specification has been developed to ensure high standards for the installation of electronic systems. It defines workmanship standards which may not be fully covered in subsidiary specifications. All contractor's documentation and installation procedures shall meet this specification for equipment reliability, maintainability, longevity, appearance and operational use.

1.3 Off-The-Shelf Equipment

The contractor shall provide commercial off-the-shelf (COTS) equipment wherever possible. COTS equipment shall meet or exceed the manufacturing standards as listed in this specification.

1.4 Manufactured Equipment

Where COTS equipment is unavailable or unsuitable for a specific application, the contractor may manufacture or arrange for the manufacturing of a particular item to suit the requirements. Manufactured equipment shall meet or exceed the best commercial equipment manufacturing standards. Approval of the final design, appearance and ergonomics of all custom manufactured equipment shall rest with the DES, Project Manager or CSC delegate.

1.5 Commonality of Equipment

The contractor shall provide commonality of hardware components within the design parameters ie. switch locks, racks, panels, security screws, etc. All equipment, if appropriate shall be interchangeable.

2.0 MATERIAL AND EQUIPMENT REQUIREMENTS

2.1 Environmental Conditions

All materials and equipment which is used in CSC installations shall be equal to, or better than the standards established in the original equipment and shall be chosen with due consideration being given to the intended use, safety, retention of appearance, maintainability and durability under rugged operating conditions. These materials shall be suitable to perform over the following environmental ranges:

a. Indoor Equipment

Temperature: 0° C to 40° C; and
Humidity: 20% to 95% non-condensing.

b. Outdoor Equipment

Temperature: -40° C to +50° C; and
Humidity: 0 to 100%, condensing.

Outdoor equipment shall operate reliably and not be damaged by combinations of direct exposure to the sun, wind, rain, lightning, hail, snow and ice as may be expected to occur at each institution location.

Complete assemblies of indoor equipment shall be resistant to liquid spills, airborne contaminants (dust, pollen and water droplets), shock and vibration.

2.2 Materials

2.2.1 Metals

Metals used shall be either corrosion resistant or be suitably treated to resist corrosion in all potential atmospheric conditions, including tear gas, to which the installation may be subjected.

For the connection of copper to a cadmium or galvanized surface, effective "wiping" of the copper surface shall be considered satisfactory protection.

No cut galvanized fitting shall be used without protection equal to or greater than the original galvanized surface. All parts shall be free from burrs and sharp edges.

Metal which has been cut, scraped, or drilled shall be properly treated (primed and painted) to retain a uniform appearance.

2.2.2 Plastic

Plastic materials must be stable and shall retain their original shape and finish over the range of operating environmental conditions specified in 2.1

No material shall be used that softens or hardens within the storage environment in a way which is detrimental to its suitability as replacement parts for existing equipment.

Metal screws shall not be threaded into plastic materials.

2.2.3 Natural Rubber

The use of natural rubber is prohibited.

2.2.4 Wood

The use of wood or wood products is not acceptable.

2.3 Toxic Materials

Materials capable of producing harmful toxic effects under any operating condition, equipment malfunction, or accidental cause shall not be used.

2.4 Flammable Materials

Materials, used either for electrical insulation or mechanical purposes which are combustible or capable of causing an explosion, shall not be used.

2.5 Fungus and Insect Supporting Materials

Materials capable of providing a nutrient medium for fungus or insects shall not be used.

2.6 Finish Application

Finish shall be applied to all surfaces where consideration of appearance and protection against corrosion, toxicity, and other deterioration exists.

Application of finish shall not impair equipment performance, and will maintain uniformity in outward appearance.

Finish materials must be scratch resistant, not react to normal cleaning products and applied so as to last at least ten years.

3.0 INSTALLATION REQUIREMENTS

3.1 Wiring and Cabling

Prior to the installation, all wires and cables shall be tested in accordance with the manufacturer's instructions and shall meet all performance parameters.

Wire and cable harnesses shall be neatly formed and clamped in position. If brackets, forms or clamps are required, these shall be the responsibility of the contractor.

All wires and cables shall be stranded. Single conductor type wires are not acceptable except when such cables are specified to terminate on an IDC type connector. This does not apply to coaxial cables with single centre conductors.

Electrical tape, masking tape, or its equivalent shall not be used on wires, cables or any installed equipment.

3.1.1 Wiring/Cabling Methods

Three (3) or more individual wires or cables which are located in one(1) cable run shall be formed into a cable harness, properly dressed, supported and securely tied with flat lacing twine or equivalent.

Wires and cables which are installed by the contractor external to consoles, equipment racks, pull boxes and junction boxes shall be contained in securely mounted conduit or cable tray systems.

Plastic PVC conduits may be used in underground installations unless otherwise specified at time of bidder's conference.

A rigid steel conduit shall be used in indoor, security sensitive areas and outdoor above-ground applications.

Signal and 120 VAC power wiring shall not be run in the same conduit, cable tray, or raceway; and shall be separated in accordance with the local Electrical Authority.

Wire splicing in cable runs shall not be permitted. All cable runs shall be continuous. If continuous cable runs are not possible, terminal block configurations are acceptable provided they are approved by the Design Authority.

Cross-connects installed on BIX, or similar blocks, must not pass across the face of the block, but must be carried around the block, so as not to impede access to the connections.

BIX, or similar, blocks are to be used for solid wire only. Stranded wires are not to be directly terminated on BIX, or other IDC terminations.

Wires in multi-conductor cables which terminate on connectors, and which are not being used, must be twisted around the cable in a neat fashion. They are not to be cut off.

Wires in multi-conductor cables which terminate on BIX or similar IDC connector blocks, and which are not being used, must be punched down on the block. They are not to be cut off.

All conductors on IDC and any other type of terminal block will be identified with a cable marker and cross referenced in the as-built drawings.

Rectangular slots shall be cut in the computer floor, underneath any cabinets, racks, and consoles, for the running of cables. These slots must constitute at least 1/2 of the available floor area. Sharp edges on the computer floor shall be supplied with suitable protection to eliminate possible nicks, tears or wear in cable insulation sheaths. Individually drilled holes for the purpose of carrying cables from the under floor to the inside of the cabinet, rack or enclosure are not permitted.

3.1.2 Cable/Wiring Labelling

The contractor shall label all cables and cable runs. The labelling method shall be logical and conform to industry standards.

All cables shall be identified with commercially produced or machine printed alpha numeric labels protected by clear heat shrink tubing. Hand printed labels are not acceptable.

All wiring shall be identified at both ends of the wire. The coding shall enable a technician to identify the wire or cable without referring to manual tracing methods, test equipment or as-built drawings.

Cable identification labels shall be attached as follows:

- a. within 30 cm of the termination for both ends.
- b. in the middle of any access point, i.e. pull box, wall shaft opening, cable tray, etc.

All individual wires shall be labelled according to a cable numbering system or wire function plan, which is acceptable to the Design Authority.

All terminal strips shall be identified with its own unique terminal number and function.

3.1.3 Exterior Cabling

Where a cable enters or exits an exterior box, chassis, or conduit, the cable entrance shall be completely sealed to prevent an influx of water. A drip loop shall be formed in the cable to assist in maintaining this weather tight seal.

Conduit bushings shall be used on all conduit entrances/exits.

Sharp edges on metal boxes or chassis enclosures shall be supplied with suitable protection to eliminate possible nicks, tears or wear in cable insulation sheaths.

3.1.4 **Slack**

Wires and cables shall be as short as practical, with sufficient slack to:

- a. allow a minimum of three (3) reconnects due to wire breakage;
- b. prevent undue stress on cable forms, wires, terminals and connections;
- c. enable parts to be removed and replaced during servicing without disconnecting adjoining wires or circuits;
- d. facilitate movement of equipment for maintenance purposes; and
- e. provide drip loops in exterior cabling.

Slack shall be provided in junction boxes where space permits. Slack shall not exceed one single loop of cable forming the circumference of the junction box.

Slack shall be provided below equipment racks and shall be neatly coiled below the access flooring. The length of slack shall be equal to the height of the associated equipment rack. Units in drawers and slide out racks shall be provided with sufficient slack to permit removing the units without severing connections.

All cross connection wiring shall be neat and tidy, properly bundled, and tied. This procedure shall allow sufficient slack for tracing of individual wires via manual methods.

Parts mounted on a hinged door shall be wired by means of a single cable, and arranged to flex without being damaged by the opening and closing of a door. If physical separation between wires is essential so as to make a single cable impractical, more than one flexible cable may be utilized.

3.1.5 **Terminations**

All terminations relying on friction for electrical and mechanical connection shall be tested in accordance with the manufacturer's instructions and shall meet the performance requirements detailed therein.

Terminal fanning strips shall be used where a number of wires are contained in a harness, shall be used unless a multi-pin connector is provided.

Spade terminal lugs shall be used on all wiring, connections to screw-thread terminals, except where solder or other type of terminal is specified.

Where wires are connected to lugs, which are clamped under screw terminals in the form of a terminal connection strip, no more than one wire shall be attached to each lug, in order that each wire may be removed individually. This requirement will not apply in the case of common connections, daisy chain distribution circuits, or similar terminations where wires will not need to be disconnected for servicing.

No more than two (2) lugs shall be attached to each terminal.

Wire and cable insulation shall be stripped back to allow for proper connection to the lug. No bare wire shall be visible between the terminal lug and the insulator.

Terminal strips must be fastened to a hard surface using a screw, or nut and bolt. Adhesive supports to secure the terminal strip, or floating terminal strips are not acceptable.

3.1.6 **Splicing and Joining**

Splicing of wires on new installations is not permitted.

Where connectors are used on cable assemblies, they shall be a locking type which will not disengage under tension.

All joints or splices in underground cable runs shall be located inside accessible, secure, waterproof, and lockable steel enclosures. The enclosures shall be located at least one (1) metre above grade and be firmly secured to existing structures or to stub pole supports.

Splices in underground cable runs, if required to repair Crown caused damage, shall be subject to approval from the Design Authority.

Stranded conductor splices shall be held by wire binding terminals in order to prevent stray strands from causing either short circuits or grounds.

Joints and splices shall be soldered and encased in waterproof shrink tubing for protection against leaching, oxidization, moisture damage, etc.

Joints and splices shall be clearly and accurately identified on applicable as-built drawings.

3.1.7 **Shielding**

Shielding shall be secured on wires and cables to prevent accidental contacting or shorting exposed current-carrying parts, grounded metal objects, or structures.

Shielding shall terminate at sufficient distance from the exposed conductors of the cable to prevent shorting or arcing between the cable conductor and the shielding.

Ends of the shielding material shall be secured against fraying.

3.1.8 **Protection**

Wires and cables shall be strategically located and protected to avoid contact with rough, irregular surfaces or sharp edges.

Wires and cables shall be protected by suitable grommets or bushings when passing through openings in metal.

Guards or other suitable protection shall be provided on insulated high voltage cables.

3.1.9 **Support**

Wires and cables shall be properly supported with adequate strain relief to prevent excessive strain on the connections, devices, or joints of any electrical apparatus connected therein.

Adhesive supports with ty-wrap products shall not be used unless they are secured by a nut and bolt device.

3.1.10 **Clearance**

Physical clearance between wires/cables and associated heat emitting parts, i.e. amplifiers, shall be sufficient to prevent deterioration of the wires or cables. Refer to Table 19 of CSA Standard C22.1 Part 1.

3.1.11 **Inductive and Capacitive Effects**

Wires and cables, including harness wire and cables, shall be located such that inductive and capacitive effects do not adversely affect system operation. The amount of twists in paired wires shall be increased over the length of wire not covered by the cable sheath.

3.2 **Power Wiring**

The contractor shall not employ "Marette" (TM) type connectors regardless of CSA Standard C22.1 regulations. All wiring shall terminate on an insulated or protected barrier strip or terminal board, and be provided with spade terminal lugs where required.

Where control and signal wires which are run in conduit, cable-harness, or cable-trough systems, shall be run in separate wire ways. The separation shall be a physical barrier of suitable material and shall conform to applicable building codes and wiring methods.

All high voltage and/or high current terminations shall be provided with protective guard devices by the contractor. The device shall be mounted to allow for maintenance access to the terminals.

Terminal lugs shall be used on all power wiring, both VAC and VDC.

Warning labels must be installed in accordance with the CSA guidelines to warn maintenance personnel of any hazardous voltages and currents.

3.2.1 AC Wiring

AC wiring methods shall conform to all local and national wiring regulations.

Outlet boxes shall be installed such that all outlets are clear of any obstructions including wiring and cabling, and shall be easily accessible.

Power distribution within a cabinet or rack shall be via a power outlet strip, as provided by the original cabinet or rack manufacturer. A third party outlet strip is not acceptable. All power strips must be mounted into the equipment cabinet with rack mounting hardware.

All power cable installations shall be completed in a neat and sturdy fashion and shall meet all requirements of the specifications detailed herein.

Power cords within equipment cabinets and racks shall be maintained as short as practicable with due consideration for maintenance needs.

Systems which use redundant equipment, such as dual microprocessors, shall power each unit from two separate breakers connected to opposite phases of the AC feed.

3.2.2 AC Power Connections

All AC power connections from the cabinet or rack power outlet strip to the AC junction box shall be via flexible armoured cable. AC power connectors are not permitted.

3.3 Conduits, Enclosures, Cable Troughs and Raceways

3.3.1 Conduits

Conduits installed above ground, and accessible to the inmate population, shall be rigid steel.

Metal conduits installed in secure and inmate accessible areas shall be fitted with double the normal quantity of support hangars.

In locations subject to extreme temperature changes, and/or where conduit lengths are of non-standard size, the contractor shall make provisions for the inclusion of conduit expansion joints.

Rigid PVC conduits shall be used only in buried applications.

Rigid PVC conduits shall not be threaded, but may be used with approved adapters and couplings applied in a manner consistent with industry standards.

EMT conduit may be used in administrative areas, and locations which are not normally assessable to the inmate population.

Liquid-tight flexible metal conduits may be used where a flexible connection is required, i.e. cameras, microwave dishes, etc. In such applications, the length of "flex" conduit shall not exceed one (1) metre.

PVC conduits which cross roadways shall be encased in poured concrete.

The contractor shall provide a suitable means of protecting the buried conduit against damage caused by digging or excavating. The preferred method is installing a tape marker directly above the conduit path.

In addition to these requirements, the applicable industrial standards apply, including:

- a. CSA Standard C22.2 No. 45-M1981 - Rigid Metal Conduit
- b. CSA Standard C22.2 No. 56-1977 - Flexible Metal Conduit

3.3.2 Enclosures

All electrical connections, terminations, and cross connections shall be made within lockable, covered steel enclosures, using good quality locks. At least two keys must be supplied to CSC.

Outdoor enclosures shall be environmentally sealed and gasketed to provide a moisture/dust free and secure environment.

Enclosures which contain electrical equipment such as circuit breakers, relays, switches, and transformers, or cable networks, connections and terminations, shall be weatherproof and dust-tight and meet the provisions of IP64.

All enclosures such as junction boxes, racks and consoles shall be positioned for ease of maintenance, service, and connection/disconnection of cables and cable harnesses.

The contractor shall provide a proper drain hole in all enclosures which are grouted in concrete.

All floor mounted cabinets, racks, and consoles shall be secured to prevent overturning when associated drawers, shelves and movable parts are extended, or when heavy objects are placed on pull out shelves or writing tables.

In addition to the provisions stated herein, the applicable industrial standards shall apply, including:

- a. CSA Standard C22.2 No. 29-M1983 for Industrial Products.
- b. CSA Standard C22.2 No. 94-1976 for Special Purpose Enclosures.

3.3.3 Cable Troughs and Raceways

Cable troughs and raceways shall be continuous and shall be constructed of metal.

The contractor shall provide adequate mounting devices which will permit the use of fastening devices that will not damage conductor insulation.

Cable troughs, raceways, and fittings shall be free from burrs or other sharp edges which may cause damage to the cable or insulated conductors.

Cable troughs and raceways shall be installed as a complete system before the conductors or cables are installed.

Cable troughs may be either ventilated or solid and unless otherwise specified, shall be equipped with covers and steel guards to protect against damage.

In addition to these provisions, the appropriate standards shall apply, including:

- a. CSA Standard C22.2 No. 126-M1980 - Cable Troughs and Fittings.
- b. CSA Standard C22.2 No. 79-1978 - Raceways and Fittings.
- c. CSA Standard C22.2 No. 62-1972 - Surface Raceways and Fittings.

3.3.4 Labelling

The contractor shall label equipment racks, junction boxes etc. The labelling method shall be logical and conform to industry standards. All equipment racks and junction boxes shall be identified with commercially produced or machine printed alpha numeric labels. Hand printed labels are not acceptable.

Identification of chassis equipment shall be located in a suitable location within the rack and affixed to the rack, not the chassis.

Approved materials used for labels include lamicoyd strip, etched metal, stamped labels, or indelible ink.

3.4 **Soldering**

On solder connections, the insulation on individual wires shall not be stripped back more than 1.5 mm from the solder area.

Soldering shall be executed so that positive electrical and strong mechanical connections are assured.

Leads shall not be wrapped more than once around the terminal.

Soldered connections on the back of connector plugs, i.e. cannon plugs, switches, relay sockets or any other device employing solder lugs, shall be insulated by means of a short length of insulating tubing placed over each wire in the connector.

"Cold" solder joints, and excessive solder on connections shall not be acceptable.

Each soldered connection shall be tested for mechanical and electrical strength to ensure that a strong connection is achieved.

Use of acid based solder flux is not permitted.

Where insulation material is subject to heating during soldering, the material shall be undamaged and the fastened parts shall not be loosened.

3.5 **Welding**

All welds shall be free of harmful defects such as cracks, porosity, undercuts, voids and gaps.

There shall be no burn through.

Weld fillets shall be uniform, smooth, and shall cover a sufficient area of the welded surface to ensure that a solid bond is achieved.

Surfaces to be welded shall be free of extraneous particles which may affect the mechanical elements of the welded area.

3.6 **Crimping**

Crimp connections shall be made in accordance with the manufacturer's instructions. Industry standards shall be observed at all times.

Solid conductors may be used with crimp connections where the use of solid conductor wiring cannot be avoided. In all other cases only stranded wiring shall be used on crimp connections.

Solid conductors which are connected to terminals by crimping shall be soldered as well. This provision only applies to terminal lugs. It does not apply where wires may be spliced by crimping except in the case of some LED's and indicator lights which employ pigtail leads which should be soldered or connected by screw terminals.

3.7 **Cleaning**

Upon completion of the installation, the equipment shall be cleaned of smudges, loose or excess solder, weld beads, metal chips, burrs, mold release agents, or any other foreign material which might detract from the intended operation, function, or appearance of the equipment.

All corrosive materials shall be removed.

The cleaning processes employed shall leave no harmful residues and shall not have a negative effect on the equipment or its parts.

4.0 GROUNDING REQUIREMENTS

4.1 General

Grounding source and distribution points shall be provided by the Crown unless otherwise specified at the bidder's conference, in the Statement of Technical Requirement (STR), or any applicable documents.

The grounding shall be such that the signal ground, equipment ground, and electrical power ground shall be connected at one point and shall follow the shortest possible path. Where necessary, ground isolation techniques shall be employed.

The path from the tie point to any ground shall be permanent, continuous, have sufficiently low impedance to limit the potential above ground, and facilitate the operation of the 'over current' devices in the circuits.

Ground conductors shall be made of copper, sized for a minimum of 200 circular mils for each 300 mm length of conductor.

Inactive wires installed in long cable or conduit runs shall be grounded to prevent stray or static electrical discharges, with proper consideration given to prevent ground loops or other grounding problems.

Installation must be such that ground loops are prevented.

4.2 Signal Ground

Signal grounds shall be used to provide a ground potential reference which is independent of the frame ground and the power equipment ground.

An insulated grounding conductor shall be connected from the equipment signal ground terminal to the main ground connection point for single units such as equipment racks.

An insulated ground plate shall be used with insulated grounding conductors for multiple units, such as common equipment room (CER) equipment, from each equipment signal ground terminal connected to the plate. The plate shall be connected to the main ground connection point by means of a single insulated grounding conductor.

4.3 Frame Ground

The ground connection of the receptacle may be used for the frame ground as long as that ground connection is isolated and insulated from the power equipment ground system. Such receptacles shall be clearly identified so that they will not be used to supply equipment that does not require frame grounds.

The receptacle ground connection conductor shall be insulated and isolated from the power equipment grounding system, and shall be connected from the receptacle ground connection to an isolated ground plate.

The isolated ground plate may be an insulated buss bar for low power applications,.

Size of grounding conductors shall be in accordance with the requirements of CSA Standard C22.1 Section 10 and Table 17.

4.4 Combined Signal and Frame Ground

Connection between the signal ground terminal and the frame ground terminal shall be part of the equipment wiring. The connection to the main ground connection point shall be similar to that for a frame ground.

4.5 Main Ground Connection Point

Main ground connection point shall be installed in accordance with CSA Standard C22.1 Section 10, and C22.2 No. 41.

4.6 Ground to Chassis

Ground connections to an electrically conductive chassis or frame shall be made by:

- a. soldering to a spot-welded terminal lug.
- b. soldering to a portion of the chassis or frame that has been formed into a soldering lug.
- c. using a terminal on the ground wire and securing the terminal by a screw, nut and lockwasher.

When using a terminal on a ground wire which is secured by a screw, nut and lockwasher, the screw shall fit in a tapped hole in the chassis or frame, or it shall be held in a through hole by a nut.

When the chassis or frame is painted, the metal around the screw hole shall be scraped clean and plated (or tinned) to provide a corrosion resistant connection.

4.7 Shielding

Shielding on wire and cable shall be grounded to the chassis or frame, in the manner specified in Section 2.5.5

4.8 Lightning Protection

All equipment with external cabling including radiating cables or other forms of antennas which may be susceptible during lightning strikes or other static discharges shall be protected fully in accordance with the relevant safety rules and regulations.

The ground rod used for lightning protection shall be copper or copper-plated steel, and shall be a minimum of 2.5 metres in length. Where the ground conditions preclude installation of a single ground rod, multiple rods of a shorter length may be used in parallel to provide the lightning protection.

The copper ground conductor shall be fastened to the ground rod using a thermic welding technique. Clamps are not acceptable.

5.0 ELECTRICAL/MECHANICAL DESIGN REQUIREMENTS

5.1 Design Considerations

All equipment shall be manufactured and finished with a degree of uniformity and grade of workmanship which shall comply with applicable industry standards, and the generally accepted principles of safe practice.

Exposed and moving parts that might constitute a safety hazard shall be provided with protective guards and warning labels.

All elements of the equipment shall be designed to operate in a highly reliable fashion, consistent with available technology, with a minimum of system downtime due to scheduled and unscheduled maintenance.

Where units or subsystems are integrated into common facilities, no single failure of a component, sub-assembly, assembly, or sub-system shall result in the failure of any other sub-system or reduced capacity or performance of other sub-systems or parts thereof.

The system shall be designed such that no failure of a single component, unit, subassembly, or subsystem will result in failure of the system or the next higher hierarchical elements.

All equipment shall be designed and installed to provide useful service, with minimal maintenance for a period of no less than 10 years, unless otherwise specified.

Tabletop or wall-mount power supplies or transformers shall not be used to power equipment installed within equipment racks and cabinets. Power supplies or transformers used within racks and cabinets shall be securely fastened to the rack equipment rails or side of the cabinet. DIN rail mounted power supplies are preferred.

5.2 Assemblies

The contractor (or manufacturing agent) shall apply special considerations in the execution of assembling system component parts.

Rack mounted equipment chassis; whose depth from the front face panel to the rear of the chassis exceeds 25 cm shall be equipped with rack slides.

Each assembly shall have a permanently fixed label showing the model number, serial number, and power requirements.

Materials used in assemblies shall be chosen with due consideration being given to the intended use, safety, durability, retention of appearance, and ability to resist corrosion from a variety of causes including tear gas.

In addition to applicable CSC/DES specifications, the appropriate industrial standards shall apply, including:

- a. EIA-310-D Racks, Panels, and Associated Equipment.
- b. CSA C22.2 No. 94-1976 Special Purpose Enclosures.
- c. CSA C22.2 No. 29-M1983 Panel boards and Enclosures.

5.3 Printed Circuit Board (PCB)

PCBs shall be constructed of non-flammable material, preferably a glass epoxy base.

The contractor shall provide extractor devices at the front of each card assembly.
All cards shall have keyed edges to prevent accidental replacement by another type of card.

Each device shall be identified and properly labelled, showing card type, and revision number.

All PCBs shall be etched. Wire wrap connections are not acceptable.

In addition to the requirements set forth herein the appropriate industrial standards shall apply, including:

- a. CSA C22.2 No.154-M1983 Data Processing Equipment.
- b. CSA C22.2 No.0.7-M1985 Equipment Electrically Connected to a Telecommunications Network.
- c. EIA RS-406/IPC-C-405A General Document for Connectors, Electric, Printed Wiring Boards.

5.4 Components

All electrical equipment, i.e. power supplies, amplifiers, etc. attached to the equipment structure shall be fastened securely and rigidly not using nuts and lockwashers.

Electrical components used in manufacturing in-house products shall be of commercial quality and shall comply with the standards of the Canadian Electrical Code, Part II.

Electronic circuit components, such as resistors, capacitors, inductors, or semiconductor devices which have no applicable standards in the Canadian Electrical Code, Part II shall comply with the test parameters as set forth in CSA C22.2 No. 154-M1983 Part 6.

6.0 **QUALITY ASSURANCE REQUIREMENTS**

The contractor shall provide objective evidence that the system and any major component therein have been designed, manufactured, inspected and tested under the umbrella of a quality assurance program capable of meeting the requirements of the applicable ISO Standard 9002 Series. More stringent requirements will be identified on a case by case basis, as needed.

In addition, the contractor shall develop a site-acceptance test/inspection procedure to demonstrate that all parameters of the system are fully operational and conform to the Statement of Technical Requirements.

6.1 **In-plant Inspection**

The equipment shall meet all functional, electrical, and visual/mechanical test parameters and shall have been fully tested and inspected by the contractor. Results shall be documented and reported to the Design Authority. Periodic inspections may be done by the Design Authority or his designated representative to verify that the equipment meets all requirements.

Particular attention shall be given to the following:

- a. Inventory of received equipment.
- b. Physical condition of equipment i.e.: scratches, dents, paint chips, etc . . .
- c. Construction techniques, board and components accessibility.
- d. Neatness, clamping and tying of wiring, cabling and harnesses.
- e. Strain relief of cables and wire connections.
- f. Legibility of nameplates, identification plates, and markings.
- g. Safety and protective covers, warning labels and grounding.
- h. Tightness of connectors, screw type fasteners, etc.
- i. Soldered and weld joints.
- j. Completeness.
- k. Operation of drawers, adjustable and sliding parts, controls etc.

-
- l. Shielding.
 - m. Cable and wire connections, ground clamps and terminal strips.
 - n. Type and quality of paint finish.
 - o. Quality of printed circuitry, etching, the electronic components and other associated parts.
 - p. Quality of locks, cabinets and other materials.

It must be noted that the in-plant tests are performed as a requirement of the financial arrangements and serve to guarantee that the design parameters of the FDR are followed and will meet the requirements of the applicable system specification. Sign-off of in-plant tests will not denote any form of final acceptance of the equipment and design.

6.2 Test Equipment

All test equipment shall be supplied by the contractor.

All instruments and test equipment shall be checked periodically by the QA Inspector in order to ensure accuracy of measurement. Records showing when the test equipment was last calibrated are to be provided as proof of accuracy.

6.3 Calibration

All test equipment used by the contractor shall bear a calibration seal showing the date calibrated and the due date for the next calibration.

The contractor shall ensure that the test equipment's calibration due date does not occur during the test period.

All equipment performance measurements shall be made with instruments whose accuracy and calibration guarantee that the results comply with the terms of the contract.

CSC reserves the right to furnish and/or require the use of any applicable instruments and standards in order to ascertain the accuracy of any measurements.

Test equipment suspected of being damaged or out of calibration shall be rejected by the Design Authority.

6.4 **Safety Design Aspects**

Particular attention is to be given to the safety design aspects of CSC installations, so as to minimize any hazards while in gaining access to, operating and servicing equipment. Such design aspects shall include the proper grounding of equipment, the installation of protective covers and warning labels over high voltage areas, the installation of warning labels on x-ray equipment, etc.

Radio and TV camera towers must receive careful attention in regards to make them accessible for servicing, especially during inclement weather.

7.0 ON-SITE INSTALLATION

7.1 Inspections

Inspections will be performed by the Design Authority or their designated representative. A thorough visual and mechanical inspection of the installation shall be performed to ensure that all applicable requirements and safety precautions have been met.

7.2 Damage to Government Property

Damage to Government property, including buildings, equipment, etc. during the course of the installation shall be made good by the contractor.

The contractor shall replace all equipment which has suffered major damage, i.e. damage which renders the equipment BER, unserviceable, or subject to deterioration.

If stocks of the applicable equipment are at such a level that replacement of the damaged items cannot be made, and the contractor cannot readily obtain new equipment in order to allow the installation to proceed without delay, the contractor shall:

- a. repair the damage immediately with available materials.
- b. return to the site and replace the equipment as soon as new equipment is procured. Minor damage shall be repaired in a manner which leaves the government property in a condition equivalent to its original state and performing the original function, with no deterioration in appearance, performance, and/or reliability.

Any equipment where the paint finish becomes scratched or marred during the installation shall be completely refinished and repainted consistent with the appearance of new equipment.

Equipment shall neither be exposed to rain, nor be left out-of-doors during inclement weather. This stipulation does not apply to construction materials.

7.3 Protection of Surfaces

The contractor shall obtain approval from the appropriate Institution authority before moving heavy loads or equipment on floors, roofs and other surfaces.

The contractor shall adequately protect floors, finished surfaces and roofs from damage during the installation and shall implement special measures when moving heavy loads or equipment on them.

The contractor shall keep the floors free of oils, grease, or other materials likely to damage or discolour them.

The contractor shall provide dust protection for the equipment during the installation period, as related construction activities may occur simultaneously.

7.4 Cutting, Patching and Digging

The contractor shall perform all cutting, patching or digging necessary for the installation of the system.

The contractor shall be responsible for changes or damage to any existing work, cables or equipment by cutting, welding, drilling, or digging without prior consent from the Design Authority.

The contractor shall promptly repair any damage for which he is responsible in order to restore the facilities to their original condition.

7.5 Visual-Mechanical Inspection

Inspection shall be performed by the Design Authority or his designated representative.

Prior to the commencement of performance and operational testing, the installation shall be inspected to ensure that all applicable requirements and standards have been met.

Particular attention shall be given to the following:

- a. Physical condition and positioning of equipment.
- b. Neatness, clamping and tying of wire and cable harnesses.
- c. Cable and wire connections, ground clamps, and terminal strips.
- d. Soldered and welded joints.
- e. Strain relief of cables, wire connections, and cable harnesses.
- f. Cleanliness of equipment boxes under computer flooring.
- g. Nameplates, identification methodology and markings.
- h. Operation of drawers, adjustable and sliding parts and controls.

-
- i. Equipment fit, fastening devices and accessibility of parts.
 - j. Construction and finishes.
 - k. Legibility of labels and tags.
 - l. Safety aspects, including secure provisions for climbing and working on towers.
 - m. Shielding.
 - n. Grounding.
 - o. Equipment Cooling Provisions.
 - p. Washers and lock-washers.
 - q. Tightness of screw type fasteners & connectors.
 - r. Screws, nuts and bolts shall show no evidence of cross-threading or mutilation.
 - s. Bottom of equipment racks etc. shall be free of debris and loose parts.

7.6 **Final System Acceptance**

The system shall be accepted when all of the following items have been completed to the satisfaction of the Design Authority and with the written certification of the project manager:

- a. performance and operational tests.
- b. all documentation.
- c. all training.
- d. all other terms and conditions.

The system warranty shall be deemed to begin at the completion of the Final System Acceptance or when the system is taken into service with accepted deficiencies, whichever comes first.

7.7 On-Site Maintenance

Building and site maintenance shall be interpreted to include all the areas in which the contractor is carrying out installation activities.

All sites and buildings shall be maintained by the contractor in a clean and tidy condition.

Upon completion of each day's work, all areas such as hallways, stairways, elevators and storage rooms used by the contractor in delivering or storing equipment shall be left in a clean and tidy condition.

The contractor shall store all electronic components not yet installed in a lockable storage room/trailer at the end of each workday. This procedure will reduce the probability of damaged and/or stolen equipment prior to system acceptance. Prior to the commencement of performance and operational testing, the installation shall be inspected to ensure that all applicable requirements and standards have been met.

8.0 DELIVERY

8.1 Packaging

All equipment shall be packaged to ensure that the equipment will not be damaged during shipment and/or delivery to the institution, as well as any associated handling on site.

Fragile components must be clearly identified and labelled.

All circuit cards, equipment modules, etc. shall be protected by the original packaging material until the equipment is placed into service.

8.2 Addressing

Address labelling shall be clearly marked in a minimum of two (2) locations on each package. The following format shall be observed:

- a. Complete name of the institutional site.
- b. Complete shipping address.
- c. Clear description of contents.
- d. Complete name of the Institutional representative.

All of the above addressing items will be provided at the Bidder's Conference.

- END OF TEXT -

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/SOW-0110
Revision 1
24 June, 2008

ELECTRONICS ENGINEERING
STATEMENT OF WORK

STRUCTURED CABLE SYSTEMS
FOR
ELECTRONIC SECURITY INSTALLATIONS

AUTHORITY

This Statement of Work is approved by Correctional Service Canada for the procurement and installation of all telecommunications and electronic security systems, subsystems, and equipment in Canadian penal institutions.

Recommended corrections, additions or deletions should be addressed to the Design Authority at the following address: Director, Engineering Services, Correctional Service Canada, 340 Laurier Avenue West, Ottawa, Ontario, K1A 0P9

Prepared by:



Manager,
Electronics Systems Research

Approved by:

Director,
Engineering Services



23 July 08

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	Original	Original
1	4.3.1 - Cable	Cable upgraded to meet OM3 standards
	Multiple	Copper cable upgraded to CAT 6

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ABBREVIATIONS

The following abbreviations are used in this specification:

BICSI	Building Industry Consultant Service International
CER	Common Equipment Room
CET	Certified Electronic Technologist
COTS	Commercial -of-the-Shelf
CSC	Correctional Service Canada
CSA	Canadian Standards Association
CSV	Certified System Vendor
DVO	Data/Voice Outlet
EIA	Electronic Industries Association
EMT	Electrical Metallic Tubing
LOF	Laser Optimized Fiber
IDF	Intermediate Distribution Frame
OTDR	Optical Time Domain Reflectometer
RCDD	Registered Communications Distribution Designer
TC	Telecomm Closet
TIA	Telecommunications Industry Association
UTP	Unshielded Twisted Pair

DEFINITIONS

The following definitions are used in this specification:

Design Authority	Director, Engineering Services (DES), Correctional Service Canada (CSC) is responsible for all technical aspects of the system design and implementation.
Contract Authority	Public Works and Government Service Canada (PW&GSC) and/or the Materiel Management Division of CSC is responsible for all contractual matters associated with the system design and implementation.
Project Manager	A CSC employee or a contracted person designated by DES to be responsible for the test and evaluation or feasibility study project.
Project Officer	A CSC employee or a contracted person designated by DES to provide technical and/or engineering services in support of the project.
Contractor	The company is responsible for assuring that all system/equipment performance and test & evaluation requirements are met.
Off-the-shelf	Equipment which is commercially, complete with field reliability data, manuals, engineering drawings and parts price list.
Custom Equipment	Equipment designed and/or manufactured specifically for a specific contract.

APPLICABLE DOCUMENTS

The following documents of the issue in effect on the date of the Request For Proposal (RFP) shall form a part of the specification to the extent specified herein.

- a. EIA/TIA Standard EIA/TIA-568 Commercial Building Telecommunications Wiring Standard
- b. EIA/TIA Technical Systems Bulletin TSB-36 Additional Cable Specifications for Unshielded Twisted Pair Cables
- c. EIA/TIA Technical Systems Bulletin TSB-40 Additional Transmission Specifications for Unshielded Twisted Pair Connecting Hardware.
- d. International standard ISO/IEC 11801-2nd Edition: Information technology — Generic cabling for customer premises.

Any other applicable industrial safety and control standards governing specific aspects for equipment and/or installations.

1.0 INTRODUCTION

1.1 General

This document defines the quality control requirements for the design, installation, testing and acceptance of structured cable systems for use in security systems installed in all Correctional Service Canada (CSC) facilities.

1.2 Scope

This specification has been developed to ensure high standards for the installation of electronic systems. It defines workmanship standards which may not be fully covered in subsidiary specifications. All contractor's documentation and installation procedures shall meet this specification for equipment reliability, maintainability, longevity, appearance and operational use.

1.3 Off-The-Shelf Equipment

The contractor shall provide commercial off-the-shelf (COTS) equipment wherever possible. COTS equipment shall meet or exceed the manufacturing standards as listed in this specification.

1.4 Manufactured Equipment

Where COTS equipment is unavailable or unsuitable for a specific application, the contractor may manufacture or arrange for the manufacturing of a particular item to suit the requirements. Manufactured equipment shall meet or exceed the best commercial equipment manufacturing standards.

1.5 Commonality of Equipment

The contractor shall provide commonality of hardware components within the design parameters ie. switch locks, racks, panels etc. All equipment, if appropriate shall be interchangeable.

2.0 MATERIAL AND EQUIPMENT REQUIREMENTS

2.1 Environmental Conditions

All materials and equipment which is used in CSC installations shall be equal to, or better than the standards established in the original equipment and shall be chosen with due consideration being given to the intended use, safety, retention of appearance, maintainability and durability under rugged operating conditions. These materials shall be suitable to perform over the following environmental ranges:

a. Indoor Equipment

Temperature: 0° C to 40° C; and

Humidity: 20% to 95% non-condensing.

b. Outdoor Equipment

Temperature: -40° C to +50° C; and

Humidity: 0 to 100%, condensing.

Outdoor equipment shall operate reliably and not be damaged by combinations of direct exposure to the sun, wind, rain, lightning, hail, snow and ice as may be expected to occur at each institution location.

Complete assemblies of indoor equipment shall be resistant to liquid spills, airborne contaminants, shock and vibration.

3.0 **TELECOMMUNICATIONS OVERVIEW**

3.1 **Structured Cabling System**

The design objective is a flexible network that is easy to re-configure, easy to manage and capable of incremental growth. The network is based on a structured cabling system conforming to Electric Industry Association/Telecommunications Industry Association Specification 568 (EIA/TIA-568) and Canadian Standards Association 529 (CSA 529) and using a star wired topology for the horizontal distribution with Category 6 Unshielded Twisted Pair (UTP) and 50/125 Micron Laser Optimized Fibre. The design will support Ethernet, Fast Ethernet, and network management.

4.0 DESCRIPTION OF WORK

4.1 General System Requirements

4.1.1. Outline

This section defines the minimum requirements for a structured cabling system to be provided on an engineered, furnished, installed, tested, and commissioned basis. Products and installation practices shall conform with the EIA/TIA documents identified in the **APPLICABLE DOCUMENTS** section of this Statement of Work.

The structured cabling system includes the following basic elements arranged into backbone feeders and horizontal distribution subsystems that are cross connected or patched together in Telecom Closets or Common Equipment Rooms on Intermediate Distribution Frames (IDFs).

- a. Unshielded Twisted Pair (Horizontal)
- b. 8-pin modular Telecom outlets
- c. Insulation displacement connector type terminal blocks
- d. LOF optic cable (Backbone)
- e. Fibre optic (duplex) interconnect patch panels
- f. Patch cords for patch panels
- g. Line cords for workstation data equipment (Office Cables)

Notes:

- 1) 3 metre length is standard for Office Cables
- 2) All cables provided for a project shall have a **GREEN** jacket.

4.2 Horizontal Data Cable

4.2.1 Cable

Each cable shall consist of 8 each of 24 AWG thermoplastic insulated solid copper conductors formed into four individually twisted pairs and enclosed by a jacket with the appropriate protection rating determined by Provincial codes.

The cable shall fully conform with EIA/TIA-568 design requirements for 100 ohm UTP cable and fully conform with EIA/TIA-568 TSB-36 transmission requirements for Category 6 cable. Cables shall bear evidence of verified Level 6 or Category 6 and also bear evidence of certification by a recognized standard or testing body. (eg: Bearing NORDX Brand name and have length clearly marked on cable sheath)

The cable bundles will be fed to locations in either a supplied cable tray or conduit system. Outlet cables will then be fed to the user locations via either pac poles or fished down hard wall offices. A pull string will remain in the conduit/cable tray for future installations.

The cable run length from the IDC to the workstation location shall NOT exceed 90 metres. The combined length for patch cords for data network horizontal distribution connections shall not exceed 10 metres for an overall length from data network hub equipment to workstation equipment not exceeding 100 metres.

4.2.2 User Termination

Termination at the user end will be made onto a certified Category 6 RJ45 module for data. These modules will then be housed in a certified faceplate. The faceplate to house the modules will have the capability to equip up to six each 8 pin modular jacks. Other configurations to be used will vary with locations: A duplex flush mount faceplate for drywall applications, a duplex surface mount kit for PAC pole applications and duplex single gang outlets mounted into custom furniture with adapter plates. Surface mount kits will not exceed a 6.5 cm. protrusion from the wall. For custom furniture it is assumed that the cable runs will be fed to the outlet via raceways in the legs of furniture. For security reasons, jacks are NOT be installed in exterior walls or walls not totally part of CSC space. All cables must either terminate on a patch panel or on a faceplate, loose or unterminated cables are not acceptable.

The 8 pin modular jack connectors shall comply for termination of 4 wire pairs with 24 AAWG solid copper conductors: minimum contact force of 100g and conductors separated by jack comb.

Each modular outlet will be wired per EIA/TIA-568 polarization sequence, designation T568A (reference CAN/CSA T529 Clause 11.2 Figure 11-1 and Table 10-1).

This illustration is a front view of the connector

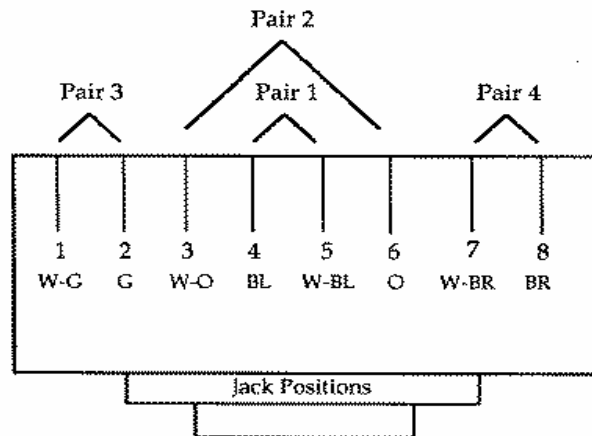


Figure 11-1
Eight-Position Jack Pin/Pair Assignments
(T568A Type)

Figure 11-1 and Table 10-1 outlines the sequencing required to construct line, office, and patch cables.

Each modular outlet will conform with EIA/TIA TSB 40 transmission requirements for Category 6 and will also be compatible with existing standard electrical outlet boxes.

Table 10-2 outlines the correct punch down positioning when using Northern Telecom T568A BIX DVOs', T568A ISDN QCBIX36DI and T568A ISDN QCBIX46DI Modular Jack Connectors, and T568A QPBIX Modular Patch Panels.

Table 10-1

Colour Codes for patch, line, and office cables		
<u>Colour Identification</u>	<u>Colour Code</u>	<u>Abbreviation</u>
Pair 1	White-Blue	(W-BL)
	Blue	(BL)
Pair 2	White-Orange	(W-O)
	Orange	(O)
Pair 3	White-Green	(W-G)
	Green	(G)
Pair 4	White-Brown	(W-BR)
	Brown	(BR)

Table 10-2

Colour Codes for punch down and modular outlets

<u>Position</u>	<u>Colour Code</u>	<u>Abbreviation</u>
1	White-Blue	(W-BL)
2	Blue	(BL)
3	White-Orange	(W-O)
4	Orange	(O)
5	White-Green	(W-G)
6	Green	(G)
7	White-Brown	(W-BR)
8	Brown	(BR)

4.2.3 Closet Termination

Supply and installation of RJ45 Category 6 hardware for system connection in communications closet using 24 NT certified patch panels rack mounted with cable organizer panels installed for each patch panel.

Active components will be connected to equipment by 8 conductor patch cords manufactured to CAT 6 compliance. Patch cords shall be stranded conductor and have a “no-snag” boot over the RJ45 connector.

Multi-Level building installations will require individual patch panels be installed for each level of the building. Patch panel(s) for each level of a multi-level building must have at least 15% unused ports. The same holds true for single story, multi ICC buildings.

4.2.4 Cable Protection

All ceiling distribution cabling shall be enclosed and protected by 3/4” and 1” rigid conduit from communications closet(s) room(s) and cabinets to all user outlets located in inmate accessible areas. In areas that CSC designated as non inmate accessible, EMT zone conduit will be allowed. Conduits must have end bushings installed to protect the cable from sharp edges.

Conduit containing Copper backbone cable must be designated “CAUTION SECURITY SYSTEM CABLE”

Conduit containing Fibre Optic backbone cable must be designated “CAUTION FIBRE OPTIC SECURITY SYSTEM CABLE”

4.2.5 Line Cords

The cabling company will supply RJ45, 8 pin modular line cords to connect owner provided data equipment to the horizontal distribution outlets at the workstation. They must be consistent with CAT 6 specification and provide end-to-end CAT 6 connectivity. Line cords shall be stranded conductor and have a “no-snag” boot over the RJ45 connector.

4.2.6 Testing

All cables/pairs will be scanned with a MicroTest Penta cable scanner or equivalent at 100 Mbs to determine DC loop resistance, near end cross talk and attenuation to meet or exceed the performance stated in EIA/TIA TSB-36 and TSB-40, noise, pair mapping and ranking. These tests must be conducted as originating from both the punch down location and modular outlet location of each cable segment.

4.2.7 Labeling

All jacks must be identified by means of labels with unique numbers. These markings will be made with printed labels. The Correctional Service of Canada expects that all drops at the user end will be sequential and not out of order.

The closet terminations must be identified with these same numbers marked on BIX labels adhered to BIX 20A designation strips and patch panels. The CAN/CSA 568 colour code will apply.

Labels will also be placed on the horizontal wire, 6-9" from termination points. This would include closets, main cabinet, and jacks.

4.2.8 Documentation

Customer to supply CAD or Visio Version 5 floor plans when available. If CAD documents are not available, contractor will be responsible to scan hard copy of plans.

Contractor to supply site plans, individual runs, risers, wire #'s, jack #'s, patch panel #'s in both hard and soft copy.

All test results shall be machine printed, hand written test result sheets are NOT acceptable.

4.3 Fibre Optic Backbone Cable

4.3.1 Cable

The cable to be supplied and installed for backbone purposes shall consist of 12 strands (6 pairs) of Laser Optimized Fibre with nominal 50/125 um core/cladding diameter formed into a single cable.

Optical cable shall physically conform with ANSI/ICEA S-83-596 mechanical and environmental specifications for outdoor fibre optic cable.

Fibre optic cable shall conform with the requirements of OM3 as per the ISO 11801-2nd Edition standards

4.3.2 Terminations

Fibre optic cables shall be terminated to SC Physical contact Connectors shall be able to sustain a minimum of 200 mating cycles per EIA/TIA-455-21 without violating specifications. These connectors will terminate within interconnect sleeves to facilitate patching in patch panels. The maximum optical attenuation per pair of mated connectors shall not exceed 0.75 db.

All fibre strands, whether used in the project or not, shall be terminated with SC type connectors and installed into a fibre patch panel: generally one duplex patch per cable (i.e. 12 connectors per panel for 12 strand fibre cable). Please note that these cables shall be SC to ST unless otherwise noted.

The patch panel proposed shall provide strain relief for each fibre as an integral part of the panel design. This standard type and size of panel should be uniformly used throughout the project.

Installed fibre panels shall be completed with all guides, brackets and other accessories to facilitate cable cross connect to active components for administration and management, including provisions for labeling that are consistent with EIA/TIA-568.

4.3.3. Testing

All terminated fibre media and related connecting hardware shall be tested with a power meter and certified at the conclusion of the initial installation with an OTDR, in both directions. Testing will include end-to-end attenuation testing that shall measure each fibre in one direction and compare with the calculated loss based on the manufacturers specifications and known length of cable using 850 nanometres and 1300 nanometres wavelengths. The difference in value between any two mated fibre shall not exceed 0.5 db.

The power levels of the terminated fibres shall be documented to allow the equipment vendor to select the correct strapping options for their equipment. This will prevent the receivers from being overloaded.

If the attenuation measurements are not within the required specifications, an Optical Time Domain Reflectometer shall be used to find the cause and location of the power loss. Any failure will be rectified.

All test results to be machine printed, and documented in duplicate and delivered complete with As-Built drawings to Corrections Canada Regional Office.

The fibre optic cable testing will also include a basic light test:

- on each of the fibres before installation to ensure that no damage had occurred during shipping;
- on each of the fibres before termination to ensure that no damage had occurred during installation.

4.3.4 **Labeling**

All fibre optic cables will be identified by means of Warning Labels located on all related conduit, pullboxes and backboards.

Both ends of all fibre cables will be labeled indicating destination and number of strands.

All ports on each Fibre optic patch panel will be labeled to identify the backbone destinations. Both ends will be labeled with this same numbering scheme.

4.4 **Cross Connect**

4.4.1 **Data Cross-connect**

Cross connection of the UTP horizontal cables to the tie field will be completed after testing of installed cables has taken place.

Jumper wire shall be provided, if requested, and will conform with EIA/TIA TSB-40 transmission requirements for Category 6.

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/STD-0227
Revision 0
12 April, 2004

ELECTRONICS ENGINEERING
STANDARDS

LCD COLOUR COMPUTER MONITOR
CLOSED CIRCUIT TELEVISION

Prepared by:



Manager,
Electronics Systems Research

Approved by:



Director,
Engineering Services

22 Apr 04

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue.

1.0 SCOPE

This standard defines the requirements of Correctional Service of Canada (CSC) for Closed Circuit Television (CCTV) Liquid Crystal Display (LCD) computer monitors at federal correctional institutions.

2.0 GENERAL

The LCD colour computer monitor is used in indoor and outdoor security surveillance and assessment systems. It is mounted in standard EIA 19 inch racks, attached to walls and ceilings by brackets, and/or is located on desks and shelves.

3.0 ENVIRONMENTAL REQUIREMENTS

The LCD colour computer monitor shall meet all operational requirements over the following operating ranges:

- 3.1 Temperature: 5° C to +40° C; and
- 3.2 Humidity: up to 95% non-condensing.

4.0 POWER REQUIREMENTS

The monitor shall use standard single phase commercial VAC power within the following limits:

- 4.1 Voltage: 120 VAC \pm 10%;
- 4.2 Frequency: 60 Hz \pm 1.5%;
- 4.3 Transients: up to five times nominal voltage for up to 100 msec durations. Changes in the input power or any fluctuations within the above limits shall not cause damage to the unit; and
- 4.4 Power: power consumption up to 45 watts.

5.0 MECHANICAL REQUIREMENTS

- 5.1 Free standing monitor cabinets shall be metal or metal with plastic front.

-
- 5.2 Rack mounted units shall be metal, and come complete with all hardware required to install in standard EIA 19" racks.
 - 5.3 External dimensions, weight, diagonal effective viewing area and mounting configuration of the monitors are application dependent. These requirements shall be specified in the functional specification for the specific application.
 - 5.4 All controls and test points used during calibration and testing shall be easily accessible and permanently labelled.

6.0 DESIGN REQUIREMENTS

- 6.1 All controls for the operation of the monitor shall be on the front of the unit and shall be easy accessible to the operator.
- 6.2 There must be clear permanent labelling of and easy access to all controls and test points used for calibration and testing by maintenance staff.
- 6.3 Where applicable, the monitor must be modular with plug-in circuit cards and assemblies. A standard extender board must be included with the equipment if applicable.
- 6.4 The monitor must be designed and built to high quality standards and have a Mean Time Between Failure (MTBF) of at least five years.
- 6.5 Labels must be permanently affixed to the exterior of the monitor which identify the manufacturer, model number, serial number and the power requirements.

7.0 TECHNICAL REQUIREMENTS

The colour computer monitor shall meet the following minimum requirements:

- 7.1 Native Resolution: $\geq 1024 \times 768$;
- 7.2 Brightness: $\geq 200 \text{ cd/m}^2$;
- 7.3 Contrast Ratio: $\geq 300:1$;
- 7.3 Aspect Ratio: 4 to 3;
- 7.4 Viewing Angle: minimum 120° Horizontal;
minimum 100° Vertical;

7.5 Display : Thin Film Transfer, active matrix, LCD; and

7.6 Video Input: VGA/SVGA/XGA;

8.0 FUNCTIONAL REQUIREMENTS

8.1 The monitor shall provide a visual indication of power on/off.

8.2 Front panel controls shall be easy accessible to the operator and include the following functions: Power on/off; Contrast; Brightness; Tint; and Colour.

9.0 INTERFERENCE

Performance of the monitor and video quality shall not be affected by the presence and use of standard electronic equipment used at the institution. Distance limits of standard electronic equipment are as follows:

9.1 CB transceivers at 1 metre or more;

9.2 VHF and UHF transceivers at 1 metre or more;

9.3 Other radio frequency transmitting, receiving and distribution equipment at 5 metres or more;

9.4 Personal computer and/or work stations at 5 metres or more.

10.0 SAFETY

10.1 The colour monitor must be CSA, UL, ULC or CE approved, as required by law.

- END OF TEXT -

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

**ES/SPEC-0603
Revision 2
17 January, 2002**

**ELECTRONICS ENGINEERING
SPECIFICATION**

**FACILITY ALARM ANNUNCIATION SYSTEM
INTEGRATION UNIT FOR USE IN
FEDERAL CORRECTIONAL INSTITUTIONS**

AUTHORITY

This Specification is approved by the Correctional Service of Canada for the procurement and installation of a stand-alone Facility Alarm Annunciation System (FAAS) Integration Unit in Canadian federal correctional institutions.

Recommended corrections, additions or deletions should be addressed to the Design Authority at the following address: Director, Engineering Services, Correctional Service of Canada, 340 Laurier Avenue West, Ottawa, Ontario, K1A 0P9

Prepared by:

**Manager,
Electronics Systems Research**

Approved by:

**Director,
Engineering Services**

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ABBREVIATIONS

The following abbreviations are used in this specification:

CCTV	Closed Circuit Television
CER	Communications Equipment Room
COTS	Commercial-Off-The- Shelf
CSA	Canadian Standards Association
CSC	Correctional Service Canada
DES	Director Engineering Services
EIA	Electronic Industries Association
FAAS	Facility Alarm Annunciation System
FDS	Fence Disturbance Detection System
FIU	FAAS Integration Unit
GFE	Government Furnished Equipment
MCCP	Main Communications and Control Post
MDS	Motion Detection System
PA	Public Address
PIDS	Perimeter Intrusion Detection System
RFP	Request for Proposal
SOW	Statement of Work
STR	Statement of Technical Requirements
UPS	Uninterruptable Power Supply
VDU	Video Display Unit

DEFINITIONS

The following definitions are used in this specification:

Design Authority	Director, Engineering Services (DES) - Correctional Service Canada (CSC) is responsible for all technical aspects of the system design and implementation.
Contract Authority	Public Works and Government Services Canada (PW&GSC) is responsible for all contractual matters associated with the system design and implementation.
Contractor	The company selected as the successful bidder.
Project Officer	A CSC employee or a contracted person designated by DES to be responsible for the implementation of the project.
Off-the-shelf	Equipment currently on the market with available field reliability data, manuals, engineering drawings and parts price list.
Custom Equipment	Equipment designed and/or manufactured specifically for a specific contract.

1.0 INTRODUCTION

This specification defines the design, technical and performance requirements for a stand-alone Facility Alarm Annunciation System (FAAS) Integration Unit (FIU). It will normally be specified when only the FIU portion of the MCCP Integration Console requires upgrading or replacement.

The FIU is used to integrate all facility alarms and sundry security information systems into a common display and control. The integration capability of the FAAS shall also be used as a port in a transparent feed through format to present all event recording from the various institutional security systems onto a common data logging system as outlined later on in this specification.

These alarms may include but are not restricted to the following:

- Personal Portable Alarm (PPA);
- PPA Location System (PALS);
- Fixed Point Security Alarm (FPSA);
- Facility/Mechanical Alarms;
- Fire Alarm Systems;
- Inmate Cell Call Systems (ICCS); and
- All interior facility alarm systems.

The contractor shall be responsible for integrating all subsystems and shall provide all material and labour required for the design, supply, delivery, installation, testing and commissioning of the FIU. The contractor shall provide documentation and training to the extent described in this and other identified specifications.

1.1 Commercial-Off-The-Self Equipment

The system shall use commercial off-the-shelf (COTS) equipment and proven designs to the maximum extent possible. All new equipment shall meet the specified lifespan requirements. New equipment designs shall be restricted to unique interfaces and common control console.

1.2 Technical Acceptability

The Correctional Service Canada (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 shall maintain very high standards of dependability and reliability.

The CSC Engineering Services Division has established technical specifications and equipment standards for specific electronic security systems which are based on very specific and restrictive operational performance criteria as detailed in its Electronic Engineering Standard. Technical acceptability of these systems means that the equipment complies with the pertinent CSC specifications and standards.

The technical acceptance process shall involve system and subsystem evaluation in accordance with the applicable CSC specifications in one of CSC facilities or may be tested in a CSC facility to verify the effectiveness of the proposed technologies when subjected to the restrictive operational environment.

CSC shall also verify in depth any of the system technical specifications called up. CSC may when it deems necessary, request the supplier to arrange for a full site demonstration. CSC may rely on manufacturer's test results for specific areas of the specification where an independent test facility has conducted the test, and the facility is deemed acceptable to CSC.

It is the supplier's responsibility to make new developments in products available to CSC for evaluation. Equipment qualification is an ongoing process and can be initiated at any time by a vendor. Any vendor can have access to the CSC specifications and standards. Any new development or products should be submitted to the CSC Engineering Services Division, Technical Authority in a suitable time frame prior to any tendering process to allow for an acceptable evaluation period. The evaluation period may take up to sixteen (16) months.

1.3 Equipment Procurement

Any ordering of equipment/material before the approval of the system design report will be undertaken at the contractor's own risk. The Design Authority may authorize the procurement of certain long lead items at, or shortly after a preliminary design review of the proposed system.

1.4 Quantity of Equipment

The quantity and location of the equipment required for CSC institutions will be contained in the Statement of Technical Requirements (STR).

2.0 **APPLICABLE DOCUMENTS**

The following documents of the issue in effect on the date of the Request for Proposal (RFP) shall form a part of this specification to the extent specified herein.

ES/SOW-0101	Statement of Work for Procurement and Installations of Electronic Systems
ES/SOW-0102	Statement of Work for Quality Control of Electronic Systems Installations.
ES/SPEC-0103	Specification for Uninterruptable Power Supply
ES/SPEC-0600	Specification for Personal Portable Alarm Systems
ES/SPEC-0601	Specification for Fixed Point Security Alarm Systems
ES/SPEC-0602	Specification for Portable Alarm Location Systems
ES/SPEC-0800	Specification for Communications and Control Consoles
ES/STD-0803	Standard for Video Display Unit
EIA-310-C	Electronic Industry Association Standard for Racks, Panels and Associated Equipment

3.0 **REQUIREMENTS**

3.1 **General**

The FIU shall provide the operator with centralized monitoring and control capability over all facility alarm annunciation systems to the extent specified in the STR. The FIU shall incorporate industrial quality and commercially available controllers and Video Display Units (VDU). The VDU shall display the status of monitored subsystems and provide software control of system features, to the extent specified herein. The FIU shall include an operator console incorporating the VDU and operator controls.

3.1.1 **Period of Operation**

The FIU and all associated equipment shall be design for and capable of 24 hours per day, seven days per week operation.

3.1.2 **Wires, Cables, Conduits, Ducts**

The contractor shall supply all necessary terminations, cross connection cabinets, conduits, wire and cabling and any other items that may be required for the satisfactory completion of the specified system. All installation workmanship shall be performed in accordance with ES/SOW-0102, Statement of Work and all applicable national, provincial, and local electrical codes.

A wiring diagram shall be supplied in the Installation section of the Maintenance Manual to detail where module connections terminate and how wires are routed and terminated.

Conduits, cables, ducts, trays, etc. may be either Government Furnished Equipment (GFE) or supplied and installed by the contractor depending on the particular institution. The determination will be made by the Design Authority and will be identified in the STR.

Connectors provided on the ends of any cable must mate with the corresponding connector on the equipment. Adapters from one type of connector to another are not acceptable.

3.1.3 **Wiring Supervision**

Wiring shall be supervised in all system modes. An alarm shall occur if any system wiring is cut or shorted to other wires or if the system devices are tampered with by unauthorized people or environmental conditions.

3.1.4 **Sabotage, Tampering and Survivability**

Elements of the system shall have high resistance to damage, destruction. All interconnecting service must be secure against tampering

3.1.5 Human Factors

Elements of the system which are used directly by staff (i.e., control panels, annunciators, alarm originating devices, etc.) shall conform with accepted principles of good human factors design.

3.1.6 Annunciation and Control Panels

Mounting space within control posts is usually limited and the problem of determining a suitable equipment mounting location is minimized if the control panels are small. Therefore, the designer should make maximum possible use of annunciation and control devices which combine two or more functions into a single unit. The system shall use Electronic Industries Association (EIA) standard video display units. The design shall be in accordance with the ES/STD-0803, Standard.

3.2 System Configuration

3.2.1 Hardware

Industrial grade FAAS central controllers shall act as an interface between the operator peripherals and the digital control panels for remote devices and subsystems. Each controller shall incorporate the following physical attributes:

- designed to operate in industrial conditions on a continuous basis;
- built to withstand a harsh, rugged work environment;
- designed with a positive pressure cooling system which passes air through an external synthetic filter element which screens contaminants, then circulates flow through the controller chassis, drives, power supply and cards;
- equipped with a security lock which shuts off keyboard access preventing any tamper activity; and
- powered by a heavy duty power supply sized with 25% spare capacity when driving all expansion ports.

Each industrial grade FAAS controller shall incorporate the following electronic features:

- microprocessor based, modular in structure;
- featuring Pentium III, or equivalent, processor;
- running at a clock speed of 500 MHZ or higher, with zero wait states;
- configured with spare expansion port(s) capability;

-
- equipped with a CDR;
 - equipped with dynamic expandable RAM, sized to suit software requirements;
 - equipped with a 3.5 inch floppy drive system; and
 - equipped with a fast access hard disk with an access speed of no longer than 28 ms, sized to suit all operating and system requirements, and suitable to hold the data storage/retrieval software and archival data for a period of one year with 25% spare disk capacity.

3.2.2 **Software**

The system software shall be designed specifically for security applications and shall provide for:

- polling and demand requests to monitor status;
- processing alarms according to predefined priorities;
- executing event-initiated software programs and related background software routines;
- controlling and processing communications with operator peripherals; and
- synchronizing all system activity including interfaces to peripherals, digital control panels and all field devices

For reasons of reliability and prevention of inadvertent changes, system software including operating systems and data files shall be maintained in non-volatile memory. The contractor shall also take all reasonable measures to ensure that no computer viruses are present in the delivered system. These measures shall include controls on the use of the software during the development and integration phases, and the tests for the presence of viruses. Similarly, steps must be in place through the careful selection of the operating system to prevent any introduction of software viruses without the constant need for extensive software security measures. The system shall incorporate security featured software for authorized access control by operators, supervisors and maintenance personnel.

The system software, especially for alarm processing, shall be written in a hardware compatible programming language, operating under a real time multitasking operating system to ensure that all priority activities are presented to the operator immediately as they occur. A capability shall be incorporated to ensure that all alarm data can be configured and exported in an appropriate format that can be processed by "DOS" family of operating system software.

3.2.3 Redundancy

The FIU shall be configured in a fully redundant hardware and software configuration and consist of two (2) controllers and two (2) interactive peripheral VDUs, capable of sustaining a complete controller failure without affecting the operation of either the PIDS, the FAAS, or any other integrated system. Master-Slave arrangements shall not be accepted. A failure in any integration system or any system which has the display and controls integrated shall not effect the proper operation of the remainder of the equipment.

Two (2) additional interactive peripheral VDUs are required. These units shall also be in a fully redundant configuration. One unit shall be dedicated for system maintenance requirements, while the second unit shall be dedicated for operational supervisory control purposes or training related duties and may be located away from the MCCP. Neither one of these units will be mounted in the main console, but will be available in a satellite configuration as outlined below. All VDU consoles must function in a simultaneous and independent manner.

All input and output data shall be available to both controllers with a continuous dynamic update occurring in both controllers in order to allow cross-checking of input and output information between the controllers. In case of a discrepancy in the information between the controllers:

- the faulty controller shall be automatically removed from service;
- all system/operating software and current data files shall be automatically driven from the functional controller;
- a system status alarm shall alert the operator that automatic switch-over has occurred; and
- no interruption in service or loss of system status shall be perceivable when switching between controllers

Under normal operating conditions, and where the PIDS and FAAS controls are required, one of the interactive peripheral VDUs shall be dedicated to PIDS operational duties with a second VDU dedicated to FAAS operations. In the event of a controller or VDU failure, it shall be possible to combine PIDS and FAAS operations on a single VDU.

3.2.4 Operator VDUs

The primary "operator to system" interface for the display of alarm annunciation and for the command of an operator controlled functions on the FAAS shall be via colour VDUs.

To eliminate confusion during an emergency situation, VDU screens shall have dedicated areas for alarms, operator prompts, operator commands, as well as time, day and date information.

To enhance operator understanding, full facility graphics, complete with language descriptions, shall be used throughout to display and describe all system activity and instruction. The FAAS VDU shall each be capable of generating a minimum of sixteen graphic maps. All descriptions, alarm messages and operator instruction prompts shall be user definable in order to accurately describe unique institution configurations as well as future changes to perimeter/facility areas and operational requirements. Language of preference (French or English) to be determined by location as specified in the STR.

A typical graphic map shall incorporate the following display features as applicable to the area of presentation:

- location of the alarms;
- identification of the alarms; and
- emergency instruction and operator prompts.

The system graphics shall reduce information clutter to a minimum with the appropriate use of icons, especially to display alarm identification and location. The following colours shall be supported for alarm information:

- green/light blue normal,
- red alarm, and
- purple failed.

The operator displays for the FAAS system shall be based on a 14" high resolution colour CRT with a minimum matrix size of 640 x 350 individually addressable pixels. The VDU shall be capable of displaying, as a minimum, the colours white, black, red, green, blue and all combinations of the primary colours in order to provide flexibility in colour map displays.

All map displays shall be able to be configured and reconfigured from a user friendly graphic software package, accessed from the maintenance menu.

3.2.5 Operator Controls

The colour VDUs for the FAAS system shall use a "Touch Screen" employing resistive membrane or surface acoustic wave technology (or equivalent). Plain language descriptions shall be utilized to initiate all system functions, minimizing operator activity and decision making. Typing mnemonic abbreviations or using unlabelled or numerical function buttons is unacceptable. When a function key is touched on the screen, the VDU shall lead the operator through the predefined functions by asking for a choice of options or menus. At every step of alarm processing, a help screen shall be available to guide the operator through system operation. The help screen shall contain information about

functions currently available to the operator.

3.2.6 Maintenance/Satellite VDUs

The maintenance and the satellite VDUs shall be based on a 12" diagonal high resolution monochrome presentation. The maintenance VDU shall be located in the MCCP. The satellite VDU shall be remotable up to 500 feet. Specific location detail shall be stipulated in the STR. Further operational requirements and parameters for these VDUs are detailed in subsequent sections entitled FAAS System Menus and FAAS Maintenance Functions, sections respectively.

3.2.7 Maintenance/Satellite Controls

The maintenance and satellite VDUs shall have an associated keyboard with an integral key-lock switch for command and data input. Multi-level password protection shall be available in software to limit maintenance and satellite access, assignment and editing capability to authorized personnel only. All passwords shall be user definable.

3.2.8 FAAS Menus

The FAAS Menus shall permit display and control of various system functions, including for the operator:

- a user definable checklist and an emergency instruction set;
- the capability to acknowledge, reset alarms for all FAAS systems;
- the ability to clear fail and diagnostic alarms;
- scanning of all applicable FAAS maps; and
- the ability, if provided by the input device, to perform alarm system test(s).

The maintenance/satellite menus shall permit control of the following:

- system time and date;
- activation or deactivation of any alarm system device;
- generation of status, test and statistical reports for alarm systems and other field devices with available inputs;
- viewing of equipment configuration;
- assignment of menus and accessibility for operators;

-
- creation of checklists and emergency instruction prompts; and
 - simulation of alarms for operator training.

3.3 FAAS Alarm Processing

3.3.1 Alarm Priorities

The FIU controller shall have multiple levels of priority for displaying alarms. Each possible alarm type shall be assigned a separate priority level as defined in the STR. All alarms shall be held in non-volatile memory. The FIU controller shall rank the alarms, displaying highest priority alarms at the top of the list and lowest priority alarms at the bottom. The total number and type of alarms to be processed shall also be displayed.

When multiple alarms occur, the first received, highest priority alarm shall be displayed on the VDU until processed by the operator. Then the next highest priority alarm shall be displayed until processed, etc. If a higher priority alarm is received before a lower priority alarm is processed, the high priority alarms shall replace the lower priority alarm on the VDU. The lower priority alarm shall then be retained in memory and be redisplayed after the higher priority alarm has been processed.

The operator shall have the capability of stepping through the list of alarms and dealing with the alarms in any order. If at any time the operator is viewing an alarm which is not the highest priority alarm present in the system, the operator shall have the option of returning directly to the highest priority alarm by activating a single control.

3.3.2 Alarm Simulation Priority

The FIU controller shall be capable of distinguishing between simulated and genuine alarm inputs. In the event that a genuine alarm is received while the alarm simulation is in use, the FIU computer shall:

- cancel all existing simulated alarms;
- ignore any additional simulated alarms; and
- display the genuine alarm.

The FIU controller shall only accept simulated alarms when there are not genuine alarms in the system.

3.3.3 Alarm Processing

Activation of any alarm from a FAAS subsystem, connected to the FIU controller shall cause the following action:

- full, plain language description and graphic display of the alarm condition, type and location
- audible signal, flashing alarm condition and emergency instruction set presentation
- acknowledgment of the alarm by the operator as his only course of action
- assignment of alarm causes by the operator by choosing from a predefined menu of causes.

3.3.4 Alarm Interface

Alarm inputs shall be accepted by the FIU and output signals provided to the output points in the form of form C dry contact closures, opto-isolated outputs or via an RS-232C or RS-485 interface as required by the alarm sensors. The type of interface required for each alarm sensor is detailed in the STR.

Any system which is not capable of a bi-directional communication link or which uses a data transfer protocol which is asynchronous or not compatible with the FAAS will not effect the functionality of the FAAS or any other integrated system.

3.4 Facility Alarm Systems

3.4.1 Data input

Bi-directional data links shall be provided in order to receive the following information from the Motion Detection System and the Fence Disturbance Detection System:

- a. Alarm annunciation;
- b. System test annunciation;
- c. System fail annunciation;
- d. System fail cancel;
- e. Alarm information data (where applicable); and
- f. Test alarm data and results (where applicable).

These messages shall be available using form C dry contact closures, opto-isolated outputs, or an EIA standard RS-232-C or RS-485 data link as required by the FAAS subsystems.

3.4.2 Data Output

The FIU controller shall provide output messages directed towards the FAAS subsystems as follows:

- a. Alarm acknowledge;
- b. Alarm cancel; and
- c. System test (where applicable).

Output controls shall use the bi-directional data link as required in section 3.2.3.1, using form C dry contact closures, opto-isolated outputs or an EIA standard RS-232-C or RS-485 data link, as required by the FAAS subsystems.

3.4.3 Miscellaneous Inputs

Where applicable, secondary outputs from Inmate Cell Call Systems, Nurse Call System, etc. shall be FIU software controlled and switchable on a system by system basis. In general, only the information from those alarm systems being monitored will be relayed for use by the operator.

3.4.4 Data Protocol

All RS232 or RS485 signals provided to, and received from, the FIU should conform to either the Senstar-Stellar Sennet or StarCom protocols. Any driver required for another protocol will be the responsibility of the contractor.

3.4.5 Fire Alarm System

When required as stated in the STR, the contractor shall relocate the Fire Alarm annunciation panel to allocated space in the MCCP console, and provide an integrated alarm annunciation function in the FIU. The contractor shall provide all cables and mounting hardware including a new control panel if specified to complete this task. The functionality and the integrity of the Fire Alarm Panel must not be compromised, and must be able to function independently as a standalone system.

3.5 Time/Date Information

The FIU controller shall generate accurate time/date information, suitable to act as a central generating unit of this information for all systems forming part of the MCCP. Interface to the various systems shall be in either parallel or serial form, as required. The availability of both types of output ports shall be provided to allow for future expansion or interfacing.

3.6 **Data Logging**

3.6.1 **General**

The FIU controller shall provide data logging (ASCII coded text activity archive) storage of over 100,000 lines of subsystem events on hard disk storage. On demand, activity archive stored events shall be sorted by type and/or date and transferred to DOS formatted floppy disks or sent to a printer to provide a hard copy of FIU and integrated subsystems events. For each event, the activity file shall show the date, time and event description.

3.6.2 **Event Definition**

Data logged events will include all status changes of monitored subsystems including FAAS alarms, alarm acknowledgement, alarm clear/reset, UPS failure or bypass, FIU controller switch-over, etc

3.7 **Printer Status**

The printer status shall be monitored by the FIU controller. Failure of the printer or a "paper-out" condition shall generate an alarm.

3.8 **Status Panel**

3.8.1 **General**

The FIU shall contain a status panel containing indicators and controls for the major FIU units. The status panel shall also contain status lights for the UPS.

3.8.2 **FIU Status Functions**

The status panel shall provide the following indicators and controls:

- a. FIU controller fail indicator; and
- b. Active FIU computer selection control.

3.9 **UPS Integration**

The contractor shall connect UPS power into all FIU equipment racks. The UPS will be provided as GFE and will be in accordance with Specification ES/SPEC-0103. Power shall be taken from the VAC regulator output or from an equivalent point in a distribution panel if available. All FIU equipment shall be connected to the UPS power. UPS status shall be monitored as per section 3.8.1.

4.0 **MECHANICAL CONFIGURATION**

4.1 **General**

The FIU equipment shall be installed in at least two distinct and separate units: an operator console and equipment racks. Displays and controls including GFE required by the operator shall be installed in a contractor provided operator console. Other equipments shall be installed in EIA standard 19-inch racks located in the CER or other location as required by the STR. All racks and console bays shall include side panels and rear doors. Requirements for raised flooring, cable entrances and/or rack cooling ducts shall be specified in the proposal.

4.2 **Console Design**

The operator console shall be ergonomically designed to provide the operator with a logical, easily understood display and control layout. All displays shall be clearly viewable and all controls shall be easily reachable from a seated position. The console shall contain a work surface at normal desk height not less than 18 inches in depth and extending the full width of the console. The work surface shall be covered with a scratch-resistant plastic covering. Detailed design requirements will be outlined in the STR.

The contractor shall provide a separate table or attachment to the console for mounting the MCCP operator telephones; if an attachment is provided, it shall not cause the telephones to block any display or control. The contractor shall provide a standard non-tip swivel-base chair with casters and arms for the FIU operator. Specification ES/SPEC-0800 shall apply to the console design.

4.3 **Printer Rack**

The FIU contractor shall provide a separate rack or stand to be located near the operator console for mounting the printer. The printer rack shall be readily movable.

4.4 **Console/Rack Colour Schemes**

The operator console, telephone table/attachment and printer rack shall be covered with a high quality paint using a standardized colour scheme. Racks for other equipment shall utilize a common-colour scheme for racks, end panels and doors.

4.5 **Environmental Requirements**

The FIU shall operate over the following indoor environmental conditions:

4.5.1 Temperature: 0° C to +50° C; and

4.5.2 Humidity: 0 to 90% relative, non-condensing.

4.6 Power Requirements

The system shall use VAC power within the following limits:

- 4.6.1 Voltage: 120 VAC $\pm 10\%$;
- 4.6.2 Frequency: 60 Hz $\pm 1.5\%$;
- 4.6.3 Transients: up to 5 times nominal voltage for up to 100 msec durations. Changes in the input power or any fluctuations within the above limits shall not cause damage to the unit; and
- 4.6.4 Power: power consumption shall not exceed 100 watts.

4.7 FAAS Maintenance Functions

Monitoring the FIU and the FAAS subsystems shall be made available through the FAAS controller and the maintenance and satellite VDUs. User-definable password protection shall be provided to limit access to authorized personnel.

The following information shall be available to the standby data logger via the EIA standard RS-232-C port, as well as displayed on the maintenance and satellite VDUs.

4.7.1 FAAS Maintenance Functions

The FAAS maintenance menus shall allow:

- a. Automated FIU systems and equipment fault diagnostics;
- b. Two-way data interface with FAAS subsystems to provide information such as test activation and results, status reports, etc . . . , where applicable;
- c. FIU data base cross check information;
- d. Processor unit error monitoring; and
- e. Statistical FAAS activity summary for alarms on a system by system basis, since the previous request for this data.

4.8 Installation Requirements

The FAAS Integration Unit shall be installed at the site in accordance with the ES/SOW-0101, Statement of Work and the ES/SOW-0102, Statement of Work.

4.9 Documentation Requirements

All final FAAS Integration Unit documentation shall be provided in accordance with the ES/SOW-0101, Statement of Work.

4.10 Support Requirements

The FAAS Integration Unit maintenance and spares support shall be provided in accordance with the ES/SOW-0101, Statement of Work.

4.11 Training Requirements

Operator training and maintenance training on the FAAS Integration Unit shall be in accordance with the ES/SOW-0101, Statement of Work.

5.0 QUALITY ASSURANCE

5.1 General

The FAAS Integration Unit Quality Assurance programme shall be provided as detailed in the ES/SOW-0101, Statement of Work.

All on-site installation work, test plans and FIU acceptance testing shall be conducted in accordance with the ES/SOW-0101, Statement of Work.

6.0 DELIVERY

Delivery requirements for the FAAS Integration Unit documents, drawings, plans, manuals, etc. (where applicable) shall be in accordance with the ES/SOW-0101, Statement of Work.

Delivery requirements of the FAAS Integration Unit equipment shall be in accordance with the ES/SOW-0102, Statement of Work.

7.0 INTERFERENCE

Performance of the FIU shall not be affected by the use of standard electronic equipment used at the institution. Distance limits of standard electronic equipment shall be in accordance with the ES/SOW-0101, Statement of Work.

8.0 **SAFETY**

All FAAS Integration Unit electrically powered elements shall meet the applicable Canadian Standards Association (CSA) standards.

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

**ES/STD-0102
Revision 2
20 February 2002**

**ELECTRONICS ENGINEERING
STANDARDS**

DATA LOGGER

Prepared by:

**Manager,
Electronics Systems Research**

Approved by:

**Director,
Engineering Service**

1.0 SCOPE

This standard defines the technical specifications and minimum requirements for a stand alone Data Logger for use by the Correctional Service Canada (CSC) in federal correctional facilities.

2.0 GENERAL

The stand alone Data Logger provides a permanent, printed copy of alarm and non-alarm events generated at the source and at the main control console. The potential systems involved represent the facility alarms throughout the Institution. They are as follows:

- a. Personal Portable Alarms (PPA)
- b. Fixed Point Security Alarms (FPSA)
- c. Fire/Mechanical Alarms
- d. Miscellaneous Intrusion Alarms.

The printed output shall be generated via two (2) different operations:

- a. automatically as the events occur;
- b. on command (either manually or automatically at a predefined time) in statistical summary form for a predefined period of time.

3.0 ENVIRONMENTAL CONDITIONS

The stand alone Data Logger shall meet all requirements over the following operating range:

- 3.1 Temperature: 0° C to 50° C; and
- 3.2 Humidity: up to 95% non-condensing.

4.0 POWER REQUIREMENTS

The equipment shall use standard commercial VAC within the following range:

- 4.1 Voltage: 120 VAC \pm 10%;
- 4.2 Frequency: 60 Hz \pm 1.5%;
- 4.3 Power: not to exceed 100 watts; and
- 4.4 Transients: input power fluctuations up to five times nominal voltages for up to 100 msec durations shall not cause damage to the unit.

Following any power failure, the system shall return to the operating mode which it was in use prior to the power failure.

5.0 MECHANICAL REQUIREMENTS

Maximum dimensions and weight for the stand alone Data Logger shall within the following limits:

- 5.1 Height: 500 mm;
- 5.2 Width: 480 mm;
- 5.3 Length: 400 mm; and
- 5.4 Weight: 10 kg.

6.0 DESIGN REQUIREMENTS

- 6.1 The Data Logger shall be designed to accommodate the expansion of alarm and non-alarm event messages via the addition of plug-in cards or modules.
- 6.2 The Data Logger shall collect input signals from the electronic systems designated in the site specific details and output the messages on a hard copy printer.
- 6.3 The Data Logger shall have the capacity to generate a permanent, printed copy of the maximum number of events originated from the electronic systems.
- 6.4 The Data Logger shall be capable of buffering a minimum of five hundred (500) input alarm and/or non-alarm event messages when the printer is out of service and/or the quantity of input data temporarily exceeds the capacity of the serial communications port.
- 6.5 The buffered messages shall be forwarded automatically in a first in, first out sequence to the line printer.
- 6.6 The time/date generator shall be equipped with an internal battery back up or some other supply of uninterruptable power for a minimum of three (3) hours.
- 6.7 The Data Logger shall be provided the capability of receiving input message format changes and reassignments from maintenance personnel via a Video Display Unit (VDU).
- 6.8 The system shall be capable of printing at the designed speed within 100 msec from startup.
- 6.9 All controls and test points used during calibrations and testing shall be easily accessible and permanently labelled;

- 6.10 The Data Logger design shall be modular with plug-in circuit cards and assemblies. Standard extender boards, plug-in cards and assemblies shall be well identified and included with the equipment;
- 6.11 The Data Logger shall have a high quality construction standard and have a designed MTBF (Mean Time Between Failure) of at least five years; and
- 6.12 Labels shall be permanently affixed to the exterior of the unit which identifies the manufacturer, the model number, the serial number and the power requirement.

7.0 TECHNICAL REQUIREMENTS

The Data Logger shall meet the requirement of the following specifications:

- 7.1 Inputs: >4 RS-232C serial data ports;
- 7.2 Data Port; bi-directional;
- 7.3 Data Speed: >1200 bits/sec;
- 7.4 Capacity: >1000 events;
- 7.5 Output: RS 232C parallel printer port;
- 7.6 Buffer Storage: >500 events;
- 7.7 Time/Date Generator: externally adjustable.

8.0 FUNCTIONAL REQUIREMENTS

- 8.1 The system event message format shall be as follows:

STX TIME SYSTEM LOCATION STATUS ETX, where:

STX I ASCII code for start of next character;

System one to eight character printout of the source of the event, i.e., P.A., FIRE, etc. . . .
;

Location one to eight character printout identifying the locations of the event, i.e., Zone 1, LU 2, GYM, etc. . . .

Status one to twenty character printout identifying the event, i.e., Alarm, DISABLE, ACK., CLEAR, etc. . . .

ETX ASCII code for end of characters.

- 8.2 The Data Logger shall collect incoming data messages from the electronic systems and generate these messages on a printer. These messages shall have the following format:

STX MESSAGE ETX

STX ASCII code for start of next character.

Message any combination of ASCII characters up to a maximum of 60 characters.

ETX ASCII code for end of character.

- 8.2 The Data Logger shall print the current time and date information automatically at the top of each printer page.

The message format is as follows: HHMMSS YY/MM/DD

HH two digit printout representing hours
MM two digit printout representing minutes
SS two digit printout representing seconds
YY two digit printout representing the year, i.e., "88"
MM two digit printout representing the month
DD two digit printout representing the day of the month.

9.0 **INTERFERENCE**

Performance of the Data Logger shall not be affected by the use of standard electronic equipment used at institutions. Distance limits of standard electronic equipment are as follows:

- 9.1 CB transceivers at 1 metre or more;
- 9.2 VHF and UHF transceivers at 1 metre or more;
- 9.3 Other radio frequency transmitting, receiving and distribution equipment at 5 metres or more; and
- 9.4 Personal computer and/or computer work stations at 5 metres or more.

10.0 **SAFETY**

The Data Logger shall be CSA approved.