



**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 0B2 / Noyau 0B2**  
**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**

**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  
7B3, Place du Portage, Phase III  
Gatineau, Québec K1A 0S5

<b>Title - Sujet</b> Perimeter MDS & PA System	
<b>Solicitation No. - N° de l'invitation</b> 21120-174683/A	<b>Date</b> 2017-02-10
<b>Client Reference No. - N° de référence du client</b> 21120-174683	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$\$HN-334-72430	
<b>File No. - N° de dossier</b> hn334.21120-174683	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2017-04-19</b>	<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Standard Time EST
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> McLaughlin, Michael	<b>Buyer Id - Id de l'acheteur</b> hn334
<b>Telephone No. - N° de téléphone</b> (819) 420-0330 ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>  Specified Herein Précisé dans les présentes	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

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

---

## PART 1 - GENERAL INFORMATION

### 1.1 Introduction

The bid solicitation is divided into seven parts plus attachments and 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;
- 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, 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.

The Annexes include the Statement of Technical Requirements, the Basis of Payment, Security Requirements, the Federal Contractors Program for Employment Equity - Certification, the Insurance Requirements and any other annexes.

The Electronic Attachments include the specifications and standards, the Institutional Access CPIC Clearance Request form, the Design Change Form and any other electronic attachments.

### 1.2 Summary

#### 1.2.1 Objective:

CSC has a requirement to replace the existing buried cable volumetric Motion Detection System (MDS) and Head End switching equipment associated with the PIDS PA system at Drumheller and Bowden Institutions. The existing PIDS MDS and PA were installed in Drumheller in 2000 and Bowden in 2002. The MDS is reaching the end of its service life. The PA speakers along the perimeter of the Institution and the associated cabling to the switcher in the CER are still functioning and do not need to be replaced. However, the PA Amplifier, switching capability and the connection to the PIDS/FAAS need to be replaced.

**Drumheller Institution** - Drumheller Institution is in Drumheller, Alberta. It is a medium and minimum security facility. Inmates are housed in direct observation living units or residential houses. Currently construction is complete on a new 96 bed medium living unit. A new 50-bed minimum unit was completed in 2014. At the same time, Drumheller is expanding the correctional and rehabilitation programs that they offer.

#### **Bowden Institution**

Bowden Institution is in Innisfail, Alberta. It is a medium and minimum security facility. Inmates are housed in direct observation living units or residential houses. Currently construction is complete on one new 96 bed medium living unit. Work is due to be completed in 2014-2015. A new 50 bed minimum living unit was completed in January 2012. Bowden is also currently expanding the correctional and rehabilitation programs that they offer. This Statement of Technical Requirements (STR) will cover the technical requirements for the required work.

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

The contractor must design, supply, install, test and provide documentation and training for a Perimeter Intrusion Detection System Public Address (PIDS PA) system in accordance with the applicable sections of the Standards, Specifications and Statements of Work specified in SP0402,

Delivery is requested to be completed within 30 weeks after contract award.

**1.2.2** There are security requirements associated with this requirement. For additional information, consult Part 6 - Security, Financial and Other Requirements, and Part 7 - Resulting Contract Clauses.

**1.2.3** The requirement is subject to the provisions of the World Trade Organization Agreement on Government Procurement (WTO-AGP), the North American Free Trade Agreement (NAFTA), and the Agreement on Internal Trade (AIT).

**1.2.4** There are 2 mandatory bidders' site visits associated with this requirement where personnel security screening is required prior to gaining access to the site.

### **1.3      Debriefings**

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

## **PART 2 - BIDDER INSTRUCTIONS**

### **2.1 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 Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-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 (2015-07-03) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 3 of Section 01, Integrity Provisions - Bid of Standard Instructions (2003) incorporated by reference above is deleted in its entirety and replaced with the following:

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

Delete: 60 days

Insert: 90 days

### **2.2 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 PWGSC will not be accepted.

### **2.3 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 question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

### **2.4 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.

## **2.5 Improvement of Requirement during Solicitation Period**

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least fourteen (14) days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

## **2.6 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 visits to be held at: Drumheller March 22<sup>nd</sup> @ 9:00am & Bowden March 23<sup>rd</sup> @ 9:00am. Interested Bidders shall meet at the Principal Entrance:

Locations:

1) Drumheller Institution is in Drumheller, Alberta. It is a medium and minimum security facility;

Drumheller Institution  
Highway #9  
PO Box 3000  
Drumheller, Alberta  
T0J 0Y0  
Tel: (403) 823-5101  
Fax: (403) 823-8666

2) Bowden Institution is in Innisfail, Alberta. It is a medium and minimum security facility

Bowden Institution  
Highway #2  
PO Box 6000  
Innisfail, Alberta  
T4G 1V1  
Tel: (403) 227-3391  
Fax: (403) 227-6022

Bidders will be required to sign an attendance form at each 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.

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.

It is also a mandatory condition of this requirement that all attendees have a site clearance for each location prior to the site visits. To apply for the site clearances, the Bidders must complete a CPIC Clearance Request form (preferably in typed format) for each institution and submit the duly completed

and signed forms by each participant, by fax to (819) 953-4944 or by e-mail to [michael.mclaughlin@pwgsc.gc.ca](mailto:michael.mclaughlin@pwgsc.gc.ca). It is a mandatory condition that the CPIC Clearance Requests and a copy of the participants Driver's License be submitted for each site visit. It is requested that the CPIC Clearance Requests and a copy of the participants Driver's License be received by this office no later than March 10<sup>th</sup> 2017. Site Clearance Request Forms and the participants Driver's License received after March 10<sup>th</sup> 2017 will 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 shall be included as an amendment to the bid solicitation document through [buyandsell.gc.ca](http://buyandsell.gc.ca).

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

---

## PART 3 - BID PREPARATION INSTRUCTIONS

### 3.1 Bid Preparation Instructions

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

- Section I: Technical Bid (4 hard copies and 2 soft copies on CD)
- Section II: Management Bid (4 hard copies and 2 soft copies on CD)
- Section III: Support Bid (4 hard copies and 2 soft copies on CD)
- Section IV: Financial Bid (1 hard copy)
- Section V: Certifications (1 hard copy)
- Section VI: Additional Information (1 hard copy)

If there is a discrepancy between the wording of the soft copy and the hard copy, the wording of the hard copy will have priority over the wording of the soft copy.

Prices must appear in the financial bid 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.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, Bidders should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

#### Section I: Technical 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 the 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:

Bidder to include a Table that addresses on a paragraph by paragraph basis the Statement of Technical Requirements (STR) by indicating the paragraph and page number where the subject topic is addressed and indicating comply, understood, noted or not applicable.

Bidders to address and present topics in the order of the Statement of Technical Requirements (STR) under the same headings.

Bidders to avoid duplication by identifying the specific paragraph and page number where the subject topic has already been addressed in the Bid.

## **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**

**3.1.1** Bidders must submit their financial bid as per the format of Annex B – Basis of Payment in accordance with the following Basis of Pricing. The total amount of Applicable Taxes must be shown separately.

### **3.1.2 Basis of Pricing**

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

#### **3.1.2.1 Design and Equipment**

The bidder must submit a firm lot price for the design and related equipment for the Drumheller and Bowden Institutions, excluding spare parts and test equipment.

#### **3.1.2.2 Installation and Testing Costs**

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

#### **3.1.2.3 Testing of Equipment for Emergency Repairs, Delays and Task Authorizations**

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 Task Authorizations 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.

#### **3.1.2.4 Travel and living expenses**

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 people and the estimated number of days, and the breakdown of the Firm Lot Price as indicated in Annex B – Basis of Payment item 2.1.



### **3.1.2.5 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

### **3.1.2.6 Documentation**

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

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

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

### **3.1.2.7 Software/Integration**

The bidder must submit a firm lot price for the software/integration.

### **3.1.2.8 Option 1: Contractors Recommended Spare parts and Test Equipment**

Spare Parts and/or Test Equipment List(s) as detailed in STR, paragraph 5.12. 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 part required and pricing for the following items:

### **3.1.3 Exchange Rate Fluctuation**

C3011T 2013-11-06, Exchange Rate Fluctuation

### **Section III: Certifications**

Bidders must submit the certifications required under Part 5.

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 term of the Contract. 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.

### **Section IV: Additional Information**

### **3.1.4. Delivery Offered**

While delivery is requested as indicated above, the best delivery that could be offered is \_\_\_\_\_

---

### 3.1.5 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: \_\_\_\_\_

### 3.1.6 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: \_\_\_\_\_

### 3.1.6 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 crew shall be paid as indicated herein. The response time shall not exceed four (4) hours. The contact person is as follows:

Name: \_\_\_\_\_  
Telephone No.: \_\_\_\_\_  
Facsimile No.: \_\_\_\_\_  
Email/Internet Address: \_\_\_\_\_

### 3.1.7 Lifetime Spares

It shall be a condition of any contract resulting here from that the Contractor undertakes to supply spare parts 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.**

## **PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION**

### **4.1 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.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

#### **4.1.1 Technical Evaluation**

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 the 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 Statement of Technical Requirements (STR) under the same headings.
- Bidders to avoid duplication by identifying the specific paragraph and page number where the subject topic has already been addressed in the Bid.

##### **4.1.1.1 Mandatory Technical Criteria**

Simply stating a compliancy to a criteria is insufficient. Bidders must present a clearly organized, printed (i.e., not handwritten) proposal that includes all necessary technical and descriptive information, in order to clearly demonstrate their compliancy to all items presented in the Statement of Technical Requirements (STR) at Annex A, as well as related specifications.

Responses will be evaluated on a simple, stringent pass/fail basis. Proposals not meeting each mandatory requirement will be considered non-responsive (non-compliant) and given no further consideration.

- Address, as described, Annex A, Statement of Technical Requirement (STR)
- Bidders must obtain the required minimum points (70%) for each of the following evaluation criteria – technical, management and support, which are subject to point rating;

The technical bid should be structured in the same format as the Statement of Work presented at Annex A, through which the bidder will clearly explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

##### **4.1.1.2 Point Rated Technical Criteria**

The Technical, Management and Support Bid will be evaluated and rated as per Attachment 1 – Point Rated Evaluation Criteria and Scoring Sheet.

## **4.1.2 Financial Evaluation**

### **4.1.2.1 Mandatory Financial Criteria**

The price of the bid will be evaluated in Canadian dollars, Applicable Taxes excluded, DDP Drumheller and Bowden, AB, Canadian customs duties and excise taxes included.

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 B – Basis of Payment

## **4.2 Basis of Selection**

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

## PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Bidders must provide the required certifications and additional information to be awarded a contract.

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Canada will declare a bid non-responsive, or will declare a contractor in default if any certification made by the Bidder is found to be untrue, whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority will render the bid non-responsive or constitute a default under the Contract.

### 5.1 Certifications Required with the Bid

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

#### 5.1.1 Declaration of Convicted Offences

As applicable, pursuant to subsection Declaration of Convicted Offences of section 01 of the Standard Instructions, the Bidder must provide with its bid, a completed Declaration Form (<http://www.tpsgc-pwgsc.gc.ca/ci-if/formulaire-form-eng.html>), to be given further consideration in the procurement process.

#### 5.1.2 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**

### 5.1.3 Education and Experience

The Bidder certifies that all the information provided in the résumés and supporting material 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**

### 5.1.4 Compliance Certification Statement

By submitting a Bid the Bidder certifies that they comply with and understand the Statement of Technical Requirements, Statements of Work, Electronic Engineering, Electronic Engineering Standards, and supporting documents that form part of the Requirement.

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**

## 5.2 Certifications Precedent to Contract Award and Additional Information

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

### 5.2.1 Integrity Provisions – List of Names

Bidders who are incorporated, including those bidding as a joint venture, must provide a complete list of names of all individuals who are currently directors of the Bidder.

Bidders bidding as sole proprietorship, as well as those bidding as a joint venture, must provide the name of the owner(s).

Bidders bidding as societies, firms or partnerships do not need to provide lists of names.

### 5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list ([http://www.labour.gc.ca/eng/standards\\_equity/eq/emp/fcp/list/inelig.shtml](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)) available from [Employment and Social Development Canada \(ESDC\)](#) - [Labour's website](#).

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

Canada will also have the right to terminate the Contract for default if a Contractor, or any member of the Contractor if the Contractor is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list during the period of the Contract.

The Bidder must provide the Contracting Authority with a completed Annex C Federal Contractors Program for Employment Equity - Certification, before contract award. If the Bidder is a Joint Venture, the Bidder must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification, for each member of the Joint Venture.

### 5.2.3 General Environmental Criteria Certification

The Bidder must select and complete one of the following two certification statements.

A) The Bidder certifies that the Bidder is registered or meets ISO 14001.

\_\_\_\_\_  
Bidders' Authorized Representative Signature

\_\_\_\_\_  
Date

or

B) The Bidder certifies that the Bidder meets and will continue to meet throughout the duration of the contract, a minimum of four (4) out of six (6) criteria identified in the table below.

The Bidder must indicate which four (4) criteria, as a minimum, are met.

Green Practices within the Bidders' organization	Insert a checkmark for each criterion that is met
Promotes a paperless environment through directives, procedures and/or programs	
All documents are printed double sided and in black and white for day to day business activity unless otherwise specified by your client	
Paper used for day to day business activity has a minimum of 30% recycled content and has a sustainable forestry management certification	
Utilizes environmentally preferable inks and purchase remanufactured ink cartridges or ink cartridges that can be returned to the manufacturer for reuse and recycling for day to day business activity.	
Recycling bins for paper, newsprint, plastic and aluminum containers available and emptied regularly in accordance with local recycling program.	
A minimum of 50% of office equipment has an energy efficient certification.	

\_\_\_\_\_  
Bidders' Authorized Representative Signature

\_\_\_\_\_  
Date

## **PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS**

### **6.1 Security Requirements**

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.

### **6.2 Financial Capability**

1. The Bidder must have the financial capability to fulfill 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 in (a) above is more than five months before the date of the request for information by the Contracting Authority, the Bidder must also provide, unless this is prohibited by legislation for public companies, 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 this 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 the date on which the Contracting Authority requests this 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, unless this is prohibited by legislation. 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, unless this is prohibited by legislation. 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 in 1. (a) to (f) above required by the Contracting Authority must be provided by the ultimate parent company. Provision of parent company financial information does not by itself 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 an agreement by the parent company to sign a Parental Guarantee, as drawn up by Public Works and Government Services Canada (PWGSC), is provided with the required information.
  4. **Financial Information Already Provided to PWGSC:** The Bidder is not required to resubmit any financial information requested by the Contracting Authority that is already on file at PWGSC with the Contract Cost Analysis, Audit and Policy Directorate of the Policy, Risk, Integrity and Strategic Management Sector, provided that within the above-noted time frame:
    - a. the Bidder identifies to the Contracting Authority in writing the specific information that is on file and the requirement for which this information was provided; and
    - b. the Bidder authorizes the use of the information for this requirement.
- It is the Bidder's responsibility to confirm with the Contracting Authority that this information is still on file with PWGSC.
5. **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.
  6. **Confidentiality:** If the Bidder provides 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).
  7. **Security:** In determining the Bidder's financial capability to fulfill 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).

---

## PART 7 - RESULTING CONTRACT CLAUSES

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

### 7.1 Statement of Requirement

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

Refer to Attachment # 1 for Statement of Technical Requirements (STR), Statements of Work and applicable Electronic Engineer Specifications and Standards. The purpose of the STR document is to define the technical aspects for the (Drumheller and Bowden institutions), The STR will indicate the extent to which both general and particular CSC specifications are applicable to the implementation of this requirement.

#### 7.1.1 Option to Purchase Contractor Recommended Spare Parts and/or 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 "30" working 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.

#### 7.1.2 Task Authorization

The Work or a portion of the Work to be performed under the Contract will be on an "as and when requested basis" using a Task Authorization (TA). The Work described in the TA must be in accordance with the scope of the Contract.

##### 7.1.2.1 Task Authorization Process

1. The Technical Authority will provide the Contractor with a description of the task using the "Task Authorization Form for non-DND clients" form specified in Annex D.
2. The Task Authorization (TA) will contain the details of the activities to be performed, a description of the deliverables, and a schedule indicating completion dates for the major activities or submission dates for the deliverables. The TA will also include the applicable basis and methods of payment as specified in the Contract.
3. The Contractor must provide the Technical Authority within 14 calendar days of its receipt, the proposed total estimated cost for performing the task and a breakdown of that cost, established in accordance with the Basis of Payment specified in the Contract.

- 
4. The Contractor must not commence work until a TA authorized by the Contracting Authority has been received by the Contractor. The Contractor acknowledges that any work performed before a TA has been received will be done at the Contractor's own risk.

#### **7.1.2.2 Task Authorization Limit**

All task authorizations must be authorized by the Contracting Authority before issuance.

#### **7.1.2.3 Periodic Usage Reports - Contracts with Task Authorizations**

The Contractor must compile and maintain records on its provision of services to the federal government under authorized Task Authorizations issued under the Contract.

The Contractor must provide this data in accordance with the reporting requirements detailed below. If some data is not available, the reason must be indicated. If services are not provided during a given period, the Contractor must still provide a "nil" report.

The data must be submitted on a quarterly basis to the Contracting Authority.

The quarterly periods are defined as follows:

- 1st quarter: April 1 to June 30;
- 2nd quarter: July 1 to September 30;
- 3rd quarter: October 1 to December 31; and
- 4th quarter: January 1 to March 31.

The data must be submitted to the Contracting Authority no later than ten (10) calendar days after the end of the reporting period.

#### **Reporting Requirement- Details**

A detailed and current record of all authorized tasks must be kept for each contract with a task authorization process. This record must contain:

##### **For each authorized task:**

- i. the authorized task number or task revision number(s);
- ii. a title or a brief description of each authorized task;
- iii. the total estimated cost specified in the authorized Task Authorization (TA) of each task, exclusive of Applicable Taxes;
- iv. the total amount, exclusive of Applicable Taxes, expended to date against each authorized task;
- v. the start and completion date for each authorized task; and
- vi. the active status of each authorized task, as applicable.

**For all authorized tasks:**

- i. the amount (exclusive of Applicable Taxes) specified in the contract (as last amended, as applicable) as Canada's total liability to the contractor for all authorized TAs; and
- ii. the total amount, exclusive of Applicable Taxes, expended to date against all authorized TAs.

**7.2 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(<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

**7.2.1 General Conditions**

2030 2016-04-04, General Conditions - Higher Complexity - Goods, apply to and form part of the Contract.

**7.2.2 Supplemental General Conditions**

4003 (2010-08-16) Licensed Software; and  
4006 (2010-08-16) Contractor to Own Intellectual Property Rights in Foreground Information

apply to and form part of the Contract.

**7.2.3 SACC Manual Clauses**

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

**7.3 Security Requirements**

**7.3.1 Site Clearance**

A site clearance is required prior to admittance to the institution. The contractor must submit completed CPIC forms for all staff who will be working at the institution(s). 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 Requirement.

**7.3.2 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 Correctional Service Canada personnel.

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

---

## **7.4 Term of Contract**

### **7.4.1 Period of the Contract**

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

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

### **7.4.2 Delivery**

1) Shipment shall be consigned to the destination specified in and delivered:

DDP Delivered Duty Paid (Drumheller and Bowden) Incoterms 2000 for shipments from a commercial supplier.

#### **7.4.2.1 Inspection and Final Acceptance**

1) Inspection

Inspection shall be carried out by the Technical Authority or the authorized representative at destination.

2) Final Acceptance

a) The Contractor shall 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.

## 7.5 Authorities

### 7.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Michael McLaughlin  
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) 420-0330  
Facsimile: (819) 953-4944  
E-mail address: michael.mclaughlin@pwgsc.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.

### 7.5.2 Technical Authority

The Technical Authority for the Contract is:

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

The Technical Authority named above 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.

### 7.5.3 Contractor's Representative

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

### 7.5.4 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

### 7.5.5 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 crew shall be paid as indicated herein. The response time shall 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

## 7.7 Payment

### 7.7.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm lot price for the equipment, installation and testing, travel expenses, on-site training, as-built drawings and manuals as specified in the Contract. Customs duties are included and Applicable Taxes are extra.

The Contractor will be paid firm hourly rates as follows, for work associated with emergency repairs, delays and performed in accordance with the Contract. Customs duties are included and Applicable Taxes are extra.

*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.*

### Task Authorizations

The Contractor will be reimbursed for the costs reasonably and properly incurred in the performance of the Work specified in the authorized Task Authorization (TA), as determined in accordance with the Basis of Payment in Annex B, to the limitation of expenditure specified in the authorized Task Authorization.

Canada's liability to the Contractor under the authorized Task Authorization must not exceed the limitation of expenditure specified in the authorized TA. Customs duties are included and Applicable Taxes are extra.

No increase in the liability of Canada or in the price of the Work specified in the authorized TA resulting from any design changes, modifications or interpretations of the Work will be authorized or paid to the Contractor unless these design changes, modifications or interpretations have been authorized, in writing, by the Contracting Authority before their incorporation into the Work.

#### Travel for Task Authorized Work

The Contractor will be reimbursed for the authorized travel and living expenses reasonably and properly incurred in the performance of the Work, at cost, without any allowance for overhead or profit, in accordance with the meal, private vehicle and incidental expense allowances specified in Appendices B, C and D of the *Treasury Board Travel Directive*, and with the other provisions of the directive referring to "travellers", rather than those referring to "employees".

All travel must have the prior authorization of the Technical Authority. All payments are subject to government audit.

Estimated cost: \$ *(to be inserted at contract award)*

#### **7.7.2 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.

#### **7.7.3 Limitation of Expenditure - Cumulative Total of all Task Authorizations**

1. Canada's total liability to the Contractor under the Contract for all authorized Task Authorizations (TAs), inclusive of any revisions, must not exceed the sum of \$ \_\_\_\_\_. Customs duties are included and Applicable Taxes are extra.

2. No increase in the total liability of Canada will be authorized or paid to the Contractor unless an increase has been approved, in writing, by the Contracting Authority.

3. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:

- a. when it is 75 percent committed, or
- b. four (4) months before the contract expiry date, or
- c. as soon as the Contractor considers that the sum is inadequate for the completion of the Work required in all authorized TAs, inclusive of any revisions, whichever comes first.

4. If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority, a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.



---

### **7.7.5 Discretionary Audit**

The Contractor's certification that the price or rate is not in excess of the lowest price or rate charged anyone else, including the Contractor's most favoured customer, for the like quality and quantity of the goods, services or both, is subject to verification by government audit, at the discretion of Canada, before or after payment is made to the Contractor.

If the audit demonstrates that the certification is in error after payment is made to the Contractor, the Contractor must, at the discretion of Canada, make repayment to Canada in the amount found to be in excess of the lowest price or rate or authorize the retention by Canada of that amount by way of deduction from any sum of money that may be due or payable to the Contractor pursuant to the Contract.

If the audit demonstrates that the certification is in error before payment is made, the Contractor agrees that any pending invoice will be adjusted by Canada in accordance with the results of the audit. It is further agreed that if the Contract is still in effect at the time of the verification, the price or rate will be lowered in accordance with the results of the audit

### **7.7.6 Time Verification**

Time charged and the accuracy of the Contractor's time recording system are subject to verification by Canada, before or after payment is made to the Contractor. If verification is done after payment, the Contractor must repay any overpayment, at Canada's request.

## **7.8 Invoicing Instructions**

### **7.8.1 Progress Payment Claim (Including Task Authorization Payments)**

The Contractor must submit a claim for payment using form PWGSC-TPSGC 1111, Claim for Progress Payment.

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. a list of all expenses;
- d. expenditures plus pro-rated profit or fee;
- e. the description and value of the milestone claimed as detailed in the Contract.

Each claim must be supported by:

- a. a copy of time sheets to support the time claimed;
- b. a copy of the invoices, receipts, vouchers for all direct expenses, travel and living expenses;
- c. a copy of the monthly progress report.

2. Applicable Taxes 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 Applicable Taxes 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

### 7.8.2 Schedule of Milestones (*applicable to each site*)

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

1 <sup>st</sup> Milestone	Design of the System	100% Design	List value – 10%	List Deliverable
2 <sup>nd</sup> Milestone	Delivery of Equipment	100% Equipment	List value – 10%	List Deliverable
3 <sup>rd</sup> Milestone	50% of Installation, including travel and living associated with installation	50% Installation, 100% travel and living associated with installation	(50% value of Installation + Travel and Living) – 10%	List Deliverable
4 <sup>th</sup> Milestone	Installation completion, software integration and testing including travel	50% installation, 100% software integration and testing, 100% travel and living associated with Installation	(50% installation + 100% software integration + 100% testing + Associated travel) – 10%	List deliverable
5 <sup>th</sup> Milestone	On-site Training and Documentation including travel	100% on-site training 100% Documentation 100% Travel and Living associated with On-site Training	(100% on-site training + 100% documentation + Travel and Living) – 10%	List Deliverable
6 <sup>th</sup> Milestone	Holdback			List Deliverable

### 7.8.3 Method of Payment – Emergency Repairs and Delays

#### 7.8.3.1 Single Payment

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

- 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;

- all such documents have been verified by Canada;
- the Work delivered has been accepted by Canada.

### 7.8.3.2 Travel and Living Expenses – Emergency Repairs, delays and design changes

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 National Joint Council Travel Directive and with the other provisions of the directive referring to "travellers", rather than those referring to "employees".

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

All payments are subject to government audit.

## 7.9 Certifications

### 7.9.1 Compliance

The continuous compliance with the certifications provided by the Contractor in its bid and the ongoing cooperation in providing additional information are conditions of the Contract. Certifications are subject to verification by Canada during the entire period of the Contract. If the Contractor does not comply with any certification, fails to provide the additional information, or if 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.

### 7.9.2 Federal Contractors Program for Employment Equity - Default by the Contractor

The Contractor understands and agrees that, when an Agreement to Implement Employment Equity (AIEE) exists between the Contractor and Employment and Social Development Canada (ESDC)-Labour, the AIEE must remain valid during the entire period of the Contract. If the AIEE becomes invalid, the name of the Contractor will be added to the "FCP Limited Eligibility to Bid" list. The imposition of such a sanction by ESDC will constitute the Contractor in default as per the terms of the Contract.

## 7.10 Applicable Laws

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

## 7.11 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) the general conditions: 2030 High Complexity 2016-04-04
- (d) Annex A, Statement of Work
- (e) Annex B, Basis of Payment;
- (h) the signed Task Authorizations (including all of its annexes, if any) (*if applicable*);
- (i) the Contractor's bid dated \_\_\_\_\_

---

## **7.12 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.

## **7.13 Meetings**

A meeting may 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. The meeting will be held with representatives of the Contractor, the Department of Public Works and Government Services and Correctional Service Canada.

## **7.14 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.

## **7.15 Delay by Canada**

In the event that an installation crew 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.

## **7.16 After Sales Service**

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.

## **7.17 Lifetime Spares**

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

Life of the equipment: \_\_\_\_\_ 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.

## **7.18 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

Solicitation No. - N° de l'invitation

21220-174683

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

21220-174683

Amd. No. - N° de la modif.

File No. - N° du dossier  
Hn33421120-166668

Buyer ID - Id de l'acheteur

HN334

CCC No./N° CCC - FMS No./N° VME

---

case the Contractor shall impose the same obligation of confidentiality on any person to whom the information is disclosed.

Solicitation No. - N° de l'invitation

21220-174683

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

21220-174683

Amd. No. - N° de la modif.

File No. - N° du dossier  
Hn33421120-166668

Buyer ID - Id de l'acheteur

HN334

CCC No./N° CCC - FMS No./N° VME

---

## **ANNEX "A"**

### **STATEMENT OF REQUIREMENT**

**(See attached pdf)**

**ANNEX "B"**

**PRICING SHEET - A**

**Drumheller Institution**

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

**PART 1 – CONTRACTOR PROPOSED SOLUTION**

**1. DESIGN OF THE SYSTEM**

Firm Lot Price for the design

**DESIGN - FIRM LOT PRICE \$\_\_\_\_\_**

**2. DELIVERY OF EQUIPMENT**

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

**EQUIPMENT - FIRM LOT PRICE \$\_\_\_\_\_**

**3. INSTALLATION AND ASSOCIATED TRAVEL**

**3.1** The price must include all costs including travel and living expenses, related to the installation

**INSTALLATION - FIRM LOT PRICE \$\_\_\_\_\_**

**TRAVEL COST - FIRM LOT PRICE \$\_\_\_\_\_**

***Breakdown of Travel costs are as follows:***

Institution	FIRM LOT PRICE BREAKDOWN	
<b><u>Drumheller Institution</u></b>	Accommodation	\$ _____
	Air Fare	\$ _____
Estimated Number of Individuals _____	Car Rental & Fuel	\$ _____
Estimated Number of Days _____	Other costs (meals and incidentals):	\$ _____
	(identify what they are)	

### 3.2 INSTALLATION (FIRM HOURLY RATES)

The following outlined installation related labour rates will apply for emergency repairs, Task Authorizations.

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

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

### 4 . SOFTWARE INTEGRATION AND TESTING INCLUDING TRAVEL

4.1 The price must include all software integration costs including travel and living expenses, related to the software integration and testing of the equipment.

Firm Lot Price the software/integration as indicated in the STR, 5.5 and 5.11:-

**SOFTWARE INTEGRATION**  
**TESTING COST -**  
**TRAVEL COST -**

**FIRM LOT PRICE \$** \_\_\_\_\_  
**FIRM LOT PRICE \$** \_\_\_\_\_  
**FIRM LOT PRICE \$** \_\_\_\_\_

**Breakdown of Travel costs are as follows:**

Institution	FIRM LOT PRICE BREAKDOWN
<b><u>Drumheller Institution</u></b>	
Estimated Number of Individuals _____	Accommodation \$ _____
Estimated Number of Days _____	Air Fare \$ _____
	Car Rental & Fuel \$ _____
	Other costs (meals and incidentals): \$ _____
	(identify what they are)

#### 4.1.1 SOFTWARE INTEGRATION (FIRM HOURLY RATES)

The following outlined software integration related labour rates will apply for emergency repairs, delays and Task Authorizations.

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

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



#### 4.1.2 TESTING OF EQUIPMENT (FIRM HOURLY RATES)

The following outlined testing related labour rates will apply for emergency repairs, delays and Task Authorizations.

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

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

#### 5. ON-SITE TRAINING AND DOCUMENTATION

The price must include all costs including travel and living expenses, related to Training.

On-site Training Firm Lot Price including all costs related to travel and living expenses associated with on-site training as per STR paragraphs 5.1 and 5.2.

As-built Drawings Firm Lot Price as per STR, paragraph 5.4.

Operator and Maintenance Manuals Firm Lot Price as per STR, paragraph 5.3.

**ON-SITE TRAINING COST** **FIRM LOT PRICE \$** \_\_\_\_\_

**TRAVEL COST** **FIRM LOT PRICE \$** \_\_\_\_\_

Institution	TRAVEL COSTS FIRM LOT PRICE BREAKDOWN
<b><u>Drumheller Institution</u></b>	
Estimated Number of Individuals _____	Accommodation \$ _____
Estimated Number of Days _____	Air Fare \$ _____
	Car Rental & Fuel \$ _____
	Other costs (meals and incidentals): \$ _____
	(identify what they are)

**AS-BUILT DRAWINGS** **FIRM LOT PRICE \$** \_\_\_\_\_

**OPERATOR AND MAINTENANCE MANUALS** **FIRM LOT PRICE \$** \_\_\_\_\_

**PART 1 TOTAL BID PRICE \$** \_\_\_\_\_

**PART 2 – OPTION # 1 - SPARE PARTS AND/OR EQUIPMENT****6. SPARE PARTS AND/OR 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 required as per STR, 5.15.

***FIRM LOT PRICE \$*** \_\_\_\_\_

**ANNEX "B" CON'T**

**PRICING SHEET - A**

**Bowden Institution**

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

**PART 1 – CONTRACTOR PROPOSED SOLUTION**

**1. DESIGN OF THE SYSTEM**

Firm Lot Price for the design

**DESIGN - FIRM LOT PRICE \$ \_\_\_\_\_**

**2. DELIVERY OF EQUIPMENT**

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

**EQUIPMENT - FIRM LOT PRICE \$ \_\_\_\_\_**

**3. INSTALLATION AND ASSOCIATED TRAVEL**

**3.1** The price must include all costs including travel and living expenses, related to the installation

**INSTALLATION - FIRM LOT PRICE \$ \_\_\_\_\_**

**TRAVEL COST - FIRM LOT PRICE \$ \_\_\_\_\_**

***Breakdown of Travel costs are as follows:***

Institution	FIRM LOT PRICE BREAKDOWN	
<b><u>Bowden Institution</u></b>	Accommodation	\$ _____
	Air Fare	\$ _____
Estimated Number of Individuals _____	Car Rental & Fuel	\$ _____
Estimated Number of Days _____	Other costs (meals and incidentals):	\$ _____
	(identify what they are)	

### 3.2 INSTALLATION (FIRM HOURLY RATES)

The following outlined installation related labour rates will apply for emergency repairs, Task Authorizations.

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

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

### 4 . SOFTWARE INTEGRATION AND TESTING INCLUDING TRAVEL

4.1 The price must include all software integration costs including travel and living expenses, related to the software integration and testing of the equipment.

Firm Lot Price the software/integration as indicated in the STR, 5.5 and 5.11:-

**SOFTWARE INTEGRATION**  
**TESTING COST -**  
**TRAVEL COST -**

**FIRM LOT PRICE \$** \_\_\_\_\_  
**FIRM LOT PRICE \$** \_\_\_\_\_  
**FIRM LOT PRICE \$** \_\_\_\_\_

**Breakdown of Travel costs are as follows:**

Institution	FIRM LOT PRICE BREAKDOWN
<b><u>Bowden Institution</u></b>	
Estimated Number of Individuals _____	Accommodation \$ _____
Estimated Number of Days _____	Air Fare \$ _____
	Car Rental & Fuel \$ _____
	Other costs (meals and incidentals): \$ _____
	(identify what they are)

#### 4.1.1 SOFTWARE INTEGRATION (FIRM HOURLY RATES)

The following outlined software integration related labour rates will apply for emergency repairs, delays and Task Authorizations.

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

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

**4.1.2 TESTING OF EQUIPMENT (FIRM HOURLY RATES)**

The following outlined testing related labour rates will apply for emergency repairs, delays and Task Authorizations.

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

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

**5. ON-SITE TRAINING AND DOCUMENTATION**

The price must include all costs including travel and living expenses, related to Training.

On-site Training Firm Lot Price including all costs related to travel and living expenses associated with on-site training as per STR paragraphs 5.1 and 5.2.

As-built Drawings Firm Lot Price as per STR, paragraph 5.4.

Operator and Maintenance Manuals Firm Lot Price as per STR, paragraph 5.3.

**ON-SITE TRAINING COST** **FIRM LOT PRICE \$** \_\_\_\_\_

**TRAVEL COST** **FIRM LOT PRICE \$** \_\_\_\_\_

Institution	TRAVEL COSTS FIRM LOT PRICE BREAKDOWN
<b><u>Bowden Institution</u></b>	
Estimated Number of Individuals _____	Accommodation \$ _____
Estimated Number of Days _____	Air Fare \$ _____
	Car Rental & Fuel \$ _____
	Other costs (meals and incidentals): \$ _____
	(identify what they are)

**AS-BUILT DRAWINGS** **FIRM LOT PRICE \$** \_\_\_\_\_

**OPERATOR AND MAINTENANCE MANUALS** **FIRM LOT PRICE \$** \_\_\_\_\_

**PART 1 TOTAL BID PRICE \$** \_\_\_\_\_

**PART 2 – OPTION # 1 - SPARE PARTS AND/OR EQUIPMENT****6. SPARE PARTS AND/OR 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 required as per STR, 5.15.

***FIRM LOT PRICE \$*** \_\_\_\_\_

Solicitation No. - N° de l'invitation

21220-174683

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

21220-174683

Amd. No. - N° de la modif.

File No. - N° du dossier

Hn33421120-166668

Buyer ID - Id de l'acheteur

HN334

CCC No./N° CCC - FMS No./N° VME

---

## **ANNEX C**

### **TASK AUTHORIZATION FORM PWGSC-TPSGC 572**

See: <http://publiservice-app.pwgsc.gc.ca/forms/pdf/572.pdf>

Voir: <http://publiservice-app.pwgsc.gc.ca/forms/pdf/572.pdf>

Solicitation No. - N° de l'invitation

21220-174683

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

21220-174683

Amd. No. - N° de la modif.

File No. - N° du dossier  
Hn33421120-166668

Buyer ID - Id de l'acheteur

HN334

CCC No./N° CCC - FMS No./N° VME

---

## **ATTACHMENT 1**

### **EVALUATION CRITERIA**

(New Criteria from CSC to follow)



## ANNEX "B" - EVALUATION CRITERIA

## 1. Point Rated Technical Proposal Criteria

The Bidder must obtain an overall pass score of 70 percent of the Technical Proposal and achieve the minimum mandatory points identified for each criterion, as applicable. The rating is performed on a scale of 100 points. The Technical Proposal should include, but not be limited to:

Point Rated Technical Proposal Criteria	Pts	Comments
<b>1.1. Understanding of the Technical Requirements ( a maximum of 45 points is available )</b> Demonstrate understanding of the technical requirements of the system which must include sufficient detail such as preliminary drawings, diagrams, photographs and sketches showing system architecture, equipment configuration, and technical information / literature/brochure on products offered.  The Bidder's Technical Proposal will be specifically reviewed to determine whether the proposed solution meets the requirements defined in the Statement of Technical Requirements (STR) and supporting documents.  The Bidder should demonstrate that the requirements as identified in the STR and supporting documents have been met, by clearly describing how these will be achieved.		
( 0 points ) a) The proposal indicates that the Bidder does not understand the requirements identified in the STR and supporting documents.		
( 35 points ) a) The proposal indicates that the Bidder understands the main concept of what is required. The Bidder's solution meets the operability, environmental, reliability, maintainability, testing and validation requirements.		
(45 points ) a) The proposal clearly indicates that the proposed solution exceeds the requirement in at least 2 instances that are specifically and uniquely identified in the Technical Proposal		
*Minimum mandatory points required: 35		
<b>1.2. Quality Assurance and Acceptance Test Plans</b> Description of the proposed quality assurance procedures/processes and acceptance test plan(s) to ensure quality requirements are met and how the Bidder intends to demonstrate to the Crown that the system functions correctly, both off site (Factory Acceptance Testing) and following on-site installation (Site Acceptance Testing). A detailed list of tests to be performed with pass/fail parameters should be provided. Maximum points are broken down as follows:		
<b>1.2.1. Quality Assurance ( a maximum of 15 points is available )</b> How the Bidder intends to ensure quality requirements are met, a description of inspection, testing, and documentation procedures as well as quality metrics.		

( 2 points per item ) The Bidder will be awarded two points per element for clearly indicating how the proposal will meet each of the elements identified below to a limit of 15 points.		
The following is a list of elements pertaining to quality assurance. The proposal indicates:		
a) That the Bidder has quality assurance procedures and processes;		
b) That the results will be recorded/analyzed and conflicts will be resolved;		
c) When, how and by whom the quality requirements will be reviewed;		
d) How documents and data will be controlled;		
e) Relevant quality control processes for purchases;		
f) How the production, assembly and on-site installation processes will be controlled to ensure quality requirements are met;		
g) How measuring and test equipment is controlled and describes the format and test results to be provided;		
h) How non-conforming products are identified and controlled to prevent misuse until proper disposal.		
*Minimum mandatory points required: 6		
Sub-section Total		
<b>1.2.2. Factory Acceptance Test Plan ( a maximum of 10 points is available )</b> How the Bidder intends to demonstrate to the Crown that the system functions correctly off site (Factory Acceptance Testing), a detailed list of tests to be performed with pass/fail parameters should be provided.		
( 2 points per item ) The Bidder will be awarded two points per item for clearly indicating how the proposal will meet each of the items identified below, to a limit of 10 points.		
The proposal indicates that the Bidder has:		
a) confirmed the requirement for a test plan;		
b) provided a test plan		
c) provided test sheets;		
d) provided test sheets including pass/fail parameters;		
e) provided test sheets, including specific parameters		
Sub-section Total		
<b>1.2.3. Site Acceptance Test Plan( a maximum of 10 points is available )</b> How the Bidder intends to demonstrate to the Crown that the system functions correctly after installation (Site Acceptance Testing), a detailed list of tests to be performed with pass/fail parameters should be provided.		
( 2 points per item ) The Bidder will be awarded two points per item for clearly indicating how the proposal will meet each of the items identified above in a) through e) to a limit of 10 points.		
The proposal indicates that the Bidder has:		
a) Demonstrated the requirements for testing the system after installation (Site Acceptance Testing);		
b) Provided a test plan		
c) Provided test sheets;		

**Comment [PWD1]:** 15 or 16 max SEE above

**Comment [JT2]:** What is the difference?

d) Provided test sheets including pass/fail parameters;		
e) Provided test sheets, including specific parameters		
Sub-Section Total		
<b>1.3. Technical Risk Elements ( a maximum of 20 points is available )</b> How the Bidder intends to meet the technical requirements, a description of the technical risks elements detailing how the Bidder intends to mitigate them. The risks identified must be limited to Technical concerns only as non Technical risks are evaluated separately.		
( 0 points ) The proposal indicates that the Bidder has not identified: a) Technical risk elements, nor b) Technical risk mitigation.		
(10 points ) The proposal indicates that the Bidder has identified : a) Technical risk elements, and b) Risk management process, but c) Bidder does not provide a technical risk mitigation plan.		
(15 points ) As above, plus the Bidder has provided a) A risk mitigation plan.		
(20 points ) The proposal indicates that the Bidder has as above, plus: a) Identified the impact of the technical risks. b) Associated the technical risks with the bidder, supplier, subcontractor, customer, integration, or equipment performance. c) Described mitigation strategies for the identified technical risks. d) Identified decision points for any approaches proposed to mitigate technical risks. e) Proposed approaches to the mitigation of technical risk that support the requirements of the project		
Sub-Section Total		
<b>Total Technical Proposal ( maximum 100 points )</b>		

**Comment [JT3]:** What is the difference?

## 2. Point Rated Project Management Proposal Criteria

The Bidder must obtain an overall pass score of 70 percent for the Project Management Proposal and achieve the minimum mandatory points identified for each criterion, as applicable. The rating is performed on a scale of 100 points. The Project Management Proposal should include, but not be limited to:

Point Rated Project Management Proposal Criteria	Pts	Comments
<b>2.1. Previous Project Management Experience</b> Identification of the Bidder, project manager, project supervisor and technicians. 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:		
<b>2.1.1. Experience of the Bidder within the last four (4) years. ( a maximum of 10 points is available )</b> Similar project(s) that have been successfully completed and have provided them with experience pertaining to the following elements. <ul style="list-style-type: none"> <li>a) Similarity of project in terms of scope and/or clients;</li> <li>b) Dollar value over \$100K; (The amount should be adapted for each project.)</li> <li>c) Installation;</li> <li>d) Training;</li> <li>e) Drawings; and</li> <li>f) Manuals.</li> </ul> The proposal indicates that the Bidder has experience with:		
(0 points) - Three or less of the elements.		
(4 points) - Four of the elements.		
(8 points) - Five of the elements.		
(10 points) - All six elements.		
Sub-Section Total		
<b>2.1.2. Range of experience within the last four (4) years in the design, supply, installation and integration of systems similar to those described in the Statement of Technical Requirements (STR). In instances where these items are not required the points will be adjusted accordingly. ( a maximum of 10 points is available )</b> The proposal indicates that the Bidder has stated levels of experience in the design, supply, installation and integration of the systems similar to those described in the STR, as follows:		
(0 points) No stated experience		
(4 points) Stated experience with private industry or Provincial Governments		
(8 points) Stated experience with other Correctional Services or similar organizations		
(10 points) Stated experience with Correctional Service Canada (CSC).		
Sub-Section Total		

**Comment [JT4]:** Can we address quality via an approval of these projects?

<p><b>2.1.3. Project Manager's (and Primary Back-up) Overall Experience (years, size of project &amp; complexity) and Qualifications. ( a maximum of 12 points is available )</b></p> <p>The proposal should indicate that the designated Project Manager and Primary Back up Project Manager should both have:</p> <ul style="list-style-type: none"> <li>a) The stated levels of experience in the design, supply, installation and integration of systems similar to those described in the STR.</li> <li>b) Professional Certification(s) –at least one of PMP, PMI, MBA, P.Eng, or demonstrated equivalent certification.</li> </ul> <p>For each resource identified, the following documentation should be provided in the order described below:</p> <ul style="list-style-type: none"> <li>a) A detailed description, (including dates – Month and Year) the number of years of experience in the specified role for similar projects in terms of size, dollar value, complexity, tasks, clients, responsibilities etc.</li> <li>b) A copy of their certification, degree, diploma and /or demonstrated equivalent to demonstrate the criteria.</li> </ul>		
<p>(0 points) – Project Manager &amp; Primary Back-Up Project Manager</p> <ul style="list-style-type: none"> <li>a) One or both lack experience with projects of similar size and complexity, regardless of professional certifications</li> </ul>		
<p>(4 points) – Project Manager &amp; Primary Back-Up</p> <ul style="list-style-type: none"> <li>a) One or both have: <ul style="list-style-type: none"> <li>i. Less than 4 years experience with projects of similar size and complexity; and</li> <li>ii. No professional certifications or demonstrated equivalents</li> </ul> </li> </ul>		
<p>(6 points) ) – Project Manager &amp; Primary Back-Up</p> <ul style="list-style-type: none"> <li>a) One or both have: <ul style="list-style-type: none"> <li>i. Less than 4 years experience with projects of similar size and complexity; and</li> <li>ii. Professional certifications or demonstrated equivalents</li> </ul> </li> </ul>		
<p>(8 points) ) – Project Manager &amp; Primary Back-Up</p> <ul style="list-style-type: none"> <li>a) Both have: <ul style="list-style-type: none"> <li>i. Between 4 and 10 years experience with projects of similar size and complexity; and</li> <li>ii. Professional certifications or demonstrated equivalents</li> </ul> </li> </ul>		
<p>(12 points) ) – Project Manager &amp; Primary Back-Up</p> <ul style="list-style-type: none"> <li>a) Both have <ul style="list-style-type: none"> <li>i. Greater than 10 years experience with projects of similar size and complexity; and</li> <li>ii. Professional certifications or demonstrated equivalents</li> </ul> </li> </ul>		
*Minimum mandatory points required: 4		
Sub-Section Total		

<p><b>2.1.4. Supervisor's (and Primary Back-Up Supervisor's) Overall Experience (years, size of project &amp; complexity) and Qualifications. ( a maximum of 8 points is available )</b></p> <p>The proposal should indicate that the designated Supervisor and Primary Back up Supervisor should both have:</p> <p>a) The stated levels of experience in the design, supply, installation and integration of systems similar to those described in the STR.</p> <p>For each resource identified the following documentation must be provided to demonstrate the criteria:</p> <p>a) A detailed description, (including dates – Month and Year) the number of years of experience in the specified role for similar projects in terms of size, dollar value, complexity, tasks, clients, responsibilities etc.</p> <p>b) A copy of their certification, degree, diploma and /or demonstrated equivalent.</p> <p>i. Technical Diploma(s) in any of the electrical, electro-mechanical, electronics, mechanical, software development, computer programming, network technology or telecommunications field.</p> <p>ii. (Certifications from Manufacturer's courses are not considered as equivalent to a Diploma.)</p>		
<p>(0 points) – Supervisor &amp; Primary Back-Up</p> <p>a) One or both lack of Supervisory experience with projects of similar size and complexity, regardless of professional certifications</p>		
<p>(4 points) – Supervisor &amp; Primary Back-Up</p> <p>a) One or both have</p> <p>i. Less than 4 years Supervisory experience with projects of similar size and complexity; and</p> <p>ii. No professional certifications or demonstrated equivalents</p>		
<p>(6 points) ) – Supervisor &amp; Primary Back-Up</p> <p>a) Both have</p> <p>i. At least 4 years Supervisory experience with projects of similar size and complexity; and</p> <p>ii. Technical certifications or demonstrated equivalents</p>		
<p>(8 points) ) – Supervisor &amp; Primary Back-Up</p> <p>a) Both have</p> <p>i. Greater than 10 years Supervisory experience with projects of similar size and complexity; and</p> <p>ii. Technical certifications or demonstrated equivalents</p>		
<p>*Minimum mandatory points required:</p>		
<p>Sub-Section Total</p>		

<p><b>2.1.5. Technicians' Overall Experience (years, size of project &amp; complexity) and Qualifications. ( a maximum of 8 points is available )</b></p> <p>The proposal should indicate that the designated Technician and Primary Back up Technician should both have:</p> <ul style="list-style-type: none"> <li>a) The stated levels of experience in the design, supply, installation and integration of systems similar to those described in the STR.</li> </ul> <p>For each resource identified the following documentation must be provided to demonstrate the criteria:</p> <ul style="list-style-type: none"> <li>a) A detailed description, (including dates – Month and Year) the number of years of experience in the specified role for similar projects in terms of size, dollar value, complexity, tasks, clients, responsibilities etc.</li> <li>b) A copy of their certification, degree, diploma and /or demonstrated equivalent. <ul style="list-style-type: none"> <li>i. Technical Diploma(s) in any of the electrical, electro-mechanical, electronics, mechanical, software development, computer programming,</li> <li>ii. (Certifications from Manufacturer's courses are not considered as equivalent to a Diploma.)</li> </ul> </li> </ul>		
<p>(0 points) – Technician &amp; Primary Back-Up</p> <ul style="list-style-type: none"> <li>a) One or both lack experience with projects of similar size and complexity, regardless of technical certifications</li> </ul>		
<p>(4 points) – Technician &amp; Primary Back-Up</p> <ul style="list-style-type: none"> <li>a) One or both have <ul style="list-style-type: none"> <li>i. Less than 4 years experience with projects of similar size and complexity; and</li> <li>ii. No Technical certifications or demonstrated equivalents</li> </ul> </li> </ul>		
<p>(6 points) ) – Technician &amp; Primary Back-Up</p> <ul style="list-style-type: none"> <li>a) One or both have <ul style="list-style-type: none"> <li>i. At least 4 years experience with projects of similar size and complexity; and</li> <li>ii. Technical certifications or demonstrated equivalents</li> </ul> </li> </ul>		
<p>(8 points) ) – Technician &amp; Primary Back-Up</p> <ul style="list-style-type: none"> <li>a) Both have <ul style="list-style-type: none"> <li>i. Greater than 10 years experience with projects of similar size and complexity; and</li> <li>ii. Technical certifications or demonstrated equivalents</li> </ul> </li> </ul>		
<p>*Minimum mandatory points required: 4</p>		
<p>Sub-Section Total</p>		
<p><b>2.2. Project Management Structure and Procedures</b> Project management structure and procedures describing the implementation of this project. Maximum points are broken down as follows:</p>		
<p><b>2.2.1. Project Management Organization and Responsibilities. ( a maximum of 10 points is available )</b> This refers only to management personnel and the way that the Bidder plans to organize the project team for this contract.</p>		

( 0 points ) The proposal indicates that the Bidder has: a) No project management organization in place. b) No plans identified to designate a separate project management team.		
(4 points ) The proposal indicates that the Bidder has: a) No project management organization in place. b) A well-developed plan in place to set up a team of trained personnel.		
(8 points ) The proposal indicates that the Bidder has: a) A project management organization/structure defined with 'matrix' personnel resources that can be made available to this project. b) Personnel are identified for the positions of Project Manager, the Project Supervisor, Technicians and Electricians.		
(10 points ) The proposal indicates that the Bidder has: a) As above, plus. b) A well defined Project Management structure. c) Identified the Personnel that will be executing specific tasks. d) Clearly defined the responsibilities of these Personnel.		
Sub-Section Total		
<b>2.2.2. Project Management Procedures. (a maximum of 12 points is available )</b> This criterion will rate the systems used by the Bidders to implement their project management approach.		
(0 points ) a) The proposal indicates that Project Management (PM) implementation is not addressed.		
(4 points ) a) The proposal indicates that PM implementation is addressed but the Bidder has not provided sufficient details to demonstrate that a fully functional PM system is in place.		
(8 points ) a) The proposal indicates that PM implementation is addressed but the Bidder has not provided sufficient details to demonstrate that a fully functional PM system is in place.		
(12 points ) - As above plus: a) Project management based on employment of Program Evaluation Review Technique (PERT) or Critical Path Method (CPM). b) Work breakdown structure is linked to project management. c) The PM system closely tracks status and progress of tasks.		
Sub-Section Total		



<b>2.3. Schedule, Milestones and Project Management Tools</b> A project schedule of events for all deliverables with milestones and rationale of how realistic and achievable they are should be provided. Availability and usage of a Project Management specific tool and the capability and implementation of supporting a secure customer facing portal that provides real time access to project specific information, including schedules and all customer facing project drawings and documents. Maximum points are broken down as follows:		
<b>2.3.1. Schedule/Milestones ( a maximum of 10 points is available )</b> A project schedule/schedule of events for all deliverables with milestones and rationale of how realistic and achievable they are including tools for addressing project slippage. <ul style="list-style-type: none"> <li>a) Major milestones are identified.</li> <li>b) Logical sequence is proposed.</li> <li>c) Contingency time identified.</li> <li>d) Time estimates are realistic.</li> </ul>		
( 0 points ) a) The proposal schedule only addresses 1 of the 4 areas identified above.		
(5 points ) a) The proposal schedule only addresses 2 of the 4 areas identified above.		
(8 points ) a) The proposal schedule addresses all of the 4 areas identified above.		
(10 points ) a) The proposal schedule addresses all of the 4 areas identified above, and: b) The proposed schedule contains milestones, significant contract events, projected delivery dates and production schedules.		
Sub-Section Total		
<b>2.3.2. Project Management Tools. ( a maximum of 10 points is available )</b> These criteria will rate the Bidder on their availability and usage of a Project Management (PM) specific tool and capability of supporting a secure customer facing portal provides real time access to project specific information, including schedules and all customer facing project drawings and documents..		
( 0 points ) a) The proposal indicates that the Bidder has not identified the PM specific software.		
( 8 points ) a) The proposal indicates that the Bidder has identified the specialized PM software but does not support a secure customer facing portal that provides real time access to project specific information.		
( 10 points ) a) The proposal indicates that the Bidder has identified the specialized PM software and supports a secure customer facing portal that provides real time access to project specific information including schedules, reports and meeting minutes.		
Sub-Section Total		

**Comment [JT5]:** Could we make it 2pts per criteria instead of a scale? It would be easier in terms of evaluation and maintaining objectivity..

<p><b>2.3.3. Project Risks Elements ( a maximum of 10 points is available )</b></p> <p>A description of the project risks, excluding all <u>technical</u> risks previously identified, related to the proposed approach and processes for managing all project risk elements (such as resources, cost, schedule and all external elements) of the project detailing how well the Bidder understands the project risks and how they propose to mitigate them.</p>		
<p>( 0 points )</p> <p>The proposal indicates that the Bidder has <u>not</u> clearly identified any:</p> <ul style="list-style-type: none"> <li>a) Non-technical risks associated with the project; and</li> <li>b) Non-technical risk mitigation plan.</li> </ul>		
<p>(4 points )</p> <p>The proposal indicates that the Bidder has clearly identified:</p> <ul style="list-style-type: none"> <li>a) The non-technical risks associated with the project, including impacts: <ul style="list-style-type: none"> <li>i. Management</li> <li>ii. Schedule</li> <li>iii. Scope changes</li> <li>iv. Cost overruns</li> <li>v. Cash flow; and</li> <li>vi. Resource issues</li> </ul> </li> <li>b) Their non-technical risk management process</li> <li>c) That the Bidder has <u>not</u> provided a non-technical risk mitigation plan.</li> </ul>		
<p>(8 points )</p> <p>The proposal indicates that the Bidder has clearly identified:</p> <ul style="list-style-type: none"> <li>a) As above, plus</li> <li>b) Their non-technical risk mitigation plan.</li> </ul>		
<p>(10 points )</p> <p>The proposal indicates that the Bidder has clearly identified:</p> <ul style="list-style-type: none"> <li>a) As above, plus</li> <li>b) The identified risks are appropriately associated with the Bidder, Subcontractor, Customer, Integration, or Equipment Performance.</li> <li>c) That the proposed non-technical mitigation approaches are closely aligned with the requirements of the project.</li> <li>d) The decision points are identified and aligned with the proposed risk mitigation approaches.</li> </ul>		
Sub-Section Totals		
<b>Total Project Management Proposal ( maximum 100 points )</b>		

### 3. Point Rated Support Proposal Criteria

The Bidder must obtain an overall pass score of 70 percent for the Support Proposal and achieve the minimum mandatory points identified for each criterion, as applicable. The rating is performed on a scale of 100 points. The Support Proposal should include, but not be limited to:

Point Rated Support Proposal Criteria		Points
<b>3.1. Operator Training Plan Outline, Training and Manuals</b> An understanding of the Operator Training requirements. Description of the proposed training plan, approach, team and information to meet the Operator training requirements. Maximum points are broken down as follows:		
<b>3.1.1. Operator training plan outline. ( a maximum of 15 points is available )</b>		
( 0 points ) a) The proposal indicates that the operator training plan outline does not meet the requirements.		
(12 points ) a) The proposal indicates that the operator training plan outline meets the requirements.		
(15 points ) The proposal indicates that the operator training plan outline: a) Meets the requirements, and b) Exceeds the requirements in at least 2 instances that are uniquely and specifically identified, including the reasons for including them, in the Bidder's proposal.		
Sub-Section Total		
<b>3.1.2. Operator Training approach, methodology and team. ( a maximum of 15 points is available)</b>		
( 0 points ) a) That the proposal does not meet training requirements		
(12 points ) a) The proposal meets the training requirements and the training team is identified, b) The training approach meets the requirements		
(15 points ) a) As above, and, b) The proposal exceeds the training requirements in at least 2 instances that are uniquely and specifically identified, including the reasons for including them		
Sub-Section Total		
<b>3.1.3. Operator Manuals. (a maximum of 15 points is available )</b>		
(0 points ) a) The proposal indicates that the documented information does not meet the requirements,		

(12 points ) a) The proposal indicates that the documented information meets the requirements,		
(15 points ) a) As above, and, b) The proposal indicates that the information provided exceeds requirements in at least 2 instances that are uniquely and specifically identified, including the reasons for including them		
Sub-Section Total		
<b>3.2. Maintenance Personnel Training Outline, Training and Manuals</b> An understanding of the Maintenance Training requirements. Description of the proposed training plan, approach, team and information to meet the Maintenance training requirements. Maximum points are broken down as follows:		
<b>3.2.1. Maintenance Training Plan Outline. ( a maximum of 15 points is available )</b>		
( 0 points ) a) That the proposal does not meet the maintenance training requirements.		
(12 points ) a) The proposal meets the maintenance training requirements and the training team is identified, b) The training approach meets the requirements		
(15 points ) a) As above, and, b) The proposal exceeds the maintenance training requirements in at least 2 instances that are uniquely and specifically identified, including the reasons for including them		
Sub-Section Total		
<b>3.2.2. Maintenance Training Approach, Methodology and Team. ( a maximum of 15 points is available )</b>		
( 0 points ) a) That the proposal does not meet training requirements		
(12 points ) a) The proposal meets the training requirements and the training team is identified, b) The training approach meets the requirements		
(15 points ) a) As above, and, b) The proposal exceeds the training requirements in at least 2 instances that are uniquely and specifically identified, including the reasons for including them		
Sub-Section Total		
<b>3.2.3. Maintenance Manuals ( a maximum of 15 points is available )</b>		

(0 points ) a) The proposal indicates that the documented information does not meet the requirements,		
(12 points ) a) The proposal indicates that the documented information meets the requirements,		
(15 points ) a) As above, and, b) The proposal indicates that the information provided exceeds requirements in at least 2 instances that are uniquely and specifically identified, including the reasons for including them		
Sub-Section Total		
<b>3.3. Spare Plan and Spare Parts List ( a maximum of 10 points is available )</b>		
(0 points ) a) The proposal indicates that the spares plan and spare parts list does not meet the requirements,		
(12 points ) a) The proposal indicates that the spares plan and spare parts list meets the requirements,		
(15 points ) b) As above, and, c) The proposal indicates that the information provided exceeds requirements in at least 2 instances that are uniquely and specifically identified, including the reasons for including them		
Sub-Section Total		
<b>Total Support Proposal ( maximum 100 points )</b>		



NOTES:

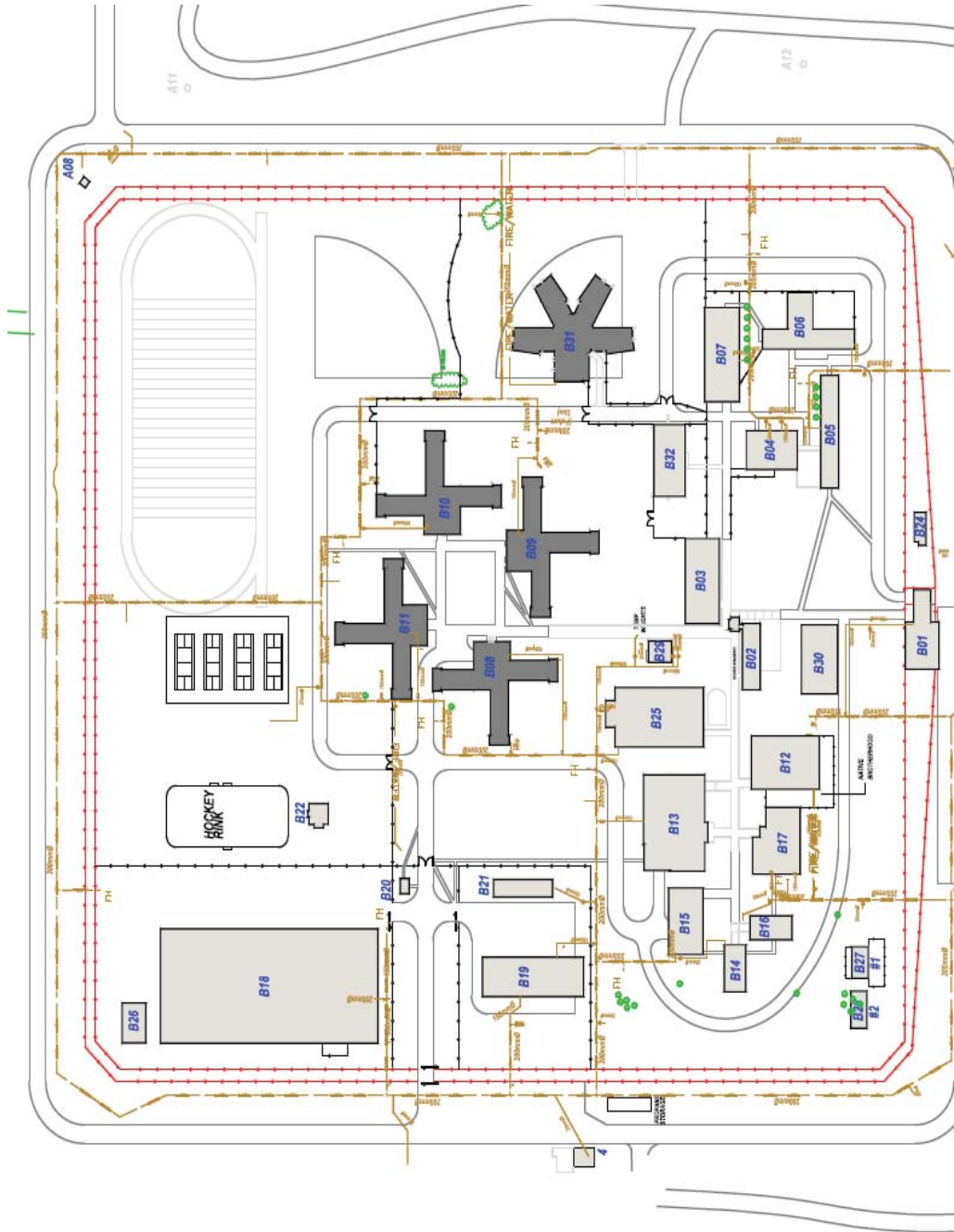
B24 = MSCP  
B01 = PRINCIPLE  
ENTRANCE



INSTITUTION  
DRUMHELLER INSTITUTION  
DRUMHELLER, AB

DESCRIPTION  
OVERALL SITE PLAN

E1



## NOTES:


 = Sensor  
Module

S = SECTOR

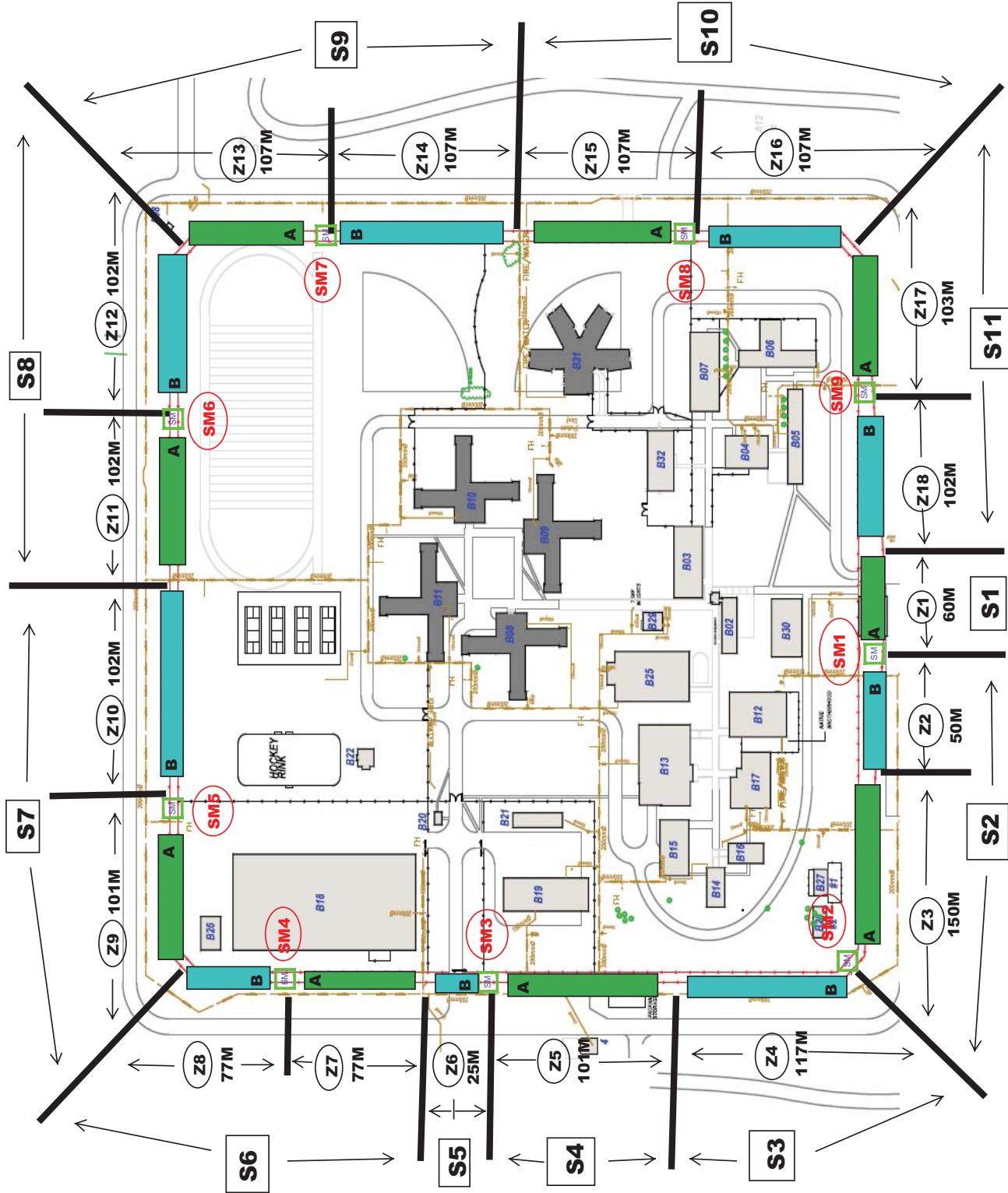
Z = ZONES



INSTITUTION  
DRUMHELLER INSTITUTION  
DRUMHELLER, AB

DESCRIPTION  
OVERALL SITE PLAN  
PIDS MDS

E2



NOTES:

= PIDS Speaker

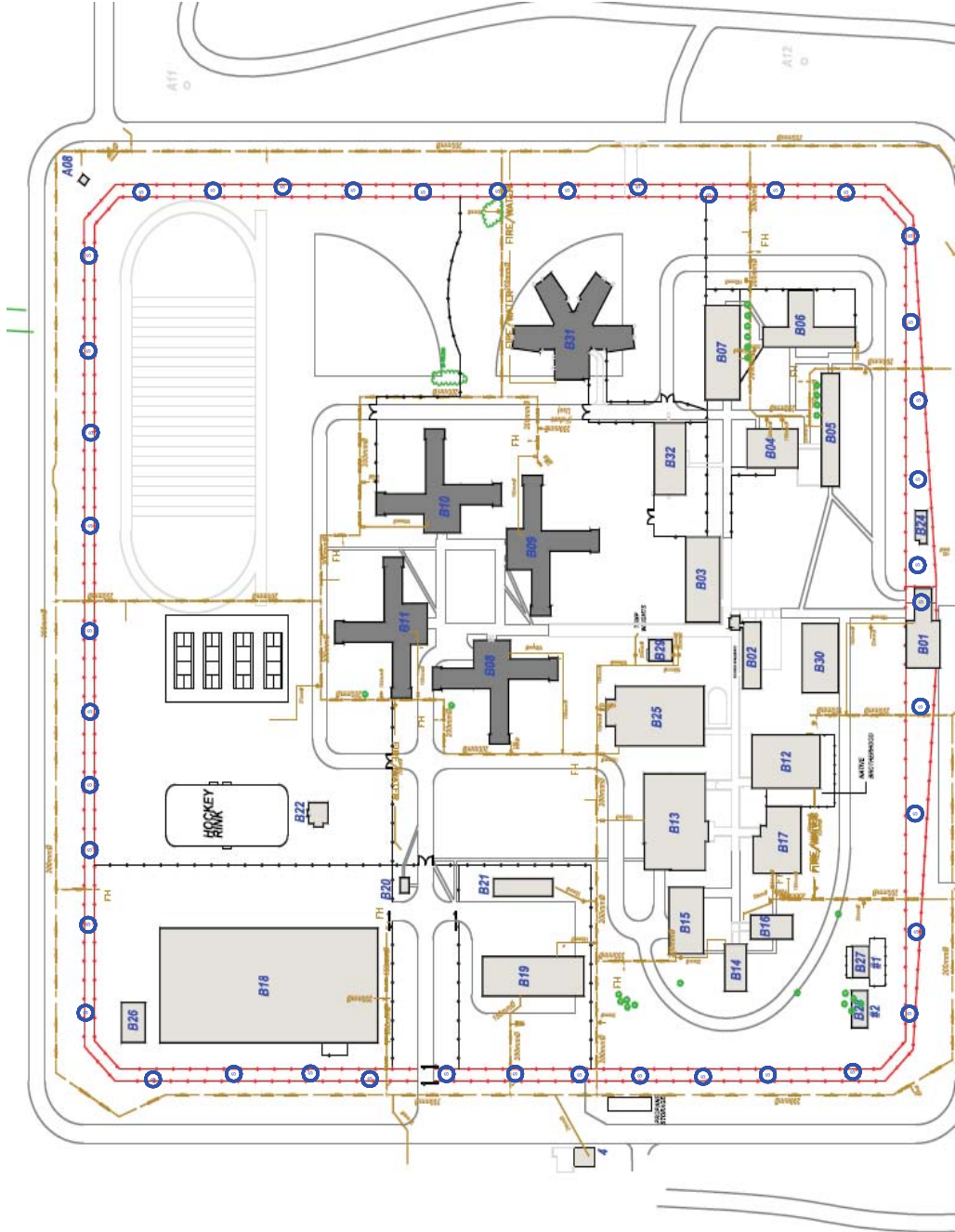


INSTITUTION  
DRUMHELLER INSTITUTION  
DRUMHELLER, AB

DESCRIPTION  
OVERALL SITE PLAN

PIDS PA

E3

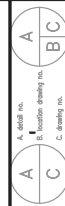




## NOTES:

B34 = MCCP

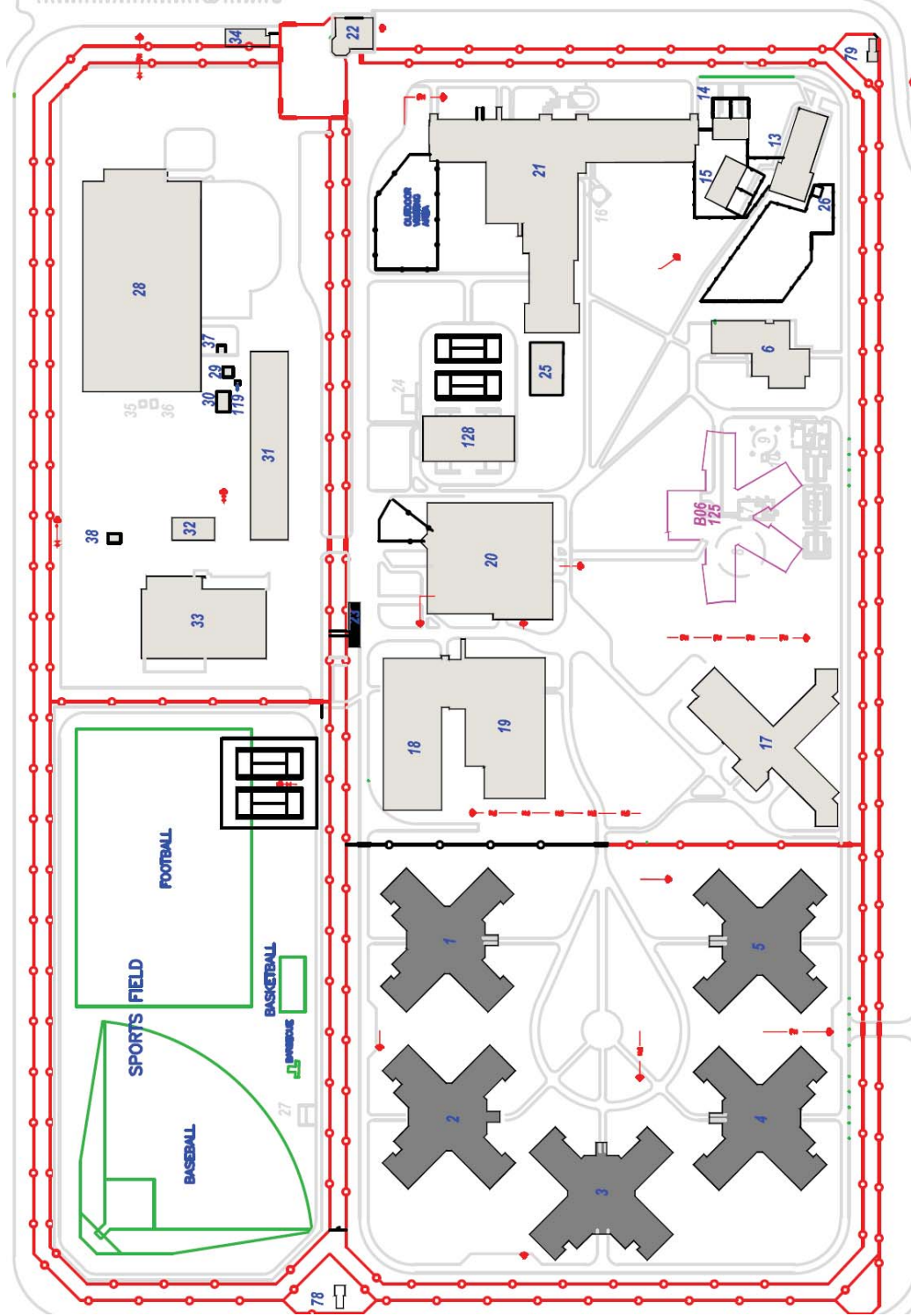
B22 = PRINCIPLE  
ENTRANCE



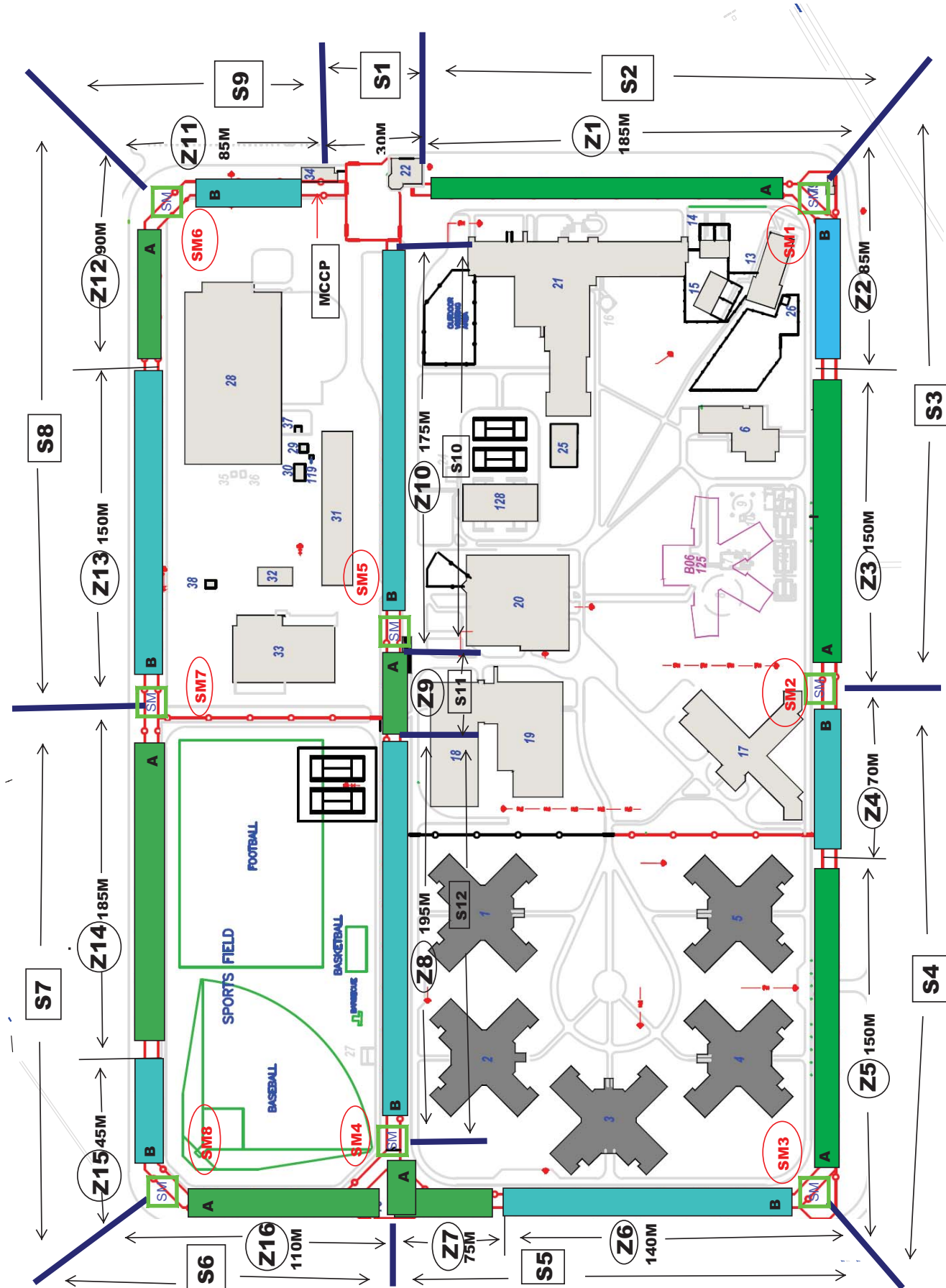
BOWDEN INSTITUTION  
BOWDEN, AB

OVERALL SITE PLAN

E1

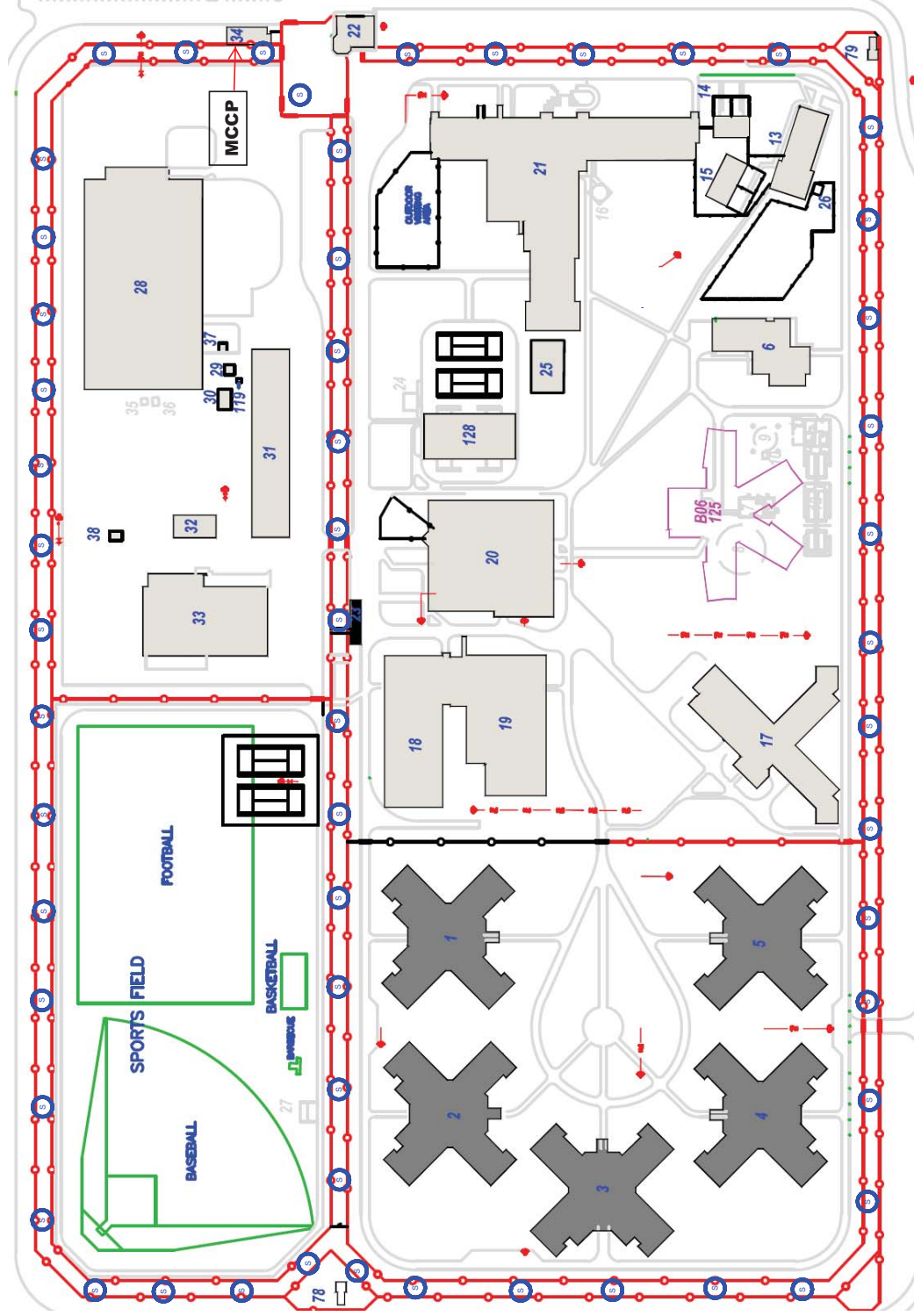


**Z = ZONE**



## NOTES:

 = PIDS Speaker



BOWDEN INSTITUTION  
 BOWDEN, AB

OVERALL SITE PLAN  
 PIDS PA

E3

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

---

**2016-06-01**

**STATEMENT  
OF  
TECHNICAL REQUIREMENTS  
  
REPLACEMENT  
  
of the  
  
PERIMETER INTRUSION DETECTION SYSTEM  
  
MOTION DETECTION SYSTEM  
and  
  
PUBLIC ADDRESS HEAD END SYSTEM  
  
AT  
  
DRUMHELLER AND BOWDEN INSTITUTIONS**

This Statement of Technical Requirements is approved by the  
Correctional Service of Canada for the replacement of the Motion  
Detection System at Drumheller and Bowden Institutions.

---

**Prepared by:**

**John Koelmans  
Chief Electronics System Maintenance (CESM)**

**Reviewed by:**

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

**Approved by:**

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

---

## TABLE OF CONTENTS

TABLE OF CONTENTS .....	2
ABBREVIATIONS .....	4
DEFINITIONS .....	6
1.0 INTRODUCTION .....	9
1.1 General .....	9
1.2 Scope .....	9
1.3 Requirement .....	10
1.4 System Architecture – MDS .....	10
1.5 System Architecture – PIDS PA .....	12
2.0 APPLICABLE DOCUMENTS .....	13
2.1 Applicability .....	13
2.2 Applicable Standards and Specifications .....	13
2.3 Drawings .....	13
2.4 Language .....	13
3.0 OPERATIONAL CRITERIA .....	14
3.1 General .....	14
4.0 TECHNICAL REQUIREMENTS .....	14
4.1 Removal of Equipment and Cable .....	14
4.2 System Installation .....	14
5.0 ADDITIONAL REQUIREMENTS .....	16
5.1 Operator Training .....	16
5.2 Maintenance Training .....	16
5.3 Manuals .....	16
5.4 As-Built Drawings .....	16
5.5 Spares .....	16
5.6 Software .....	17
5.7 Testing .....	17
5.8 Operational Down-Time .....	18
5.9 Institution Address .....	18
5.10 Institutional Operations .....	18
5.11 Integration Responsibility .....	18
5.12 Security .....	19
5.13 Safety .....	19
5.14 Communication Responsibility .....	19

---

Appendix A - Maintenance Handover Report Form

Appendix B - Safety Regulations for Security Electronics Contractors Working at CSC Institutions

Appendix C - As-Built Drawings

Appendix D - Starcom over IP Protocol

---

## ABBREVIATIONS

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

---

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



## DEFINITIONS

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

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

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

---

## 1.0 INTRODUCTION

### 1.1 General

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

The existing PIDS MDS and PA were installed in Drumheller in 2000 and Bowden in 2002. The MDS is reaching the end of its service life.

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

#### **Drumheller Institution**

Drumheller Institution is in Drumheller, Alberta. It is a medium and minimum security facility. Inmates are housed in direct observation living units or residential houses.

Currently construction is complete on a new 96 bed medium living unit. A new 50-bed minimum unit was completed in 2014.

At the same time, Drumheller is expanding the correctional and rehabilitation programs that they offer.

#### **Bowden Institution**

Bowden Institution is in Innisfail, Alberta. It is a medium and minimum security facility. Inmates are housed in direct observation living units or residential houses.

Currently construction is complete on one new 96 bed medium living unit. Work is due to be completed in 2014-2015. A new 50 bed minimum living unit was completed in January 2012.

Bowden is also currently expanding the correctional and rehabilitation programs that they offer

### 1.2 Scope

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

The contractor must design, supply, install, test and provide documentation and training for a Perimeter Intrusion Detection System Public Address (PIDS PA) system in accordance with the applicable sections of the Standards, Specifications and Statements of Work specified in SP0402,

---

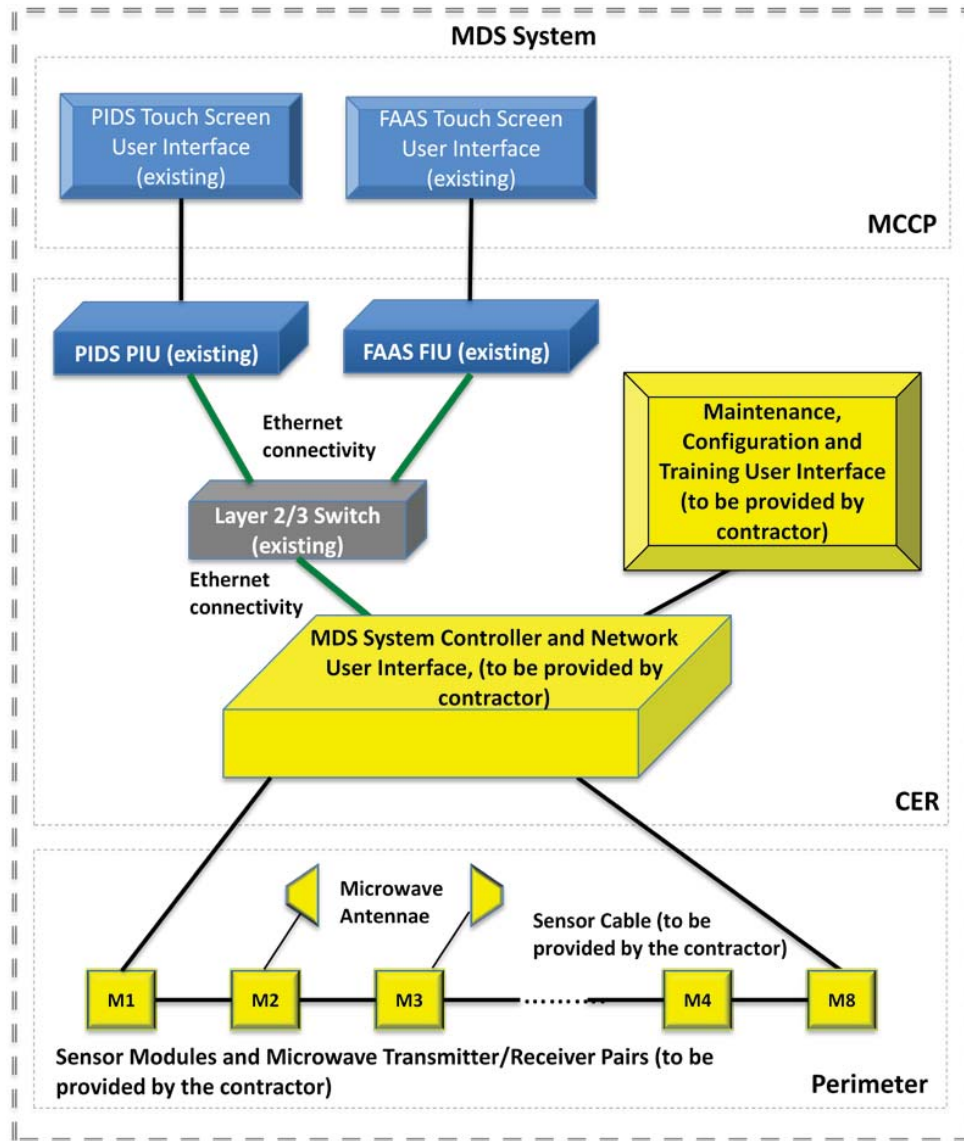
and as described in this STR. The contractor must provide acceptable documentation and as-built drawings for the maintenance of this equipment.

### 1.3 Requirement

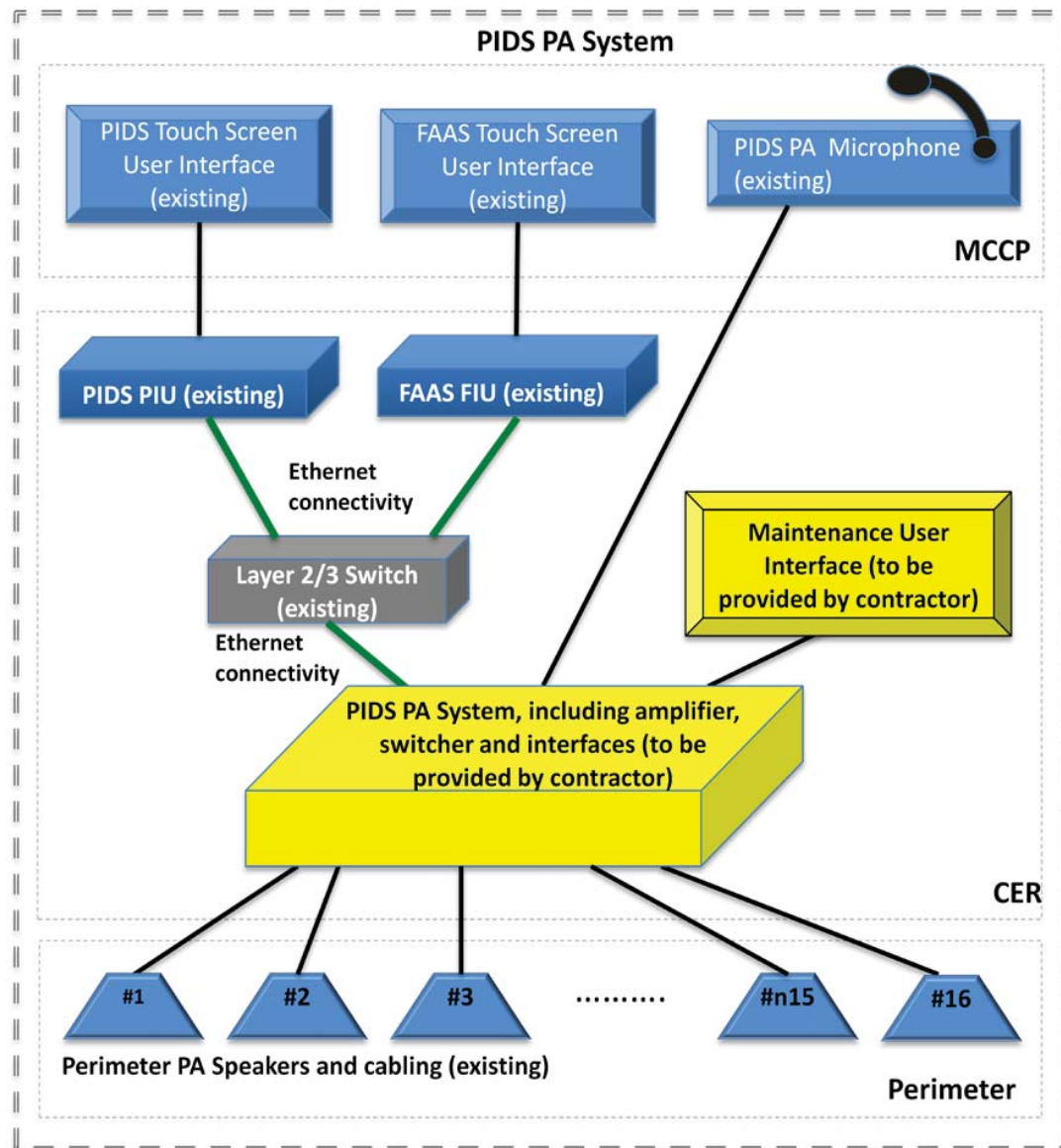
The purpose of this STR is to define the technical aspects for the removal and installation of the existing MDS equipment and the replacement of the existing PIDS PA Head End system. This STR will indicate the extent to which both general and particular CSC specifications are applicable to the implementation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

The primary purpose of the MDS is to detect attempts by an intruder to penetrate the perimeter around a facility. The primary purpose of the PIDS PA is to provide the Main Communication and Control Post (MCCP) operator with the ability to direct one-way voice announcements into each sector of the PIDS-protected perimeter under the control of the PIDS User Interface.

### 1.4 System Architecture – MDS



1.5 System Architecture – PIDS PA



---

## 2.0 APPLICABLE DOCUMENTS

### 2.1 Applicability

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

### 2.2 Applicable Standards and Specifications

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

### 2.3 Drawings

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

### 2.4 Language

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



---

3.0 **OPERATIONAL CRITERIA**

3.1 **General**

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

4.0 **TECHNICAL REQUIREMENTS**

4.1 **Removal of Equipment and Cable**

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

4.2 **System Installation**

**MDS**

The contractor must install temporary microwave detection to cover all MDS sectors before the existing MDS cable is removed. The contractor will provide the required number of microwave detectors to complete the temporary installation as well as providing two (2) sets of spares.

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

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

At Bowden, sectors 1 and 11 are equipped with an existing microwave transmitter receiver pair. The contractor must equip this sector with a new microwave transmitter receiver pairs and the existing technology removed.

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

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

**PIDS PA**

---

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

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

The PIDS PA switcher must be capable of being directly connected, with no intervening hardware or software other than network switches, to the PIDS/FAAS system via an Ethernet connection, over CAT 6 cable, and must be capable of receiving commands and transmitting notifications to and from the PIDS PIU and the FAAS FIU using the Starcom over IP Protocol. This protocol is defined in Appendix D.

### **General Installation**

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

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

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

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

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

---

5.0 **ADDITIONAL REQUIREMENTS**

5.1 **Operator Training**

No operator training is required for this project.

5.2 **Maintenance Training**

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

5.3 **Manuals**

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

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

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

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

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

5.4 **As-Built Drawings**

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

5.5 **Spares**

---

---

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

#### 5.6 **Software**

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

#### 5.7 **Testing**

- .1 The contractor must provide a detailed ATP to the DA, or his designated representative, by fax or email, for approval at least two weeks prior to the *start* of installation of the CCTV equipment and system.
- .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.
- .7 If the DA during the ATP testing finds a minor deficiency that does not affect the operational effectiveness of the MDS system, the ATP testing may continue. Any minor deficiency should be rectified within 30 days; an extension may be approved by the DA and or the CESM. If a major deficiency is found during the ATP testing that does affect the operational effectiveness of the MDS system; the testing must cease until the deficiency has been corrected.
- .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 must correct the deficiencies. The two (2) week operational testing period will begin again after all deficiencies have been cleared.
  - .12 The equipment warranty period will start on the date the system is formally accepted.

**5.8 Operational Down-Time**

Equipment and systems operational down time must be kept to a minimum. All down time must be coordinated with the institution. The contractor's staff may be required to work during evenings, nights and/or weekends to reduce the amount of down time and to meet operational requirements.

**5.9 Institutional Operations**

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

**5.10 Institution Address**

Drumheller Institution  
Highway #9  
PO Box 3000  
Drumheller, Alberta  
T0J 0Y0  
Tel: (403) 823-5101  
Fax: (403) 823-8666

Bowden Institution  
Highway #2  
PO Box 6000  
Innisfail, Alberta  
T4G 1V1  
Tel: (403) 227-3391  
Fax: (403) 227-6022

**5.11 Integration Responsibility**

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

---

external system being installed.

5.12 **Security**

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

5.13 **Safety**

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

5.14 **Communication Responsibility**

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

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

**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.



# Senstar 100®

Addendum #4

December 18, 2014

J2DA0407-001, Rev T

---

## Version 6.xx software features

---

This bulletin outlines changes that have been implemented in the Senstar 100 software version 6.xx release. The first section is a description of the most recent release (Version 6.22). All previously released 6.xx versions are described in reverse order (6.21 to 6.00).

### Version 6.22

This section includes an explanation of the new support features in the version 6.22 software.

#### New support features

The following support feature has been added to software version 6.22:

1. Support has been added for Starcom IP implementation.  
This is available provided QNX TCP/IP Runtime Manager is installed (s/w J2SW4400-xyx).  
The QNX TCP/IP Runtime Manager requires a QNX TCP/IP license (p/n X0315) for each PC.

### Version 6.21

This section includes an explanation of the new support features, software changes and problems that were fixed in the version 6.21 software.

#### New support features

The following support feature has been added to software version 6.21:

1. Support has been added for the Blue Storm serial cards (replacement for the Blue Heat serial cards).

#### Software Changes

The following software changes have been incorporated in version 6.21:

1. The memory calculation has been revised to accommodate the large amount of RAM available on modern computers.
2. The Date and Time setting now functions with the Panasonic 550 video switchers.
3. The Scope Cabaret Handler was ported from QNX2.
4. The Control RocketPort driver has been replaced with a newer version.

#### Problems that have been fixed

The following problem has been corrected in software version 6.21.

1. A problem was fixed in which erroneous report logger failure error messages could be annunciated despite there being no report logger defined in the database.
2. A problem was fixed in Alarm Simulation. If Map Concealment was enabled on the third and fourth computer nodes, the Alarm Simulation did not work correctly on those computers.
3. A problem was fixed in which random startup problems occurred on modern computers.

### Version 6.20

This section includes an explanation of the new support features and software changes in the version 6.20 software.

#### New support features

The following support feature has been added to software version 6.20:

1. The 3rd monitor now supports the Colorgraphic model 612602 and 612402 dual graphics cards.

#### Software Changes

The following software change has been incorporated in version 6.20:



1. The keyboard macro utility can now perform increments greater than 1 (the default remains 1).

## Version 6.19

This section includes an explanation of the new support features, software changes and problems that were fixed in the version 6.19 software.

### New support features

The following support features have been added to software version 6.19:

1. Camera presets are now supported for the Panasonic 550 video switcher.
2. The B & E fibre Ethernet card has been added to the Operating System disks.
3. New Ethernet network drivers have been added to the Operating System disks for the 82557, 905, i82540 and via chipsets.
4. A new driver has been added for the Blue Heat serial cards.
5. A second subtype of the mimic panel has been ported to QNX4.
6. Support has been added for the B & E Ethernet cards.

### Software Changes

The following software changes have been incorporated in version 6.19:

1. Protection was added to prevent race conditions between user input and alarms during alarm simulation.
2. Backing up the user data now includes newer files from the active partition. This prevents the omission of some setup files.
3. Alarm Simulation now respects restricted map viewing, and will not allow a user to view restricted maps without the appropriate permission.
4. The PPS Custom Handler has been changed to support tamper alarms.
5. Intelli-FLEX cut and climb alarms have been combined into one alarm type. This prevents a problem, which caused output points to become latched.
6. Communications to the David cards have been improved.

7. It is now possible to have Sennet Networks in the same system configured as single and dual ported. Previously, it was not possible to mix the two configurations in one system.
8. Improvements were made to the accuracy of timed group events.
9. Problems that have been fixed
10. The following problems have been corrected in software version 6.19.
11. A problem was fixed in alarm simulation, in which sensor state changes sent when the Pause/Resume screen was being displayed, would cause the map to be incorrectly displayed, and would prevent further alarm simulations from occurring.
12. A problem was fixed in Site Creation database conversions, in which CUs that included blue heat cards were being incorrectly converted. This problem affected early 6.1x databases.
13. A problem was fixed in which daylight savings time was not taken into account when a Starcom device (master) was determining the time for a CU.
14. Active and previously active detection alarms on the CM were both displayed as "D" on the status report. The detection alarms are now correctly indicated as "d" for previously active alarms and "D" for active alarms.
15. A problem was fixed in Alarm Simulation, where under certain conditions the map screen would be displayed rather than the pause/resume screen.
16. A problem with the maintenance test reports, whereby the test button, report rate, and print rate were not necessarily accurate after the first page of equipment, has been corrected.
17. A problem has been corrected with the alarm simulation. On the pause/resume screen the user could enter and exit the help menu, but not be returned to the pause/resume screen.

## Version 6.18

This section includes an explanation of the new support features and software changes that are incorporated in the version 6.18 software.

### New support features

The following support feature has been added to software version 6.18:

1. Support has been added for the Colorgraphic 612402 dual VGA card.



## Software Changes

The following software changes have been incorporated in version 6.18:

1. It is now possible to adjust the Acknowledge Timeout for video switchers. This was done for VS that are connected via the Blue Heat or RocketPort serial expansion cards.
2. Two Sennet network X/Y data path error rate reporting problems, related to Perimitrax Sensor Modules, have been corrected. When the X/Y data path error rate was extremely high for a Sensor Module, the datapath error rates could be missed, or reported incorrectly. In addition, for a dual ported Network Controller that was connected to two CUs, the data path error alarm could be intermittent.
3. The CM reset report now identifies the CM by its assigned number rather than by the port to which it is connected.
4. Two problems related to Panasonic video switchers were corrected; an intermittent communication failure that always cleared immediately, and a rare lock up condition.
5. The Ziton CP3 fire alarm Custom Handler now accepts alarm points.

## Version 6.17

This section includes an explanation of new support features and software changes that are incorporated in the version 6.17 software.

### New support features

The following support features have been added to software version 6.17:

1. Support has been added for the RocketPort 8 Universal PCI serial port expansion card.
2. Support has been added for the Colorgraphic 612602 video card.
3. The Siemens Video Control Bar custom handler and custom output driver were ported from QNX2.
4. A custom handler was written to support an external timer for synchronization.

## Software Changes

The following software changes have been incorporated in version 6.17:

1. The speed for operator input on the login screens has been improved.

2. The PS/2 mouse can now be disconnected, and will become operable within 30 seconds of reconnection.
3. CCTV monitor numbers can no longer be higher than the number of monitors that are configured for a given video switcher.
4. A problem was corrected whereby the alarm beep could become a single beep (rather than three beeps) after running an alarm simulation.
5. Version 6.16
6. This section includes an explanation of new support features and software changes that are incorporated in the version 6.16 software.
7. New support features
8. The following support features have been added to software version 6.16:
9. Support has been added for the Pelco ASCII protocol.
10. Support has been added for the Blue Heat 2-port serial card.

## Software Changes

The following software changes have been incorporated in version 6.16:

1. A reset report has been added for the Perimitrax Sensor Module.

## Version 6.15

This section includes an explanation of new support features and software changes that are incorporated in the version 6.15 software.

### New support features

The following support feature has been added to software version 6.15:

1. Support has been added for Zip Drive backup.

## Software Changes

The following software changes have been incorporated in version 6.15:

1. Previously, when the Sennet Network X or Y datapath was changed (enabled/disabled), the datapath error reporting for individual Sennet cards was also changed. Now, disabling the Sennet Network X or Y datapath, still disables the datapath error reporting for individual Sennet cards. However, enabling the Sennet Network X or Y datapath does

not enable the error reporting for individual cards. Error reporting for individual Sennet cards must be manually enabled, on a card by card basis.

2. It is now possible to select the alarm list when there is only one alarm.

## Version 6.14

This section includes an explanation of the software changes that are incorporated in the version 6.14 software.

### Software Changes

The following software changes have been incorporated in version 6.14:

1. The generic memory mapping routines have been changed to correct for PCI addresses that are not on 4k memory boundaries. This was required for the Siemens Simatic computer.
2. An issue with the Multifunction card, whereby it was affecting serial switching cards at 22 minutes after the hour, has been resolved.
3. Bypassed FOIDS input points now appear in the bypassed points summary.
4. Sample Site Data now defaults to a PS/2 mouse and the PCI Multifunction card.

## Version 6.13

This section includes an explanation of new support features and software changes that are incorporated in the version 6.13 software.

### New support features

The following support features have been added to software version 6.13:

1. Support has been added for the WSA mimic panel, the Ziton ZCP2 and 3 fire alarm systems, and the Aritech type 1 and 2 security panels custom handlers.
2. It is now possible to adjust the following Sennet® Network Parameters:  
Enable X/Y data path at the Network Controller  
Adjust the Tx time before polling  
Adjust the Slave retry time  
Adjust Slave fail re-audits (nw\_fail\_filter)  
Adjust the X/Y data path error period
3. Support has been added for the Microcomm, and Secutron custom handlers.

4. Support has been added for the RocketPort universal PCI 16-port serial cards.
5. The ISA version Multifunction card can now be tested similarly to the PCI version, from the Senstar 100 Startup menu (F7 Test Multifunction Card).
6. Weather Logger Feedback control points have been added to disable weather alarm logging (wlog files) and weather datalogging (wdat files). The output control points are WL card 0 point 1 (weather alarm logging) and point 2 (weather datalogging). These points can be tied in to the OFF (secure) output drive of a display zone that has scheduled access and control defined. This allows weather logging to be automatically scheduled.

### Software Changes

The following software changes have been incorporated in version 6.13:

1. The IRQ verification has been improved for any serial ports not using the QNX standard device driver (i.e., serial port cards other than Blue Heat or RocketPort).
2. The ACK transmission operation has been improved for Custom Handlers connected to serial ports using the QNX standard device driver (i.e., Blue Heat or RocketPort serial cards).
3. The sanity hits within integ.exe are now faster to compensate for the faster timing of the Multifunction card.
4. Opr\_nor.exe has been changed so that map stepping does not cause a persistent current output drive, if one is defined in the first zone (sensor) of the map. In addition, a change has been made so that first level output timeouts to the Panasonic 500 series VS will not cause opr\_nor.exe to halt automatic video stepping.
5. A new Joint Domain Alarm Processing (JDAP) relation has been added - the absolute AND, for which the terms of the equation must be detected as TRUE. The absolute AND has no conditional TRUE, which becomes automatically active if the term originates on a hardware device that has a fatal failure (e.g., Comm Fail).
6. Delayed ON (activation filtering) has been added to the VTICS custom output driver.
7. A faster alarm beep has been added for higher priority alarms. The faster alarm beep is set in system options.
8. A CU database exchange timeout diagnostic alarm has been added for when mate link communication is marginal.

9. The settable range of Sennet device input noise tolerance has been increased from 0.0 - 0.3 volts, to 0.0 - 0.6 volts. In addition, the ability to specify an alternate resistor value, customized by the user, for Sennet inputs where single resistor supervision is available, has been added.

## Version 6.12

This section includes an explanation of new support features and software changes that are incorporated in the version 6.12 software.

### New support features

The following support feature has been added to software version 6.12:

1. Software detection support has been added for the 7 PCI/6 ISA slot computer (J2SP0900) and for the auto-detection of ISA ARCNET cards.

### Software Changes

The following software changes have been incorporated in version 6.12:

1. The input point bypass option has been added to also work within the weather logger process.
2. A startup toggle (ON/OFF point and output point number 1) has been added to disable alarm reporting from the PALS Custom handler.
3. Support for the QNX4 ARCNET driver initialization in the J2SP0900 computer has been improved for operation in a 2 CU network, where there is an increased probability of a single CU booting without communications to another CU. The improved s100\_netmon.exe initialization program will regularly provide large periods where it does not monopolize the CPU's resources. This will allow other Senstar 100 processes to run, as required, and will result in a more responsive system.

## Version 6.11

This section includes an explanation of new support features and software changes that are incorporated in the version 6.11 software. Version 6.11 includes the support features and software changes up to and including version 6.05.

### New support features

The following support features have been added to software version 6.11:

1. Support has been added for 4 and 8 port Blue Heat PCI multi-serial (port) expansion cards.  
Note: Sennet® (SN) and Control Module (CM) devices that are connected to Blue Heat ports must have an ACK timeout set in the site database.
2. Support has been added for the PCI Multifunction card relay outputs.  
Note: The PCI Multifunction card serial ports can no longer be used to communicate with secondary devices (i.e., touchscreen, mouse, serial printer).

### Software Changes

The following software changes have been incorporated in version 6.11:

1. The Senstar 100 system now comes in one size, with all options enabled. If a Multifunction card is installed in the computer, the system is a Senstar 100. If there is no Multifunction card installed, the system is a Central Controller with map and site size restrictions, and fewer options than the Senstar 100.
2. Languages can be loaded under single monitor site creation.
3. The system Supervisor can enable or restrict access to the site creation utility, and site data loading, individually.
4. Additional menu navigation has been added to the Config HDW site creation menus.
5. Additional functions have been added to the boot disk.

## Version 6.10

This section includes an explanation of new support features that are incorporated in the version 6.10 software. Version 6.10 includes the support features and software changes up to and including version 6.03.

### New support features

The following support features have been added to software version 6.11:

1. Support has been added to allow serial port Baud rates up to 38400 Baud. The previous maximum was 9600 Baud.
2. Preliminary support has been added for the PCI Multifunction card.
3. Support has been added for 8 and 16 port RocketPort® PCI multi-serial (port) expansion cards.  
Note: Sennet (SN) and Control Module (CM) devices that are connected to RocketPort serial ports must have an ACK timeout set in the site database.



## Version 6.06

This section includes an explanation of new support features and software changes that are incorporated in the version 6.06 software.

### New support features

The following support feature has been added to software version 6.06:

1. Virtual memory points that are bypassed are now reported.

### Software Changes

The following software changes have been incorporated in version 6.06:

1. The operator and maintenance test functions can be changed to support individual SN card tests. A SN device test becomes a sequenced card test if the /actv/user\_text/nw\_test\_time file exists. A ¶ symbol as the first character of this file provides the default value 20 second delay. The ¶ symbol is obtained by typing <Ctrl>t.
2. The Intelli-FLEX test has also been changed to support the sequencing of each card test by one second (depends on whether the /actv/user\_text/nw\_test\_time file exists).
3. The maximum setting range for secondary alarm acknowledge and process transfers has been extended from 15 minutes to 30 minutes.

## Version 6.05

This section includes an explanation of new support features and software changes that are incorporated in the version 6.05 software.

### New support features

The following support features have been added to software version 6.05:

1. Support has been added for the VTICS (Voice Type Inmate Cell Call System) custom output driver.
2. Support has been added for the Activation Filter custom output driver.
3. A restart function has been added for the Hostess™ iA card, for instances when a problem is detected with the card.
4. The David® 300 support has been fully ported from the QNX®2 version 5.45 software. In addition, corrections and enhancements have been added to the support.

5. Support has been added for the Simplex Cell Call, and the Siemens®-Cerberus MXL Fire and Riot Alarm panels custom handlers.

### Software Changes

The following software changes have been incorporated in version 6.05:

1. The ability to change Network Controller (NC) parameters from within maint\_db has been added.
2. A startup toggle (ON/OFF point and output point number 1) has been added to disable alarm reporting from the PALS Custom handler.
3. The periph\_in process has been changed so that Local CTRL bit fail reports in the activity archive, are generated only for Sensor Module (SM) cards.
4. An RTS/DTR toggle has been added to wake up the Panasonic 500 video switcher, after a serial switchover.
5. The Edwards custom handler has been changed so that space padded lines will not affect the alphabetic sort and search functions.
6. The Sennet cards X/Y data paths default settings have been changed to disabled. Previously the data paths were enabled. This has also been changed in the sample site databases.
7. A file size check has been added before copying to DOS formatted disks, so that maint\_pro.exe does not block on the file copy, while the file copy is waiting for the user to insert another floppy disk. This change affects the copying of files greater than 1.44 Mb.
8. The audit period for the Sennet X/Y data path error checking has been increased to four times the timeout frequency. In addition, it is now possible to view data path errors when the path is disabled, by selecting the Status Report View All mode.
9. The Maintenance user is now prevented from altering Sensor Module (SM) or Intelli-FLEX (IF) parameters before the parameters have been uploaded, after a re-activation/reboot. This prevention function can be superseded by advanced menu entry.
10. An alternate site data activation mode has been added that will keep current Sennet card parameters. The alternate mode will reuse all applicable current active Sennet settings, including TU, LTU, and SM input point parameters (debounce time, noise tolerance, line drop) and SM and IF detection parameter settings.

11. Protection has been added to the super\_pro.exe archive file read and display, to prevent a corrupt file structure from causing the process to terminate. The file structure could be corrupted by a poorly formatted datalog string, received from a connected Starcom device.
12. The time that a Sennet card can be online without having sent a slave diagnostic report has been increased from 10 to 60 seconds. After the timeout (now 60 seconds) a card reset message is sent. In addition, resetting the slave card time for the reconfiguration request has been added, for when a slave card comes back online. In this way, card configuration timeout comparisons are meaningful, and comparisons do not automatically result in performing slave reconfigurations.
13. DTR and RTS are now explicitly set in the touchscreen driver.
14. The automatic background download of IF parameters from the maintenance database is now prevented if not in Host mode (no previous required upload has occurred).
15. The equipment fail report code has been combined into the same archive (log) text line with the equipment fault declaration.
2. The Intelli-FLEX™ parameter upload function has been added, and occurs after new site activation.
3. The Sennet data paths (X and Y) are now individually monitored for errors. Excessive errors cause a hardware fault, if the data path is enabled in Site Creation. Previously, the enabled flag was used only to determine whether the errors were shown in the status report. Now, the enabled flag enables and disables the X/Y data path error rate monitoring. NOTE: A data path may still be connected, and providing communications to the Sennet card, even if it is set to disabled.
4. The indexing on the /etc/config/hdwc\_intr.xx file has been changed from the xx being the CU number to the xx being the QNX Node ID. As a result, to index to the correct file, the network node number MUST be set in the CU Configure Hardware menu of the Site Creation utility.
5. The way that interrupts are verified by sysinit.exe has been changed to prevent incorrect assignment of interrupts to serial ports.
6. Another address range has been added for the DFLEX 8 multi-serial port card to provide alternative addresses due to conflicts with I/O ports 0X290 and 0X298 in some computers. NOTE: The new DFLEX address range includes 0X278. Therefore, the system parallel port should be set to an address other than 0X278. If two DFLEX cards and a network are used, then the network IRQ MUST be changed to 10, to allow the second DFLEX card to use IRQ 5 (via edit of the /etc/config/hdwc\_intr.nn file).

## Version 6.04

This section includes an explanation of new support features and software changes that are incorporated in the version 6.04 software.

### New support features

The following support features have been added to software version 6.04:

1. Support has been added for the Portable Alarm Location System (PALS) custom handler.
2. Support has been added for the Digital Video Capture System (DVCS) custom handler.
3. A network active monitor utility has been added to monitor the QNX®4 ARCNET® driver, and to prevent the driver from failing on initialization. This was required for the MITAC® 3685A computer.

### Software Changes

The following software changes have been incorporated in version 6.04:

1. The Virtual Memory (VM) device is now included in the input point bypass function.

7. It is now possible to select IRQs 3, 4, 5, 9, 10, 11, or 12 for the Hostess i smart cards using the /etc/config/hdwc\_intr.nn file.
8. The map concealment files are now the first type of files to be transferred during resync.
9. A soft reboot function has been added, and is activated under the same circumstances as the hardware watchdog timer timeout. (The soft reboot function relies on only one program (integ.exe) NOT going insane.) This function will provide system sanity reboot for Central Controllers (no Multifunction card, hence no hardware watchdog timer). The soft reboot function is disabled by creating a file (/work/save/Dont\_soft\_reboot) in the event that a process termination message is desired, to be viewed, before automatic reboot.

## Version 6.03

This section includes an explanation of new support features and software changes that are incorporated in the version 6.03 software.

### New support features

The following support features have been added to software version 6.03:

1. The capability of saving all maintenance reports to DOS formatted floppy disks has been added. This includes plot data and status reports.
2. Custom support for the Siemens Matrix switcher was added with the porting of the SIMATRIX custom handler (CH).
3. The custom output driver support has been added into the Senstar 100 baseline. The time periods of the flash and pulse output drives has been expanded within custom output driver number 1. The times are now definable up to hours. The custom message output driver (driver type 2) (formerly called the custom VS message output driver) was ported from QNX 2.
4. Support has been added for an interface unit (IU) communication output timeout reset for non-smart cards. If an output timeout occurs for an IU on a non-smart card, the output timeout can be reset after communications are re-established.
5. The dio\_ctrl.exe process supports a second PCI DIO card in a computer.
6. Support has been added to enable a contact VS device to use CU DIO card outputs.

### Software Changes

The following software changes have been incorporated in version 6.03:

1. The maximum number of maps has been changed from 64 to 128.
2. The way that the status report data is presented has been changed. Previously, an upper case letter indicated that the input status had changed to active since the last reset, or print report request. This is now indicated by a lower case letter. An upper case letter is used to indicate that an input is currently active.
3. The ISR for the American Dynamics video switcher (VS) has been changed so that output timeouts can be detected. Now, control units (CUs) can accurately determine if they can transmit to the VS for indirect (via the other CU) video selection.

4. The output configuration reports have been changed to display more custom output type data. These reports have been standardized for all devices.
5. The Virtual Memory (VM) device has been added to opt\_pro start and stop simulation point status save and restore.
6. A soft reboot capability has been added to the integ.exe process. It can now reboot the computer on fatal failures, even if no reset wiring (or Multifunction card) is installed.
7. The information listed in the View Software Configuration screen has been expanded.
8. The Sennet status report has been changed to indicate:
  9. card software version,
  10. minimum and maximum voltages for LTU inputs,
  11. error counts to a maximum of 255 (increased from 100),
  12. that data is unavailable by '-' (dashes),
  13. current active conditions by '\*' (asterisk),
  14. active since last report reset with '+' (square),
  15. card status for the control panel (CP).
16. The David (DV), Fiber Sensys (FS) and FOIDS® (FI) devices have been added to the report sent to maint\_db.exe when an output timeout has occurred. Proper output timeout reporting to maint\_db.exe is ensured upon an output\_reset.
17. The VM device status report screen can be reset.
18. The display of the Video Mode softkey is governed by the same rules as the messages sent out to the video switcher (VS).  
The Video Mode softkey is displayed:
  19. if direct communications are available and the CU has direct control of the VS, or
  20. if indirect communications are available and the CU has indirect control of the VS (that CU's monitor configuration is unique).
21. In addition, if proper communications are not available, as described above, the softkey is now displayed in DENY\_ACCESS (greyed-out) mode.
22. A status report will be immediately displayed when all data has been received from a Sennet Network.





## Version 6.02

This section includes an explanation of new support features and software changes that have been incorporated in the version 6.02 software.

### New support features

The following support features have been added to software version 6.02:

1. The Senstar 100 now supports two Predator® LT2 Dual VGA cards (PCI). This provides support for the auxiliary monitor.
2. Support for PCI DIO cards has been added.
3. Language conversion support has been added. Language load support has been added for QNX 2 language versions 5.42 and 5.52. Language conversion is not done automatically with a software upgrade load as it was in QNX 2. Language conversion is performed, as required, on all languages that are on the hard disk, when any language is loaded. Language conversion can also be performed manually, in order to update existing languages on the hard disk. (The same procedure that is used for the update conversion of site creation data in QNX 4 is used for language conversion). The language conversion program is `cvrt_lang_db.exe`. It creates files named `/work/tmp/cfig/lang/langname/cvrt_lang_log.xxx`. These files can be viewed to determine what language conversions were necessary to update a language so that the converted language can be edited, and checked where the updates occurred. Language versions that are convertible include QNX 2 Senstar 100 versions 5.42 to 5.45 and version 5.55.
4. Up to two DFLEX8 cards (ISA) are now supported. This replaces the Smart Hostess, Hostess i8 and single Hostess i16 cards.
5. The import of QNX 2 user data support has been added in the setup menus.
6. Serial printer support has been added to QNX 4.
7. Support for CH types 3 digiLARM device and 4 Edwards device has been added.

### Software Changes

The following software changes have been incorporated in version 6.02:

1. Some computers prevented access to the Multifunction card serial ports until the UART was written to. Code was added to do this in `sysinit.exe` so that the serial ports are detected and included in the computer hardware list. In addition, a delay was added in the test interrupt routine.

2. It is now possible to do site creation with a single monitor, when the secondary monitor is disabled.
3. The target system information has been added to Site Creation data so that the setting is saved onto floppy disk and will follow Site Creation data reloads.
4. Some computers were corrupting dual ported smart card memory on boot-up. Senstar 100 now waits for the card to signal that the memory is OK after data load. In addition, `cust_hand.exe`, `periph_in/out.exe` task waits were introduced, based on the memory data being valid.
5. It is now possible to read a screen set of Alarm Prompt or Alarm Location data from a temporary file set up by the QNX editor. In addition, the cut and paste function for alarm prompts and locations has been expanded to more than one line.
6. It is now possible to perform alarm simulation on a single CU in a multi-CU system.
7. Screens have been added for the System Shutdown and End of Alarm Simulation.

## Version 6.01

This section includes an explanation of new support features that have been incorporated in the version 6.01 software.

### New support features

The following support feature has been added to software version 6.01:

1. In previous software versions, it was mandatory to copy Activity Archive files to floppy disk before the files could be deleted. The copying files to floppy disk portion of this function is now a selectable option under the System Options menu. The default setting (option enabled) for copying Activity Archive files remains unchanged from previous versions.

## Version 6.00

**The QNX 4 Senstar 100 version 6.00 software is functionally equivalent to QNX 2 version 5.55.**

This section includes an explanation of new support features and software changes that have been incorporated in the version 6.00 software.

### New support features

The following support features have been added to software version 6.00:



1. Senstar 100 now operates under the QNX 4 Operating System (OS) Version 4.23. This is a POSIX compliant OS, which provides support for modern computers and equipment.

Although the user interface remains the same, there are numerous software enhancements to the system. The QNX 4 OS provides:

- support for modern computers, i.e. Pentium® III, Pentium IV (the QNX 2 limit was Pentium I-166),
  - support for hard disks larger than 8 gigabytes,
  - support for modern peripheral equipment such as CD-ROM,
  - support for the PS/2 mouse,
  - improved floppy disk access speed, and
  - support for Ethernet.
2. Support has been added for the Colorgraphic® Predator LT dual-VGA card. The Predator dual-VGA card (PCI card) is the replacement for the Colorgraphic Warp dual-VGA card. All previous dual-VGA cards are still supported by software. However, some older cards (e.g., MVP2) will not operate on faster computers.
  3. Support has been added for Ethernet networks. Senstar 100 networked system CUs can now communicate via Ethernet and ARCNET.
  6. Although the QNX 2 and QNX 4 floppy disks are not compatible, the Senstar 100 version 6.0x software can read QNX 2 disks. The Senstar 100 version 6.00 software automatically converts site creation data (for Senstar 100 software versions 5.41, 5.42, 5.51 and 5.52) to version 6.00. Language data conversion support is pending. Any site creation data versions prior to 5.41 must first be upgraded under QNX 2, and then be converted to version 6.00. The copy from floppy menu in the site creation utility allows the selection of either QNX 2 or QNX 4 floppy disks.
  7. Custom Handler integration is now a part of the Senstar 100 application and is no longer supplied separately. This is to prevent version incompatibility issues. Selecting CH drivers is now done within site creation, and not by installed separate software. (There is no longer any CH specific software). Each QNX 2 CH type will be converted to QNX 4, as required. Currently, the generic Starcom CH (Starcom without audit) and the SurGard CH have been ported.
  8. There is a different parallel port driver in the QNX4 software version. If the LPT port address is not selected correctly, the board field in the hardware configuration listing will be '?????????', and the printer will not work. Therefore, in QNX 4 it is necessary to select the correct LPT in site creation, to coincide with the BIOS setting. Select the LPT as follows: LPT1:3BCh, LPT2:378h, LPT3:278h. Formerly, in the QNX 2 version, if the port address was not selected correctly, the board field in the hardware configuration listing was '?????????'. However, this did not cause a port discrepancy as the QNX 2 software automatically adjusted to the different address.

## Software Changes

The following software changes have been incorporated in version 6.00:

1. The Central Controller is capable of having up to four maps. A "target system" field has been added in the site creation main screen to further define the type of Central Controller.
2. The Site Data generation and activation speed has been improved.
3. There have been significant changes to the installation program for the QNX 4 version. Refer to the QNX 4 Operating System Installation Instructions (J2DA0307) for details.
4. Network node numbers can now be independent of CU numbers. In QNX 2 the network card determined the node number. With QNX 4, the node number is selected during the OS software installation.
5. There is a new menu in setup, under file and data utilities that is used to backup and load user data. Formerly, the computer had to be started from the boot floppy to backup user data.
9. The QNX 4 floppy disk access speed is much faster. This improves the speed of all floppy disk related activities such as activity archiving, site data loading and site data backups. Because QNX 4 is a 32-bit operating system, many of the files are larger. Therefore, it is now standard to archive (compress) the files to disk.
10. The DOS Activity Archive is now a standard feature. Formerly, it was a separately purchased option. Printers are frequently abandoned in favour of the activity archive. Copying the activity archives to DOS disks enables them to be used with standard analysis tools in a Windows® environment.
11. Support for monochrome monitors has been discontinued in version 6.00.d



Website: [www.senstar.com](http://www.senstar.com) email: [info@senstar.com](mailto:info@senstar.com)

FlexPS, Senstar and the Senstar logo are registered trademarks and FlexZone is a trademark of Senstar Corporation. Other Product names and Company names included in this document are used only for identification purposes, and are the property of, and may be trademarks of, their respective owners. Copyright © 2014. All rights reserved. The information in this document is subject to change without notice. Printed in Canada.

# Senstar® 100

## Application Note # 06

December 18, 2014  
J2DA0609-001, Rev A

---

# Starcom IP implementation

---

## Introduction

Starcom (Version 2.0) is Senstar's generic serial data interface protocol as defined in TM-8045-001-00C. Senstar 100 (S100) supports one or many Starcom serial device interfaces as defined in each S100 database. The Starcom interface provides integration of a wide variety of host devices into the S100 PIDS for input / output control and display purposes. Any host device that has implemented a Starcom communications interface can be connected to S100 via a serial port.

With the installation of QNX4 TCP/IP networking protocols on S100 systems as part of the Network Time Protocol (NTP) function it is possible to provide the Starcom communications protocol with IP sockets connectivity. Since most Senstar 100 PCs have Ethernet Network Interface Cards (NIC) hardware, a Starcom IP implementation can take advantage of Ethernet LAN infrastructure for S100 and Starcom device connectivity.

Starcom IP Implementation is available with Senstar 100 version 6.22 and later.

## Protocol Messages

Starcom IP will use the same application messages as serial Starcom. See the Starcom Communication Protocol Version 2.0 Technical Memorandum (TM-8045/001/00). Physical (serial) interface control will no longer be required and so will not be part of the data packet exchange. Serial packet escape codes, STX, ETX, handshaking, error detection and flow control will be dropped. As such, message handlers above the physical and network interface layers i.e., the transport layer, will not need to be changed on any host implementation.

## Message Format

Messages sent or received have the following format:

SIG	LEN	DATA
-----	-----	------

Where:

SIG: signature bytes: always 0xE0, 0x34

LEN: 2 byte length of data block: LSB, MSB e.g., 07 00

DATA: data bytes to be sent or received. This constitutes the Starcom application message(s).



e.g., SET POINT NUMBER and ALARM STATUS VALUE messages:

02	02	01	00	03	01	01
----	----	----	----	----	----	----

Messages are variable length, they start with a 2 byte Signature (0xE0, 0x34) followed by a 2 byte Length. The Length gives the number of data bytes making up the message data. The maximum length supported is 128 bytes. This is more than enough since Starcom protocol messages are always less than 20 bytes (except for DATALOG messages).

For the above SET POINT NUMBER and ALARM STATUS VALUE Starcom message, the IP data packet (in hex bytes) is:

E0	34	07	00	02	02	01	00	03	01	01
----	----	----	----	----	----	----	----	----	----	----

## Senstar 100 database changes

To take advantage of the new IP connectivity existing Starcom devices in S100 databases will only need to have their physical connection type changed using the S100 site creation hardware setup application. The device i/o point space and application message exchange with the S100 system will not change. Similarly the physical Starcom serial interface device will need to change to a Starcom IP interface device. This IP capable client host device will need to allow for redefinition of its physical interface from serial to IP, and to manage redundant IP connections, one to the PIDS and one to the FAAS.

## Connections

Senstar 100 systems often are multi-CU (Control Unit). A CU is a PC running the S100 software and a site specific database. The dual S100 system is to distribute operator functionality and provide redundancy. In CSC terminology these CUs are known as the PIDS and the FAAS. Generally speaking when both CUs are UP, the PIDS handles perimeter sensors and cameras, and the FAAS handles everything else (internal building sensors and controls).

The serial interface from a Starcom device is split via a serial mux / switch to connect to this pair of S100 PCs (PIDS and FAAS). The S100 system handles which connection is active, the Starcom device is unaware it can be communicating with different PCs.

In an Ethernet LAN the Starcom IP client device will now need to be configurable to connect to one S100 (PIDS) or the other (FAAS). One to be a primary interface choice, the second to be an alternate if the connection is lost. Connection timeouts and retries should be configurable as well.

## Upgrade of Senstar 100 Software

Senstar 100 support for Starcom IP is available with software (s/w) version 6.22.

To upgrade to version 6.22:

- a. Boot the CU with the QNX boot disk (p/n J2SW2200).
- b. Load J2SW2300-622 and J2SW2500-622 software packages.

Note that site creation database version has been incremented to handle the Starcom IP connectivity settings. After upgrade to version site creation s/w version 6.22 you must up convert your site creation database(s) using the command:



### # cvrt\_cfg\_db.exe

On the QNX command line.

It is recommended that you save your site creation database(s) to floppy disk before performing the up conversion.

S100 application software version 6.22 will run on previous site data (e.g., version 6.21). However to get the Starcom IP connectivity you will have to regenerate your database with the new Starcom IP settings as you define in the site creation hardware configuration menus.

## Senstar 100 Configuration

Within site creation, hardware configuration menus the Starcom device type has added fields to define:

**Mode:** Server or Client, the Starcom device is usually a client (connects to a listening S100).

**IP Address:** in dotted decimal notation (e.g. 192.168.1.101).

**Port:** the base socket port number for the connection. This will be a port  $\geq 4001$ .

**IP primary node:** in a multi-CU database this defines the preferred connection, usually the lower node ID of the two CUs. In a single CU system this can be 0 to default to the current CU node ID.

**IP number of hosts:** this is typically 1. If the Starcom IP connection is to a dual-CU system then set this to 2.

Once these settings are entered, select a **NETWORK** port assignment for the Starcom device for each CU in the system.

### More on IP number of hosts

Typically the Starcom device is a client that connects to the one of the listening S100 servers, either the PIDS or the FAAS with preference given to the lower numbered CU node ID. This is usually the PIDS computer. If this connection is not available the Starcom device will alternately connect to the next higher numbered CU node ID (FAAS).

In the case of the S100 system operation as a client, it is asserted that this S100 is a single CU system that is connecting to a dual S100 system (PIDS and FAAS). The IP address defined for the Starcom interface is for the preferred connection. The alternate connection is determined by that IP address +1. Therefore it is necessary for the PIDS and FAAS servers in this case be adjacent IP addresses.

e.g.,

PIDS	192.168.1.101	
FAAS	192.168.1.102	
S100 Starcom Client	192.168.1.105	Single CU satellite system

Note this corresponding sample /etc/hosts file:

192.168.1.101	node1
192.168.1.102	node2
192.168.1.105	node5

## Example Site Creation Setup

The following is the setup of a single Starcom IP device in the PIDS/FAAS database and in a single CU satellite S100 database using the IP addresses listed above.



---

### S100 PIDS and FAAS (servers) database

#### Starcom Device

Mode	Client	: we are the server
IP	192.168.1.105	: this IP is for reference only
Port	4003	
IP primary node	1	: the dual-CU system will favour the connection to node 1
IP number of hosts	1	: connecting to a single CU system

### S100 Starcom Client database

#### Starcom Device

Mode	Server	: we are the client
IP	192.168.1.101	: this is the preferred server IP, alternate server IP is 192.168.1.102
Port	4003	
IP primary node	0	: default to my node ID
IP number of hosts	2	: connecting to a PIDS/FAAS system



---

Senstar Corporation website: [www.senstar.com](http://www.senstar.com) email: [info@senstar.com](mailto:info@senstar.com)

Senstar and the Senstar logo are registered trademarks, and Silver Network, FlexZone and Intelli-FLEX are trademarks of Senstar Corporation. Product names and Company names included in this document are used only for identification purposes, and are the property of, and may be trademarks of their respective owners. Copyright © 2014, . All rights reserved. The information in this document is subject to change without notice. Printed in Canada.

**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



**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.

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

---

**ES/SPEC-0401  
Revision 2  
November 2001**

**ELECTRONICS ENGINEERING  
SPECIFICATION**

**PERIMETER INTRUSION DETECTION 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 Perimeter Intrusion Detection System (PIDS) 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**

---

## TABLE OF CONTENTS

TABLE OF CONTENTS .....	2
ABBREVIATIONS .....	4
DEFINITIONS.....	5
1.0 INTRODUCTION.....	6
1.1 Commercial-Off-The-Self Equipment.....	6
1.2 Technical Acceptability.....	6
1.3 Equipment Procurement .....	7
1.4 Quantity of Equipment.....	7
2.0 APPLICABLE DOCUMENTS .....	8
3.0 REQUIREMENTS .....	9
3.1 General.....	9
3.1.1 Period of Operation .....	9
3.1.2 Wires, Cables, Conduits, Ducts .....	9
3.1.3 Wiring Supervision .....	9
3.1.4 Sabotage, Tampering and Survivability.....	9
3.1.5 Human Factors.....	10
3.1.6 Annunciation and Control Panels .....	10
3.2 System Configuration.....	10
3.2.1 Hardware.....	10
3.2.2 Software .....	11
3.2.3 Redundancy .....	11
3.2.4 Operator VDUs.....	12
3.2.5 Operator Controls.....	13
3.2.6 Maintenance/Satellite VDU .....	14
3.2.7 Maintenance/Satellite Controls.....	14
3.2.8 PIDS System Menus .....	14
3.3 PIDS Alarm Processing.....	15
3.3.1 Alarm Priorities .....	15
3.3.2 Alarm Simulation Priority.....	15
3.3.3 Alarm Processing.....	16
3.4 Intrusion Detection Systems .....	16
3.4.1 Data input.....	16
3.4.2 Data Output.....	17
3.4.3 Miscellaneous Inputs.....	17
3.4.4 Data Protocol .....	17
3.5 PIDS CCTV System .....	17
3.5.1 General .....	17
3.5.2 Vertical Interval Switcher.....	17
3.5.3 Dwell Time .....	18
3.5.4 VCR Control .....	18

---

---

3.5.5	CCTV Character Generator .....	18
3.5.6	Unused Camera Ports.....	18
3.5.7	Miscellaneous CCTV Functions .....	18
3.6	Time/Date Information .....	19
3.7	PIDS PA Control.....	19
3.7.1	PA Control.....	19
3.7.2	PIDS PA Control Panel .....	19
3.8	FDS Audio Monitoring Panel .....	19
3.9	SIDS CCTV Integration .....	19
3.9.1	General .....	19
3.9.2	Monitor and Control Panel Integration.....	20
3.9.3	SIDS VCR Integration .....	20
3.10	Data Logging .....	20
3.10.1	General .....	20
3.10.2	Event Definition .....	20
3.11	Printer Status.....	20
3.12	Status Panel.....	20
3.12.1	General .....	20
3.12.2	PIU Status Functions .....	21
3.13	UPS Integration.....	21
4.0	MECHANICAL CONFIGURATION .....	22
4.1	General.....	22
4.2	Console Design.....	22
4.3	VCR/Printer Rack.....	22
4.4	Console/Rack Colour Schemes .....	22
4.5	Environmental Requirements.....	22
4.6	Power Requirements.....	23
4.7	PIDS Maintenance Functions.....	23
4.7.1	PIDS Maintenance Functions.....	23
4.8	Installation Requirements.....	24
4.9	Documentation Requirements.....	24
4.10	Support Requirements .....	24
5.0	QUALITY ASSURANCE.....	25
5.1	General.....	25
6.0	DELIVERY.....	25
7.0	INTERFERENCE .....	25
8.0	SAFETY .....	25

---

---

## 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
GFE	Government Furnished Equipment
MCCP	Main Communications and Control Post
MDS	Motion Detection System
PA	Public Address
PIDS	Perimeter Intrusion Detection System
PIU	PIDS Integration Unit
RFP	Request for Proposal
SIDS	Supplementary Intrusion Detection System
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 Perimeter Intrusion Detection System Integration Unit (PIU). It will normally be specified when only the PIU portion of the MCCP Integration Console requires upgrading or replacement.

The PIU is the central controller and supporting infrastructure between the operator and the Perimeter Intrusion Detection System (PIDS) subsystems. The PIU shall incorporate hardware and software necessary to perform status monitoring, alarm processing and display and control over the subsystems.

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 PIU. The contractor shall provide documentation and training to the extent described in this and other identified specifications.

Subsystems to be integrated into the PIU will be identified in the Statement of Technical Requirements (STR) and may include some or all of the following:

- a. Motion Detection System (MDS);
- b. Fence Disturbance System (FDS);
- c. PIDS Closed Circuit Television (CCTV);
- d. Supplementary Intrusion Detection System (SIDS);
- e. Uninterruptable Power Supply (UPS); and
- f. PIDS Public Address (PA) System.

### 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 specification identified 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-0204	Specification for Video Vertical Interval Switchers
ES/SPEC-0402	Specification for PIDS Public Address Systems
ES/SPEC-0403	Specification for an SIDS Closed Circuit Television Systems
ES/SPEC-0409	Specification for PIDS Closed Circuit Television 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 PIU shall provide the operator with centralized monitoring and control capability over all PIDS to the extent specified in the STR. The PIU 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 PIU shall include an operator console incorporating the VDU and operator controls.

##### 3.1.1 **Period of Operation**

The PIU 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, call 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

The industrial grade PIDS 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 PIDS 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 PIU 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 PIDS system shall be via colour VDUs.

To eliminate confusion during an emergency situation, VDU screens shall have dedicated areas for alarms, secure and access states, operator prompts, operator commands, as well as time, day and date information.

To enhance operator understanding, full perimeter and facility graphics, complete with language descriptions, shall be used throughout to display and describe all system activity and instruction. The PIDS 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 fences, building structures, gates, sallyports, guard towers, patrol roads, etc.;
- location, type, condition, priority and real time status of all perimeter sensors; 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 sensor location and state. The following colours shall be supported for alarm sensors:

- green/light blue            secure,
- yellow                        masked,
- red                             alarm, and
- purple                         failed.

The operator displays for the PIDS 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 PIDS 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, using unlabelled or numerical function buttons or using a mouse 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 250 feet. Specific location detail shall be stipulated in the STR. Further operational requirements and parameters for these VDUs are detailed in subsequent sections entitled PIDS System Menus and PIDS 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 PIDS System Menus

The PIDS System 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 activate secure or access states for perimeter sensors;
- the ability to clear tamper, jam, fail and diagnostic alarms;
- scanning of all applicable site maps;
- an automatic or manual step through available camera views;
- the ability to set up an automatic camera viewing sequence; and
- the ability to perform sensor(s) test(s).

The maintenance/satellite menus shall permit control of the following:

- system time and date;
- activation or deactivation of any field device;
- generation of status, test and statistical reports for sensors and other field devices with available inputs;
- viewing of equipment configuration;
- generation of field profiles for MDS or FDS with available field inputs;



- generation of system resets, or threshold establishment for MDS or FDS with available field inputs;
- assignment of menus and accessibility for operators;
- creation of checklists and emergency instruction prompts; and
- simulation of alarms for operator training.

### 3.3 PIDS Alarm Processing

#### 3.3.1 Alarm Priorities

The PIU 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 PIU 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 PIU 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 PIU computer shall:

- cancel all existing simulated alarms;
- ignore any additional simulated alarms; and
- display the genuine alarm.

The PIU 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 PIDS subsystem, connected to the PIU controller shall cause the following action:

- full, plain language description and perimeter graphic display of the alarm condition, type and location
- audible signal, flashing alarm condition and emergency instruction set presentation
- activation of all CCTV related equipment, including automatic video switching to the assessable area, and video recording etc.
- initiation of an audio path via the PIDS public address system
- acknowledgement 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.
- ability to scroll through the previous 25 recorded alarm incidents.

### 3.4 Intrusion Detection Systems

#### 3.4.1 Data input

Bi-directional data links shall be provided in order for the PIU controller to receive the following information from the Motion Detection System and the Fence Disturbance Detection System:

- a. Alarm annunciation;
- b. System test results;
- c. Zone tamper annunciation;
- d. Zone tamper cancel;
- e. System fail annunciation;
- f. System fail cancel;
- g. Alarm information data (where applicable);
- h. Threshold information (where applicable); and
- j. Test alarm data and results (where applicable).

These messages shall be available using form C dry contact closures, or an EIA standard RS-232-C or RS-485 data link, as required by the MDS and the FDS system controllers.

---

#### 3.4.2 Data Output

Bi-directional data links shall be provided in order for the PIU controller to provide the following information to the MDS and FDS terminal equipment:

- a. Alarm acknowledge
- b. Alarm cancel
- c. Zone mask
- d. Zone secure
- e. Zone tamper acknowledge
- f. Test target activation (where applicable)
- g. System test

These messages shall be available using form C dry contact closures, or an EIA standard RS-232-C or RS-485 data link, as required by the MDS and the FDS system controllers.

#### 3.4.3 Miscellaneous Inputs

Where applicable, secondary outputs from FDS sensors, such as audio, shall be PIU software controlled and switchable on a sector by sector basis. In general, only the information from those sectors being assessed or 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 PIDS should conform to either the Senstar-Stellar Sennet or StarCom protocols. Any driver required for another protocol will be the responsibility of the contractor.

### 3.5 PIDS CCTV System

#### 3.5.1 General

The PIU shall integrate the CCTV assessment system described in Specification ES/SPEC -0409 and provided by others. The Contractor shall mount the PIDS CCTV monitors in the PIU console and shall connect the monitors and cameras to the switcher described in 3.5.2.

#### 3.5.2 Vertical Interval Switcher

The PIU shall integrate a Video Switcher, outlined in Specification ES/SPEC-0204. The PIU controller will control the video switcher to provide the following sequence options:

- a. zone sequence mode - the monitors sequence by zone, simultaneously displaying all cameras associated with a zone.
- b. group selection mode - the monitors sequence cameras by predesignated groupings, e.g., all sally port cameras, etc.

- c. alarm lock-up mode - all cameras associated with a zone are automatically displayed in the event of an MDS/FDS intrusion or tamper alarm.

Camera/monitor assignments shall be user defined, and variable through software control.

Sequence options (a) and (b) shall be user selectable. Camera sequences shall occur under operator control, or automatically by the PIU controller with a predefined dwell time. In case of an alarm, fail or tamper condition, the system shall revert immediately to the alarm lock-up mode to display the sector in question. Upon completion of the alarm/tamper condition, the system shall return to the sequence mode in use prior to the alarm lock-up mode.

### 3.5.3 Dwell Time

Dwell times used in the PIDS sequence modes shall be generated by the PIU controller and shall be user definable.

### 3.5.4 VCR Control

The PIU controller shall automatically start the record function of the VCRs, supplied by others as per Specification, ES/SPEC-0409, any time an alarm, fail or tamper condition has been received. The VCRs shall continue to record until an alarm cancel, tamper or fail reset has occurred.

Manual operation of the VCRs shall also be possible, using the appropriate VCR record button. VCR activity shall be relayed to the Data Logging system.

### 3.5.5 CCTV Character Generator

The PIU shall incorporate a video character generator interfaced to the video switcher and CCTV monitors. The character generator shall provide the appropriate camera number identification, date and time of day to each monitor. The size of the characters displayed shall be adjustable. The position of the camera number identification and date/time shall be independently adjustable and shall not be restricted to any portion of the monitor screen.

The CCTV character generator may be an integral part of the video switches specified in paragraph 3.5.2.

### 3.5.6 Unused Camera Ports

At anytime a CCTV monitor is unused, the PIU shall route a "video black" signal to the monitor. This may occur if a camera fails, is removed or if less than four PIDS CCTV cameras are assigned to a zone or group.

### 3.5.7 Miscellaneous CCTV Functions

The PIU controller shall be able to sense and annunciate end-of-tape conditions and relay this information to the data logging system.

---

Similarly, the wiper function of the camera housings, supplied by others as per ES/SPEC-0409 shall be PIU computer controlled on a sector by sector basis. This function shall be user operated and shall involve those units being assessed or monitored at that time.

### **3.6 Time/Date Information**

The PIU 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. This shall include the video systems and the data logger. 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.

### **3.7 PIDS PA Control**

#### **3.7.1 PA Control**

The PIU controller shall control the PA, as per Specification, ES/SPEC-0402. The PIDS PA provides one way voice communication to an alarmed sector. The output of the PA shall be switched on a sector by sector basis under alarm conditions as outlined in section 3.3 of this specification. In case of an alarm condition, the output of the PIDS PA shall be switched to the sector being assessed. The activation of the PA shall be under the control of the operator. Only the activation and actual use of the PIDS PA shall be logged by the data logger.

#### **3.7.2 PIDS PA Control Panel**

The PIU contractor shall provide a PIDS PA controls panel in the operator console. The panel shall contain a microphone input and test tone generator to permit access to and testing of the PIDS PA subsystem on a sector by sector basis.

### **3.8 FDS Audio Monitoring Panel**

The PIU contractor shall provide an FDS audio monitoring panel in the MCCP console as specified in the STR. The panel shall contain controls to permit the MCCP operator to monitor the audio signals generated by the FDS sensors via remote selection of FDS sector audio. A speaker shall be provided in the MCCP or the operator console for FDS audio monitoring. The contractor shall provide a volume control in the FDS audio monitoring panel to control the audio level. The contractor shall be responsible for the connection to and integration of the audio signals and controls with the audio monitoring panel.

### **3.9 SIDS CCTV Integration**

#### **3.9.1 General**

The SIDS CCTV system includes auxiliary cameras, camera controls, monitors and VCRs to provide general surveillance of various parts of the institution. The SIDS camera selection and positioning are controlled directly by the MCCP operator and not by the PIU controller. The SIDS is described in detail in Specification, ES/SPEC-0403.

---

### 3.9.2 Monitor and Control Panel Integration

The PIU Contractor shall integrate the SIDS CCTV monitors and control panels, in the quantities listed in the STR, into the PIU operator console. The contractor shall connect the monitors and control panels to the UPS power and to the associated cameras at the defined interface. Time and date information from the PIU shall be available on these monitors.

### 3.9.3 SIDS VCR Integration

The SIDS VCRs shall be mounted in the PIU VCR/printer housing as outlined in section 4.3. The contractor shall connect the VCRs to the UPS power and shall interface the VCRs to the SIDS monitors. The contractor shall install VCR RECORD ON/RECORD OFF push-buttons and an end of tape alarm light adjacent to the associated SIDS monitors and shall connect these controls to the VCRs.

### 3.10 Data Logging

#### 3.10.1 General

The PIU 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 PIU and integrated subsystems events. For each event, the activity file shall show the date, time and event description.

The PIU controller shall notify the operator via the display when the hard drive has reached 75% capacity, and again when it has reached 90% capacity. It shall prompt the operator to download the oldest files onto floppy diskettes. The PIU controller shall automatically purge the oldest files when the hard drive reaches 95% capacity, bringing the hard drive down to the 50% level.

#### 3.10.2 Event Definition

Data logged events will include all status changes of monitored subsystems including PIDS alarms, alarm acknowledgement, alarm clear/reset, UPS failure or bypass, PIU controller switch-over, etc. Normal sequencing of PIDS CCTV cameras will not be data logged.

### 3.11 Printer Status

The printer status shall be monitored by the PIU controller. Failure of the printer or a "paper-out" condition shall generate an alarm.

### 3.12 Status Panel

#### 3.12.1 General

The PIU shall contain a status panel containing indicators and controls for the major PIU units. The status panel shall also contain status lights for the UPS.

---

### **3.12.2 PIU Status Functions**

The status panel shall provide the following indicators and controls:

- a. PIU controller fail indicator; and
- b. Active PIU computer selection control.

### **3.13 UPS Integration**

The contractor shall connect UPS power into all PIU 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 AC regulator output or from an equivalent point in a distribution panel if available. All PIU equipment shall be connected to the UPS power. UPS status shall be monitored as per section 3.12.3.

---

#### 4.0 **MECHANICAL CONFIGURATION**

##### 4.1 **General**

The PIU 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 PIU operator. Specification ES/SPEC-0800 shall apply to the console design.

##### 4.3 **VCR/Printer Rack**

The PIU contractor shall provide a separate rack or stand to be located near the operator console for mounting the PIDS VCRs, SIDS VCRs and printer. All equipments installed below the top surface of the rack shall be mounted on slide out shelves equipped with positive stops. The VCR/printer rack shall be readily movable.

##### 4.4 **Console/Rack Colour Schemes**

The operator console, telephone table/attachment and VCR/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 PIU 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 PIDS Maintenance Functions

Monitoring the PIU and the PIDS subsystems shall be made available through the PIU 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 PIDS Maintenance Functions

The PIDS maintenance menus shall allow:

- a. Automated PIU systems and equipment fault diagnostics;
- b. Two-way data interface with MDS and FDS systems to provide sensor information such as test activation and results, thresholds, status reports, etc., where applicable;
- c. MDS and FDS sensor calibration, where applicable;
- d. PIU data base cross check information;
- e. Processor unit error monitoring;
- f. Data Logging port assignments;
- g. Statistical PIDS activity summary for MDS and FDS alarms and total "Mask" times, on a sector by sector basis, since the previous request for this data; and
- h. MDS and FDS target response information, where available.

---

**4.8 Installation Requirements**

The Perimeter Intrusion Detection System 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 Perimeter Intrusion Detection System Integration Unit documentation shall be provided in accordance with the ES/SOW-0101, Statement of Work.

**4.10 Support Requirements**

The Perimeter Intrusion Detection System 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 Perimeter Intrusion Detection System Integration Unit shall be in accordance with the ES/SOW-0101, Statement of Work.

---

**5.0 QUALITY ASSURANCE**

**5.1 General**

The Perimeter Intrusion Detection System 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 Perimeter Intrusion Detection System Integration Unit acceptance testing shall be conducted in accordance with the ES/SOW-0101, Statement of Work.

**6.0 DELIVERY**

Delivery requirements for the Perimeter Intrusion Detection System 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 Perimeter Intrusion Detection System Integration Unit equipment shall be in accordance with the ES/SOW-0102, Statement of Work.

**7.0 INTERFERENCE**

Performance of the Perimeter Intrusion Detection System Integration Unit 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 Perimeter Intrusion Detection System Integration Unit electrically powered elements shall meet the applicable Canadian Standards Association (CSA) standards.

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

---

**ES/SPEC-0402  
Revision 2  
8 March, 2002**

**ELECTRONICS ENGINEERING  
SPECIFICATION**

**PIDS PUBLIC ADDRESS SYSTEM  
FOR USE IN  
FEDERAL CORRECTIONAL INSTITUTIONS**

**AUTHORITY**

This Specification is approved by the Correctional Service of Canada for the procurement and Installation of Perimeter Intrusion Detection System (PIDS) Public Address (PA) 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

---

Prepared by :

  
Manager,  
Electronic Systems Research

Approved by :

  
Director,  
Engineering Services

8 Mar 02

---

## TABLE OF CONTENTS

TABLE OF CONTENTS .....	2
ABBREVIATIONS .....	4
DEFINITIONS .....	5
1.0 INTRODUCTION .....	6
1.1 General .....	6
1.2 Purpose .....	6
1.3 Commercial-Off-The-Shelf Equipment .....	6
1.4 Technical Acceptability .....	6
1.5 Equipment Procurement .....	7
1.6 Quantity of Equipment .....	7
2.0 APPLICABLE DOCUMENTS .....	8
3.0 REQUIREMENTS .....	9
3.1 General .....	9
3.1.1 System Configuration .....	9
3.1.2 System Capacity .....	9
3.1.3 Period of Operation .....	10
3.2 System Requirements .....	10
3.2.1 Wires, Cables, Conduits, Ducts .....	10
3.2.2 Control Equipment .....	10
3.2.3 Interface to Data Logger .....	10
3.3 Design Requirements .....	10
3.3.1 General .....	10
3.3.2 Wiring Supervision .....	11
3.3.3 Speaker Locations .....	11
3.3.4 Speaker Output .....	11
3.3.5 PA Switcher .....	11
3.3.6 Microphone .....	12
3.3.7 Speaker Mounting .....	12
3.3.8 Matching Transformer .....	12
3.3.9 Interchangeability .....	12
3.3.10 Facilities .....	12
3.3.11 System Performance on Switchover .....	12
3.3.12 Sabotage, Tampering and Survivability .....	13
3.3.13 Power Failure .....	13
3.3.14 System Failure .....	13
3.3.15 Human Factors .....	13

---

---

3.3.16	Existing Equipment .....	13
3.3.17	Control Panels .....	13
3.4	Functional Requirements.....	14
3.4.1	PA Control.....	14
3.4.2	PA Control Panel.....	14
3.5	Environmental Requirements .....	14
3.5.1	Indoor Equipment .....	14
3.5.2	Outdoor Equipment.....	14
3.6	Power Requirements.....	15
3.7	Installation Requirements .....	15
3.8	Documentation Requirements.....	15
3.9	Support Requirements .....	15
3.10	Training Requirements .....	16
4.0	QUALITY ASSURANCE .....	16
4.1	General .....	16
4.2	System Check Out.....	16
4.3	Final Acceptance Test Procedures.....	16
5.0	DELIVERY .....	16
6.0	INTERFERENCE .....	17
7.0	SAFETY .....	17

---

### 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
GFE	Government Furnished Equipment
MCCP	Main Communications and Control Post
PA	Public Address
PIDS	Perimeter Intrusion Detection System
RFP	Request for Proposal
SOW	Statement of Work
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 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 essential technical and functional requirements of the Correctional Service Canada (CSC) for the procurement and installation of a Public Address (PA) system to be used in conjunction with the Perimeter Intrusion Detection System (PIDS) in federal correctional institutions.

### 1.2 Purpose

The PIDS Public Address System provides the Main Communication and Control Post (MCCP) operator with one-way voice access into each zone of the PIDS-protected perimeter. The operator will use this system to communicate with intruders detected and observed by the PIDS system.

The system described herein would be applicable to new institutions to be constructed. It could also be retrofitted into existing institutions whenever it becomes necessary to add a perimeter Public Address capability or replace existing obsolete equipment.

### 1.3 Commercial-Off-The-Shelf Equipment

The PIDS PA 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 consoles.

### 1.4 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.

#### **1.5 Equipment Procurement**

Any ordering of equipment/material before the approval of the PIDS PA 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.

#### **1.6 Quantity of Equipment**

The quantity and location of the PIDS PA equipment required for CSC institutions will be contained in the specification identified in the Statement of 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 Electronic Systems for Correctional Service of Canada Institutions.
ES/SOW-0102	Statement of Work for Quality Control for installation of Electronic Systems in Federal Correctional Institutions.
ES/SPEC-0005	Specification for Main Communications and Control Post Integration Consoles
ES/SPEC-0401	Specification for Perimeter Intrusion Detection System Integration Units
EIA-310-C	Electronic Industry Association Standard for Racks, Panels and Associated Equipment

---

### 3.0 **REQUIREMENTS**

#### 3.1 **General**

The contractor shall design, supply, install, test and provide documentation and training for a Perimeter Intrusion Detection System Public Address system in accordance with the Standards, Specifications and Statements of Work specified in Section 2.0.

##### 3.1.1 **System Configuration**

The PIDS Public Address system elements shall be deployed zone by zone at the perimeter of the institution corresponding to the alarm and detection zones of the PIDS system. The system shall consist of the following elements in quantities to be determined by the contractor as required to support this requirement.

- a. PIDS Public Address Switcher consisting of:
  - a zone selector panel;
  - a microphone; and
  - test tone generator.
- b. Loudspeaker assemblies, one or more per zone, consisting of:
  - loudspeaker and matching transformer;
  - horn; and
  - mounting fixture.
- c. Common equipment (amplifiers, power supply, etc.)
- d. Interconnecting wire, cable, conduits, ducts, junction boxes, etc.

##### 3.1.2 **System Capacity**

The number of loudspeaker assemblies and the number of zones served by each shall be as specified in the STR. The system shall be of a modular design and it shall be possible at a future date to add more associated equipment to the basic installed complement without requiring the existing hardware.

---

### **3.1.3 Period of Operation**

The system and all associated equipment shall be rated for and capable of 24 hours per day, seven days per week operation.

## **3.2 System Requirements**

### **3.2.1 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.

### **3.2.2 Control Equipment**

The maximum feasible amount of common control equipment (power supplies, logic boards, amplifiers, etc.) shall be located in Terminal Equipment Spaces (TES) and Common Equipment Room (CER) provided for the purpose. These areas will be identified in the STR. It is preferred that only equipment such as control panels, etc., which the operator must access directly, should be located in the Control Posts.

### **3.2.3 Interface to Data Logger**

The contractor shall supply and install all necessary wiring and control equipment required to interface the system to the PIU Data Logger described in ES/SPEC-0005, Specification.

## **3.3 Design Requirements**

### **3.3.1 General**

To the maximum practical extent, off-the-shelf equipment should be selected for use in the system. New designs should be restricted to common interface areas, control panels and consoles, or unique devices for which an off-the-shelf item does not exist.

---

A design objective is to minimize the number of wires required between all elements of the system.

A space-diversity approach to system planning shall be employed to ensure that loss of one interconnection routing does not impair the operational capability of the complete system.

### 3.3.2 **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.

### 3.3.3 **Speaker Locations**

Speakers shall be located to provide complete coverage of the assigned zones.

### 3.3.4 **Speaker Output**

At any point in the assigned zone, the voice output shall be intelligible in the presence of the highest level of background audio interference normally encountered at that point (e.g., high wind, etc.)

### 3.3.5 **PA Switcher**

The PIDS PA Switcher shall be controlled by the PIU processor. The switcher shall enable the selection of a one-way voice path to each perimeter zone on a mutually exclusive basis. The zone selected shall be visible on the front panel of the PIDS PA switcher.

The PIDS PA switcher shall meet the following requirements:

- a. equipped with an adjustable test tone generator;
- b. capacity for up to 15 perimeter zones;
- c. installed in an Electronic Industries Association (EIA) standard 19" equipment rack;
- d. equipped with connectorized inputs/outputs; and
- e. system alarm outputs for power supply failure, loop continuity failure, and switching relay failure.

---

#### 3.3.6 Microphone

The microphone shall be co-located with the PIDS Public Address Control Panel, and shall be used to communicate with the selected zone. The microphone shall be equipped with an integral push-to-talk switch which will permit the operator to open the voice path to the selected zone. The microphone shall be a hand-held type and attached to the PIU console via a spring clip retainer.

#### 3.3.7 Speaker Mounting

The speakers shall be installed outdoors and shall be rugged, weatherproof units capable of satisfactory operation under the environmental conditions of this specification. The speaker units and their mountings shall exhibit high resistance to damage or destruction due to deliberate, physical abuse. The contractor shall submit a sample of the unit he proposes to use for approval prior to proceeding with procurement of these parts. Speakers shall be mounted so as to be unreachable without climbing aids such as ladders, etc. Speakers shall be mounted on the outside of the inner perimeter fence.

#### 3.3.8 Matching Transformer

The matching transformer shall be part of the speaker assembly and shall have a number of selectable taps to permit on-site selection of the proper power level to be delivered to each speaker. The taps shall be provided with a secure cover to inhibit unauthorized adjustment.

#### 3.3.9 Interchangeability

Speakers and associated equipment shall be readily interchangeable. Where feasible, all major components shall be of modular plug-in design.

#### 3.3.10 Facilities

Power for this system is available at each institution from the domestic source through the Emergency Power Distribution System. The latter system consists of a diesel-electric set which typically requires twenty (20) seconds to take over the load on sensing failure of the domestic source.

#### 3.3.11 System Performance on Switch over

The PIDS PA system shall incur no failure or damage directly attributable to switch over of power sources as described in this specification. On completion of a switch over action, this system shall provide normal system operation.

---

#### 3.3.12 Sabotage, Tampering and Survivability

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.

#### 3.3.13 Power Failure

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

#### 3.3.14 System Failure

A system failure shall be deemed to have occurred when any required annunciation is not produced or when any required control function cannot be performed.

#### 3.3.15 Human Factors

Elements of the system which are used directly by staff or inmates (i.e., control panels, etc.) shall conform with accepted principles of good human factors design.

#### 3.3.16 Existing Equipment

In most installations, control elements of the system will share console space with other electrical/electronic equipment such as door controls, lighting controls, etc. and will be operated by the same staff member. In such cases it is important that effort be made to coordinate the functional and operational design of the system according to accepted human engineering principles to ensure a uniform appearance and commonality of a layout to assist the operator in the performance of his duties.

#### 3.3.17 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 control devices which combine two or more functions into a single unit.

The system shall use EIA standard display and control panels. The design of the display and control panel shall be in accordance with the ES/STD-0802, Standard.



---

### 3.4 Functional Requirements

#### 3.4.1 PA Control

The Perimeter Intrusion Detection System Integration Unit shall control the PIDS PA. In the event of a perimeter alarm condition, the output of the PIDS PA shall be automatically switched to the perimeter sector being assessed by the CCTV system. The output of the PA shall be switched on a sector by sector basis under alarm conditions. The PIDS PA shall provide the MCCP operator one way voice communication to an alarmed sector. The activation of the PA shall be under the control of the operator using the push-to-talk switch on the microphone. Only the activation and actual use of the PIDS PA shall be logged by the PIU data logger.

#### 3.4.2 PA Control Panel

The contractor shall provide a PIDS PA controls panel in the operator console. The panel shall contain a microphone input and test tone generator to permit access to and testing of the PIDS PA system on a sector by sector basis.

### 3.5 Environmental Requirements

The amplifier, microphone and speaker equipment shall comply with all requirements of this specification over the following environmental ranges:

#### 3.5.1 Indoor Equipment

- temperature 0°C to 50°C; and
- humidity 0% to 95% Non Condensing.

#### 3.5.2 Outdoor Equipment

- temperature -40°C to +55°C; and
- humidity up to 100% Condensing.

In addition, outdoor equipment shall continue to operate in full compliance with all parts of this specification and shall not be damaged by any of the following conditions in any combination:

- exposure to direct sunlight;
- any amount of frost;

- 
- wind velocity up to 100 Km per hour;
  - rain;
  - snow;
  - hail stones up to 2 cm in diameter;
  - ice buildup to a thickness of 2 cm; and
  - any air-to-ground or ground-to-air lightning strikes outside a 1 Km radius.

### 3.6 Power Requirements

The system shall use VAC power within the following limits:

- 3.6.1 Voltage: 120 VAC  $\pm 10\%$ ;
- 3.6.2 Frequency: 60 Hz  $\pm 1.5\%$ ;
- 3.6.3 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
- 3.6.4 Power: power consumption shall not exceed 100 watts.

### 3.7 Installation Requirements

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

### 3.8 Documentation Requirements

All final system documentation shall be provided with a Copyright Release for the documentation delivered in support of the system. The documentation shall be in accordance with the ES/SOW-0101, Statement of Work.

### 3.9 Support Requirements

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

---

### 3.10 **Training Requirements**

Operator training and maintenance training on the system shall be in accordance with the ES/SOW-0101, Statement of Work.

## 4.0 **QUALITY ASSURANCE**

### 4.1 **General**

The system Quality Assurance programme shall be provided as detailed in the ES/SOW-0101, Statement of Work.

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

### 4.2 **System Check Out**

During the system check out, the contractor shall measure PIDS PA system sound levels as follows:

For each speaker, measure the test tone & voice sound levels between the perimeter fences at two locations:

- directly in front of speakers; and
- the midpoint between two (2) speakers

The contractor shall record the sound level readings and submit the test results to the Design Authority.

### 4.3 **Final Acceptance Test Procedures**

The Design Authority will repeat the system check out tests with the contractor, using the same sound level metre that was used for the system check out.

## 5.0 **DELIVERY**

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

---

Delivery requirements of the system equipment shall be in accordance with the ES/SOW-0102, Statement of Work.

**6.0 INTERFERENCE**

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 shall be in accordance with ES/SOW-0101, Statement of Work.

**7.0 SAFETY**

All system electrically powered elements shall meet the applicable Canadian Safety Association (CSA) standards.

**CORRECTIONAL SERVICES CANADA  
TECHNICAL SERVICES BRANCH  
ELECTRONIC SECURITY SYSTEMS**

---

ES/ SPEC -0404  
Revision 3  
2013 April 18

**ELECTRONIC ENGINEERING SPECIFICATION  
MOTION DETECTION SYSTEM  
FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS**

**AUTHORITY**

This Specification is approved by the Correctional Service of Canada for the procurement and installation of Motion Detection Systems (MDS) in Canadian federal correctional institutions.

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

Director, Electronic Security Systems  
Correctional Service of Canada  
340 Laurier Avenue West,  
Ottawa, Ontario  
K1A 0P9

---

Prepared by:



Electronic Systems and Installation Engineer

Approved by:



Director, Electronic Security Systems

---

**TABLE OF REVISIONS**

Revision	Paragraph	Comment
3	All	Initial update from Revision 2 (EM) and review with Tech Services stakeholders.

---

## TABLE OF CONTENTS

<b>TABLE OF REVISIONS</b> .....	<b>2</b>
<b>TABLE OF CONTENTS</b> .....	<b>3</b>
<b>TABLE OF ABBREVIATIONS</b> .....	<b>5</b>
<b>TABLE OF DEFINITIONS</b> .....	<b>6</b>
<b>1 INTRODUCTION</b> .....	<b>7</b>
1.1 Overview.....	7
1.2 Purpose .....	8
1.3 Commercial Off-The-Shelf Equipment.....	8
1.4 Technical Acceptability.....	9
1.5 Quantity of Equipment .....	9
<b>2 REFERENCES</b> .....	<b>10</b>
2.1 Specifications, Standards, and Statements of Work .....	10
<b>3 OPERATIONAL REQUIREMENTS</b> .....	<b>11</b>
3.1 General .....	11
3.2 System Capacity .....	11
3.3 Sensor Detection Field.....	11
3.4 Sensor Sensitivity.....	11
3.5 Sensor Supervision .....	12
3.6 Dead Zones .....	12
3.7 Nuisance Alarms.....	12
3.8 False Alarms .....	12
3.9 Tamper/Fault Alarms .....	13
3.10 System Test.....	13
3.11 System Failure .....	13
3.12 Perimeter Sectors .....	13
3.13 Operational Alarm Notifications .....	13
3.14 Fault Alarm Notifications .....	13
3.15 Event Notifications .....	13
3.16 Report Generation .....	14
3.17 System Definition Deliverables and Parameters.....	14
<b>4 PHYSICAL REQUIREMENTS</b> .....	<b>15</b>
4.1 Equipment installed outdoors: .....	15
4.2 Dimensions and packaging of equipment installed indoors: .....	15
4.3 Floor Space .....	15
4.4 Equipment Racks.....	15
4.5 Wires, Cables, Conduits, Ducts.....	15
4.6 Identification of equipment:.....	15
4.7 Sector Numbering.....	16
4.8 Safety.....	16
<b>5 ENVIRONMENTAL REQUIREMENTS</b> .....	<b>17</b>

---

<b>5.1</b>	<b>Environmental limits .....</b>	<b>17</b>
<b>5.2</b>	<b>Interference .....</b>	<b>17</b>
<b>5.3</b>	<b>Reliability.....</b>	<b>17</b>
<b>5.4</b>	<b>Safety.....</b>	<b>17</b>
<b>6</b>	<b>INTERFACE REQUIREMENTS.....</b>	<b>18</b>
<b>6.1</b>	<b>Connectivity .....</b>	<b>18</b>
<b>6.2</b>	<b>Sensor Module Integration and Power capabilities .....</b>	<b>18</b>
<b>6.3</b>	<b>Sensor Module capabilities .....</b>	<b>18</b>
<b>6.4</b>	<b>Cabling and Equipment Supervision .....</b>	<b>18</b>
<b>6.5</b>	<b>Power.....</b>	<b>19</b>
<b>6.6</b>	<b>User Interfaces.....</b>	<b>19</b>
<b>7</b>	<b>INSTALLATION REQUIREMENTS .....</b>	<b>21</b>
<b>7.1</b>	<b>Perimeter Signal &amp; Power Cables .....</b>	<b>21</b>
<b>7.2</b>	<b>Sector Calibration.....</b>	<b>21</b>
<b>7.3</b>	<b>Sector Alignment.....</b>	<b>21</b>
<b>7.4</b>	<b>Installation Procedures .....</b>	<b>21</b>
<b>8</b>	<b>QUALITY ASSURANCE REQUIREMENTS .....</b>	<b>22</b>
<b>8.1</b>	<b>General .....</b>	<b>22</b>
<b>8.2</b>	<b>System Check Out.....</b>	<b>22</b>
<b>8.3</b>	<b>Acceptance Test Procedures (ATP) .....</b>	<b>22</b>
<b>9</b>	<b>DELIVERY REQUIREMENTS .....</b>	<b>23</b>
<b>9.1</b>	<b>Documentation.....</b>	<b>23</b>
<b>9.2</b>	<b>Support.....</b>	<b>23</b>
<b>9.3</b>	<b>Training .....</b>	<b>23</b>
<b>9.4</b>	<b>Hand Over .....</b>	<b>23</b>



---

## TABLE OF ABBREVIATIONS

Abbreviation	Expansion
API	Application Programming Interface
ATP	Acceptance Test Procedure
CD	Commissioner's Directive
CER	Common Equipment Room
COTS	Commercial-Off-The- Shelf
CCDA	Communications, Control and Data Acquisition platform
CSA	Canadian Standards Association
CSC	Correctional Service Canada
DES	Director Engineering Services
EIA	Electronic Industries Association
FAAS	Facility Alarm Annunciation Sub-System
FAR	False Alarm Rate
FDDS	Fence Disturbance Detection Sub-System
GFE	Government Furnished Equipment
MCCP	Main Communications and Control Post
MDS	Motion Detection Sub-System
NAR	Nuisance Alarm Rate
NTP	Network Time Protocol
PIDS	Perimeter Intrusion Detection Sub-System
PIU	Perimeter Intrusion Detection System Integration Unit
Pd	Probability of Detection
RFP	Request for Proposal
SOW	Statement of Work
STR	Statement of Technical Requirements
TCP/IP	Transport Control Protocol/Internet Protocol
UPS	Uninterruptible Power Supply

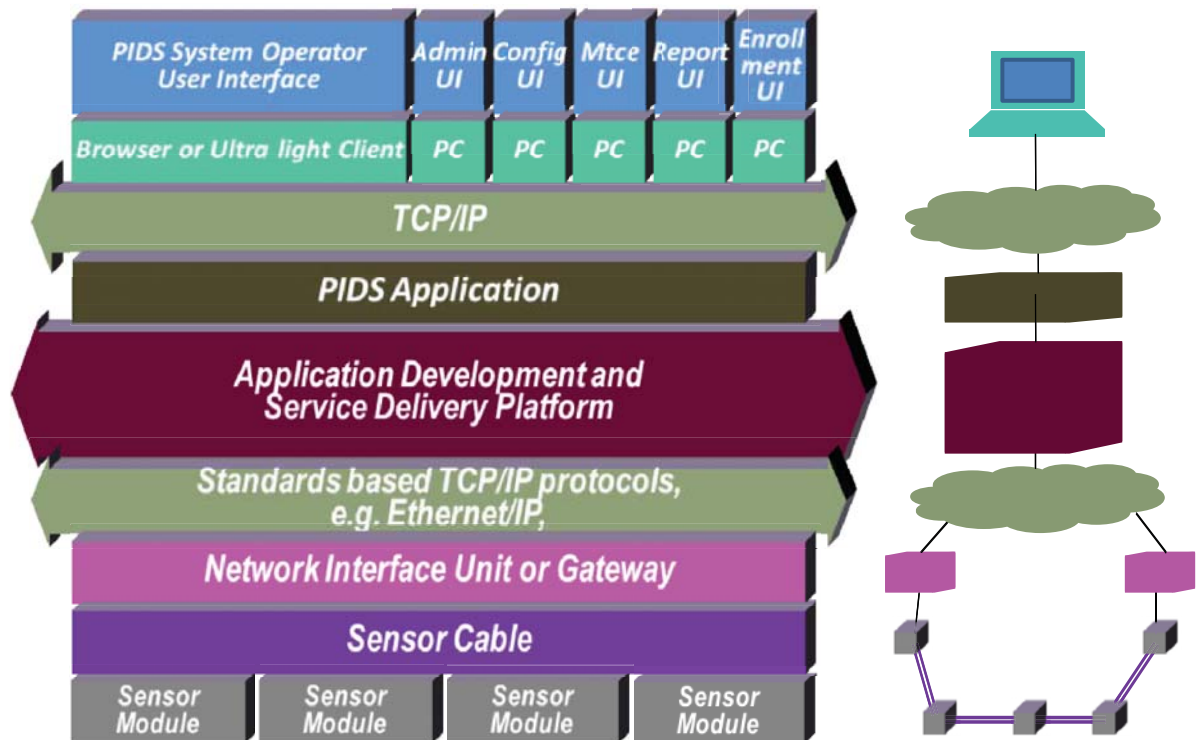
## TABLE OF DEFINITIONS

Term	Definition
Design Authority	Director, Engineering Services (DES) - Correctional Service of 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.
Perimeter Sector	The phrase Perimeter Sector or Sector used on a stand-alone basis describes one of the discrete, contiguous Radio Frequency detection fields that is aligned with each physical sector making up the complete perimeter and runs parallel to the buried cables.
Detection Zone	The phrase Detection Zone or Zone used on a stand-alone basis describes the area of Radio Frequency sensitivity surrounding and perpendicular to the buried cables.

## 1 INTRODUCTION

### 1.1 Overview

- .1 This specification defines the essential technical and functional requirements of the Correctional Service of Canada for the procurement and installation of modular, ranging, buried electromagnetic field sensor to be deployed as Motion Detection Sub-System (MDS) for federal correctional institutions. This sub-system is an element of the Perimeter Intrusion Detection Systems (PIDS) installed at many Federal Institutions and will share a Common User Interface with the Fence Disturbance Sensor Sub-System (FDS), the PIDS Public Address sub-system and the PIDS CCTV sub-system.
- .2 The sensor must be configurable into discrete detection segments that can be between three (3) metres long and one hundred and fifty (150) metres long. The sensor detection segments must be configurable into discrete detection sectors that can vary in length from three (3) metres to one hundred and fifty (150) metres. The detection sectors must support perimeters up to and including up to two thousand (2,000) metres in length.
- .3 The system must consist of the following components:
  - .1 A buried cable sensor sub-system with a common, protected power, data and sensing cable connected to a network interface unit;
  - .2 A network interface unit or gateway that provides power and data communications to the sensor network as well as an interface, using a standard based and published protocol, to a Command, Control and Data Acquisition (CCDA) platform.
  - .3 A Perimeter Intrusion Detection System Integration Unit operating as the CCDA, unless specified in the STR.
  - .4 A Network Interface Unit, which must provide visibility and control of the manageable attributes of the sensors and the events presented by the sensors to the CCDA.
  - .5 an MDS application software that runs on the Command, Control and Data Acquisition (CCDA) platform or on a sub-system server that is connected to the Command, Control and Data Acquisition (CCDA) platform, that provides the necessary software functionality to allow the MDS system to be configured, administered, maintained and accessed for reporting services through function specific User Interfaces.
  - .6 If specified in the STR, a PIDS software application that runs on the Command, Control and Data Acquisition (CCDA) platform that provides the necessary software functionality to manage the MDS sensor sub-system, detect alarm and event notifications from the sensor sub-system and provide the Operator User Interface.
- .4 User Interfaces must include:
  - .1 If specified in the STR, an Operator User Interface that presents the Operator with the information needed to manage the functionality to be provided by the MDS sub-system.
  - .2 An Administrative User Interface.
  - .3 A Report Development and Generation User Interface.
  - .4 A Configuration User Interface.
  - .5 A Maintenance User Interface.



## MDS Sub-System Architecture

### 1.2 Purpose

- .1 The primary purpose of a Buried line MDS is to detect attempts by an intruder to penetrate a perimeter around a facility. They must operate in the outdoor environment and must perform reliably in all weather conditions. The detection field must be formed by radio-frequency (RF) signals carried by sensor cables that are buried along the length of the perimeter to be protected. The RF signals must form an invisible electromagnetic detection field around the sensor cables that can locate and detect an intruder passing through the field.
- .2 The MDS-subsystem may be used in any institution equipped with a double perimeter fence that meets the spacing requirements for the deployment of a buried cable sensor.

### 1.3 Commercial Off-The-Shelf Equipment

- .1 The MDS must use commercial off-the-shelf (COTS) equipment and proven designs to the maximum extent possible. New technology proposed must be compatible with the Command and Control environment of the Institution at which it will be installed and may be subject to evaluation by CSC to ensure that is technically acceptable following the steps defined in section 1.4.

---

## **1.4 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.
- .2 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.
- .3 The CSC Electronic Security Systems Directorate has established technical specifications and equipment standards for specific electronic security sub-systems which are based on very specific and restrictive operational performance criteria as detailed in its Electronic Engineering Specifications and Standards. Technical acceptability of these sub-systems means that the equipment complies with the relevant CSC specifications and standards.
- .4 The technical acceptance process must involve system and sub-system evaluation in accordance with the applicable CSC specifications.
- .5 CSC may when it deems necessary, request the supplier to arrange for a full site demonstration.
- .6 CSC must verify in depth any of the system technical specifications called up.
- .7 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.

## **1.5 Quantity of Equipment**

- .1 The quantity and location of the MDS equipment required for CSC institutions will be contained in the information identified in the site specific Statement of Technical Requirements or Statement of Work.

---

## 2 REFERENCES

### 2.1 Specifications, Standards, and Statements of Work

- .1 Access to non-government specifications is the responsibility of the contractor.
- .2 The following documents of the issue in effect on the date of the Request for Proposal (RFP) form a part of this specification to the extent specified herein.

Number	Title
ES/SOW-0101	Statement of Work for Installation of Electronic Systems
ES/SOW-0102	Statement of Work for Quality Control of Electronic Systems Installations
ES/SOW-0110	Statement of Work for Structured Cable Systems for Electronic Systems Installations
ES/SPEC-0005	Specification for Main Communications and Control Post Integration Consoles
ES/SPEC-0102	Electronics Engineering Specification, Data Logger for use in Federal Correctional Institutions
ES/SPEC-0603	Electronics Engineering Specification, Facility Alarm Annunciation System Integration Unit for use in Federal Correctional Institutions
ES/STD-0300	Electronics Engineering Standard, Network Time Protocol Server
ES/STD-0806	Standard for Icon Design for the User Interface for use in Federal Correctional Institutions (draft)
ES/STD-0807	Standard for the Look and Feel of the User Interface for use in Federal Correctional Institutions (draft)
ES/STD-0808	Standard for the Design of the Framework for the User Interface for use in Federal Correctional Institutions (draft)
EIA-310	Electronic Industry Association Standard for Racks, Panels and Associated Equipment

### 3 OPERATIONAL REQUIREMENTS

#### 3.1 General

- .1 The MDS sub-system at an institution consists of sensor cables buried below ground between the fences around its perimeter divided into discrete sectors. These sensor cables transmit and receive an electromagnetic field that, when disrupted, detects conductive materials (e.g. people) above them. The cables are connected to sensor modules which transmit information to a Network Interface Unit or Application Server. The Application Server, in turn, processes, analyses, interprets, and stores that information as well as receives input from the Operator at a Command and Control user Interface, typically a Perimeter Intrusion Detection System Integration Unit, or PIU, in existing installations.

#### 3.2 System Capacity

- .1 The MDS sub-system must provide a number of discrete perimeter sectors which will typically be between 2 and 25.
- .2 The system must be of a modular design and it must be possible at a future date to add more sectors and associated sensor modules, processing and control equipment to the basic installed complement without replacing existing hardware.
- .3 The MDS sub-system must provide the following capabilities at each sensor module:
  - .1 Relay outputs - 1 Form C, {One (1) Alarm A and B, Supervision and Fail};
  - .2 Auxiliary inputs - Two (2) supervised inputs;
  - .3 The ability to expose alarms, notifications and management of these inputs and outputs to the CCDA;
  - .4 USB Port.

#### 3.3 Sensor Detection Field

- .1 Buried Line sensors must detect and annunciate any disturbances in the electromagnetic field between the transmit cable and the receive cable as an intruder approaches a detection zone. Typically these sensors use Ported Coaxial Cables as the transmitter and receiver cables, but other cable configurations are acceptable.
- .2 The detection pattern must be elliptical in shape, a minimum of one (1) metre and a maximum of one and a half (1.5) metres above the ground and two (3) metres to three (3) metres wide depending on cable spacing and soil composition.
- .3 The detection pattern must also extend below the ground to a depth of least half (0.5) a metre.
- .4 Once calibrated to the suppliers specifications, the sensor must not detect a person that is at least two (2) metres from the nearest sensor cable.
- .5 System coverage must be limited to the detection zone. Potential targets outside the detection zone must not be detected by the system.

#### 3.4 Sensor Sensitivity

- .1 The sensor must detect an intruder weighing a certain mass attempting to walk, run, crawl or jump the detection zone. (The nominal mass of the intruder will be in excess of 35 kg.)
- .2 The sensitivity of each segment of each sector of the sensor sub system must be adjustable from the sub-system Maintenance User Interface.
- .3 Remote testing of each of sector of the sensor sub system must be provided as part of the system functionality and the ability to initiate, monitor and capture the results of sensor

testing must be provided through an open API or gateway to a higher level Command, Control and Data Acquisition system (CCDA).

### **3.5 Sensor Supervision**

- .1 The sensor cables will be continuously monitored and if they are cut at any point, a Tamper alarm will be generated.
- .2 The sensor module enclosures will be equipped with tamper switches that must be continuously monitored and if the enclosures are opened, a Tamper alarm will be generated.
- .3 The sensor modules that form the active components of the system will be continuously monitored and if they fail, a Fault alarm must be generated.

### **3.6 Dead Zones**

- .1 Any area of reduced or non-detection in accordance with section 3.1 with a width which is greater than 0.5 m must be identified as a dead zone.
- .2 The accumulation of all areas of reduced detection or non-detection must be less than 0.5% of the total length of the system.
- .3 Any accumulation of reduced detection or non-detection which is greater than the specified minimum, or any dead zone found in the system coverage during the 12 month period following system commissioning must be corrected at the contractor's expense.

### **3.7 Nuisance Alarms**

- .1 Nuisance Alarms are defined as those alarms which occur as a result of the detection of non valid target within the specified environmental conditions. Nuisance Alarms may be caused by:
  - .1 Changes in atmospheric conditions;
  - .2 Small animals (less than 45 kg);
  - .3 Ground/air vibration;
  - .4 Other observable causes (other than valid targets);
  - .5 Electrical or radio frequency interference;
  - .6 Personnel, structures, or vehicles outside the detection zone; and
  - .7 Alarms due to unknown causes but which cannot be classified as false alarms.
- .2 Alarms caused by "Tests" are not classified as nuisance alarms.
- .3 Within the specified environmental conditions, the system's nuisance alarm rate must not exceed:
  - .1 10 per 24 hour period;
  - .2 Monthly average of 0.60 alarms per day per sector; and/or
  - .3 7 alarms per sector in any one day.
- .4 The contractor must state the expected nuisance alarm rate for this installation. This stated rate must form part of any resulting contract. Persistent nuisance alarm rates in excess of the stated number during the 12 month period following commissioning must necessitate corrective action

### **3.8 False Alarms**

- .1 False Alarms are defined as those alarms that are caused by phenomena internal to the sensor. Such phenomena may include intermittent faults and transients due to changes in



status of incoming power or may be related to the sensor's signal processing. The False Alarm Rate must not exceed one per sector per year for the entire system.

### **3.9 Tamper/Fault Alarms**

- .1 The MDS sensors must be self monitoring for short and open circuits, and must generate an appropriate alarm message that can be used to trigger a visual and audible sector alarm signal at the Operator User Interface when a sensor or associated interconnect circuit is shorted, cut, disconnected, or loses system power.

### **3.10 System Test**

- .1 It must be possible to remotely test the operational status of the sensor system from the Maintenance User Interface on receipt of a command that manually places a sector or group of sectors in a "test" mode.

### **3.11 System Failure**

- .1 A power failure within the sensor, malfunction of processing or related circuitry, a short or open of any sensor cable or signal cable must generate a Tamper alarm.
- .2 A sub-system failure must be deemed to have occurred when any required motion detection is not produced or when any required control function cannot be performed.

### **3.12 Perimeter Sectors**

- .1 In order to provide prompt identification of the location of an attempted intrusion, the perimeter must be divided into multiple sectors. The overall number and layout of sectors must be arrived at by design review, subject to approval by the Design Authority.

### **3.13 Operational Alarm Notifications**

- .1 The MDS sub-system, must report the following operational alarms through an open API or gateway to a higher level Command, Control and Data Acquisition system (CCDA):
  - .1 Sensor alarm/reset;

### **3.14 Fault Alarm Notifications**

- .1 The MDS sub-system, must report the following fault alarms through an open API or gateway to a higher level Command, Control and Data Acquisition system (CCDA):
  - .1 Sensor fault;
  - .2 Sensor tamper;
  - .3 System fault;
  - .4 System Tamper;

### **3.15 Event Notifications**

- .1 Each MDS sub-system, must report the following report the following events through an open API or gateway to a higher level Command, Control and Data Acquisition system (CCDA) for data-logging purposes using a TCP/IP encapsulated version of the Starcom Protocol:
  - .1 All Operational alarms
  - .2 All fault alarms
  - .3 All tamper alarms
  - .4 All maintenance log in and log out actions

- .5 All changes in user access parameters;

### **3.16 Report Generation**

- .1 The MDS sub-system application software must enable the generation of reports, at the Report Generation User Interface that provides the following data, where applicable:
  - .1 Alarm date and time, including sector number and any text descriptor associated with the alarm action, such as "mask", "secure", "fault", tamper;
  - .2 Event date and time, including sector number and any text descriptor associated with the event status.
- .2 The MDS sub-system application software must be able to:
  - .1 select a date and time range for all reports to a fifteen (15) minute or smaller resolution;
  - .2 print all reports;
  - .3 Save all reports as a file.

### **3.17 System Definition Deliverables and Parameters**

- .1 The Contractor must:
  - .1 include an open SDK for the display interface generation,
  - .2 provide an object model for each type of device that is managed by the MDS sub-system. This will allow the sensor device functionality, including both events and manageable parameters, to be accessed, normalised and exposed to the PIDS application or other applications that may eventually run on the platform,
  - .3 provide a copy of the database structure and schema,
  - .4 provide a published or standard protocol for communications between all TCP/IP managed devices and the platform, preferably based on existing network standards such as SNMP.

## **4 PHYSICAL REQUIREMENTS**

### **4.1 Equipment installed outdoors:**

- .1 The dimensions of the equipment must be application specific within the following limits:
  - .1 All outdoor fence mounted signal processing and distribution equipment must be housed in weatherproof, tamper-proof enclosures;
  - .2 Tamper devices must be provided inside all equipment boxes and enclosures with removable covers, housings or other accessible units to detect unauthorized opening or tampering.
  - .3 All outside enclosure penetrations must be from the bottom unless the system design requires penetrations from other directions.
  - .4 All outdoor mounted equipment must be housed in weatherproof enclosures equipped with tamper switches; and
  - .5 All covers required to be removed for maintenance must be secured by security screws.

### **4.2 Dimensions and packaging of equipment installed indoors:**

- .1 All equipment must be designed to mount in EIA standard rack mounts
- .2 The maximum feasible amount of common control equipment (network interfaces, servers, maintenance user interfaces, etc.) must be located in the Common Equipment Room (CER) provided for the purpose.
- .3 Computers supporting the Operator User Interface, if specified in the STR, must be also be located in the CER and made available to the Control Post using an appropriate extender.
  - .1 All computers, however they may be configured, or network interface units must be rack mounted and specified as industrial grade.

### **4.3 Floor Space**

- .1 The contractor must state in the Preliminary Design Report (PDR) the amount of floor space that will be required to house the electronic control and processing equipment.

### **4.4 Equipment Racks**

- .1 The contractor must provide all necessary racks to mount the network interface units or servers.

### **4.5 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 completion of the specified system.
- .2 All installation workmanship must be performed in accordance with ES/SOW-0102, and all applicable national, provincial, and local electrical codes.
- .3 A wiring diagram must be supplied in the Installation section of the Maintenance Manual to detail where connections terminate and how wires are routed and terminated.
- .4 Conduits, cables, ducts, trays, etc. may be either Government Furnished Equipment (GFE) or supplied and installed by the contractor depending on the particular institution.
- .5 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

### **4.6 Identification of equipment:**

- .1 Each item of equipment installed must:
  - .1 Have a permanently affixed label on the interior of the unit which identifies the manufacturer, and the model or assembly number;
  - .2 Have a permanently affixed label on the exterior of the unit which identifies the manufacturer, and the model or assembly number.

#### **4.7 Sector Numbering**

- .1 MDS sectors must be installed and numbered sequentially from one (1) to the sector total, beginning beside the main gate of the institution, and continuing in sequence clockwise around the perimeter.
- .2 The physical sector numbers will correspond to the numbered sectors on the perimeter map that will be displayed on the Operator User Interface.
- .3 The contractor must supply and install robust, easily readable signs that indicate the beginning and end of each sector on the chain link fence unless otherwise indicated in the STR.

#### **4.8 Safety**

- .1 All system electrically powered elements must meet the applicable Canadian Safety Association (CSA) standards

## 5 ENVIRONMENTAL REQUIREMENTS

### 5.1 Environmental limits

- .1 The MDS must have a high Pd and low NAR over the following environmental conditions in any combination once the system has been calibrated and adapted to the terrain:
  - .1 Temperature: -40° C to 55° C (outdoor equipment);  
0° C to 40° C (indoor equipment);
  - .2 Humidity: 0 to 100% non-condensing (outdoor equipment);  
20 to 95% non-condensing (indoor equipment);
  - .3 Ground frost or freezing conditions;
  - .4 Rainfall up to 25 mm/hour;
  - .5 Hail stones up to 2 cm in diameter;
  - .6 Temperature changes causing quick ground freezing or thawing conditions;
  - .7 Sunrise/Sunset;
  - .8 Fog;
  - .9 Snowfall up to 30 cm/hour;
  - .10 Sandstorms;
  - .11 Seismic Vibrations;
  - .12 Acoustic or magnetic disturbances;
  - .13 Snow accumulation up to 50 cm;
  - .14 Lightning strikes outside a radius of 1 km; and
  - .15 Any site-specific phenomena as may be expected and/or published in other documents.

### 5.2 Interference

- .1 Performance of the system must not be affected by the use of standard electronic equipment used at the institution. Distance limits of standard electronic equipment must be in accordance with the interference limitations defined in ES/SOW-0101, Statement of Work, unless modified by the following distance limitations.
  - .1 5 watt CB transceiver at 1 metre or more;
  - .2 6 watt VHF and UHF transceivers at 1 metre or more;
  - .3 25 mW 420-430 MHz Personal Portable Transmitters at 1 metre or more;
  - .4 Other radio frequency transmitting, receiving, and distribution equipment at 5 metres or more;
  - .5 Computer work stations at 5 metres or more;

### 5.3 Reliability

- .1 All MDS components must have an MTBF of at least 5 years.

### 5.4 Safety

- .1 All system electrically powered elements must meet the applicable Canadian Safety Association (CSA) standards.
- .2 All components must meet IEC 60950-1 or the CSA equivalent.

## 6 INTERFACE REQUIREMENTS

### 6.1 Connectivity

- .1 All MDS sub-system cabling must be secured against tampering and improper eavesdropping in metal conduit where installed in inmate accessible or exposed locations.
- .2 The MDS sub-system network interface units or servers must:
  - .1 Interface over IPV4 TCP/IP to the CCDA or higher level system;
  - .2 Interface to legacy Senstar PIDS PIU and FAAS FIU systems for system management, alarm reporting and event logging using the Starcom protocol as described in ES/SPEC-0005;
  - .3 Be able to operate on 100Base-TX (IEEE 802.3u);
  - .4 Connect using an RJ-45 connector to the CCDA or to a higher level system;
  - .5 provide a published or standard protocol for communications between all TCP/IP managed devices and the MDS sub-system, preferably based on existing network standards such as SNMP.
- .3 The MDS sub-system must be able to accept time settings from a Network Time Protocol (NTP) server.
- .4 Sensor communications
  - .1 The MDS sub-system sensors must communicate with the network interface at two distinct points.
  - .2 Connect to the MDS sub-system sensor network using rugged, moisture proof connectors that are fit for purpose.
  - .3 Failure of one data line will not cause the system to fail, i.e. the communications must be fully redundant.

### 6.2 Sensor Module Integration and Power capabilities

- .1 All MDS sub-system cabling must be secured against tampering and improper eavesdropping in metal conduit where installed in inmate accessible or exposed locations.

### 6.3 Sensor Module capabilities

- .1 Each MDS sub-system module must be capable of providing the following relay outputs:
  - .1 Alarm A, Alarm B, Supervision, Fail
  - .2 Form C, 1.0 A 30 VDC max
  - .3 Expandable with relay output card
- .2 Each MDS sub-system module must be capable of providing the following auxiliary inputs:
  - .1 2 supervised inputs
  - .2 Expandable with universal input card
- .3 Each MDS sub-system module must be capable of providing the following port type:
  - .1 USB port

### 6.4 Cabling and Equipment Supervision

- .1 Wiring must be supervised in all system modes. An alarm must occur if any sensor or sub-system cabling is cut or shorted to other wires or if the system devices are tampered with by unauthorized people or environmental conditions.

---

## 6.5 Power

- .1 The MDS sub-system must be powered from standard commercial VAC power, supplied from the UPS in the CER, within the following range:
  - .1 Voltage: 120 VAC  $\pm 10\%$ ;
  - .2 Frequency: 60 Hz  $\pm 1.5\%$
  - .3 Power: not to exceed 100 watts; Following any power failure, the system must return to the operating mode which it was in use prior to the power failure.
  - .4 Transients: power fluctuations up to five times nominal voltages for up to 100 msec durations must not cause damage to the unit.
  - .5 Loss or restoration of primary power to the MDS sub-system must not produce spurious alarms or events to the data logger.
  - .6 When power is restored after a power failure, the system must resume normal operation without operator or maintenance staff action.
- .2 Sensor Power/Redundancy
  - .1 The MDS sub-system sensor cables must be powered from two independent power supplies connected to the system at two distinct points.
  - .2 Failure of a single supply must not cause the system to fail, i.e. either power supply can power the entire system.
- .3 Back Up Power
  - .1 The contractor must identify any built in or optional power failure protection available with the equipment.
- .4 All MDS sub-system equipment, including Network Interface Units, must be connected to a UPS capable of supporting a minimum of one hour of operation.

## 6.6 User Interfaces

- .1 Operator User Interface
  - .1 If specified in the STR, an Operator User Interface on a Touch Screen Display, that presents the Operator with the information needed to manage the functionality to be provided by the SMSS, including the visual and audible parameters that the operator will respond to and use to interact with the system.
  - .2 The Operator User Interface must be capable of displaying all instructions in both English and French.
  - .3 The Operator User Interface must accept an input to toggle between languages, or display both simultaneously.
- .2 Administrative User Interface
  - .1 An Administrative User Interface on a Display equipped with a keyboard and a pointing device that provides the Regional Technical Authority with the ability to add or delete system users and to assign them system privileges.
- .3 Configuration User Interface
  - .1 A Configuration User Interface on a Display equipped with a keyboard and a pointing device that provides the Contractor or a designated representative with the ability to configure all of the variable parameters of the MDS sub-system, including the sensor

calibration and testing and the creation of screen layouts, maps, positioning of devices etc if the STR calls for an Operator User Interface.

.4 Maintenance User Interface

- .1 A Maintenance User Interface on a Display equipped with a keyboard and a pointing device that provides the designated Maintenance Service Provider with the ability to access all maintenance and diagnostic services, tools and menus available in the MDS sub-system.
- .2 The Maintenance User Interface will allow access to all configure all of the functionality associated with the other User Interfaces, except for the Administrative User Interface.

.5 Report Development User Interface

- .1 A Report Development and Generation User Interface on a Display equipped with a keyboard and a pointing device that provides designated Officers and Staff with the ability to access the database and to run preconfigured reports from the database using a report generation menu or to develop and run custom reports using report generator such as Crystal Reports.



---

## 7 INSTALLATION REQUIREMENTS

### 7.1 Perimeter Signal & Power Cables

- .1 Where needed, signal distribution cables for the MDS sub-system must be mounted at or near the top of the inner perimeter fence.
- .2 All cable runs from the top of the fence to sensors, pull boxes, etc. must be carried in rigid steel conduit and buried where it leaves the fence.
- .3 If power is required on the perimeter for the MDS sub-system, the power cables must be buried or run in rigid steel conduit along the top of the outer perimeter fence.
- .4 All cables run from the perimeter to the common equipment room and/or Main Communication & Control Post (MCCP) must be carried in buried conduits.
- .5 Connectors provided on the ends of any cable must mate with the corresponding connector on the equipment.
- .6 Adapters from one type of connector to another are not acceptable.

### 7.2 Sector Calibration

- .1 The MDS sub-system must provide the capability for the sensitivity of each threshold to be calibrated on a sector by sector basis from the Maintenance User Interface.
- .2 The contractor must state the following requirements in the technical proposal:
  - .1 Number of personnel to complete the adjustments;
  - .2 Special calibration equipment (if required); and
  - .3 Length of time to adjust each sector's threshold.

### 7.3 Sector Alignment

- .1 A preferred sector may be made up of more than one MDS sub-system sector; however, the original boundaries must be maintained in order to coordinate with the FDS and CCTV subsystem.
- .2 A suggested sector layout will be provided in the site-specific documentation.

### 7.4 Installation Procedures

- .1 The system must be installed at the site in accordance with the ES/SOW-0101, Statement of Work and the ES/SOW-0102, Statement of Work.
- .2 The installed system must not impede the free movement of service vehicles (for snow removal, weed control, etc.) between the perimeter fences.
- .3 Cables pull boxes, distribution panels and all exposed equipment must be secured against tamper and inmate attack. Steel enclosures must be used throughout the installation, either locked or secured with a maximum of two (2) screws.
- .4 Cables, pull boxes, distribution panels and all exposed equipment must be protected from damage due to lightning.
- .5 Appropriate steps must be taken to ensure the protection of any buried cable against damage, including that which may be caused by the surrounding media. Action should also be taken to contain, on a long term basis, any protective media immediately surrounding the cable in question.
- .6 Where necessary, appropriate steps must be taken to provide adequate drainage between the fences in order to ensure no loss of detection capability.

---

## 8 QUALITY ASSURANCE REQUIREMENTS

### 8.1 General

- .1 The system 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 system acceptance testing must be conducted in accordance with the ES/SOW-0101, Statement of Work.

### 8.2 System Check Out

- .1 The MDS sub-system contractor must provide, as a minimum, the following System Check Out Test results to the Design Authority prior to the scheduling of the on-site acceptance tests:
  - .1 Sensitivity profile of each MDS sector.
  - .2 Normal walk around the perimeter, the centre point of the detection zone.
  - .3 Normal walk crossings of the detection zone at four (4) foot intervals in each MDS sector.
  - .4 Two (2) normal walks around the perimeter & between the fences:
    - Along the inner perimeter fence
    - Along the outer perimeter fence which will indicate the system's detection zone is contained within the fences.
  - .5 Vehicle drive around the perimeter as close as possible to the outer perimeter fence, further indicating the containment of the detection zone.

### 8.3 Acceptance Test Procedures (ATP)

- .1 The Design Authority will determine the appropriate number of locations to perform the special crossing tests. The Design Authority will perform the "slow walk" crossing first, which will identify the approximate location of the detection zone boundary.
- .2 All special crossings performed during the on-site ATP must be detected before the Design Authority can approve this section of the acceptance tests. The human/vehicle containment tests will be repeated during the on-site ATP.
- .3 If any MDS sub system sector requires the physical relocation of sensor equipment or the adjustment of detection thresholds due to failed on site tests, the System Check Out tests must be repeated for the failed sector(s).

## **9 DELIVERY REQUIREMENTS**

### **9.1 Documentation**

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

### **9.2 Support**

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

### **9.3 Training**

- .1 Operator training and maintenance training for the MDS sub-system must be in accordance with the ES/SOW-0101, Statement of Work.

### **9.4 Hand Over**

- .1 Following System Acceptance and the delivery of Documentation, Spares, as required, and Training, the contractor will supply a Hand Over Report.
- .2 A sample of a Hand Over report is provided in Annex A.

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

---

**ES/SPEC-0409  
Revision 3  
November 2001**

**ELECTRONICS ENGINEERING  
SPECIFICATION**

**PERIMETER INTRUSION DETECTION SYSTEM  
CLOSED CIRCUIT TELEVISION SYSTEM  
FOR USE IN  
FEDERAL CORRECTIONAL INSTITUTIONS**

**AUTHORITY**

This Specification is approved by Correctional Service Canada for the procurement and Installation of Digital Field Switchers in Closed Circuit Television (CCTV) 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

---

**Prepared by:**

**Manager,  
Electronics Systems Research**

**Approved by:**

**Director,  
Engineering Services**

---

## TABLE OF CONTENTS

TABLE OF CONTENTS.....	2
ABBREVIATIONS.....	4
DEFINITIONS.....	5
1.0 INTRODUCTION.....	6
1.1 General.....	6
1.2 Purpose.....	6
1.2.1 Fenced Perimeters.....	6
1.2.2 Walled Perimeters.....	6
1.3 Commercial-Off-The-Self Equipment.....	6
1.4 Technical Acceptability.....	7
1.5 Equipment Procurement.....	7
1.6 Quantity of Equipment.....	7
2.0 APPLICABLE DOCUMENTS.....	8
3.0 REQUIREMENTS.....	9
3.1 General.....	9
3.1.1 System Configuration.....	9
3.1.2 Period of Operation.....	9
3.2 System Requirements.....	9
3.2.1 Camera Siting.....	9
3.2.2 Perimeter Lighting.....	9
3.2.3 Camera Mounting.....	10
3.2.4 Tower and Camera Stability.....	10
3.2.5 Anti-Climbing Devices/Maintenance Foot Stand.....	10
3.2.6 Interchangeability.....	10
3.2.7 Facilities.....	10
3.2.8 Emergency System Start-Up.....	10
3.2.9 Wiper Control.....	11
3.2.10 Wires, Cables, Conduits, Ducts.....	11
3.2.11 Control Equipment.....	11
3.2.12 Interface to Time Lapse Video Cassette Recorder.....	12
3.3 Design Requirements.....	12
3.3.1 General.....	12
3.3.2 CCTV Cameras.....	12

---

3.3.3	CCTV Monitors.....	12
3.3.4	Camera Enclosures .....	12
3.3.5	Camera Lenses .....	13
3.3.6	Time Lapse Video Cassette Recorders .....	13
3.3.7	Video Sequential Switcher.....	13
3.3.8	Wiring Supervision.....	13
3.3.9	Sabotage, Tampering and Survivability.....	13
3.3.10	Power Failure.....	13
3.3.11	System Failure.....	13
3.3.12	Human Factors .....	13
3.3.13	Control Panels .....	14
3.4	Operational Requirements .....	14
3.4.1	System Resolution .....	14
3.4.2	Target Resolution .....	14
3.4.3	System Synchronization .....	14
3.4.4	Video Stability.....	14
3.5	Environmental Requirements .....	14
3.6	Power Requirements.....	15
3.7	Installation Requirements .....	15
3.8	Documentation Requirements.....	15
3.9	Support Requirements .....	15
3.10	Training Requirements .....	15
4.0	QUALITY ASSURANCE .....	16
4.1	General .....	16
5.0	DELIVERY.....	16
6.0	INTERFERENCE .....	16
7.0	SAFETY .....	16

---

## ABBREVIATIONS

The following abbreviations are used in this specification:

CCTV	Closed Circuit Television
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
FDS	Fence Disturbance Detection System
FOV	Field of view
GFE	Government Furnished Equipment
MDS	Motion Detection System
MCCP	Main Communications and Control Post
PIDS	Perimeter Intrusion Detection System
PW&GSC	Public Works and Government Services Canada
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 essential technical and functional requirements of the Correctional Service Canada (CSC) for the procurement and installation of a Perimeter Intrusion Detection System (PIDS) Closed Circuit Television (CCTV) system for federal correctional institutions.

The system described herein would be applicable to new institutions to be constructed. It could also be retrofitted into existing institutions whenever it becomes necessary to add a PIDS CCTV capability or replace existing obsolete equipment.

### **1.2 Purpose**

The primary use of the PIDS CCTV system is to provide a surveillance and assessment capability for the staff in the Main Communications and Control Post (MCCP) of an institution with fenced and/or walled perimeters as follows:

#### **1.2.1 Fenced Perimeters**

For the standard double fence perimeter which uses a Fence Disturbance Detection System (FDS) sensor and the Motion Detection System (MDS) sensor, the CCTV coverage area is defined as the institution side of the inner perimeter fence fabric plus a minimum distance of 3 metres inside the inner perimeter fence and the complete area between the two fences. For a single fence perimeter, this coverage area is defined as the institution side of the inner perimeter fence fabric plus a minimum distance of 3 metres inside the inner perimeter fence.

#### **1.2.2 Walled Perimeters**

The CCTV coverage area is defined as the top and inside of the perimeter wall from a point 2 metres above the wall to a point 3 metres from the base of the wall. The target shall be in full view when positioned anywhere on top of the wall.

### **1.3 Commercial-Off-The-Shelf Equipment**

The CCTV 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.

---

#### 1.4 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.

#### 1.5 Equipment Procurement

Any ordering of equipment/material before the approval of the PIDS CCTV 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.

#### 1.6 Quantity of Equipment

The quantity and location of the PIDS CCTV equipment required for CSC institutions will be contained in the specification identified 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 Installation of Electronic Systems
ES/SOW-0102	Statement of Work for Quality Control of Electronic Systems Installations
ES/SPEC-0400	Specification for Perimeter Intrusion Detection Systems
ES/SPEC-0401	Specification for Perimeter Intrusion Detection System Integration Units
ES/SPEC-0403	Specification for Perimeter Intrusion Detection System Video Switchers
ES/SPEC-0404	Specification for Motion Detection Systems
ES/SPEC-0405	Specification for Fence Disturbance Detection Systems
ES/STD-0202	Standard for Monochrome, CCD Cameras
ES/STD-0204	Standard for Fixed/Zoom Lens
ES/STD-0205	Standard for Outdoor Enclosures
ES/STD-0211	Standard for Time Lapse Video Cassette Recorders
ES/STD-0212	Standard for Monochrome Video Monitors
EIA-310-C	Electronic Industry Association Standard for Racks, Panels and Associated Equipment

---

### 3.0 **REQUIREMENTS**

#### 3.1 **General**

The contractor shall design, supply, install, test and provide documentation and training for a PIDS CCTV system in accordance with the Specifications, Standards and Statement of Works specified in Section 2.0 of this specification.

##### 3.1.1 **System Configuration**

The PIDS CCTV system shall consist of the elements in the quantities given in the STR. The system shall be of a modular design and it shall be possible at a future date to add more associated CCTV equipment to the basic installed complement without replacing the existing hardware.

##### 3.1.2 **Period of Operation**

The PIDS CCTV system and all associated equipment shall be rated for and capable of 24 hours per day, seven days per week operation. Components of the system located outdoors shall be designed to operate over the range of temperature, wind, precipitation and humidity conditions expected on the site and as noted in this specification.

#### 3.2 **System Requirements**

##### 3.2.1 **Camera Siting**

The CCTV PIDS camera locations shall be chosen to provide full assessment for all sectors of the perimeter as described in the STR. The perimeter will be divided into zones, nominally two per side, unless the technology of the chosen intrusion alarm systems constrains this assignment.

The Design Authority shall approve the siting of all PIDS CCTV cameras before installation can commence.

##### 3.2.2 **Perimeter Lighting**

The PIDS CCTV cameras shall meet the requirements as specified in the Standard, ES/STD-0202 for monochrome CCD cameras. The existence of perimeter illumination levels less than the specified camera light sensitivity level, uneven distribution of light, or any other related lighting problems shall be identified to the Design Authority prior to system design.

---

### **3.2.3 Camera Mounting**

Cameras and enclosures shall be mounted with sufficient height to ensure a clear view of the observed sector with minimal reduction of see-through ability by fence mounted wire fixtures at the extremes of the sector under observation. Camera mounting designs for guard towers and/or institution structures must be submitted to and approved by the Design Authority.

### **3.2.4 Tower and Camera Stability**

All PIDS CCTV cameras mounted on camera towers shall be mounted such that under worst case wind conditions, i.e., 100 km/hour, the video displacement as viewed on a monitor shall not exceed five TV Lines.

### **3.2.5 Anti-Climbing Devices/Maintenance Foot Stand**

Camera towers shall be equipped with climbing fixtures above the 3.1 m (10.0 ft.) level only. Where the contractor supplies an open structure tower, anti-climbing fixtures shall be attached from the 2.5 m (8.0 ft.) to 3.1 m (10.0 ft.) of the tower. If an open tower is provided, and it is necessary to provide visibility through the lower part then anti-climbing fixtures must be attached to the tower beginning at the 2.5 m (8.0 ft.) level. Anti-climbing devices must also be included inside the tower to prevent climbing through the center.

Camera towers shall be equipped with two (2) foot stands to provide a stable platform for maintenance personnel when working on either side of the camera. Safety harness hook up ring bolts shall be properly located at belt level when standing on the maintenance foot stands.

### **3.2.6 Interchangeability**

Cameras, mounts, monitors and associated equipment shall be readily interchangeable wherever possible. All major components shall be of modular plug-in design.

### **3.2.7 Facilities**

Power is available for this system at each institution through the internal wiring of the emergency power system on site.

### **3.2.8 Emergency System Start-Up**

The emergency system consists of a diesel-powered generator with controls which sense commercial power failure and initiate diesel start-up. The elapse time to emergency power following mains (domestic) failure is typically 20 seconds.

Following a switch over to emergency power, and/or a return to commercial power from an emergency, the CCTV System shall revert automatically to normal service status.

---

The Design Authority will identify the locations of the emergency VAC power source in the STR.

The contractor shall be responsible for connecting all cameras, enclosures, and associated outdoor CCTV equipment to the institution's emergency VAC power supply. Each camera location, including the enclosure, shall be provided with its own circuit breaker.

Control of power to cameras and enclosures shall be exercised from the MCCP console via relay, small switches, and Class II circuits. The control switches shall be located inside the MCCP console, accessed from the back of the console.

The contractor shall provide the status of camera power on/off switches with form C contact closures to the PIDS Integration Unit (PIU).

#### 3.2.9 Wiper Control

Control of camera enclosure wipers shall be exercised from the front panel of the MCCP console. The CCTV wiper control interface shall be capable of accepting a Form C contact closure to control each wiper.

#### 3.2.10 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.

#### 3.2.11 Control Equipment

The maximum feasible amount of common control equipment (power supplies, logic boards, amplifiers, etc.) shall be located in the Common Equipment Room (CER) provided for the purpose. These areas will be identified in the STR. It is preferred that only equipment which the operator must access directly should be located in the Control Posts.

---

### **3.2.12 Interface to Time Lapse Video Cassette Recorder**

The contractor shall supply and install all necessary wiring and control equipment required to interface the PIDS CCTV system to the Time Lapse VCR described in ES/STD-0211, Standard.

## **3.3 Design Requirements**

### **3.3.1 General**

To the maximum practical extent, off-the-shelf equipment should be selected for use in the system. New designs should be restricted to common interface areas, control panels and consoles, or unique devices for which an off-the-shelf item does not exist.

A design objective is to minimize the number of wires required between all elements of the system.

A space-diversity approach to system planning shall be employed to ensure that loss of one interconnection routing does not impair the operational capability of the complete system.

### **3.3.2 CCTV Cameras**

The PIDS CCTV cameras shall meet all the technical requirements as specified in Standard, ES/STD-0202. The contractor shall be responsible for mounting all cameras on camera towers, guard towers and/or buildings.

With many cameras being used simultaneously, an external synchronization source shall be provided to genlock all cameras to the same sync source to prevent video roll or jitter on the monitor during video switching.

### **3.3.3 CCTV Monitors**

The PIDS CCTV monitors shall meet all the technical requirements as specified in Standard, ES/STD-0212. The contractor shall be responsible for mounting these monitors either in the MCCP console or on the walls or ceiling in the MCCP. Wall and/or ceiling mounting structure shall be the responsibility of the CCTV contractor and shall be approved by the Design Authority. The requirement for ceiling and/or wall mounted monitors shall be included in the STR.

### **3.3.4 Camera Enclosures**

The PIDS CCTV camera outdoor enclosures shall meet all the technical requirements as specified in the Standard, ES/STD-0205. The contractor shall be responsible for mounting all camera enclosures on camera towers, guard towers and/or buildings.

---

#### **3.3.5 Camera Lenses**

The PIDS CCTV camera lenses shall meet all the technical requirements as specified in Standard, ES/STD-0204. The contractor shall be responsible for mounting all cameras lenses on the cameras.

#### **3.3.6 Time Lapse Video Cassette Recorders**

The PIDS Timer Lapse VCRs shall meet all the technical requirements as specified in Standard, ES/STD-0211. The contractor shall be responsible for providing and installing all VCRs in appropriate VCR racks in the MCCP.

#### **3.3.7 Video Sequential Switcher**

The Video Switcher for the PIDS CCTV system shall meet all the technical requirements as specified in Specification, ES/SPEC-0403.

#### **3.3.8 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.

#### **3.3.9 Sabotage, Tampering and Survivability**

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.

#### **3.3.10 Power Failure**

When power is returned after a power failure, the system shall resume normal operation without operator action and shall automatically start from a "no-calls-present," cleared condition with no cells disabled.

#### **3.3.11 System Failure**

A system failure shall be deemed to have occurred when any required video surveillance is not produced or when any required control function cannot be performed.

#### **3.3.12 Human Factors**

Elements of the system which are used directly by staff or inmates (i.e. control panels, etc.) shall conform with accepted principles of good human factors design.



---

#### **3.3.13 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 control devices which combine two or more functions into a single unit.

### **3.4 Operational Requirements**

#### **3.4.1 System Resolution**

Under normal night-time perimeter lighting conditions, specified in paragraph 3.1.4 of this specification, each camera and monitor combination (including interconnecting cable and video switcher identified in paragraph 3.1.8 of this specification) shall retain the camera's resolution rating. The VCR is excluded from this requirement.

#### **3.4.2 Target Resolution**

A circular target object measuring 47.8 cm (18.8 in.) in diameter shall be resolved with a minimum of 5 TV Lines when viewed at the farthest extreme of the required field of view (FOV). If the target is to be viewed through one or more layers of fence fabric, the minimum resolution becomes 10 TV Lines.

#### **3.4.3 System Synchronization**

The PIDS CCTV system shall be designed such that when the perimeter cameras are connected to the MCCP monitors through the Video Sequential Switcher as specified in the Specification, ES/SPEC-0403, no tearing, rolling or distortion shall be observed on the monitor when sequencing or manually switching from one camera to another.

#### **3.4.4 Video Stability**

The video image displayed on each monitor shall be stable, free of roll, jitter and tearing. There shall be no degradation of this requirement when the system operates through a video switcher. There shall be a minimum RF isolation of 40 dB between any pair of video circuits.

### **3.5 Environmental Requirements**

The PIDS CCTV system shall operate over the indoor and outdoor environmental conditions as specified in the Standards and Specifications listed in Section 2.0 of the specification. The contractor may meet these requirements through the use of suitable environmental enclosures.

Any associated CCTV equipment installed outdoors, i.e. video line, amplifiers, sync distribution amplifiers, etc.; which is rated as indoor equipment, shall be installed in heated enclosures.

---

The contractor shall provide lightning protection on all cables and terminal equipment which are installed indoors and outdoors. Towers and cameras shall be grounded via a buried grounding rod.

**3.6 Power Requirements**

The PIDS CCTV system shall use VAC power within the limits specified in the Standards and Specifications listed in Section 2.0 of the specification.

**3.7 Installation Requirements**

The PIDS CCTV system shall be installed at the site in accordance with the ES/SOW-0101, Statement of Work and the ES/SOW-0102, Statement of Work. The installation shall include all necessary labour, wire, cable, camera towers, conduit, trenching, site preparation, power supplies, amplifiers, cameras, lenses, enclosures, monitors, videocassette recorders, and control panels for operation in the institutional environment.

**3.8 Documentation Requirements**

All final system documentation shall be provided in accordance with the ES/SOW-0101, Statement of Work.

**3.9 Support Requirements**

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

**3.10 Training Requirements**

Operator training and maintenance training on the system shall be in accordance with the ES/SOW-0101, Statement of Work.

---

**4.0 QUALITY ASSURANCE**

**4.1 General**

The system Quality Assurance programme shall be provided as detailed in the ES/SOW-0101, Statement of Work.

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

**5.0 DELIVERY**

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

Delivery requirements of the system equipment shall be in accordance with the ES/SOW-0102, Statement of Work.

**6.0 INTERFERENCE**

Performance of the PIDS CCTV system 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 ES/SOW-0101, Statement of Work.

**7.0 SAFETY**

All PIDS CCTV system electrically powered elements shall meet the applicable Canadian Safety Association (CSA) standards.

**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

---

**Prepared by:**

  
**Manager,  
Electronics Systems Research**

**Approved by:**

  
**Director,  
Engineering Services**  
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

---

## TABLE OF CONTENTS

TABLE OF CONTENTS .....	3
ABBREVIATIONS .....	5
DEFINITIONS.....	6
1.0 INTRODUCTION.....	7
1.1 Commercial-Off-The-Shelf Equipment .....	7
1.2 Technical Acceptability.....	7
1.3 Equipment Procurement.....	8
1.4 Quantity of Equipment.....	8
2.0 APPLICABLE DOCUMENTS .....	9
3.0 REQUIREMENTS .....	10
4.0 SYSTEM DEVELOPMENT .....	11
4.1 Preliminary Design .....	11
4.2 Preliminary Design Review .....	12
4.3 Final Design .....	12
4.4 Final Design Review .....	12
4.5 Design Change Control .....	12
4.5.1 Type I .....	12
4.5.2 Type II .....	13
4.6 Design Change Request (DCR).....	13
4.7 In-Plant Testing .....	13
5.0 SYSTEM INSTALLATION .....	14
5.1 Schedule .....	14
5.2 On-Site Inspections .....	14
5.3 On-Site Coordination.....	14
5.4 Facility Criteria.....	14
5.5 Installation Design .....	14
5.6 Subcontractor Supervision .....	15
5.7 System Checkout .....	15
5.8 As-Built Drawings .....	15
6.0 SYSTEM ACCEPTANCE .....	16
6.1 Acceptance Test Plans (ATPs) .....	16
6.2 System Testing.....	16
6.3 Deficiency Lists (DL) .....	16
6.4 Technical Acceptance .....	16

---

7.0	QUALITY ASSURANCE (QA .....	17
7.1	Quality Control Program.....	17
7.2	System Test Program.....	17
7.2.1	System Test Plan .....	17
7.2.2	Test Procedures.....	17
7.2.3	Contractor Testing.....	18
7.2.4	Test Reports.....	18
8.0	TRAINING .....	19
8.1	Classroom Training .....	19
8.2	Training Documentation .....	19
9.0	MAINTENANCE and SPARES .....	20
9.1	Maintenance Plan.....	20
9.2	Spares Plan.....	20
9.3	Spares List .....	20
9.4	Test Equipment .....	20
10.0	DOCUMENTATION.....	21
10.1	Manuals and Drawings.....	21
10.2	List of Equipment.....	21
10.3	Baseline Measurements.....	21
10.4	Documentation Format.....	21
10.5	Operator Manuals.....	22
10.6	Maintenance Manuals .....	23
11.0	PROJECT PROVISIONS .....	24
11.1	Monthly Progress Reports.....	24
11.2	Monthly Review Meetings .....	24
11.3	Maintenance Support .....	24
11.4	Shipment and Delivery .....	25
12.0	SYSTEM AVAILABILITY .....	26
12.1	Common Facilities.....	26
12.2	Single Point of Failure .....	26
12.3	Availability Model.....	26
12.4	Availability .....	26
12.5	Expected Life Duration .....	27
13.0	INTERFERENCE .....	28
13.1	Interference to the System .....	28
13.2	Interference by the System .....	28
14.0	LIGHTNING PROTECTION .....	29

---

---

## 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 1/2" 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 1/2" 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

---

## TABLE OF CONTENTS

TABLE OF CONTENTS .....	3
ABBREVIATIONS .....	5
DEFINITIONS.....	6
APPLICABLE DOCUMENTS .....	7
1.0 INTRODUCTION.....	8
1.1 General.....	8
1.2 Scope .....	8
1.3 Off-The-Shelf Equipment.....	8
1.4 Manufactured Equipment .....	8
1.5 Commonality of Equipment .....	8
2.0 MATERIAL AND EQUIPMENT REQUIREMENTS .....	9
2.1 Environmental Conditions .....	9
2.2 Materials.....	9
2.2.1 Metals.....	9
2.2.2 Plastic.....	10
2.2.3 Natural Rubber .....	10
2.2.4 Wood .....	10
2.3 Toxic Materials .....	10
2.4 Flammable Materials .....	10
2.5 Fungus and Insect Supporting Materials.....	10
2.6 Finish Application .....	10
3.0 INSTALLATION REQUIREMENTS.....	11
3.1 Wiring and Cabling .....	11
3.1.1 Wiring/Cabling Methods .....	11
3.1.2 Cable/Wiring Labelling .....	12
3.1.3 Exterior Cabling.....	12
3.1.4 Slack .....	13
3.1.5 Terminations .....	13
3.1.6 Splicing and Joining .....	14
3.1.7 Shielding .....	14
3.1.8 Protection .....	15
3.1.9 Support.....	15
3.1.10 Clearance .....	15
3.1.11 Inductive and Capacitive Effects .....	15
3.2 Power Wiring .....	15
3.2.1 AC Wiring .....	16
3.2.2 AC Power Connections .....	16

---

3.3	Conduits, Enclosures, Cable Troughs and Raceways .....	16
3.3.1	Conduits .....	16
3.3.2	Enclosures .....	17
3.3.3	Cable Troughs and Raceways .....	18
3.3.4	Labelling .....	18
3.4	Soldering .....	19
3.5	Welding .....	19
3.6	Crimping .....	20
3.7	Cleaning .....	20
4.0	GROUNDING REQUIREMENTS .....	21
4.1	General .....	21
4.2	Signal Ground .....	21
4.3	Frame Ground .....	22
4.4	Combined Signal and Frame Ground .....	22
4.5	Main Ground Connection Point .....	22
4.6	Ground to Chassis .....	22
4.7	Shielding .....	23
4.8	Lightning Protection .....	23
5.0	ELECTRICAL/MECHANICAL DESIGN REQUIREMENTS .....	24
5.1	Design Considerations .....	24
5.2	Assemblies .....	24
5.3	Printed Circuit Board (PCB) .....	25
5.4	Components .....	25
6.0	QUALITY ASSURANCE REQUIREMENTS .....	26
6.1	In-plant Inspection .....	26
6.2	Test Equipment .....	27
6.3	Calibration .....	27
6.4	Safety Design Aspects .....	28
7.0	ON-SITE INSTALLATION .....	29
7.1	Inspections .....	29
7.2	Damage to Government Property .....	29
7.3	Protection of Surfaces .....	29
7.4	Cutting, Patching and Digging .....	30
7.5	Visual-Mechanical Inspection .....	30
7.6	Final System Acceptance .....	31
7.7	On-Site Maintenance .....	32
8.0	DELIVERY .....	33
8.1	Packaging .....	33
8.2	Addressing .....	33

---

---

## **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 -