Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

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

Issuing Office - Bureau de distribution
Electrical & Electronics Products Division
L'Esplanade Laurier
East Tower, 4th floor,
Ottawa
Ontario
K1A 0S5

Title - Sujet CCTV System Upgrade - Beaver Creek CCTV System Upgrade - Beaver Creek Institution	
Solicitation No. - N° de l'invitation 21120-219816/A	**Date** 2021-09-10
Client Reference No. - N° de référence du client 21120-21-3709816	
GETS Reference No. - N° de référence de SEAG PW-$$HN-336-80355	
File No. - N° de dossier hn336.21120-219816	**CCC No./N° CCC - FMS No./N° VME**

Solicitation Closes - L'invitation prend fin

at - à 02:00 PM Eastern Daylight Saving Time EDT
on - le 2021-10-21 Heure Avancée de l'Est HAE

F.O.B. - F.A.B.
Plant-Usine: ☐ **Destination:** ☐ **Other-Autre:** ☐

Address Enquiries to: - Adresser toutes questions à: Bisson(hn336), Phillipe	**Buyer Id - Id de l'acheteur** hn336
Telephone No. - N° de téléphone (613) 295-8641 ( )	**FAX No. - N° de FAX** ( ) -

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:

Specified Herein
Précisé dans les présentes

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Delivery Required - Livraison exigée See Herein – Voir ci-inclus	**Delivery Offered - Livraison proposée**

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

Telephone No. - N° de téléphone
Facsimile No. - N° de télécopieur

Name and title of person authorized to sign on behalf of Vendor/Firm (type or print)
Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)

Signature **Date**

Canada

TABLE OF CONTENTS

PART 1 - GENERAL INFORMATION 3

1.1 INTRODUCTION 3
1.2 SUMMARY 3
1.3 DEBRIEFINGS 4

PART 2 - BIDDER INSTRUCTIONS 5

2.1 STANDARD INSTRUCTIONS, CLAUSES AND CONDITIONS 5
2.2 SUBMISSION OF BIDS 5
2.3 ENQUIRIES - BID SOLICITATION 6
2.4 APPLICABLE LAWS 6
2.5 IMPROVEMENT OF REQUIREMENT DURING SOLICITATION PERIOD 6
2.6 BID CHALLENGE AND RECOURSE MECHANISMS 6
2.7 VIRTUAL SITE VISIT 6

PART 3 - BID PREPARATION INSTRUCTIONS 8

3.1 BID PREPARATION INSTRUCTIONS 8

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION 12

4.1 EVALUATION PROCEDURES 12
4.2 BASIS OF SELECTION 13

ATTACHMENT 1 TO PART4 – POINT RATED EVALUATION CRITERIA AND SCORING SHEET 14

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION 30

5.1 CERTIFICATIONS REQUIRED WITH THE BID 30
5.2 CERTIFICATIONS PRECEDENT TO CONTRACT AWARD AND ADDITIONAL INFORMATION 31

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS 33

6.1 SECURITY REQUIREMENTS 33
6.2 FINANCIAL CAPABILITY 33

PART 7 - RESULTING CONTRACT CLAUSES 35

7.1 STATEMENT OF REQUIREMENT 35
7.2 STANDARD CLAUSES AND CONDITIONS 37
7.3 SECURITY REQUIREMENTS 37
7.4 TERM OF CONTRACT 37
7.5 AUTHORITIES 38
7.6 PAYMENT 40
7.7 PROGRESS PAYMENT CLAIM AND INVOICING INSTRUCTIONS 42
7.8 CERTIFICATIONS 43
7.9 APPLICABLE LAWS 44
7.10 PRIORITY OF DOCUMENTS 44
7.11 INSURANCE 44
7.12 MEETINGS 44
7.13 CONTRACTOR'S FACILITIES 44
7.14 DELAY BY CANADA 45
7.15 AFTER SALES SERVICE 45
7.16 LIFETIME SPARES 45
7.17 DISCLOSURE OF INFORMATION 45

ANNEX "A" - STATEMENT OF TECHNICAL REQUIREMENTS (STR) 46

ANNEX "B" - BASIS OF PAYMENT **47**

ANNEX ”C” TO PART 5 - BID SOLICITATION **52**

ANNEX ”D” - TASK AUTHORIZATION FORM PWGSC-TPSGC 572 ..... **53**

ANNEX "E" – CONFIDENTIALITY AGREEMENT **54**

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.

1.2 Summary

1.2.1 The Correctional Service of Canada (CSC) has a requirement to upgrade the existing analogue/digital – Closed Circuit Television (CCTV) equipment installed at the Beaver Creek Institution located near Gravenhurst, Ontario.

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

The work includes the design, supply, installation, testing and provision of operational and technical training on the CCTV system as described in the Statement of Technical Requirements (STR). Refer to Annex A.

Delivery is requested to be completed within 40 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), the Canada-European Union Comprehensive Economic and Trade Agreement (CETA) and the Canadian Free Trade Agreement (CFTA).

1.2.4 There is a mandatory virtual bidders' site visit associated with this requirement where personnel security screening is required prior to gaining access to the electronic site documents.

1.2.5 The Federal Contractors Program (FCP) for employment equity applies to this procurement; see Part 5 - Certifications, Part 7 - Resulting Contract Clauses and the annex C titled *Federal Contractors Program for Employment Equity - Certification*.

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 (2020-05-28) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

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

Delete: 60 days
Insert: 120 days

2.2 Submission of Bids

In light of the current COVID-19 pandemic, it is recommended that all suppliers submit their bid using the epost Connect:

Given that many people are currently working from home and in an effort to reduce the spread of the Coronavirus disease (COVID-19) within communities, bidders are highly encouraged to transmit their bid electronically using the epost Connect service.

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated in the bid solicitation.

Note: For bidders choosing to submit using epost Connect for bids closing at the Bid Receiving Unit in the National Capital Region (NCR) the email address is:

tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca

Note: Bids will not be accepted if emailed directly to this email address. This email address is to be used to open an epost Connect conversation, as detailed in Standard Instructions 2003, or to send bids through an epost Connect message if the bidder is using its own licensing agreement for epost Connect.

****

If you experience difficulties with the epost connect system, you may contact our Bids Receiving Unit at the following address for assistance:

tpsgc.dgareceptiondessoumissions-abbidreceiving.pwgsc@tpsgc-pwgsc.gc.ca

Do not send any bid or offer directly to that email address.

Bids must be submitted only to the Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date and time 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 ***(to be inserted at contract award)***.

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 Bid Challenge and Recourse Mechanisms

(a) Several mechanisms are available to potential suppliers to challenge aspects of the procurement process up to and including contract award.

(b) Canada encourages suppliers to first bring their concerns to the attention of the Contracting Authority. Canada’s Buy and Sell website, under the heading “Bid Challenge and Recourse Mechanisms” contains information on potential complaint bodies such as:

- Office of the Procurement Ombudsman (OPO)
- Canadian International Trade Tribunal (CITT)

(c) Suppliers should note that there are **strict deadlines** for filing complaints, and the time periods vary depending on the complaint body in question. Suppliers should therefore act quickly when they want to challenge any aspect of the procurement process.

2.7 Optional Virtual Site Visit

In light of the COVID-19 situation, Government restrictions on public gatherings and physical distancing requirements are limiting the ability to provide traditional site visits. Due to its immediate requirement, the Correctional Service of Canada (CSC) has decided to distribute detailed information about its current installation

and requirement to interested bidders following the signature of a Confidentiality Agreement. A teleconference will take place, in replacement of a site visit, where clarifications will be provided and questions will be answered.

ADDITIONAL SPECIFICATIONS / INFORMATION AVAILABLE VIA EMAIL

Due to the nature of the work taking place at the facility and the Security Requirements, photos and/or videos of the Beaver Creek Institution (5775 Gravenhurst Road, Gravenhurst, Ontario, K0H 1G0) areas of interest will be provided to bidders via email.

IMPORTANT NOTE:

Interested bidders **must email the Contracting Authority at Phillipe.Bisson@pwgsc-tpsgc.gc.ca no later than October 4, 2021** to request a copy of the additional information that have been made available. Bidders are requested to clearly identify the name of the participant, the name of the company, e-mail address and telephone number.

Bidders **must include a completed Annex E, Confidentiality Agreement** with the request for specifications for each individual that will have access to them.

Contracting Authority:

Phillipe Bisson
Supply Specialist

Public Services and Procurement Canada (PSPC)
Acquisitions Branch
Industrial Products and Vehicles Procurement Directorate
HN Division

Telephone: **(613) 295-8641**
E-mail address**: phillipe.bisson@*tpsgc-pwgsc.gc.ca***

BIDDERS' CONFERENCE (TELECONFERENCE)

Date, Time and Call-in Details of the bidders' conference (teleconference) will be provided upon acceptance of bidder's request for information via email.

The scope of the requirement outlined in the bid solicitation will be reviewed during the conference and questions will be answered. It is recommended that bidders who intend to submit a bid attend.

Bidders should provide, in writing, to the Contracting Authority, the name(s) of the person(s) who will be attending.

To ensure consistency and fairness to all Bidders, any clarifications or changes to the bid solicitation, all questions and answers will be recorded and then submitted to the Contracting Authority who will issue an amended RFP for all Bidders to view the non-restricted information resulting from the bidder's conference.

Bidders who do not attend the bidder's conference will not be precluded from submitting a bid.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

Canada requests that the Bidder submits its bid in accordance with section 08 of the 2003 standard instructions. The epost Connect system has a limit of 1GB per single message posted and a limit of 20GB per conversation.

The bid must be gathered per section and separated as follows:

Section I: Technical Bid
Section II: Management Bid
Section III: Support Bid
Section IV: Financial Bid
Section V: Certifications
Section VI: Additional Information

Due to the nature of the Request for Proposal, transmission of bids by mail/courier to PWGSC Bid Receiving Unit (BRU) will not be accepted.

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

Section I: Technical Bid

The Technical, Management and Support Bids must 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 must address the evaluation criteria in sufficient depth in their bid. Simply repeating the statement contained in the solicitation document is not sufficient. Bidders must 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 (Destination), 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 CCTV System Upgrade – Beaver Creek Institution, 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 AM to 4:30 PM 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 Spare parts and Test Equipment

Spare Parts and/or Test Equipment List(s) as detailed in STR, paragraph **5.12**.

3.1.2.9 Bid Firm Lot Price Cost Breakdown

Prior to contract award Bidders must provide a line by line breakdown of the material and labour used to calculate the Bid Prices for Equipment and Design Lot Price identified within Annex “B” - Basis of Payment.

The pricing provided will be used to calculate the cost of any Task Authorizations throughout the life of the contract.

3.1.3 Exchange Rate Fluctuation

C3011T (2013-11-06), Exchange Rate Fluctuation

Section V: 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 VI: Additional Information

3.1.4. Delivery Offered

While delivery is requested as indicated above, the best delivery that could be offered is ***(Bidder to insert a date).***

3.1.5 Contractor Contacts

Name and telephone number of the person responsible for:

General enquiries	Delivery follow-up
Name: _____	Name: _____
Telephone No.: _____	Telephone No.: _____
Facsimile No.: _____	Facsimile No.: _____
E-mail address: _____	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: _____

3.1.7 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: _____

3.1.8 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

For the purpose of the Evaluation Process only, **"Bidder"** means the person or entity (or, in the case of a joint venture, the persons or entities) submitting a bid to perform a contract for goods, services or both. It may also include the parent or subsidiaries of the Bidder.

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:

- 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.

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;

- Bidder must clearly identify in their Bid the name of the following resources assigned to each institution:
    1. Project Manager;
    2. Primary Back-up Project Manager;
    3. Project Supervisor;

4. Primary Back-up Project Supervisor;
5. Technician; and
6. Primary Back-up Technician,

- Bidders must obtain the required minimum points identified in Attachment 1 to Part 4 - Evaluation Criteria and Scoring Sheet, Sections 1.1, 1.2.1, 2.2.1, 2.2.2 and 2.2.3.

The technical bid should be structured in the same format as the Statement of Technical Requirement 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 to Part 4 - 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 destination, 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.

ATTACHMENT 1 TO PART4 – POINT RATED EVALUATION CRITERIA AND SCORING SHEET

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
1.1 Understanding of the Technical Requirements (a maximum of 45 points is available) 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) The proposal indicates that the Bidder does not understand the requirements identified in the STR and supporting documents. (35 points) 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) 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**		

1.2 Quality Assurance and Acceptance Test Plans

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:

Point Rated Technical Proposal Criteria	Pts	Comments
1.2.1 Quality Assurance (a maximum of 16 points is available) 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 16 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		
1.2.2 Site Acceptance Test Plan (a maximum of 20 points is avail.) 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. (4 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 20 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; d) Provided test sheets including pass/fail parameters; e) Provided test sheets, including specific parameters.		

Sub-Section Total		
1.3 Technical Risk Elements (a maximum of 19 points is available) 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 a minimum of two Technical concerns only as non-Technical risks are evaluated separately. (0 points) The proposal indicates that the Bidder has not identified: a) A minimum of two Technical risk elements, nor b) Technical risk mitigation. (10 points) The proposal indicates that the Bidder has identified : a) Two or more Technical risk elements, and b) Risk management process, but c) Bidder does not provide a technical risk mitigation plan. (14 points) As above, plus the Bidder has provided a) A risk mitigation plan. (19 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		
Total Technical Proposal (maximum 100 points)		

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:

2.0 Previous Project Management Experience
The Bidder, the project manager, the project supervisor and the technicians will be evaluated The proposal must demonstrate a detailed description of the qualification and previous experience pertaining to similar projects in terms of size, tasks, clients, and responsibilities.

Point Rated Project Management Proposal Criteria	Pts	Comments
2.1 Experience of the Bidder within the last four (4) years (a maximum of 10 points is available) (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 in a) through e) to a limit of 10 points. Similar project(s) that have been successfully completed and have provided them with experience pertaining to the following elements. a) Similarity of project in terms of scope and/or clients; b) Dollar value over $100K; c) Installation; d) Training; e) Drawings and Manuals		
Sub-Section Total		

2.2.1 Project Manager's (and Primary Back-up Project Manager) Overall Experience (years, size of project & complexity) and Qualifications (a maximum of 12 points is available) The proposal should indicate that the designated Project Manager and Primary Back up Project Manager should both have: a) The stated levels of experience in the design, supply, installation and integration of systems similar to those described in the STR. b) Professional Certification(s) –at least one of PMP, PMI, MBA, P. Eng. or demonstrated equivalent certification. For each resource identified, the following information / documentation should be provided in the order described below: 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. b) A copy of their certification, degree and/or diploma to demonstrate the criteria. ***Please Note: Points are assessed on a team basis (Project Manager and Primary back-up Project Manager), based on combined overall experience.*** (0 points) – Project Manager & Primary Back-Up Project Manager One or both lack experience with projects of similar size and complexity, regardless of professional certifications (4 points) – Project Manager & Primary Back-Up Project Manager At least one has: i. Less than 4 years of experience with projects of similar size and complexity; and ii. No professional certifications (6 points) – Project Manager & Primary Back-Up Project Manager At least one has: i. Less than 4 years of experience with projects of similar size and complexity; and ii. Professional certifications (8 points) – Project Manager has: i. Between 4 and 10 years of experience with projects of similar size and complexity; and ii. Professional certifications **And** – Primary Back-Up Project Manager has: i. Less than 4 years of experience with projects of similar size and complexity; and ii. Professional certifications (12 points) – Project Manager & Primary Back-Up Project Manager Both have		**NOTE TO BIDDERS:** If neither of the resources have experience with projects of similar size and complexity, then combined, you get 0 point. If at least one of the resources has less than 4 years of experience and no professional certifications, then combined, you get 4 points. If at least one of the resources has less than 4 years of experience and professional certifications, then combined, you get 6 points. If the Project Manager has between 4 and 10 years of experience and the Primary Back-Up Project Manager has less than 4 years of experience and both resources have professional certifications, then combined, you get 8 points. If both resources have more than 10 years of experience and

i. Greater than 10 years of experience with projects of similar size and complexity; and ii. Professional certifications ***Minimum mandatory points required: 6**		professional certifications, then combined, you get 12 points.
Sub-Section Total		

2.2.2 Project Supervisor's (and Primary Back-Up Project Supervisor's) Overall Experience (years, size of project & complexity) and Qualifications (a maximum of 8 points is available)

The proposal should indicate that either the designated Project Supervisor or Primary Back up Project Supervisor has the stated levels of experience in the design, supply, installation and integration of systems similar to those described in the STR.

For each resource identified, the following information / documentation should be provided in the order described below:

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.

b) A copy of their professional or technical certification, degree or diploma in any of the electrical, electro-mechanical, electronics, mechanical, software development, computer programming, network technology or telecommunications fields.
Note: Certifications from Manufacturer's courses are not considered as equivalent to a Diploma.

Please Note: Points are assessed on a team basis (Project Supervisor or Primary Back up Project Supervisor), based on combined overall experience.

(0 points) – Project Supervisor & Primary Back-Up Project Supervisor
One or both lack supervisory experience with projects of similar size and complexity, regardless of professional certifications.

(4 points) – Project Supervisor & Primary Back-Up Project Supervisor
At least one has:
i. Less than 4 years Supervisory experience with projects of similar size and complexity; and
ii. No professional or technical certifications

(6 points) – Project Supervisor has:
i. Between 4 and 10 years Supervisory experience with projects of similar size and complexity; and
ii. Professional or technical certifications.

And
– Primary Back-Up Project Supervisor has:
i. Less than 4 years Supervisory experience with projects of similar size and complexity; and
ii. No professional or technical certifications

(8 points) – Project Supervisor & Primary Back-Up Project Supervisor
a) Both have
i. Greater than 10 years Supervisory experience with projects of similar size and complexity; and
ii. Professional or technical certifications

NOTE TO BIDDERS:

If neither of the resources have experience with projects of similar size and complexity, then combined, you get 0 point.

If at least one of the resources has less than 4 years of experience and no professional or technical certifications, then combined, you get 4 points.

If the Project Supervisor has between 4 and 10 years of experience with professional or technical certifications and the Primary Back-Up Project Supervisor has less than 4 years of experience and no professional or technical certifications, then combined, you get 6 points.

If both resources have more than 10 years of experience with professional or technical

***Minimum mandatory points required: 4**		certifications, then combined, you get 8 points.
Sub-Section Total		

2.2.3 Technician and Primary Back-up Technicians' Overall Experience (years, size of project & complexity) and Qualifications (a maximum of 8 points is available) The proposal should indicate that either the designated Technician or Primary Back up Technician has the stated levels of experience in the design, supply, installation and integration of systems similar to those described in the STR. For each resource identified, the following information / documentation should be provided in the order described below: 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 b) A copy of their technical certifications in any of the electrical, electro-mechanical, electronics, mechanical, software development or computer programming including, certifications from Manufacturer's courses. ***Please Note: Points are assessed on a team basis (Technician or Primary Back up Technician), based on combined overall experience.*** (0 points) – Technician & Primary Back-Up Technician One or both lack experience with projects of similar size and complexity, regardless of technical certifications (4 points) – Technician & Primary Back-Up Technician At least one has: i. Between 6 months and 4 years of experience with projects of similar size and complexity; and ii. No Technical or manufacturers certifications (6 points) – Technician has: i. Between 4 and 10 years of experience with projects of similar size and complexity; and ii. Technical or manufacturers certifications. **And** – Primary Back-Up Technician i. Between 6 months and 4 years of experience with projects of similar size and complexity; and ii. No technical or manufacturers certifications. (8 points) – Technician & Primary Back-Up Technician Both have i. Greater than 10 years of experience with projects of similar size and complexity; and ii. Technical or manufacturers certifications. ***Minimum mandatory points required: 4**		**NOTE TO BIDDERS:** If neither of the resources have experience with projects of similar size and complexity, then combined, you get 0 point. If at least one of the resources has between 6 months and 4 years of experience and no technical or manufacturers certifications, then combined, you get 4 points. If the Technician has between 4 and 10 years of experience with technical or manufacturers certifications and the Primary Back-Up Technician has between 6 months and 4 years of experience and no technical or manufacturers certifications, then combined, you get 6 points. If both resources have more than 10 years of experience and technical or manufacturers certifications, then combined, you get 8 points.
Sub-Section Total		

2.2.4 The proposal indicates that one or more of the identified resources (stated in response to evaluation criteria 2.2.1, 2.2.2 and 2.2.3) has stated levels of experience in the design, supply, installation and integration of the systems similar to those described in the STR, as follows: (a maximum of 10 points is available) (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		

2.3 Project Management Structure and Procedures
Project management structure and procedures describing the implementation of this project.

Point Rated Project Management Proposal Criteria	Pts	Comments
2.3.1 Project Management Organization and Responsibilities (a maximum of 10 points is available) This refers only to management personnel and the way that the Bidder plans to organize the project team for this contract. (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		

2.3.2 Project Management Procedures (a maximum of 12 points is available) This criterion will rate the systems used by the Bidders to implement their project management approach. (0 points) The proposal indicates that Project Management (PM) implementation is not addressed. (4 points) 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) The proposal indicates that PM system is in place that will allow the Bidder to manage the project. Bidder has supplied a detailed plan of his PM implementation. (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		

2.4 Schedule, Milestones and Project Management Tools

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.

Point Rated Project Management Proposal Criteria	Pts	Comments
2.4.1 Schedule/Milestones (a maximum of 10 points is available) 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. a) Major milestones are identified. b) Logical sequence is proposed. c) Contingency time identified. d) Time estimates are realistic. (0 points) The proposal schedule only addresses 1 of the 4 areas identified above. (5 points) The proposal schedule only addresses 2 of the 4 areas identified above. (8 points) The proposal schedule addresses 3 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		
2.4.2 Project Management Tools (a maximum of 10 points is available) 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)The proposal indicates that the Bidder has not identified the PM specific software. (8 points)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)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		

2.4.3 Project Risks Elements (a maximum of 10 points is available) A description of the project risks, excluding all technical 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. (0 points) The proposal indicates that the Bidder has not clearly identified any: a) Non-technical risks associated with the project; and b) Non-technical risk mitigation plan. (4 points) The proposal indicates that the Bidder has clearly identified: a) The non-technical risks associated with the project, including impacts: i. Management ii. Schedule iii. Scope changes iv. Financial impact v. Resource issues b) Their non-technical risk management process, c) That the Bidder has not provided a non-technical risk mitigation plan. (8 points) The proposal indicates that the Bidder has clearly identified: a) As above, plus, b) Their non-technical risk mitigation plan. (10 points) The proposal indicates that the Bidder has clearly identified: a) As above; plus b) The identified risks are appropriately associated with the Bidder, Subcontractor, Customer, Integration, or Equipment Performance; c) That the proposed non-technical mitigation approaches are closely aligned with the requirements of the project; d) The decision points are identified and aligned with the proposed risk mitigation approaches.		
Sub-Section Totals		
Total Project Management Proposal (maximum 100 points)		

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	Pts	Comments
3.0 Operator Training Plan Outline, Training and Manuals 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:		
Point Rated Support Proposal Criteria	**Pts**	**Comments**
3.1.1 Operator training plan outline (a maximum of 15 points is available) (0 points) The proposal indicates that the operator training plan outline does not meet the requirements. (12 points) 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 minimum requirements as identified within the STR in at least 2 instances that are uniquely and specifically identified, including the reasons for identifying them, in the Bidder's proposal.		
Sub-Section Total		
3.1.2 Operator Training approach, methodology and team (a maximum of 15 points is available) (0 points) 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) Exceeds the minimum requirements as identified within the STR in at least 2 instances that are uniquely and specifically identified, including the reasons for identifying them, in the Bidder's proposal.		
Sub-Section Total		

3.1.3 Operator Manuals (a maximum of 15 points is available) (0 points) The proposal indicates that the documented information does not meet the requirements. (12 points) The proposal indicates that the documented information meets the requirements. (15 points) Exceeds the minimum requirements as identified within the STR in at least 2 instances that are uniquely and specifically identified, including the reasons for identifying them, in the Bidder's proposal.		
Sub-Section Total		

3.2 Maintenance Personnel Training Outline, Training and Manuals

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:

Point Rated Support Proposal Criteria	Pts	Comments
3.2.1 Maintenance Training Plan Outline (a maximum of 15 points is available) (0 points) 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) Exceeds the minimum requirements as identified within the STR in at least 2 instances that are uniquely and specifically identified, including the reasons for identifying them, in the Bidder's proposal.		
Sub-Section Total		
3.2.2 Maintenance Training Approach, Methodology and Team (a maximum of 15 points is available) (0 points) 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) Exceeds the minimum requirements as identified within the STR in at least 2 instances that are uniquely and specifically identified, including the reasons for identifying them, in the Bidder's proposal.		
Sub-Section Total		

3.2.3 Maintenance Manuals(a maximum of 15 points is available) (0 points) The proposal indicates that the documented information does not meet the requirements. (12 points) The proposal indicates that the documented information meets the requirements. (15 points) Exceeds the minimum requirements as identified within the STR in at least 2 instances that are uniquely and specifically identified, including the reasons for identifying them, in the Bidder's proposal.		
Sub-Section Total		
3.3 Spare Plan and Spare Parts List (a maximum of 10 points is available) (0 points) The proposal indicates that the spares plan and spare parts list does not meet the requirements. (6 points) The proposal indicates that the spares plan and spare parts list meets the requirements. (10 points) Exceeds the minimum requirements as identified within the STR in at least 2 instances that are uniquely and specifically identified, including the reasons for identifying them, in the Bidder's proposal.		
Sub-Section Total		
Total Support Proposal (maximum 100 points)		

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) 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 6 – 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 the CCTV System Upgrade – Beaver Creek Institution as described in the Statement of Technical Requirement (STR). The Contractor shall provide acceptable documentation for the maintenance of this system.

Refer to Annex A 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 CCTV System Upgrade at the Beaver Creek Institution. 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 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" 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 (2020-05-28), General Conditions - Higher Complexity - Goods, apply to and form part of the Contract.

7.2.2 Supplemental General Conditions

4001 (2015-04-01) Hardware Purchase, lease and Maintenance;
4003 (2010-08-16) Licensed Software;
4004 (2013-04-25) Maintenance and Support Services for 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 (2018-06-21) 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

The contractor must submit a list of all staff who will be working at the institution(s) five (5) working days prior to start-up date.

Contractor personnel are required to have a valid government issued piece of identification (ID) (i.e. Driver's License or Passport) in order to access the institution to perform the Work.

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 to the Beaver Creek Institution (5775 Gravenhurst Road, Gravenhurst, Ontario, K0H 1G0) 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:

Phillipe Bisson
Supply Specialist

Public Services and Procurement Canada
Acquisitions Branch
Industrial Products and Vehicles Procurement Directorate
HN Division
140 O'Connor Street
Ottawa, ON, K1A 0S5

Telephone: (613) 295-8641
E-mail address: ***Phillipe.Bisson@tpsgc-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:

(*To be completed at time of Contract award)*

Name: _____
Title: _____
Organization: _____
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:

(*To be completed at time of Contract award)*

General enquiries

Name: _____
Telephone: _____
Facsimile: _____
E-mail: _____

Delivery follow-up

Name: _____
Telephone: _____
Facsimile: _____
E-mail: _____

7.5.4 Warranty Repairs

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

(*To be completed at time of Contract award)*

Response Time: _____
Name: _____
Telephone: _____
Facsimile: _____
E-mail: _____

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:

(To be completed at time of Contract award)

Name: _____
Telephone: _____
Facsimile: _____
E-mail: _____

7.6 Payment

7.6.1 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 *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.

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

7.6.2 Limitation of Price

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

7.6.3 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 $ ***(to be inserted at contract award)*** . Customs duties and Applicable Taxes are included.

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.

7.6.4 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

7.6.5 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.

7.7 Progress Payment Claim and Invoicing Instructions

7.7.1 Progress Payment Claim (Including Task Authorization Payments)

1. 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;

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.

7.7.2 Invoicing Instructions

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions.

2. By submitting invoices the Contractor is certifying that the goods and services have been delivered and that all charges are in accordance with the Basis of Payment provision of the Contract, including any charges for work performed by subcontractors.

7.7.3 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:

1st Milestone	Design of the System	100% Design	List value – 10%	Approved Final Design Report
2nd Milestone	Delivery of Equipment	100% Equipment	List value – 10%	Approved Packing Slip

3rd 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%	Approved Progress Report
4th 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%	Acceptance Tests Completed, All deficiencies resolved in Acceptance Test.
5th 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%	Handover sheets and training course Summary sheets, signed by trainees.
6th Milestone	Holdback			All Deliverables Provided

7.7.4 Method of Payment – Emergency Repairs and Delays

7.7.4.1 Single Payment

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

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

7.7.4.2 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.

7.8 Certifications

7.8.1 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.

7.8.2 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.

7.9 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____(***name of the province to be inserted at contract award***).

7.10 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 supplemental general conditions:
  (i) 4001 (2015-04-01) Hardware Purchase, lease and Maintenance;
  (ii) 4003 (2010-08-16) Licensed Software;
  (iii) 4004 (2013-04-25) Maintenance and Support Services for Licensed Software; and
  (iv) 4006 (2010-08-16) Contractor to Own Intellectual Property Rights in Foreground Information
(c) the general conditions 2030 (2020-05-28), General Conditions - Higher Complexity - Goods;
(d) Annex A, Statement of Technical Requirements (STR);
(e) Annex B, Basis of Payment;
(f) the signed Task Authorizations (including all of its annexes, if any) and;
(g) the Contractor's bid dated _____,as clarified on _____,as amended on _____

7.11 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.

7.12 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.

7.13 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.

7.14 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.

7.15 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.

7.16 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: ***(to be inserted at contract award)*** 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.

7.17 Disclosure of Information

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

ANNEX “A” - STATEMENT OF TECHNICAL REQUIREMENTS (STR)

(SEE BELOW ANNEX E FOR FULL DOCUMENT)

ANNEX "B" - BASIS OF PAYMENT

CCTV System Upgrade – Beaver Creek Institution

All prices must be firm in Canadian dollars, Delivered Duty Paid (Beaver Creek Institution – Gravenhurst, Ontario), 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: $_____***

2.1 ADDITIONAL CONDUIT WORK

Bidders are requested to provide a cost per foot basis for additional conduit *(cost of material only)*.

COST PER FOOT	***FIRM LOT PRICE: $_____***

Note: *Cost of labour to be calculated separately as per the firm hourly rate in part 3.2 below.*

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:

Site	FIRM LOT PRICE BREAKDOWN
BEAVER CREEK INSTITUTION Estimated Number of Individuals _____ Estimated Number of Days _____	Accommodation $_____ Air Fare $_____ Car Rental & Fuel $_____ 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 SOW.

SOFTWARE INTEGRATION	***FIRM LOT PRICE: $_____***
TESTING COST	***FIRM LOT PRICE: $_____***
TRAVEL COST	***FIRM LOT PRICE: $_____***

Breakdown of Travel costs are as follows:

Site	FIRM LOT PRICE BREAKDOWN
BEAVER CREEK INSTITUTION Estimated Number of Individuals _____ Estimated Number of Days _____	Accommodation $_____ 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 SOW.

As-built Drawings Firm Lot Price as per SOW.

Operator and Maintenance Manuals Firm Lot Price as per SOW.

ON-SITE TRAINING COST	***FIRM LOT PRICE: $_____***

TRAVEL COST	***FIRM LOT PRICE: $_____***

Breakdown of Travel costs are as follows:

Site	FIRM LOT PRICE BREAKDOWN	
BEAVER CREEK INSTITUTION	Accommodation	$_____
	Air Fare	$_____
Estimated Number of Individuals _____	Car Rental & Fuel	$_____

Estimated Number of Days _____	Other costs (meals and incidentals): $_____ (identify what they are)

5.1 AS-BUILT DRAWINGS	***FIRM LOT PRICE: $_____***

5.2 OPERATOR AND MAINTENANCE MANUALS	***FIRM LOT PRICE: $_____***

PART 1- CONTRACTOR PROPOSED SOLUTION	***TOTAL BID PRICE: $_____***

PART 2 – OPTION # 1 - SPARE PARTS AND TEST 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 as detailed in STR section 5.12. The bidder must also submit a firm unit price for each recommended spare parts required.

Description	Qty.	Firm Unit Price	Extended Price
		$	$
		$	$
		$	$
		$	$
		$	$
		$	$
		$	$
		$	$
		$	$
		$	$

PART 2 - SPARE PARTS AND/OR TEST EQUIPMENT	***FIRM LOT PRICE: $_____***

ANNEX "C" to PART 5 - BID SOLICITATION

FEDERAL CONTRACTORS PROGRAM FOR EMPLOYMENT EQUITY – CERTIFICATION

I, the Bidder, by submitting the present information to the Contracting Authority, certify that the information provided is true as of the date indicated below. The certifications provided to Canada are subject to verification at all times. I understand that Canada will declare a bid non-responsive, or will declare a contractor in default, if a certification is found to be untrue, whether during the bid evaluation period or during the contract period. Canada will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply with any request or requirement imposed by Canada may render the bid non-responsive or constitute a default under the Contract.

For further information on the Federal Contractors Program for Employment Equity visit Employment and Social Development Canada (ESDC) – Labour's website.

Date:_____(YYYY/MM/DD) (If left blank, the date will be deemed to be the bid solicitation closing date.)

Complete both A and B.

A. Check only one of the following:

( ) A1. The Bidder certifies having no work force in Canada.

( ) A2. The Bidder certifies being a public sector employer.

( ) A3. The Bidder certifies being a federally regulated employer being subject to the *Employment Equity Act*.

( ) A4. The Bidder certifies having a combined work force in Canada of less than 100 employees (combined work force includes: permanent full-time, permanent part-time and temporary employees [temporary employees only includes those who have worked 12 weeks or more during a calendar year and who are not full-time students]).

A5. The Bidder has a combined workforce in Canada of 100 or more employees; and

( ) A5.1. The Bidder certifies already having a valid and current Agreement to Implement Employment Equity (AIEE) in place with ESDC-Labour.

OR

( ) A5.2. The Bidder certifies having submitted the Agreement to Implement Employment Equity (LAB1168) to ESDC-Labour. As this is a condition to contract award, proceed to completing the form Agreement to Implement Employment Equity (LAB1168), duly signing it, and transmit it to ESDC-Labour.

B. Check only one of the following:

( ) B1. The Bidder is not a Joint Venture.

OR

( ) B2. The Bidder is a Joint venture and each member of the Joint Venture must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification. (Refer to the Joint Venture section of the Standard Instructions)

ANNEX ”D” - TASK AUTHORIZATION FORM PWGSC-TPSGC 572

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

ANNEX "E" – CONFIDENTIALITY AGREEMENT

TO: HER MAJESTY THE QUEEN IN RIGHT OF CANADA ("CANADA"), AS REPRESENTED BY THE MINISTER OF PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

The description of the requirement of bid solicitation No.21120-219816/A contains information that is confidential or proprietary to Canada or to a third party (the Confidential Information) that is not to be disclosed or used in any way other than as set out below.

1. The Supplier agrees that:
    a. it must not, without first obtaining the written permission of the Contracting Authority, disclose to anyone, other than an employee or a proposed subcontractor with a need to know, the Confidential Information;
    b. it must not make copies of the Confidential Information or use it for any purpose other than for the preparation of a bid in response to the bid solicitation identified above;
    c. at close or early termination of the bid period, it must immediately deliver the Confidential Information to the Contracting Authority as well as every draft, working paper and note that contains any information related to the Confidential Information.
2. The Supplier must require any proposed subcontractor referred to in (a) above to execute a Confidentiality Agreement on the same conditions as those contained in this agreement.
3. The Supplier acknowledges and agrees that it will be liable for any and all claims, loss, damages, costs, or expenses incurred or suffered by Canada caused by the failure of the Supplier, or by anyone to whom the Supplier discloses the Confidential Information to comply with these conditions.
4. Nothing in this Confidentiality Agreement should be construed as limiting the Supplier's right to disclose any information to the extent that such information:
    a. is or becomes in the public domain through no fault of the Supplier or any proposed subcontractor;
    b. is or becomes known to the Supplier from a source other than Canada, except any source that is known to the Supplier to be under an obligation to Canada not to disclose the information;
    c. is independently developed by the Supplier; or
    d. is disclosed under compulsion of a legislative requirement or any order of a court or other tribunal having jurisdiction.

_____
Name of Supplier

_____
Signed by its authorized representative

_____
Date

CORRECTIONAL SERVICE CANADA

CHANGING LIVES. PROTECTING CANADIANS.

CCTV System Upgrade
Beaver Creek Institution

STATEMENT OF TECHNICAL REQUIREMENTS

Correctional Service Canada | Service correctionnel Canada

Canada

Correctional Service Canada
Technical Services Branch
Electronics Systems

Issue 2

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STATEMENT OF TECHNICAL REQUIREMENTS

UPGRADE

of

INTERNAL (SIDS) CCTV SYSTEMS

at

BEAVER CREEK INSTITUTION

AUTHORITY

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the existing Hybrid CCTV System at Beaver Creek Institution.

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TABLE OF CONTENTS

DOCUMENT REVISION HISTORY 4
TABLE OF CONTENTS 5
ABBREVIATIONS 7
DEFINITIONS 9

1.0 INTRODUCTION 10
1.1 General 10
1.2 Scope 10
1.3 Requirements 10
1.4 Technical Acceptability 10

2.0 APPLICABLE DOCUMENTS 11
2.1 Applicability 11
2.2 Applicable Statements of Work, Specifications and Standards 11
2.3 Language 11

3.0 OPERATIONAL CRITERIA 12
3.1 General 12
3.2 System Specifics 13

4.0 TECHNICAL REQUIREMENTS 14
4.1 Concept of Operation 14
4.2 Existing System Verification 14
4.3 Removal of Equipment and Cables 15
4.4 System Installation 15
4.5 Cameras and Lens 17
4.6 Camera Power Supplies 21
4.7 Network Architecture 21
4.8 Network Video Recorder 26
4.9 Integration 28
4.10 Network Video User Station (client) 29
4.11 KVM (Keyboard, Video, Mouse) Extensions 30

4.12 Monitors 31
4.13 Uninterruptible Power Supply 31
4.14 Electronic Equipment Cabinet 32
4.15 Expandability 33
4.16 Finishing 33

5.0 ADDITIONAL REQUIREMENTS 34
5.1 Operator Training 34
5.2 Maintenance Training 34
5.3 Manuals 35
5.4 As-Built Drawings 35
5.5 Software 36
5.6 Testing 36
5.7 Operational Down-Time 37
5.8 Institutional Operations 37
5.9 Institutional Address 37
5.10 Security 38
5.11 Safety 38
5.12 Spares 38
5.13 Communication Responsibility 39
5.14 Design Change Procedure 39

Annex A - Maintenance Handover Report Form

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

Annex C - Site Specific Requirements and System Layout

Annex D – Camera Totals

Annex E – Camera Assignment Tables

Annex F – Monitor and Client Assignment Tables

Annex G – Node and Fibre Layout

Annex H – Site Maps

Annex I – Specifications and Standards

ABBREVIATIONS

The following abbreviations are used in this specification:

CER	Central Equipment Room
CD/DVD	Compact Disk/Digital Video Disk
CMBR	Crisis Management Boardroom
CMO	Correctional Manager Operations
CSC	Correctional Service Canada
CSA	Canadian Standards Association
CCTV	Closed Circuit Television
CFM	Cubic Feet / Minute
DA	Design Authority
EIS	Electronic Image Stabilization
EVI	Educational Vocational Institute
FOV	Field of View
GB	Gigabit
IP	Internet Protocol
LCD	Liquid Crystal Display
LED	Light Emitting Diode
LOF	Laser Optimized Fibre
Mbps	Megabits per second
MCCP	Main Communication Control Post
NTSC	National Television System Committee

NVUS	Network Video User Station
NVR	Network Video Recorder
PIU	Perimeter Integration Unit
PoE	Power over Ethernet
PSIM	Physical Security Information System
PTZ	Pan/Tilt/Zoom
RTO	Regional Technical & Electronics Officer
SAT	Site Acceptance Test
SATA	Serial ATA (Advance Technology Attachment)
SEG	Segregation
SIO	Security & Intelligence Officer
SOW	Statement of Work
STR	Statement of Technical Requirements
TB	Terabyte
TtT	Train the Trainer
UPS	Uninterruptible Power Supply
UTP	Unshielded Twisted Pair
VMS	Video Management Software

DEFINITIONS

The following definitions are used throughout this specification:

Design Authority: Director, Engineering Services, Correctional Service Canada (CSC)

Contract Authority: Public Works & Government Services Canada

Contractor: The Company selected as the successful bidder on the contract.

1.0 INTRODUCTION

1.1 General

The Correctional Service of Canada (CSC) has a requirement to upgrade the existing analogue/digital – Closed Circuit Television (CCTV) equipment installed at Beaver Creek Institution. The existing analogue CCTV equipment is to be upgraded and integrated into a Genetec Security Center VMS digital CCTV video recording system. In certain areas where additional CCTV coverage is required new network cameras will be installed. This Statement of Technical Requirements (STR) will cover the technical requirements for the required work.

The Beaver Creek Institution is a medium/minimum security facility located near Gravenhurst, Ontario. Work will have to be accomplished with minimum disruption to the daily operation and security of the institution. To satisfy this requirement, the existing system must remain operational as long as possible to ensure the integrity of the perimeter security. The contractor will be required to work afterhours on major changes of the infrastructure.

1.2 Scope

The contractor must supply, install, test, and provide operational and maintenance training on the CCTV system, as described in this STR. The contractor must provide acceptable documentation for the operation and the maintenance of this system. The replacement of existing CCTV equipment will be 100% integrated into an upgraded Genetec Security Center VMS software.

1.3 Requirements

The purpose of this STR is to define the technical aspects and describe specific work requirements for the upgrade of the CCTV system at the Beaver Creek Institution. This STR will indicate the extent to which both general and particular CSC specifications are applicable to the implementation of this requirement.

1.4 Technical Acceptability

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

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

2.0 APPLICABLE DOCUMENTS

2.1 Applicability

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

2.2 Applicable Statements of Work, Specifications and Standards

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/SOW-0110 Electronics Engineering Statement of Work – Structured Cable Systems for Electronic Security Systems

D. ES/SPEC-0006 Electronics Engineering Specification – Conduit, Space and Power Requirements for Security Systems for use in Federal Correctional Institutions

E. ES/STD-0205 Electronics Engineering Standard, Fixed Outdoor Camera Enclosure, Closed Circuit Television

F. ES/STD-0221 Electronics Engineering Standard, Fixed Network Colour Camera for Enclosure, Closed Circuit Television

G. ES/STD-0223 Electronics Engineering Standard, Pan/Tilt/Zoom Network Colour Dome Camera, Closed Circuit Television

H. ES/STD-0227 Electronics Engineering Standard, LCD Colour Computer Monitor, Closed Circuit Television

I. ES/STD-0228 Electronics Engineering Standard, Network Video User Station, Closed Circuit Television

J. ES/STD-0229 Electronics Engineering Standard, Network Video Recorder, Closed Circuit Television

K. ES/STD-0232 Electronics Engineering Standard, Fixed Network Colour Dome Camera, Closed Circuit Television

L. ES/STD-0233 Electronics Engineering Standard, Indoor No-Grip Corner Mount Network Colour Camera, Closed Circuit Television

M. ES/STD-0235 Electronics Engineering Standard, Indoor Panoramic Network Colour Camera, Closed Circuit Television

2.3 Language

The language at the Beaver Creek Institution is English. All CCTV system display and control indicators and information will be in English only. The operator manuals, maintenance manuals and as-built documents will be provided in English only. Documentation will be provided as per Paragraphs 5.1 through 5.4.

3. OPERATIONAL CRITERIA

3.1. General

3.1.1. The contractor must supply and install new CCTV equipment to upgrade an existing CCTV to a 100% digital CCTV system with the most current VMS software to ensure compatibility with future systems. The VMS software will be integrated from 2 separate sites into a single site with centralized storage at the medium security site. Work will include replacement of all analogue CCTV cameras and cabling, replacement of some existing 62.5/125µm (OM1) fibre optic cabling and installation of 50/125µm (OM2) and 9/125µm (OS2) fibre optic cable, replacement of all Ethernet network switches, new fibre optic and CAT5 or CAT6 termination bays and all necessary fibre-optic media converters, network switches, client computers, monitors, brackets, towers and uninterruptable power supplies to provide a complete CCTV network throughout the institution. The contractor must provide and install new CCTV equipment cabinets that meet the requirements detailed in section 4.14 and detailed in Annex C of this STR. The contractor must provide and install a new CCTV archive array as detailed in this STR into existing electronics equipment cabinets in the CER. The contractor will provide and install the most current version of Genetec Security Center VMS and configure the software to provide all alarm outputs to the PIDS/FAAS Perimeter Integration Unit (PSIM) in the Main Communications and Control Post.

3.1.2. The system upgrade will consist of the provision of 188 new digital CCTV cameras, 29 network video user stations (clients), 39 monitors, directory servers, video archivers, network attached video storage appliances, electronic equipment cabinets, network switches, camera mounting assemblies, tilt-down/swing back camera towers and roof gantries, uninterruptable power supplies, fibre-optic cabling, category 6 cabling and patch/termination bays. In addition, the upgraded Genetec VMS software will be expanded to accommodate both medium and minimum sites into a single Genetec system recording all cameras associated with Beaver Creek Institution. The operational parameters of the installed equipment shall meet or exceed the performance and operational requirements in accordance with the SOW's, Specifications and Standards listed in paragraph 2.2.

3.1.3. The system upgrade will require an expansion of the existing Genetec VMS software and additional Genetec camera licenses. The system expansion will require that all network and camera hardware be properly programmed to be 100% compatible on a Genetec Security Center VMS platform. All Work on the VMS software, video storage solution, network support equipment and (but not limited to) CCTV cameras must be integrated by a certified Genetec reseller employing trained and certified Genetec installation/integration technicians. Installation technicians Genetec certifications qualifications will be confirmed with Genetec.

3.2. **System Specifics**

3.2.1. This project will see a turn-key digital CCTV system installed into the Beaver Creek Institution at Gravenhurst Ontario. This system will be complete with all necessary mounts, cable dressing brackets and straps. All conduit and cable provided will meet CSC – Electronics standards and specifications. All new equipment provided must seamlessly integrate into existing digital CCTV equipment and the project will result in an expansion of the existing Genetec Security Center Video Management System.

3.2.2. Specifics of operation for all new CCTV equipment are detailed in Annex C of this STR.

3.2.3. Installation of this upgrade will not interfere with the operation of existing equipment and video recording at the Institution without the explicit written permission of the contract authority. Existing digital CCTV cameras that are not being replaced in this project will be integrated by the contractor into the new contractor provided Genetec VMS system. These cameras include:

- **191 AXIS P3343-VE Cameras (Buildings E, F, G, H, J & T)**

3.2.4. Provision of a fully redundant video archive system as detailed in section 4.7 of this document.

3.2.5. All Genetec Omnicast camera licenses will be upgraded to Genetec Security Center licenses and all necessary new camera licenses will be provided to allow capacity for integration and recording of up to 400 CCTV cameras on the VMS platform.

4. TECHNICAL REQUIREMENTS

4.1. Concept of Operation

4.1.1. Video surveillance of certain sensitive areas is required to maintain a safe and secure environment for both staff and inmates. CCTV cameras will be installed at various locations on a number of buildings to provide the required video surveillance. Existing Analogue cameras will be replaced with digital cameras; CAT6 cable will be installed to support these cameras. All new digital cameras will be powered via PoE.

4.1.2. All control functions such as selection and control of the Pan/Tilt/Zoom (PTZ) and spot monitor selection of a camera will be through the use of a mouse. Playback, recording, searching or archiving of video to external media will be accomplished through the use of a mouse and keyboard on NVUS clients as specified in Annex C of this document.

4.2. Existing System Verification

4.2.1. Prior to commencing any new work, the contractor must test the operational characteristics of all existing equipment and systems, whose equipment is in proximity to where work will be carried out or which will be reused, prior to removal or installation of any equipment and provide a written record of these tests to the Crown.

4.2.2. The contractor must identify any operational deficiency of equipment or be held accountable for any systems deficiencies during the commissioning period.

4.2.3. The contractor is to take digital images of all Field of Views (FOVs) for reference when installing replacement cameras. A copy of these images will be provided to the project authority 2 weeks **prior** to removing any existing equipment. The lenses supplied with the new cameras will be adjusted to provide the same or better FOVs. Any changes to any FOV will be provided to the contractor in writing from the project authority. Any unauthorised FOV changes will be rectified at the contractor's expense.

4.2.4. The contractor must test all existing fibre optic cabling to be reused in this project and provide detailed light budget analysis and OTDR readings for all fiber strands. Test results will include the following:

4.2.4.1. Origin and destination of cable
4.2.4.2. Light loss in dB over cable – pass/fail – dB
4.2.4.3. Length of cable – in meters
4.2.4.4. Pass/fail

4.2.5. The contractor must test all existing structured cabling to be reused in this project with a certified CAT6 LAN Analyzer and provide detailed analysis and LANCAT readings for all cables.

4.2.5.1. Wire map - pass/fail
4.2.5.2. Propagation Delay – pass/fail
4.2.5.3. Cable Length – pass/fail – length
4.2.5.4. Insertion Loss – pass/fail – dB
4.2.5.5. Return Loss – pass/fail
4.2.5.6. NEXT – pass/fail
4.2.5.7. ELFEXT – pass/fail

4.3. Removal of Equipment and Cables

4.3.1. The contractor must remove all of the redundant cables, conduit and equipment located in and on various buildings. Care must be taken to ensure that any cables and conduits of other systems are not damaged. All electronic equipment must be handed over to CSC in good condition. The contractor must dispose of all of the removed cables and conduit off site in an environmentally friendly way.

4.3.2. The contractor must provide, to the Design Authority, a list of all equipment to be removed 2 weeks **prior** to any equipment removal. This list will contain the following information as a minimum; location, make, model and serial number. The contractor must return all removed equipment to the local ADGA electronic maintenance workshop, where it will be inventoried and tagged for disposal. This information will be used to ensure the removal of the equipment from the maintenance contract, and its proper disposal.

4.4. System Installation

4.4.1. The contractor must provide, install and test a complete and fully functional IP based CCTV system. The CCTV system must meet or exceed all of the performance and operational requirements contained in the SOW's, specifications and standards listed in Section 2.2. Where there is a conflict between a published specification and this STR; this STR will be the document of reference.

4.4.2. The contractor must avoid, as much as possible, the use of conduit in inmate accessible areas. The contractor must utilize existing pipe chases, existing conduit in the walls, etc., where possible. New lengths of conduit must be of the minimum necessary length. All newly installed conduits carrying video for this project must be identified, except in inmate accessible areas, by prominent labels with **BRIGHT GREEN** wording. The contractor must use only rigid threaded conduit in inmate accessible areas. These labels must be located at each end of the conduit run, on both sides of any penetration of a wall,

and at 3.5 metre points along its length. All junction box covers and conduit joints will be painted bright green except where installed in inmate accessible areas.

4.4.3. The contractor must test all new fibre optic cabling installed in this project and provide detailed light budget analysis and OTDR readings for all fiber strands. Test results will include the following:

4.4.3.1. Origin and destination of cable – information
4.4.3.2. Light loss in dB over cable – pass/fail – Db
4.4.3.3. Length of cable – in meters
4.4.3.4. Pass/fail

4.4.4. The contractor must test all existing structured cabling to be reused in this project with a certified CAT6 LAN Analyzer and provide detailed analysis and LANCAT readings for all cables.

4.4.4.1. Wire map - pass/fail
4.4.4.2. Propagation Delay – pass/fail
4.4.4.3. Cable Length – pass/fail – length
4.4.4.4. Insertion Loss – pass/fail – Db
4.4.4.5. Return Loss – pass/fail
4.4.4.6. NEXT – pass/fail
4.4.4.7. ELFEXT – pass/fail

4.4.5. The use of flex conduit will only be permitted by written authorisation from the project authority on a case by case basis; the use of flex conduit is not permitted in inmate accessible areas.

4.4.6. In secure office areas where drywall construction is used the contractor must fish associated cabling to support KVM extension devices through the walls. The walls will be finished with an appropriate CAT6 termination plate, labeled to the device. ALL visible CAT6 RJ 45 plugs will be **BRIGHT GREEN**. When fishing cable into a wall the contractor may use flex conduit. Where it is impossible to fish the cable into a hollow wall or the wall is solid (e.g. cinderblock) the contractor may use a decorative wire mold to run the necessary cables to the defined location of the equipment with written permission form the project authority. Wire mold will meet the Ontario Electrical Code when supporting power.

4.4.7. All category 6 Ethernet data cables and data jumper cables (minimum 23 gauge), jacks and connector boots installed as part of this project, must be **BRIGHT GREEN** in colour. All cables must be FT4 rated except where cable in not protected in a conduit or in a plenum ceiling, such cable must meet a FT6 fire rating. All Fibre optic cabling and fibre optic patch cords must be labeled at both ends.

4.4.8. All cabling in equipment cabinets, termination trays, cable trays, junction boxes, and at edge devices will be neatly dressed using Velcro style "hook and loop" re-useable straps. Cable straps must encircle all the cables in a given bundle. Any cable secured with a tie-wrap will require replacement of the entire cable.

4.4.9. All cabling in equipment cabinets will be dressed throughout the cabinet. Cables entering a cabinet from the top will be routed to the base of the cabinet and then return to the designated equipment height, the reverse for cables entering the bottom. Vertical cable runs in the cabinet will be in the side panel areas of the cabinet. Vertical cable runs will be strapped every 12 inches. Cable straps must encircle all the cables in a given bundle. Vertical cable bundles will route from the cable riser across the width of the equipment cabinet and loop back to the termination point on the patch panel. This will provide enough slack to permit any patch panel to be removed, reversed and re-punched.

4.4.10. 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 further than the adjacent equipment cabinet in a series of cabinets. Note: Equipment cabinets must be abutting without side panels to open connection to be considered adjacent.

4.4.11. All category 6 structured cabling will be punched onto a high density CAT6 patch field or panel or a CAT6 keystone jack in a single gang box. RJ45 connectors will not be permitted as terminations for CAT6 structured cabling, except where the CAT6 cable is supporting a CCTV camera or the termination is specifically authorised by the project authority in writing. Where CAT6 structured cable is terminated with an RJ45 connector, the connector must be rated specifically for a CAT6 connection directly to a CAT6 premise cable (solid conductor) and the RJ45 jack must be shielded.

4.5. **Cameras and Lenses**

4.5.1. All cameras to be provided fall into 6 categories. Each camera provided must meet all operating specifications listed associated Electronics Engineering Standards unless specifically otherwise stated in this statement of technical requirement.

4.5.2. All cameras provided must provide a minimum of 1 x H.264 video stream in 1920x1080 pixels resolution unless specifically detailed otherwise below.

4.5.3. All new CCTV cameras must be powered via PoE, PoE+ or PoE++ over the interconnecting Ethernet cable. Separate PoE+ or PoE++ injectors will only be permitted on a case by case basis by the project technical authority. If more than 4 PoE injectors are necessary in a cabinet, they will be mounted into a manufacturer designed chassis designed specifically to host the injectors and reduce cabinet density.

4.5.4. All CCTV lenses provided must be recommended by the manufacturer of the camera, or approved by the camera manufacturer. Unproven third party lenses are not acceptable.

4.5.5. There are 2 sub categories of camera type #1, fixed network colour dome camera. All fixed network colour dome cameras must meet all of the requirements detailed in Electronics Engineering Standard ES/STD-0232 unless specifically detailed differently in this Statement of Technical Requirements.

4.5.6. Camera type #1A (Fixed Dome 9mm)

The provided camera must meet all of the requirements detailed in Electronics Engineering Standard ES/STD-0232 unless specifically detailed differently in this Statement of Technical Requirements. The contractor must provide a fixed dome colour network CCTV camera with an integrated varifocal 3-9mm F1.3 lens providing a 105°–36° Horizontal field of view. The Camera must be equipped with an automatically removable infrared-cut filter for Day/Night operation, low light sensitivity will not exceed 0.11 lux. The camera will have electronic image stabilization, remote focus and remote zoom capability. The camera will provide 1920x1080 resolution at up to 30 fps with wide dynamic range sensitivity (WDR-Forensic Capture and zip stream compression). The integrated enclosure will support a ¾" threaded conduit port or a pendant wall mount with internal space for premise cable termination or a service loop. The camera will be IP66 and NEMA 4x rated, IK10+ rated, impact resistant to 50 joules and will support cold start-up down to -40°C and an operational temperature range from -40°C to +40°C.

4.5.7. Camera type #1B (Fixed Dome 22mm)

The provided camera must meet all of the requirements detailed in Electronics Engineering Standard ES/STD-0232 unless specifically detailed differently in this Statement of Technical Requirements. The contractor must provide a fixed dome colour network CCTV camera with an integrated varifocal 9-22mm F1.6 lens providing a 36°–15° Horizontal field of view. The Camera must be equipped with an automatically removable infrared-cut filter for Day/Night operation, low light sensitivity will not exceed 0.11 lux. The camera will have electronic image stabilization, remote focus and remote zoom capability. The camera will provide 1920x1080 resolution at up to 30 fps with wide dynamic range sensitivity (WDR-Forensic Capture and zip stream compression). The integrated enclosure will support a ¾" threaded conduit port or a pendant wall mount with internal space for premise cable termination or a service loop. The camera will be IP66 and NEMA 4x rated, IK10+ rated, impact resistant to 50 joules and will support cold start-up down to -40°C and an operational temperature range from -40°C to +40°C.

4.5.8. Camera type #2 (PTZ - Pan/Tilt/Zoom)

The contractor must provide a PTZ colour network CCTV camera that meets all of the requirements detailed in Electronics Engineering Standard ES/STD-0223 unless

specifically detailed differently in this Statement of Technical Requirements. The camera must be equipped with a 4.3-129mm F1.6-4.7 30x power zoom lens providing a 66.7°–2.36° Horizontal field of view, with endless 360° pan. The camera will have electronic image stabilization. The Camera must be equipped with an automatically removable infrared-cut filter for Day/Night operation, low light sensitivity will not exceed 0.15 lux. The camera will provide 1920x1080 resolution at up to 30 fps with wide dynamic range sensitivity (WDR-Forensic Capture and zip stream compression). The camera will have a fully rounded dome (Sharp dome) to provide better views up to 15° above the horizon and will be equipped with laser focusing. The camera will be IP66 and NEMA 4x rated, IK08 rated and will support cold start-up down to -40°C and an operational temperature range from -40°C to +40°C.

4.5.9. Camera Type #3 (Anti-Ligature Corner Mount High Security Camera)

The provided camera must meet all of the requirements detailed in Electronics Engineering Standard ES/STD-0233 unless specifically detailed differently in this Statement of Technical Requirements. The contractor must provide an Indoor anti-ligature corner mount colour network CCTV Camera equipped with an integrated varifocal 2.5-6mm F1.2 lens providing a 105°–49° Horizontal field of view with remote focus and remote zoom capability. The Camera will be equipped with an automatically removable infrared-cut filter for Day/Night operation, low light sensitivity will not exceed 0.1 lux. The camera will be equipped with a PoE powered IR Illuminator providing up to 10M illumination at 940nm. The camera will provide up to 1280x960 resolution at up to 30 fps. The camera will be equipped with a minimum of 1 digital output to trigger an external function or power a LED indicator. The camera will be IP66 and NEMA 4x rated, IK10+ rated, impact resistant to 50 joules. The camera casing will be stainless steel with front mounted recessed security screws for maintenance access. The camera enclosure will have a gasket sealed rear conduit port.

4.5.10. Camera Type #4 (360° Panoramic Dome)

The provided camera must meet all of the requirements detailed in Electronics Engineering Standard ES/STD-0235 unless specifically detailed differently in this Statement of Technical Requirements. The contractor must provide a fixed dome colour network CCTV camera with an integrated 1.27mm F2.0 lens providing a 187° Horizontal field of view. The Camera must be equipped with an automatically removable infrared-cut filter for Day/Night operation, low light sensitivity will not exceed 0.3 lux. The camera will stream Up to 4 individually cropped out and de-warped view areas and a 360 panoramic view simultaneously. The camera will provide up to 2592x1944 resolution at up to 12 fps. The integrated enclosure will support a ½" threaded conduit port, a pendant mount or a wall mount with internal space for premise cable termination or a service loop. The camera will be IP66 and NEMA 4x rated, IK10+ rated, impact resistant to 50 joules.

4.5.11. Camera Type #5 (Multi-Sensor)

The provided camera must meet all of the requirements detailed in Electronics Engineering Standard ES/STD-0232 unless specifically detailed differently in this Statement of Technical Requirements. The contractor must provide a fixed dome colour network CCTV camera with 3 integrated 5MP sensors providing a 180°Horizontal field of view. The Camera must be equipped with 3 automatically removable infrared-cut filters for Day/Night operation, low light sensitivity will not exceed 0.3 lux. The camera will have factory focused lenses. The camera will provide 3x5MP 3x(2560x1920) resolution at up to 20 fps with wide dynamic range sensitivity (WDR-Forensic Capture and zip stream compression). The camera will require only 1 IP address and 1 camera license. The integrated enclosure will support a threaded pendant mount. The camera will be IP66 and NEMA 4x rated, IK10+ rated, impact resistant to 50 joules and will support an operational temperature range from -40°C to +40°C.

4.5.12. Camera Type #6 (Fixed Box Camera)

The provided camera must meet all of the requirements detailed in Electronics Engineering Standard ES/STD-0221 unless specifically detailed differently in this Statement of Technical Requirements. The contractor must provide a fixed box colour network CCTV camera suitable to install into an outdoor rated enclosure. The camera will be equipped with an i-CS lens mount to support remote focus and remote zoom. The camera will support P-Iris lenses. The contractor will provide with each camera a 12.5-50mm F1.4 CS mount IR corrected P-Iris type lens as recommended by the camera manufacturer. The camera with the provided lens will have a Horizontal field of view of 25°–7°. The Camera must be equipped with an automatically removable infrared-cut filter for Day/Night operation, low light sensitivity will not exceed 0.11 lux. The camera will have electronic image stabilization, remote focus and remote zoom capability. The camera will provide 1920x1080 resolution at up to 30 fps with wide dynamic range sensitivity (WDR-Forensic Capture and zip stream compression). The cameras operating temperature range will not less than 0°C to +40°C. The contractor will provide and install a new outdoor heated box camera enclosure for each type #6 camera provided in this STR. The enclosure will be equipped with a thermally activated heater and blower and a window wiper. The contractor will replace the existing enclosure where identified in this STR with the new enclosure and will fully integrate the new enclosure to the existing power and wiring, enabling control of the window wiper from the MCCP console. The provided enclosure will meet or exceed the operational specifications detailed in ST0205R3E Outdoor Camera Enclosure, in Appendix I of this STR.

4.5.13. All CCTV cameras will be powered via PoE over the interconnecting Ethernet cable from the closest available node or electronics equipment cabinet to the camera. If an existing conduit form the camera routes directly to a different node the contactor

may request an exception from the project authority. It is preferred all equipment is powered via PoE directly from the supporting network switch.

Analogue cameras are NOT acceptable for any new installation.

4.6. **Camera Power Supplies**

Wherever possible all PoE camera power will be provided from PoE equipped network switches located in the electronics equipment cabinets (nodes) specified for the camera as defined in Annex C of this document. Where separate PoE, PoE+ and PoE++ injectors are necessary they will be securely rack mounted, if more than 4 separate PoE injectors are necessary in a cabinet, they will be mounted into a manufacturer designed chassis designed specifically to mount the injectors and reduce cabinet density. If the associated power supply has multiple outputs for several cameras, the supplied supply will be equipped with separate fused outputs for each camera, and an indicator panel on the front of the rack mounted supply indicating the status of each power output port.

The contractor must supply and install new power supplies that will provide the required voltage and amperage to power to all cameras detailed in this document. The power supplies must be installed in the electronic equipment rooms or in secure locations identified in this document or by the project authority.

4.7. **Network Architecture**

The Beaver Creek CCTV system requires an upgraded network infrastructure which must be capable of providing integrated support for multiple Electronic Security System (ESS) sub systems. Initially, for this deployment, this network infrastructure must support the deployment of CCTV cameras and associated client computers. The system must be expandable to scale to support additions to this CCTV network infrastructure and/or addition of further ESS sub-systems within the institution as required in the future. This network infrastructure must provide an integrated, end-to-end "virtualized" architecture for the systems connected to it, using state of the art techniques for the network operation and configuration as described in sections below.

The contractor must supply new network switches replacing all existing network switches, with the exception of cases where the same core switch and cabling requirements have been fulfilled prior to this project. Network switches shall be replaced or installed on a location to location basis as per the attached drawings.

The new network switching infrastructure must be sourced by one switch vendor with the ability to interface in a multi-vendor manner to other vendor's equipment should future requirements deem this necessary.

CSC, ESS systems network traffic is predominantly streaming video from CCTV camera operation. The provided network infrastructure must be optimized for (H.264) multicast video operation for both cameras covered by this deployment and the addition of further cameras which may be added in the future; optimization including the perspectives of:

4.7.1. simplicity and efficiency of protocols involved;
4.7.2. efficient video streaming with required low latency, high bandwidth and network resiliency for predictable, always on connectivity
4.7.3. connectivity to the associated video management system (VMS), storage and viewing stations (NVUS).

The system must be capable of supporting thousands of independent streams. The system must be configured with readiness for sub-second failover recovery in the event of any failure, with no visible loss of data. The faster recovery is to maintain connectivity, avoid data or packet loss and minimize pixilation of video data.

The network infrastructure must provide an open system, multi-vendor capable, communication environment utilizing IEEE 802,1aq Shortest Path Bridging (SPB) to forward and control traffic between switches.

To achieve VLAN segregation between the new CCTV system and all the other existing ESS (narrowband) services, the new CCTV system will be deployed with a new 10.0.0.0/8 or 192.168.0.0/16 IP range (as per RFC1918), broken into 24-bit routed networks with two routed subnets per switch (one for CTTV, the other for the rest of the ESS systems).

The new network switches to be provided will replace existing switches deployed for the support of the Beaver Creek CCTV cameras.

The contractor is responsible to ensure the new switching infrastructure is fully integrated into the FAAS and PIU alarm and display systems.

The network infrastructure must consist of a Core network infrastructure in the building FBA-103 (the main CCTV archive, also referred to in this documentation as Home Node) and Edge 2-tier network infrastructure and edge switches to be built primarily from 48-port switch devices (with smaller network devices only where specified in external, small capacity locations requiring a robust outdoor switch).

The contractor is responsible for taking all steps to minimize the number of network equipment device types/models required to minimize sparing requirements.

All switches must include QoS (Quality of Service) and security management capabilities. Each switch must have the ability to classify, mark and prioritize traffic into priority queues, and/or weighted round robin queues on every port, and maintain QoS across the virtual / stack backplane. Classification controls and ACL (Access Control List) strategies

must include the ability to sort traffic based on: MAC Address, 802.1Q VLAN Identification (VID), IP Address, TCP/UDP Ports, CoS (Class of Service), ToS (Type of Service), and DSCP (Differentiated Services Code Point).

The network infrastructure will provide a layer 2 SPB VID environment in which each ESS subsystem has its own allocated VID to provide for secure traffic segregation for each sub system and thus ease of monitoring, troubleshooting and maintenance. Each VID will be logically separate from any other and thus allow multiple services and systems to operate independently on the same wired infrastructure.

The network infrastructure must be capable of supporting flexible topology configurations e.g. star, full or partial mesh or ring topology to allow for optimal use of additional data paths as these become available and thus provide extra resiliency and readiness for redundancy in network connectivity connections.

The contractor is responsible to confirm that all network switches within the network infrastructure are mountable in 19" mounting rail racks, and that the switches do not exceed the depth of communication racks and cabinets.

The contractor is to supply network switches to meet the needs of all ESS network requirements.

For network access control and security, the network system must provide software for automatic edge device authentication to ensure edge devices are compatible devices for installation, manage device permissions and monitor the health of connected devices.

All network switches must be capable of network access control (NAC) via device authentication and IEE802.1x Port-based NAC, and include a management GUI interface for maintenance equipment.

Where deployment of the NAC authentication mechanism requires the installation of a server for its functionality this MUST be provided by the contractor.

Each switch must support end-to-end (system-wide) network infrastructure support for a flexible and robust, optimally high availability and reliable (Best in class mean time between failure) network (that is always on), with high throughput (10Gps with edge switches dual-connected to the core switches) and providing a lossless environment with lowest latency (<4ms) for an evolving, high performance CSC ESS network infrastructure and Data Centre.

The network architecture is required to support zero down time for maintenance to core switches allowing for the continuous operation of video surveillance and other connected ESS subsystems and services.

Switch Technical requirements:

4.7.4. 350 W, 120 V power supply; POE switches must be able to concurrently deliver up to POE+ per port
4.7.5. Must support up to 50 Ethernet ports (48 port version)
4.7.6. Must provide software support for Ipv4 and Ipv6

Temperature range of operation: 0°C to 40°C
Operating humidity range: 0 to 95% relative humidity

4.7.7. **Core network**

The core network must consist of a switch cluster, with a minimum of two 10Gb shortest path bridging (SPB) switches acting as one logical switch (with 40 GE connectivity using multi-chassis link aggregation (MC-LAG) between them), providing active-active switch operation and linkage capability (to be located in building FBA-103 (Home Node).

This switch cluster must provide high availability connectivity and performance utilizing active-active links to the edge switching equipment. Thus, if one core switch becomes inoperable (maintenance update, equipment failure) bandwidth is dropped by a factor of 50%, but the second unit maintains 100% of the connectivity requirement and maintains uninterrupted operation of the overall network.

Core Switches must include clustering capabilities, whereby the physical core switches can be logically combined to appear as a single switch (using MC-LAG), from the perspective of any edge switch, and from any multi-NIC equipped server or appliance. These 'virtual' links between the edge and the core cluster must be Active-Active (with spanning tree, and other loop avoidance or hot-standby methods must be disabled), load sharing, and capable of scaling up to 8 physical interfaces bound into a single virtual trunk. It is imperative that service outages normally associated with network disruption, such as the restart, module alteration, power outage, or software/firmware reload of a single core switch does not disrupt the flow of traffic through the entire virtual / clustered core.

This switch cluster will be made up of 19" rack mountable 1RU switches providing the capability to be configured with Layer 2 and layer 3 switching features.

The core switches and network infrastructure will support ease of provisioning via edge only device and service provisioning, providing ease of configuration at the edge devices automatically informing the network infrastructure of a move, add or change and not require core configuration when changes to the network are required. The edge only provisioning will be capable of adding a new device to the associated VID.

Each of the core-switch cluster switches must provide hot-swappable power supplies and replaceable redundant fans.

4.7.8. Edge network

The edge switches must be 48 port network switches utilizing 802.1aq SPB allowing for ease of future expansion of the network infrastructure and the capability for multiple connections into different switches utilizing load balanced network paths to provide an extra level of resiliency within the network in case of any switch failure. For more remote site locations with low port capacity requirements, a SPB-compatible 8-port switch must be used.

The edge switches must provide:

4.7.8.1. Minimum of L3 switching
4.7.8.2. 10/100/1000 Mbps switching
4.7.8.3. Dual 1/ 10 GBps SFP+ uplinks (as required for link capacity requirements, with migration readiness option for 10Gb future uplinks) resilient, always on connectivity
4.7.8.4. Wire-speed performance and non-blocking throughput to support a variety of applications including requirements for low latency, high bandwidth, reliable video surveillance
4.7.8.5. Field replaceable redundant power supplies for increased resilience
4.7.8.6. Maximum POE wattage to support CCTV surveillance cameras deployed with capacity for further additions; must be able to concurrently deliver up to POE+ per port
4.7.8.7. Flexibly support for IEE 802.3af POE and IEEE 802.3at POE+ devices per port, optimized for video surveillance (including PTZ devices, HD)
4.7.8.8. Provide one-touch edge provisioning for edge devices with any move, add or change communicated automatically throughout the network infrastructure
4.7.8.9. Capability (via stackable functionality) to add further network capacity as required without impacting current operational switching
4.7.8.10. Support IEEE 802.1aq SPB
4.7.8.11. Advanced QOS and prioritization
4.7.8.12. Support for both Ipv4 and Ipv6 management addresses

The Edge switches must provide for edge only –provisioning natively, automatically informing the rest of the network of the change/ addition, eliminating the need, when changes are made, for manual configuration of the core switches and inter-switch trunks.

4.7.9. Fibre Cabling

The initial deployment of this new CCTV switching infrastructure will utilize existing on-site Fibre cabling connections between buildings and/or switches and new contractor provided fibre optic cable where identified in appendix C of this STR.

Full deployment and benefits of the core with active-active links must use 2 Multi-mode fibre strand pairs, one pair connected to each of the core switches **or** 2 Single mode fibre strands in bi-directional mode, one strand each to each of the core switches, as is detailed in Appendix C of this STR. This will provide active-active links from each of the connected Nodes to the core switches.

This significantly minimizes single points of failure and dependencies of the network on any individual switch or link.

4.8. Network Video Recording System

The term "NVRS" will refer to a "Network Video Recording System" consisting of a video directory, video archivers and video storage. RAID redundancy may be used in the directories, archivers or for virtualization of both directories and archivers over redundant appliances. Video storage is detailed below.

4.8.1. The contractor must provide and install a Network Video Recording System (NVRS) into existing equipment cabinets located in FBA-103 as detailed in Annex C map FBA (1st floor). The environmental, power, mechanical and technical requirements for the NVRS is specified in ES/STD-0229. Where this document differs from the specification this document will be the document of reference.

4.8.2. The NVRS will meet but not be limited to the following criteria:

4.8.3. The provided NVRS must be a Genetec certified storage solution

4.8.4. The provided NVRS must be IP attached storage with redundant Gigabit Ethernet interfaces;

4.8.5. The provided NVRS must record using Mirrored Write to Overlapping Pairs of Disks;

4.8.6. The provided NVRS must allow for duplication of data to two separate storage systems

4.8.7. Data must be duplicated on each storage system

4.8.8. Must be a redundant mirrored array

4.8.9. Separate storage systems must together use less than 180 watts of power per mirrored storage array pair.

4.8.10. The provided NVRS must have automatic failover in case of appliance failure (RAID configurations are NOT considered redundant archiving).

4.8.11. Mirrored storage array pair must be able to use any type of 3.5" or 2.5" SATA hard drives in any capacity and from any disk manufacturer and must be able to mix

different hard drive sizes, makes and models across the mirrored storage array; all hard drives must be of the same form factor.

4.8.12. The provided NVRS must be SATA based; all video archiver drives must be spinning drives, SSD are not acceptable for video storage.

4.8.13. The provided NVRS must provide up to 150TB raw storage per 3U vertical rack space

4.8.14. The provided NVRS must allow hardware replacement without interrupting data access including replacing disk drives, power supplies, fan modules, whole appliances and network switches;

4.8.15. The provided NVRS must include a system by which equipment can be monitored remotely via a software client on the CCTV network. Remote monitoring must identify both the array and the disk that has failed, arrays in write mode and arrays that are idle.

4.8.16. The provided NVRS must allow any single disk drive to be removed from the array and connected to a designated client computer to allow raw video to be extracted from the removed drive. The array must allow any other make, model or capacity of SATA HD to be used as a replacement for a removed drive.

4.8.17. The provided NVRS will write the same video to 2 disks simultaneously e.g., drive 1&2. When the disks reach capacity, the system will begin to write in the same pattern on disks 2&3 cascading until all disks in the unit are full, then the process will repeat. These strings of drives will be referred to as arrays.

4.8.18. The provided NVRS will be controlled by contractor provided, installed and integrated dual redundant directory servers operating the Genetec Security Center VMS. Each directory will mirror the sister directory and in the event of a directory failure, the mate directory will seamlessly continue to manage all video from the CCTV network to the video archivers. Each directory will be equipped with as a minimum :

4.8.18.1. Dual redundant power supplies, each supply to be hot swappable.
4.8.18.2. Minimum Intel Core i7 3770 4 core processor or better
4.8.18.3. Minimum 16GB DD3 RAM
4.8.18.4. Minimum 2 x 256GB SATA3 SSD configured in a RAID 1 array for redundancy
4.8.18.5. Minimum 2 x 1Gb Ethernet NICs
4.8.18.6. Minimum 1x 16x DVD+/- RW drive

4.8.19. The provided NVRS will utilize the Genetec failover feature. A failover array will be provided at a ratio of 2:10 (2 failover arrays for every 10 active arrays). If an array experiences a failure or if more than 33% of the drives in an array experience failure,

or more than 33% of the drives are removed or switch to off-line status, the entire array will automatically switch to off-line status and all cameras being recorded on the array will seamlessly switch to a failover array with no loss of video recording.

4.8.20. The provided NVRS will have sufficient capacity to record up to 400 cameras using H.264 compression at 1280x1024 pixels minimum, assuming a data rate of ~2Mbps, at a frame rate of 30 fps for a minimum time period of 168 hours. The contractor will account for 4 multi-sensor cameras each with an approximate bandwidth of ~24Mbps and 6 panoramic cameras with an approximate bandwidth of ~3.7Mbps. The compression method must be H.264 Compression and will be 70% where 100% is highest quality. Cameras with zip stream capacity will have this function engaged.

4.8.21. The contractor must provide and integrate to each of the SIO clients (M23, M24 & M25 of this document) a disk drive docking station will allow direct playback of stored video on the client from any single drive that has been removed from the NVRS storage array. This will allow the crown under serious circumstances to obtain and retain an "original" version of the video recording from an event.

4.8.22. The contractor must provide an additional 120 Genetec camera licenses to provide capacity to integrate up to 400 cameras into the digital video archive.

4.9. **Integration**

4.9.1. The contractor must integrate all hardware provided into the upgraded Genetec Security Center VMS, providing additional licensing where necessary. The contractor must integrate alarms for the VMS into the PIU (Perimeter Integration Unit). The contractor must program the maps displays into the FAAS display of the Senstar 100 PIU. The PIU will provide live status, and alarm annunciation of the following system alarms:

4.9.1.1. Camera video loss (all cameras connected to the Genetec VMS)
4.9.1.2. Remote switch failure (all switches connected to the CCTV network)
4.9.1.3. Network switch power supply failure
4.9.1.4. Network link loss (all nodes)
4.9.1.5. UPS failure (all UPS units in all equipment cabinets)
4.9.1.6. UPS AC loss (all UPS units in all equipment cabinets)
4.9.1.7. Archiver failure, including but not limited to:
4.9.1.8. Network connection loss
4.9.1.9. Video storage array failure
4.9.1.10. Hard drive warning & hard drive failure
4.9.1.11. Directory failure
4.9.1.12. Directory power supply failure
4.9.1.13. Archiver failure

4.9.2. The contractor must integrate all cameras detailed in this statement of technical requirements and all other digital CCTV cameras at the Beaver Creek Institution site. These include,

4.9.2.1. All cameras associated with the minimum security unit (53 cameras)
4.9.2.2. All cameras associated with the medium security unit (98 cameras)
4.9.2.3. All cameras associated with the perimeter (37 cameras)

4.10. Network Video User Station

4.10.1. Network Video User Stations (NVUS) must be located in the areas identified in Annex C of this document. The contractor must provide a new NVUS (Client) for all video displays detailed in this document.

4.10.2. Client Types 1, 2 & 3 will meet or exceed the following specifications as a minimum:

4.10.2.1. EIA-310 Compliant rack mount chassis
4.10.2.2. Maximum 1RU space
4.10.2.3. 8GB DDR3 RAM memory
4.10.2.4. 256GB SATA 3 6Gb/s solid state hard drive
4.10.2.5. Dual DVI output video card with 1GB RAM memory and DirectX 9.0 support.
4.10.2.6. Intel i7 quad core 3.4 GHz processor with 8MB cache memory.
4.10.2.7. 10/100/1000 Ethernet Network Interface Card

4.10.3. Client Type 4 will meet or exceed the following specifications as a minimum:

4.10.3.1. Tower style PC (mini format PCs will not be acceptable).
4.10.3.2. 50db sound pressure @ 24” maximum.
4.10.3.3. 12GB DDR3 RAM memory
4.10.3.4. 256GB SATA 3 6Gb/s solid state hard drive
4.10.3.5. 4TB 3.5", SATA 6Gb/s, 7200 RPM, 64MB Cache hard drive
4.10.3.6. Dual DVI output video card with 1GB RAM memory and DirectX 9.0 support.
4.10.3.7. Intel i7 quad core 3.4 GHz processor with 8MB cache memory.
4.10.3.8. 10/100/1000 Ethernet Network Interface Card
4.10.3.9. Internal 24X DVD Writer - SATA Interface, 48X CD-R Write Speed
4.10.3.10. Keyboard and Mouse Combo - 1000 DPI, Spill-resistant, Durable keys, Plug-and-play, USB

4.10.4. **Type 1 NVUS client – Static Operational Display:**

The provided NVUS will display up to 12 images on two monitors or a maximum of 9 images on a single monitor. The monitors will be fed video signal directly from the associated NVUS or via a video extension device. The provided NVUS will display only live images. No playback or video extraction will be possible from an operator display NVUS. The operator will not have any access or control over the display of the NVUS.

4.10.5. **Type 2 NVUS client – Dynamic Operational Display:**

The provided NVUS will display up to 12 images on two monitors or a maximum of 9 images on a single monitor. The monitors will be fed video signal directly from the associated NVUS or via a video extension device. The provided NVUS may require a mouse for PTZ control and/or display change or switching on/off of display of specific images on the monitor as defined in the **Monitors and Associated NVUS Clients"** section in Annex C of this document. All provided mouse devices will be USB wired directly to the NVUS or via a USB extension device. The provided NVUS will display only live images. No playback or video extraction will be possible from an operator display NVUS.

4.10.6. **Type 3 NVUS client – Advanced Operator / V&C and Food Services Clients:**

The provided NVUS will display up to 8 images on two monitors or a maximum of 9 images on a single monitor. The monitors will be fed video signal directly from the associated NVUS or via a video extension device. The provided NVUS will be equipped with a mouse for PTZ control and/or display change or switching on/off of display of specific images on the monitor as defined in the "***Monitors and Associated NVUS Clients***" section in Annex C of this document. All provided mouse devices will be USB wired directly to the NVUS or via a USB extension device. The provided NVUS will display live images and recorded video from cameras assigned to this client for up to 24hours. No video extraction will be possible from a Type 3 NVUS.

4.10.7. **Type 4 NVUS client – Advanced Operator / SIO Investigations:**

The provided NVUS will display up to 16 images on one The monitor will be fed video signal directly from the associated NVUS or via a video extension device. The provided NVUS will be equipped with a mouse and keyboard as defined in the **Monitors and Associated NVUS Clients"** section in Annex C of this document. All provided mouse and keyboard devices will be USB wired directly to the NVUS. The provided NVUS will display live images and recorded video from cameras, it will allow storage of extracted video onto a designated spinning hard drive and will permit the extraction of video via DVD/CD optical RW drive or via USB port to a portable hard drive.

4.10.8. All Type 1, 2 & 3 NVUS Clients will be supported by the associated UPS in the designated Node as identified in Annex C of this document.

4.10.9. All Type 4 NVUS Clients will be supported by portable UPS to be located with the client as identified in Annex C of this document.

4.11. **KVM (Keyboard, Video, Mouse) Extensions**

The contractor must provide new video, USB or combination KVM extension units to all equipment requiring such as defined in Annex C of this document or by distance from electronics equipment cabinets that will require an extension device.

All extension units providing signal to monitors will be mounted via a bracket to the VESA mount on the back of the monitor. The provided bracket will hold extension devices securely and provide a mounting solution for a VESA compliant monitor mounting arm. The provided bracket will include Velcro cable management straps to neatly dress all excess cable at the bracket. All provided extension devices must be immune to RF interference from VHF portable radios emitting up to 6 watts' energy at a distance of no less than 1 meter.

4.12. Monitors

The monitors provided must meet the environmental, power, mechanical and technical requirements for the monitors as specified in ES/STD-0227.

4.12.1. Type 1 Monitor – Control Post Monitor 22" LED
4.12.2. Type 2 Monitor – Advanced User Monitor 27" LED
4.12.3. Type 3 Monitor – Power User Monitor 32" LED

Monitors provided will meet the following criteria:
4.12.4. Have a minimum resolution of: 1920x1080
4.12.5. Aspect Ratio: 16:9
4.12.6. Response Time: 5ms or better
4.12.7. Contrast Ratio: 3000:1
4.12.8. Input Connectors: D-Sub & HDMI
4.12.9. 178° / 178° Viewing Angle (Horizontal / Vertical)
4.12.10. VESA compliant mount

4.13. Uninterruptible Power Supplies

The contractor must supply rack-mounted, uninterruptible power supplies (UPS) or provide expansion to the existing UPS as specified in Appendix C of this statement of technical requirements or approved by the project authority in writing. All UPS must be installed in the equipment cabinets unless specifically detailed otherwise in this document or by the project authority in writing. The UPS must be of sufficient capacity to provide 20 minutes of emergency back-up power unless specifically detailed otherwise in this document or by the project authority in writing.

All UPS units provided will report UPS status over the CCTV network, all alarm condition reporting will be integrated into the S100 PIU. UPS will report alarms on the following conditions:

4.13.1. UPS is on battery UPS on battery.
4.13.2. UPS capacity is overloaded.
4.13.3. UPS has failed the battery self-test.
4.13.4. UPS is on battery, and in a low-battery state (battery is almost discharged)
4.13.5. All UPS units provided are to be rack mount unless otherwise specified in Annex C of this document.

4.14. Electronic Equipment Cabinets

The contractor must supply and install electronic equipment cabinets as is detailed in Annex C.

4.14.1. Full height floor mount cabinets will meet the following criteria:

Power distribution within a cabinet or rack must be via three power outlet strips, as provided by the original cabinet or rack manufacturer. 2 x Horizontal power strips will have at least 5 outlets on the rear and at least 1 outlet on the front of each strip. Each strip must have at least six outlets. 1 x vertical 20A power strip equipped with a twist lock plug and a minimum of 16 outlets.
The Cabinet will be equipped with a dimmable, retractable front light for component illumination the light will have 8 rear outlets, spaced to accommodate plug-in power supplies, it will be of a clean ground surge suppressor design will not pass noise contamination to the ground, and will also have two rear USB ports for use with the optional LED gooseneck work light (model # LT-GN)
Vertical power strips must be connected to "Emergency Power". This strip will be connected to the nearest emergency generator supported AC panel on an independent circuit. The circuit will be identified in the AC panel as “Electronic Security Systems – CCTV”
Raised top for ventilation; Where a cabinet is installed into an electrical or mechanical room the cabinet will be equipped with cooling fans in the top or sides of the cabinet. These fans will provide a minimum of 150 CFM free air movement per 72” of cabinet height.

- Metal doors front and rear. Both doors fitted with locks, both locks keyed alike;
- Removable sides, where cabinet sides are accessible they will be equipped with keyed locks matching the keyway of the front and rear cabinet doors.
- Four adjustable levelling feet;
- Adjustable side rails for mounting equipment. EIA standard 19" width;
- Minimum usable depth of 33.5", (36” outside depth). Minimum usable height of 73.5" with an overall height of 80”. Minimum 42 usable rack spaces. Middle Atlantic WMRK-4236SVR or equivalent.
- Except where otherwise specified differently in Annex C of this document.

4.14.2. Wall mount cabinets will meet the following criteria:

The contractor must supply and install wall mount electronic equipment cabinets as is detailed in Annex C. The cabinet must be provided with power distribution within the cabinet via an installed power strip connected to "Emergency Power". This strip will be connected to the nearest emergency generator supported AC panel on an independent circuit. The circuit will be identified in the AC panel as “Electronic Security Systems – CCTV”. The cabinet will have a louvered front door for equipment airflow; the cabinet will be equipped with cooling fans in the top or sides of the cabinet. These fans will provide a minimum of 70 CFM free air movement. All doors fitted with locks, all locks keyed alike. Adjustable side rails for mounting equipment. EIA standard 19" width; equipment will mount vertically into the cabinet. Rack rails will be 180 degrees adjustable for ease of equipment installation and maintenance.

4.15. **Expandability**

It must be possible to expand the system beyond the originally installed capacity through the installation of additional hardware. The system expandability must not be limited in his regard.

It must be possible to use the digital backbone for other applications in the future, such as Voice Paging, Voice Intercom, Access Control, Door Control, etc. These systems may be installed by a different manufacturer than installed the original IP video system.

4.16. **Finishing**

Where walls are cut, opened or damaged the contractor must repair the wall to its original appearance, including taping, sanding and colour matching existing paint.
Where the contractor must use wire mold or expose conduit in office areas or other work areas the contractor must paint the exposed conduit to colour match the office where it is installed.

5. ADDITIONAL REQUIREMENTS

5.1. Operator Training

The contractor must prepare and present a training course (TtT) for individuals responsible to train staff for the operation of the system in accordance with the specification ES/SOW-0101 Statement of Work. The training course must concentrate on the features and proper operation of the installed system. The course must be presented on the site within two weeks of the successful acceptance testing of the system. The course must consist of two, three-hour sessions for basic users and one full day session for advanced (SIO) users. Each session must be presented in English to a group of up to six persons. Training sign-in sheets must be included in the final documentation package and they must clearly identify; name of training, date of training, location of training(institution), printed name of attendee, signature of attendee, and attendee's comments on training.

5.2. Maintenance, Training and Certification

The contractor must prepare and present a four-day training course, in English, for up to five persons responsible for the maintenance of the equipment. The course must concentrate heavily on the material contained in the technical and site manual and as-built drawings. The course must be presented on the site within two weeks of the successful acceptance testing of the system. The course syllabus will be presented to the project authority for approval no later than 30 days after approval of the FDR. Training sign-in sheets must be included in the final documentation package and they must clearly identify; name of training, date of training, location of training(institution), printed name of attendee, signature of attendee, and attendee's comments on training.

The contractor is responsible to ensure that CSC maintenance technicians receive training to be able to provide 1st level monitoring equipment for all new switching infrastructure.

In the event of any failure of equipment under this STR, including the network switching infrastructure, the contractor is responsible for immediate resolution for resumption of full system operation. This must include provision of a three-year warranty including a response time to a service call of within 4 hours. The contractor, if necessary with an appropriate arrangement with the equipment vendor, will provide next business day shipment of an advanced replacement unit for failed hardware and full software support, for the lifetime of the product, as well as basic technical support during normal business hours for the lifetime of the product, and as access to self-service downloads of service packs/ maintenance loads for software updates.

In order to facilitate this, the contractor must be required to ensure appropriate maintenance support agreements are in place with the switch vendor to provide immediate support in the event of equipment or software failure. The contractor must provide proof of the availability of certified maintenance support.

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 two printed copies of the operator manual in English, and two printed copies of the maintenance manual in English to the site. The contractor must provide one copy of the operator manual in English and one copy of the maintenance manual in English in an electronic format to each of following: The Design Authority, the Regional Electronics Officer (RTO), the local CSC Authorized Service Contractor workshop, and the CSC Authorized Service Contractor Headquarters. Maintenance manuals must all include completed Acceptance Test Program (ATP) forms and completed training sign-in sheets. All manuals are to be delivered in electronic format CD, DVD or USB flash drive. All manuals are to have an interactive index that will 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 as-built drawings of the site installation in AutoCAD 2000 format and in accordance with specification ES/SOW-0101 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 RTO, one to the local CSC Authorized Service Contractor workshop, and one to the CSC Authorized Service Contractor Headquarters.

As-Built drawings will include as a minimum.

5.4.1. A Logical diagram of the upgraded CCTV system differentiating between existing equipment and new equipment provided in this project.

5.4.2. A Physical diagram of the installation based on CSC provided Auto-CAD floor plans of buildings. Showing locations of equipment cabinets, devices, conduit, cable trays and junction boxes.

5.4.3. Installation Tables Including:

- 5.4.3.1. Network Switch Port Assignment
  - 5.4.3.1.1. Switch, Model, Location, Port, Assignment
- 5.4.3.2. Camera details
  - 5.4.3.2.1. Camera, Designation, Model, Lens, IP Address, Switch
- 5.4.3.3. PoE Power Assignment
- 5.4.3.4. NVUS Details
- 5.4.3.5. User Station, Location, CPU, Serial #, IP Address, Monitors, Switch, Port
- 5.4.3.6. Monitor Assignment
- 5.4.3.7. Make & Model, Assignment, Camera Assignment, Serial Number
- 5.4.3.8. UPS Details
- 5.4.3.9. Make & Model, Location, Serial Number, Battery type and quantity
- 5.4.3.10. CAT6 Patch Panel Assignment
- 5.4.3.11. Location, Port, Assignment

5.5. **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, one to the RTO, one to the local CSC Authorized Service Contractor workshop, and one to the CSC Authorized Service Contractor Headquarters.

5.6. **Testing**

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

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

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

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

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

5.6.6 The DA may repeat all of the ATP tests done by the contractor or a percentage of them. If the project authority determines that an unacceptable level of tests have failed during the ATP, the project authority may halt the testing procedures for a minimum of 2 weeks. The Project Authority and the contractor will re-convene in a minimum of 2 weeks to continue testing. The 2 week minimum window may be decreased solely at the projects authority's discretion and with the agreement of the contractor.

5.6.7 If the DA during the ATP testing finds a minor deficiency that does not affect the operational effectiveness of the CCTV equipment or system, the ATP testing may continue. If a major deficiency is found during the ATP testing that does affect the operational effectiveness of the CCTV equipment or system; the testing must cease until the deficiency has been corrected.

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

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

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

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

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

5.7 Operational Down-Time

Equipment and systems operational down time must be kept to a minimum. All scheduled down time will be approved in writing by the project design authority or designate. All approved down time will be coordinated with the Correctional Manager Operations (CMO) on site. The contractor's staff may be required to work during evenings, nights and/or weekends to reduce the amount of down time and to meet operational requirements.

5.8 Institutional Operations

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

5.9 Institution Addresses

Beaver Creek Institution
5775 Gravenhurst Road
P.O. Box 280
Gravenhurst, Ontario, K0H 1G0

Project Authority:

Daniel Smith
National Headquarters Project Leader
443 Union Street / PO Box 1174
Kingston, ON. K7L 4Y8

Tel. (613) 449-1597
daniel.smith@csc-scc.gc.ca

Institutional Contact:

David Raithby
Chief Plant Maintenance
Beaver Creek Institution
2000 Beaver Creek Drive
P.O. Box 1240
Gravenhurst, Ontario, P1P 1W9

Tel. (705) 687-1865

5.10 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 Regional Electronics Program Officer (RTO), ten (10) working days prior to the start-up date.

5.11 Safety

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

5.12 Spares

The bidder's proposal will include provision of the following spares: When percentage is less than 1 spare quantity is less than 1 spare quantity will be rounded up to 1. When spare quantity is greater than 1 the quantity will be rounded down to the nearest whole number.

5.12.1 Spare cameras will be provided at a ratio of 2.5% of each quantity provided.

5.12.2 Spare network switches will be provided at a ratio of 5% of each quantity 5.12.3 provided.

5.12.3 Spare fibre optic converters will be provided at a ratio of 5% of each quantity provided.

5.12.4 Spare SFP devices will be spared at a ratio of 5% of each quantity provided.

5.12.6 Spare KVM extension devices will be provided at a ratio of 10% of each quantity provided.
5.12.7 Spare Monitors will be provided at a ratio of 5% of each quantity provided.
5.12.8 Spare power supplies will be provided at a ratio of 10% of each quantity provided.
For sparing purposes these will be defined as any power supply that is not attached or installed to the device in question. This applies specifically to AC-adaptor power supplies.
5.12.9 1 x Spare Type 1 NVUS client will be provided. Spare NVUS will all be provided complete with keyboard and mouse.
5.12.10 5 x spare hard drives compatible with the storage arrays will be provided.

A complete list of all spares, make, model, quantity and serial numbers will be confirmed and signed off by the project authority upon delivery. An electronic version of the list will also be provided which will also include project number; cost and warranty information. Spares will be delivered directly to the ADGA electronic maintenance workshop at Beaver Creek Institution within two weeks of the start of equipment installation. The contractor may only remove delivered spare equipment to replace a defective component during installation with the expressed written consent of the project authority. Spares will be deliverable on the day of final acceptance testing. The crown will not be responsible for any spare equipment delivery prior to the final acceptance testing.

5.13 Communication Responsibility

The contractor is responsible for briefing institution staff prior to leaving the work site every day. The briefing must be given to CPM, or designate and must include, as a minimum:

- Work performed that day
- Operation status of the system, including any limitations in functionality or peculiarities
- Contact name and number in the event of a system failure
- Emergency contact numbers of installation technicians

5.14 Design Change Procedure

The contractor must address all requests for change or deviation from this STR with the Project Authority before any on site discussions, to ensure all changes are consistent with National Policy and Technical Standards, and to ensure the crown maintains a complete awareness of the project expectations and time-line.

Correctional Service Canada Service correctionnel Canada
Canada

Correctional Service Canada
Technical Services Branch
Electronics Systems

Issue 1
February 28, 2018

STATEMENT
OF
TECHNICAL REQUIREMENTS

UPGRADE

of

CCTV SYSTEMS

at

BEAVER CREEK INSTITUTION

Appendix A

Maintenance Handover Report

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the existing Hybrid CCTV System at Beaver Creek Institution.

Appendix A

CORRECTIONAL SERVICE OF CANADA
TECHNICAL SERVICES BRANCH
ELECTRONICS SYSTEMS
MAINTENANCE HANDOVER REPORT FORM

INSTITUTION: **DATE:**

SYSTEM/EQUIPMENT:

APPLICABLE CONTRACT NO:
DSS FILE NO:
SPECIFICATIONS:

EQUIPMENT SUPPLIER (NAME AND ADDRESS):

SUPPLIER CONTACT (NAME AND TELEPHONE):

WARRANTY DETAILS:

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

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 labour 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/RTO 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/RTO, RHQ
AWMS, Institution

Correctional Service Canada
Technical Services Branch
Electronics Systems

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Appendix B

Safety Regulations for Security Electronics Contractors Working at CSC Institutions

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the existing Hybrid CCTV System at Beaver Creek Institution.

Appendix B

SAFETY REGULATIONS FOR SECURITY ELECTRONICS CONTRACTORS WORKING AT CSC INSTITUTIONS

1. Acts and Regulations

a. The contractor must, at all times, be in full compliance with the latest issue of the following Acts and Regulations:

1. The Occupational Health and Safety Act of the province where the work is being carried out,
2. The Canada Labour Code Part II,
3. The National Building Code Part VIII,
4. The Workers' Compensation Board regulations of the province where the work is being carried out,
5. Safety regulations and procedures prepared by the Institution where the work is being carried out,
6. All other safety regulations in effect at the work site.

b. In the event of conflict between any provisions of the above authorities the most stringent shall 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 shall include a hazard assessment, controls, an emergency plan and a communications strategy.

b. The contractor shall complete a hazard assessment. All critical tasks and the associated hazards shall be identified.

c. Once hazards are identified, controls shall be put in place to minimize the risks. The controls shall include but not be limited to Safe Work Practices, Standard Operating Procedures and safety inspections.

d. An emergency plan shall be prepared that takes into consideration all of the identified hazards and the potential problems that could arise during the project. The emergency plan shall outline the emergency procedures to be taken in the event of an accident and shall 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.

SAFETY REGULATIONS FOR SECURITY ELECTRONICS CONTRACTORS WORKING AT CSC INSTITUTIONS CONT.

e. A communications strategy shall 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 shall address and conform to the Acts and Regulations identified in Paragraph 1.a. above.

g. The submission of the Safety Plan to Correctional Service Canada shall 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 shall 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

Issue 1
February 28, 2018

STATEMENT
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TECHNICAL REQUIREMENTS

UPGRADE

of

CCTV SYSTEMS

At

BEAVER CREEK INSTITUTION

Appendix C

Site Specific Requirements and System Layout

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the existing Hybrid CCTV System at Beaver Creek Institution.

SITE SPECIFIC REQUIREMENTS

CCTV Cameras installation details

Medium Unit Cameras – Outdoor Areas

1. F-1 (V&C Tower)
   The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
   - 1.1. Location – The location of camera F-1 is behind the PFV unit (FBS) and is detailed on drawing "422 Medium Security Unit"
   - 1.2. NODE – Camera F-1 will be connected to the VMS using an existing link from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports.
   - 1.3. FOV – This camera will provide PTZ observation of the V&C outdoor yard areas, the NW side of the Fen fencing and will compliment CCTV coverage of the parking lot.
   - 1.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
   - 1.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of the existing tower. The gooseneck shall be orientated NNE and the camera shall be mounted on the south arm of the gooseneck. The switch will be installed into a new contractor provided locking stainless steel equipment cabinet. The cabinet shall have a locking hasp that will accommodate a 1" brass padlock. The provided cabinet will have a NEMA 4 rating.

2. F-2 (V&C Tower)
   The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
   - 2.1. Location – The location of camera F-2 is detailed on drawing "422 Medium Security Unit"
   - 2.2. NODE – Camera F-2 will be connected to the VMS using an existing link from the camera tower to Node FN10. The camera will be connected via outdoor grade CAT6 cable to a contractor provided network switch with a minimum of 4 PoE+ RJ45 copper ports.
   - 2.3. FOV – This camera will provide PTZ observation of the V&C outdoor yard areas, the inmate movement areas between buildings FBB and FBK and Fen fencing behind building FBT.
   - 2.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
   - 2.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of the existing tower. The gooseneck shall be orientated SSW and the camera shall be mounted on the north arm of the gooseneck. The switch will be installed into a new contractor provided locking stainless steel equipment cabinet. The cabinet shall have a locking hasp that will accommodate a 1" brass padlock. The provided cabinet will have a NEMA 4 rating. The cabinet will be mounted above the roof surface to prevent water penetration.

3. F-3 – (Juniper and Lighthouse Movement)
   The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
   - 3.1. Location – The location of camera F-3 between FBK and FBU is detailed on drawing "422 Medium Security Unit"
   - 3.2. NODE – Camera F-3 will be connected to the VMS using a contractor provided and installed direct burial CAT6 PoE+ link to Node FN10 or FN12. The camera will be connected via outdoor grade CAT6 cable to a contractor provided network switch with a minimum of 24 PoE+ RJ45 copper ports.
   - 3.3. FOV – This camera will provide PTZ observation of the V&C outdoor yard areas, the inmate movement areas between buildings FBB and FBK and Fen fencing behind building FBT.
   - 3.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

SITE SPECIFIC REQUIREMENTS

3.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of a contractor provided and installed 12M tilt down CCTV tower. The gooseneck shall be orientated south and the camera shall be mounted on the north arm of the gooseneck. The cabinet shall have a locking equipment panel where the buried CAT6 cable will be terminated onto a CAT6 termination along side the terminated CAT6 cable form the camera. the contractor will also provide an appropriate CAT6 patch cable to connect the camera.

4. F-4 – (Tundra and Horizon Movement)
The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
   4.1. Location – The location of camera F-4 between FBH, FBT and FBU is detailed on drawing "422 Medium Security Unit"
   4.2. NODE – Camera F-4 will be connected to the VMS using a contractor provided and installed direct burial CAT6 PoE+ link to Node FN10 or FN12. The camera will be connected via outdoor grade buried CAT6 cable to a contractor provided network switch with a minimum of 24 PoE+ RJ45 copper ports. The contractor must supply and install all necessary CAT6 and CAT6 extenders, cabling and conduit from the camera location to the PoE switch in FBT or FBH for a PoE connection to this camera.
   4.3. FOV – This camera will provide PTZ observation of the east roadway, the main exercise yards and the inmate gardens.
   4.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
   4.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of a contractor provided and installed 12M tilt down CCTV tower. The gooseneck shall be orientated NE and the camera shall be mounted on the SW arm of the gooseneck. The cabinet shall have a locking equipment panel where the buried CAT6 cable will be terminated onto a CAT6 termination along side the terminated CAT6 cable form the camera. the contractor will also provide an appropriate CAT6 patch cable to connect the camera.

5. F-5 – (Juniper south roof)
The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
   5.1. Location – The location of camera F-5 on the roof of FBJ is detailed on drawing "422 Medium Security Unit"
   5.2. NODE – Camera F-5 will be connected to the VMS using an existing CAT6 PoE+ link to Node FN9.
   5.3. FOV – This camera will provide PTZ observation of the yard areas south of building FBJ and the entire south wall of the gym.
   5.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
   5.5. Mounting – The camera will be mounted on a contractor provided pendant mount on a contractor provided and installed swing-back CCTV gantry. The gantry shall position the camera beyond the roof parapet to allow viewing straight down as well as the inmate yards. The gantry will allow maintenance technicians to swing the camera back over the roof parapet and 2M inside the parapet for maintenance. The contractor shall provide and install a locking NEMA4 stainless cabinet where the premise cabling will be terminated to an RJ45 jack. The camera will be connected via a stranded CAT6 patch cable between the RJ45 and the camera.

6. F-6 – (West roadway)
The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
   6.1. Location – The location of camera F-6 on the roof of FBJ is detailed on drawing "422 Medium Security Unit"
   6.2. NODE – Camera F-6 will be connected to the VMS via a contractor provided and installed outdoor grade CAT6 PoE+ link to Node FN9.
   6.3. FOV – This camera will provide PTZ observation of the west roadway, FBD inmate entry, the west wall of FBJ and the south wall of FBD.

SITE SPECIFIC REQUIREMENTS

6.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

6.5. Mounting – The camera will be mounted on a contractor provided pendant mount on a contractor provided and installed swing-back CCTV gantry. The gantry shall position the camera beyond the roof parapet to allow viewing straight down as well as the inmate yards. The gantry will allow maintenance technicians to swing the camera back over the roof parapet and 2M inside the parapet for maintenance. The contractor shall provide and install a locking NEMA4 stainless cabinet where the premise cabling will be terminated to an RJ45 jack. The camera will be connected via a stranded CAT6 patch cable between the RJ45 and the camera.

7. F-7 – (Granite PTZ)

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

7.1. Location – The location of camera F-7 is detailed on drawing “422 Medium Security Unit”

7.2. NODE – Camera F-7 will be connected to the VMS using an existing link from the camera tower to Node FN7. The contractor will replace the existing CAT6 patch cable from the tower cabinet to the camera with a 22awg CAT6 outdoor stranded patch cable.

7.3. FOV – This camera will provide PTZ observation of the outdoor yard areas, aboriginal areas and in between FBF and FBG.

7.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

7.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of the existing tower. The gooseneck shall be orientated west and the camera shall be mounted on the east arm of the gooseneck. The switch will be installed into a new contractor provided locking stainless steel equipment cabinet at the tower base. The cabinet shall have a locking hasp that will accommodate a 1” brass padlock. The provided cabinet will have a NEMA 4 rating.

8. F-8 – (Aboriginal Grounds PTZ)

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

8.1. Location – The location of camera F-8 is detailed on drawing “422 Medium Security Unit”

8.2. NODE – Camera F-8 will be connected to the VMS using an existing fibre link from the camera tower to Node FN1. The contractor will replace the existing CAT6 patch cable from the tower cabinet to the camera with a 22awg CAT6 outdoor stranded patch cable.

8.3. FOV – This camera will provide PTZ observation of the outdoor yard areas, aboriginal areas and in between FBF and FBG.

8.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

8.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of the existing tower. The gooseneck shall be orientated west and the camera shall be mounted on the east arm of the gooseneck. The switch will be installed into a new contractor provided locking stainless steel equipment cabinet at the tower base. The cabinet shall have a locking hasp that will accommodate a 1” brass padlock. The provided cabinet will have a NEMA 4 rating.

9. F-9 – (Falcon PTZ)

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

9.1. Location – The location of camera F-9 is detailed on drawing “422 Medium Security Unit”

9.2. NODE – Camera F-9 will be connected to the VMS using an existing link from the camera tower to Node FN6. The contractor will replace the existing CAT6 patch cable from the tower cabinet to the camera with a 22awg CAT6 outdoor stranded patch cable.

9.3. FOV – This camera will provide PTZ observation of the outdoor yard areas, aboriginal areas and in between FBF and FBG.

9.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

9.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of the existing tower. The gooseneck shall be orientated west and the camera shall be mounted

on the east arm of the gooseneck. The switch will be installed into a new contractor provided locking stainless steel equipment cabinet at the tower base. The cabinet shall have a locking hasp that will accommodate a 1" brass padlock. The provided cabinet will have a NEMA 4 rating.

10. F-10 – (Driftwood PTZ)
The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
    10.1. Location – The location of camera F-10 is detailed on drawing "422 Medium Security Unit"
    10.2. NODE – Camera F-10 will be connected to the VMS using an existing link from the camera tower to Node FN4. The contractor will replace the existing CAT6 patch cable from the tower cabinet to the camera with a 22awg CAT6 outdoor stranded patch cable.
    10.3. FOV – This camera will provide PTZ observation of the movement areas at FBB, FBC, and FBL.
    10.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
    10.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of the existing tower. The gooseneck shall be orientated SW and the camera shall be mounted on the NE arm of the gooseneck. The switch will be installed into a new contractor provided locking stainless steel equipment cabinet at the tower base. The cabinet shall have a locking hasp that will accommodate a 1" brass padlock. The provided cabinet will have a NEMA 4 rating. The cabinet will be mounted above the roof surface to prevent water penetration.

11. F-11 – (Sallyport PTZ)
The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
    11.1. Location – The location of camera F-11 is detailed on drawing "422 Medium Security Unit"
    11.2. NODE – Camera F-11 will be connected to the VMS using a new contractor provided CAT6 outdoor rated cable via existing conduit from the camera location to the CER area in FBA. The camera will connect to the VMS at Home Node in FBA-103.
    11.3. FOV – This camera will provide PTZ observation of the Sallyport and movement areas south of FBA.
    11.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
    11.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of the existing tower. The gooseneck shall be orientated SW and the camera shall be mounted on the NE arm of the gooseneck. The switch will be installed into a new contractor provided locking stainless steel equipment cabinet at the tower base. The cabinet shall have a locking hasp that will accommodate a 1" brass padlock. The provided cabinet will have a NEMA 4 rating. The cabinet will be mounted above the snow line to prevent water penetration.

12. F-12 & F13 – (Pedestrian Passage)
The contractor must supply and install 2 fixed network colour cameras that meet the following requirements:
    12.1. Location – The location of cameras B-22 & B-23 is detailed on drawing "BC12"
    12.2. NODE – Cameras B-22 & B-23 will be connected to Node BN3 located in BC12-B11. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC12-B11 for a PoE connection to each camera.
    12.3. FOV – B-22 & B-23 will observe the indoor visits area BC12-108 to provide a reference in compliment to the PTZ camera.
    12.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    12.5. Mounting – The cameras will be wall or fence mounted at the approximate location indicated at the highest possible point.

13. F-14 – (V&C PTZ)
The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
    13.1. Location – The location of camera F-14 is detailed on drawing "422 Medium Security Unit"

SITE SPECIFIC REQUIREMENTS

13.2. NODE – Camera F-14 will be connected to the VMS using existing CAT6 outdoor rated cable via existing conduit from the camera location to the switch in FBB-127. The camera will connect to the VMS via Node FN2 located in FBB-127.
13.3. FOV – This camera will provide PTZ observation of the V&C yard and patio area.
13.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
13.5. Mounting – The camera will be mounted on an existing pendant mount under the roof overhang of the V&C patio.

14. F-15 – (West Parking Lot)
The contractor must supply and install a multi-sensor outdoor colour network camera that meets or exceeds the following requirements:
14.1. Location – The location of camera F-15 is detailed on drawing "443 Outdoor Plan"
14.2. NODE – Camera F-15 will be connected to the VMS via a new contractor provided OM3 fibre-optic link from the camera tower to Node BN8. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports.
14.3. FOV – This camera will provide a 180° view of the BCI medium security unit parking lot (west).
14.4. Camera – The provided camera will be type #5 as detailed in section 4.5.4.6 of this statement of technical requirements.
14.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of a contractor provided and installed 12M tilt down CCTV tower. The gooseneck shall be orientated north and the camera shall be mounted on the south arm of the gooseneck. The cabinet shall have a locking equipment panel where the buried FO cable will be terminated along side the terminated CAT6 cable from the camera. the contractor will also provide an appropriate CAT6 patch cable to connect the camera. The contractor will provide AC power to the tower from the nearest available electrical panel and all necessary network equipment, FO terminations, power supplies to provide a fully functional camera on the CCTV network.

15. F-16 – (Center Parking Lot)
The contractor must supply and install a multi-sensor outdoor colour network camera that meets or exceeds the following requirements:
15.1. Location – The location of camera F-16 is detailed on drawing "443 Outdoor Plan"
15.2. NODE – Camera F-16 will be connected to the VMS via a new contractor provided OM3 fibre-optic link from the camera tower to Node BN8. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports.
15.3. FOV – This camera will provide a 180° view of the BCI medium security unit parking lot (center).
15.4. Camera – The provided camera will be type #5 as detailed in section 4.5.4.6 of this statement of technical requirements.
15.5. Mounting – The camera will be mounted on a contractor provided gooseneck pendant mount on top of a contractor provided and installed 12M tilt down CCTV tower. The gooseneck shall be orientated north and the camera shall be mounted on the south arm of the gooseneck. The cabinet shall have a locking equipment panel where the buried FO cable will be terminated along side the terminated CAT6 cable from the camera. the contractor will also provide an appropriate CAT6 patch cable to connect the camera. The contractor will provide AC power to the tower from the nearest available electrical panel and all necessary network equipment, FO terminations, power supplies to provide a fully functional camera on the CCTV network.

SITE SPECIFIC REQUIREMENTS

16. F-17 – (East Parking Lot)
The contractor must supply and install a multi-sensor outdoor colour network camera that meets or exceeds the following requirements:
    16.1. Location – The location of camera F-17 is detailed on drawing “443 Outdoor Plan”
    16.2. NODE – Camera F-17 will be connected to the VMS via an existing OM3 fibre-optic link from the camera tower to Node BN7. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports.
    16.3. FOV – This camera will provide a 180° view of the BCI medium security unit parking lot (east).
    16.4. Camera – The provided camera will be type #5 as detailed in section 4.5.4.6 of this statement of technical requirements.
    16.5. Mounting – The camera will be mounted on a contractor provided double gooseneck pendant mount on top of an existing 12M tilt down CCTV tower. The gooseneck shall be orientated north and the camera shall be mounted on the south arm of the gooseneck. The cabinet shall have a locking equipment panel where the buried FO cable will be terminated along side the terminated CAT6 cable from the camera. the contractor will also provide an appropriate CAT6 patch cable to connect the camera. The contractor will provide AC power to the tower from the nearest available electrical panel and all necessary network equipment, FO terminations, power supplies to provide a fully functional camera on the CCTV network.

17. F-18 (Edgewood Entrance)
The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.
    17.1. Location – The location of camera F-18 is detailed on drawing “443 Outdoor Plan”
    17.2. NODE – Camera F-18 will be connected to Node FN5 located in FBE-211. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBE-211 for a PoE connection to the camera.
    17.3. FOV – F-18 will observe the exterior entry door and under the hood of Edgewood living init.
    17.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    17.5. Mounting – The cameras will be wall mounted at the approximate location indicated at the highest possible point to provide a view under the main entrance hood. The wall mount will provide space for CAT6 premise termination and a CAT6 patch cable to the camera with bottom accessible conduit ports.

18. F-19 (Falcon Entrance)
The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.
    18.1. Location – The location of camera F-19 is detailed on drawing “443 Outdoor Plan”
    18.2. NODE – Camera F-19 will be connected to Node FN6 located in FBF-211. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBF-211 for a PoE connection to the camera.
    18.3. FOV – F-19 will observe the exterior entry door and under the hood of Falcon living init.
    18.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    18.5. Mounting – The cameras will be wall mounted at the approximate location indicated at the highest possible point to provide a view under the main entrance hood. The wall mount will provide space for CAT6 premise termination and a CAT6 patch cable to the camera with bottom accessible conduit ports.

SITE SPECIFIC REQUIREMENTS

19. F-20 (Granite Entrance)
The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.
    19.1. Location – The location of camera F-20 is detailed on drawing “443 Outdoor Plan”
    19.2. NODE – Camera F-20 will be connected to Node FN7 located in FBG-211. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBG-211 for a PoE connection to the camera.
    19.3. FOV – F-20 will observe the exterior entry door and under the hood of Edgewood living init.
    19.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    19.5. Mounting – The cameras will be wall mounted at the approximate location indicated at the highest possible point to provide a view under the main entrance hood. The wall mount will provide space for CAT6 premise termination and a CAT6 patch cable to the camera with bottom accessible conduit ports.

20. F-21 (Horizon Entrance)
The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.
    20.1. Location – The location of camera F-21 is detailed on drawing “443 Outdoor Plan”
    20.2. NODE – Camera F-21 will be connected to Node FN8 located in FBH-209. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBH-209 for a PoE connection to the camera.
    20.3. FOV – F-21 will observe the exterior entry door and under the hood of Edgewood living init.
    20.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    20.5. Mounting – The cameras will be wall mounted at the approximate location indicated at the highest possible point to provide a view under the main entrance hood. The wall mount will provide space for CAT6 premise termination and a CAT6 patch cable to the camera with bottom accessible conduit ports.

21. F-22 (SEG yard north - rear)
The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.
    21.1. Location – The location of camera F-22 is detailed on drawing “443 Outdoor Plan”
    21.2. NODE – Camera F-22 will be connected to Node FN3 located in FBC-138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-138 for a PoE connection to the camera.
    21.3. FOV – F-22 will observe the east end of the north segregation yard.
    21.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    21.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point to provide a view of the east end of the yard. The wall mount will provide space for CAT6 premise termination and a CAT6 patch cable to the camera with bottom accessible conduit ports.

22. F-22 (SEG yard north - front)
The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.
    22.1. Location – The location of camera F-23 is detailed on drawing “443 Outdoor Plan”
    22.2. NODE – Camera F-23 will be connected to Node FN3 located in FBC-138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-138 for a PoE connection to the camera.
    22.3. FOV – F-23 will observe the west end of the north segregation yard.
    22.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    22.5. Mounting – The camera will be wall mounted replacing the existing camera.

SITE SPECIFIC REQUIREMENTS

23. F-24 (SEG yard south - rear)
    The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.
    23.1. Location – The location of camera F-24 is detailed on drawing “443 Outdoor Plan”
    23.2. NODE – Camera F-24 will be connected to Node FN3 located in FBC-138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-138 for a PoE connection to the camera.
    23.3. FOV – F-24 will observe the east end of the south segregation yard.
    23.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    23.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point to provide a view of the east end of the yard. The wall mount will provide space for CAT6 premise termination and a CAT6 patch cable to the camera with bottom accessible conduit ports.

24. F-25 (SEG yard south - front)
    The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.
    24.1. Location – The location of camera F-25 is detailed on drawing “443 Outdoor Plan”
    24.2. NODE – Camera F-25 will be connected to Node FN3 located in FBC-138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-138 for a PoE connection to the camera.
    24.3. FOV – F-25 will observe the west end of the south segregation yard.
    24.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    24.5. Mounting – The camera will be wall mounted replacing the existing camera.

MAP FBA

25. F-26 & F-27 (Visitor Waiting)
    The contractor must supply and install 2 fixed network colour cameras that meet the following requirements.
    25.1. Location – The location of cameras v is detailed on drawing “FBA –A122”
    25.2. NODE – Cameras F-26 & F-27 will be connected to “Home Node” located in FBA-A103. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBA-A103 for a PoE connection to each camera.
    25.3. FOV – Cameras F-26 & F-27 will observe opposite sides of the visitor waiting area.
    25.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    25.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

26. F-28 (Entry Processing)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    26.1. Location – The location of camera F-28 is detailed on drawing “FBA –A113”
    26.2. NODE – Camera F-28 will be connected to “Home Node” located in FBA-A103. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBA-A103 for a PoE connection to each camera.
    26.3. FOV – Camera F-28 will observe the passage door to room A112.
    26.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    26.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

27. F-29 (Entry Identification)
The contractor must supply and install a fixed network colour camera that meets the following requirements.
    27.1. Location – The location of camera F-29 is detailed on drawing "FBA –A117"
    27.2. NODE – Camera F-29 will be connected to "Home Node" located in FBA-A103. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBA-A103 for a PoE connection to each camera.
    27.3. FOV – Camera F-29 will observe the main entry door, visitor's entry door and the PECP door.
    27.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    27.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

28. F-30 (A&D waiting room)
The contractor must supply and install an anti-ligature outdoor colour network camera that meets or exceeds the following requirements.
    28.1. Location – The location of camera F-30 is detailed on drawing "FBA-A111"
    28.2. NODE – Camera F-30 will be connected to Home Node located in FBA-A103. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in FBA-A103.
    28.3. FOV – F-30 will observe the A&D inmate waiting room FBA-A111.
    28.4. Cameras – The provided cameras will be type #3 as detailed in section 4.5.4.4 of this statement of technical requirements.
    28.5. Mounting – The cameras will be wall/corner mounted at the approximate location indicated at the highest possible point.

29. F-31 (Visitor Search Area)
The contractor must supply and install an anti-ligature outdoor colour network camera that meets or exceeds the following requirements.
    29.1. Location – The location of camera F-30 is detailed on drawing "FBA-A113"
    29.2. NODE – Camera F-31 will be connected to Home Node located in FBA-A103. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in FBA-A103.
    29.3. FOV – F-31 will observe the visitor search area and the x-ray baggage scanner providing a 360° view of room.
    29.4. Cameras – The provided cameras will be type #4 as detailed in section 4.5.4.5 of this statement of technical requirements.
    29.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

30. F-32 (Inmate effects storage)
The contractor must supply and install a fixed network colour camera that meets the following requirements.
    30.1. Location – The location of camera F-32 is detailed on drawing "FBA –A01"
    30.2. NODE – Camera F-32 will be connected to "Home Node" located in FBA-A103. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBA-A103 for a PoE connection to each camera.
    30.3. FOV – Camera F-32 will observe the inmate effects storage room door FBA-A05.
    30.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    30.5. Mounting – The cameras will be wall mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

MAP FBB

31. F-33 (V&C Visitor entry)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    31.1. Location – The location of camera F-33 is detailed on drawing "FBB –B111"
    31.2. NODE – Camera F-33 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    31.3. FOV – Camera F-33 will observe the V&C entry door and corridor B111.
    31.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    31.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

32. F-34 (NPB boardroom)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    32.1. Location – The location of camera F-34 is detailed on drawing "FBB –B109"
    32.2. NODE – Camera F-34 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    32.3. FOV – Camera F-34 will observe the NPB boardroom FBB-B109.
    32.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    32.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

33. F-35 (Closed Visits - Visitor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    33.1. Location – The location of camera F-35 is detailed on drawing "FBB –B122"
    33.2. NODE – Camera F-35 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    33.3. FOV – Camera F-35 will observe the visitor side – closed visit booth.
    33.4. Cameras – The provided cameras will be type #3 as detailed in section 4.5.4.4 of this statement of technical requirements.
    33.5. Mounting – The cameras will be corner/ceiling mounted at the approximate location indicated at the highest possible point.

34. F-36 (Closed Visits - Inmate)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    34.1. Location – The location of camera F-36 is detailed on drawing "FBB –B121"
    34.2. NODE – Camera F-36 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    34.3. FOV – Camera F-36 will observe the inmate side – closed visit booth.
    34.4. Cameras – The provided cameras will be type #3 as detailed in section 4.5.4.4 of this statement of technical requirements.
    34.5. Mounting – The cameras will be corner/ceiling mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

35. F-37 (V&C Indoor NW PTZ)
    The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
    35.1. Location – The location of camera F-37 is detailed on drawing "FBB-B102".
    35.2. NODE – Camera F-37 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    35.3. FOV – This camera will provide operator managed observation of the open indoor visits area FBB-B102.
    35.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
    35.5. Mounting – The camera will be mounted onto a contractor provided T94A04L recessed ceiling mount with a ¾ conduit port. The mount bezel will be flush with the acoustic ceiling tile.

36. F-38 (Vending Machines)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    36.1. Location – The location of camera F-38 is detailed on drawing "FBB –B102"
    36.2. NODE – Camera F-38 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    36.3. FOV – Camera F-38 will observe the inmate side – closed visit booth.
    36.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    36.5. Mounting – The cameras will be wall mounted at the approximate location indicated above the observation windows.

37. F-39 (V&C Indoor NE PTZ)
    The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
    37.1. Location – The location of camera F-39 is detailed on drawing "FBB-B102".
    37.2. NODE – Camera F-39 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    37.3. FOV – This camera will provide operator managed observation of the open indoor visits area FBB-B102.
    37.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
    37.5. Mounting – The camera will be mounted onto a contractor provided T94A04L recessed ceiling mount with a ¾ conduit port. The mount bezel will be flush with the acoustic ceiling tile.

38. F-40 & F-41 (Open Visit Area)
    The contractor must supply and install 2 fixed network colour cameras that meet the following requirements.
    38.1. Location – The location of cameras v is detailed on drawing "FBB –B102"
    38.2. NODE – Cameras F-40 & F-41 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    38.3. FOV – Cameras F-40 & F-41 will observe opposite sides of the open visit area.
    38.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    38.5. Mounting – The cameras will be wall mounted on the bulkhead above the ceiling T-bar at the approximate locations indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

39. F-42 (V&C Inmate entry)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    39.1. Location – The location of camera F-42 is detailed on drawing "FBB –B101"
    39.2. NODE – Camera F-34 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    39.3. FOV – Camera F-42 will observe the inmate entry vestibule FBB-B101.
    39.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    39.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

40. F-43 (V&C Indoor SW PTZ)
    The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
    40.1. Location – The location of camera F-43 is detailed on drawing "FBB-B102".
    40.2. NODE – Camera F-43 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    40.3. FOV – This camera will provide operator managed observation of the open indoor visits area FBB-B102.
    40.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
    40.5. Mounting – The camera will be mounted onto a contractor provided T94A04L recessed ceiling mount with a ¾ conduit port. The mount bezel will be flush with the acoustic ceiling tile.

41. F-44 (V&C Indoor SE PTZ)
    The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
    41.1. Location – The location of camera F-44 is detailed on drawing "FBB-B102".
    41.2. NODE – Camera F-44 will be connected to Node FN2 located in FBB-B127. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBB-B127 for a PoE connection to each camera.
    41.3. FOV – This camera will provide operator managed observation of the open indoor visits area FBB-B102.
    41.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
    41.5. Mounting – The camera will be mounted onto a contractor provided T94A04L recessed ceiling mount with a ¾ conduit port. The mount bezel will be flush with the acoustic ceiling tile.

MAP FBC

42. F-45 (Day room #1)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    42.1. Location – The location of camera F-45 is detailed on drawing "FBC –C160"
    42.2. NODE – Camera F-45 will be connected to Node FN3 located in FBC-C138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-C138 for a PoE connection to each camera.
    42.3. FOV – Camera F-45 will observe the inmate day use room FBC-C160.
    42.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    42.5. Mounting – The camera will be ceiling or wall mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

43. F-46 (Day room #2)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    43.1. Location – The location of camera F-46 is detailed on drawing "FBC –C150"
    43.2. NODE – Camera F-46 will be connected to Node FN3 located in FBC-C138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-C138 for a PoE connection to each camera.
    43.3. FOV – Camera F-46 will observe the inmate day use room FBC-C150.
    43.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    43.5. Mounting – The camera will be ceiling or wall mounted at the approximate location indicated at the highest possible point.

44. F-47 (South SEG Range)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    44.1. Location – The location of camera F-47 is detailed on drawing "FBC –C159"
    44.2. NODE – Camera F-47 will be connected to Node FN3 located in FBC-C138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-C138 for a PoE connection to each camera.
    44.3. FOV – Camera F-47 will observe the north segregation range FBC-C159.
    44.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    44.5. Mounting – The camera will be ceiling or wall mounted at the approximate location indicated at the highest possible point.

45. F-48 (North SEG Range)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    45.1. Location – The location of camera F-48 is detailed on drawing "FBC –C149"
    45.2. NODE – Camera F-48 will be connected to Node FN3 located in FBC-C138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-C138 for a PoE connection to each camera.
    45.3. FOV – Camera F-48 will observe the north segregation range FBC-C149.
    45.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    45.5. Mounting – The camera will be ceiling or wall mounted at the approximate location indicated at the highest possible point.

46. F-49 (Dry Cell)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    46.1. Location – The location of camera F-49 is detailed on drawing "FBC –C141"
    46.2. NODE – Camera F-49 will be connected to Node FN3 located in FBC-C138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-C138 for a PoE connection to each camera.
    46.3. FOV – Camera F-49 will observe the segregation dry cell FBC-C141.
    46.4. Cameras – The provided cameras will be type #3 as detailed in section 4.5.4.4 of this statement of technical requirements.
    46.5. Mounting – The camera will be corner/ceiling mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

47. F-50 (Observation Cell)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    47.1. Location – The location of camera F-50 is detailed on drawing "FBC –C136"
    47.2. NODE – Camera F-50 will be connected to Node FN3 located in FBC-C138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-C138 for a PoE connection to each camera.
    47.3. FOV – Camera F-50 will observe the observation cell FBC-C136.
    47.4. Cameras – The provided cameras will be type #3 as detailed in section 4.5.4.4 of this statement of technical requirements.
    47.5. Mounting – The camera will be corner/ceiling mounted at the approximate location indicated at the highest possible point.

48. F-51 (Health Care Entry)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    48.1. Location – The location of camera F-51 is detailed on drawing "FBC –108
    48.2. NODE – Camera F-51 will be connected to Node FN3 located in FBC-C138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-C138 for a PoE connection to each camera.
    48.3. FOV – Camera F-51 will observe the health care entry lobby FBC-C108.
    48.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    48.5. Mounting – The camera will be ceiling or wall mounted at the approximate location indicated at the highest possible point.

49. F-52 (Health Care Corridor 128)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    49.1. Location – The location of camera F-52 is detailed on drawing "FBC –128
    49.2. NODE – Camera F-52 will be connected to Node FN3 located in FBC-C138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-C138 for a PoE connection to each camera.
    49.3. FOV – Camera F-52 will observe the north corridor C128 FBC-C128.
    49.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    49.5. Mounting – The camera will be ceiling or wall mounted at the approximate location indicated at the highest possible point.

50. F-53 (Health Care Corridor 116)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    50.1. Location – The location of camera F-53 is detailed on drawing "FBC –116"
    50.2. NODE – Camera F-53 will be connected to Node FN3 located in FBC-C138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-C138 for a PoE connection to each camera.
    50.3. FOV – Camera F-53 will observe the south corridor C116 FBC-C116.
    50.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    50.5. Mounting – The camera will be ceiling or wall mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

51. F-54 (Segregation Court)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    51.1. Location – The location of camera F-54 is detailed on drawing "FBC –104"
    51.2. NODE – Camera F-54 will be connected to Node FN3 located in FBC-C138. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBC-C138 for a PoE connection to each camera.
    51.3. FOV – Camera F-54 will observe the segregation court C116 FBC-C104.
    51.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    51.5. Mounting – The camera will be ceiling or wall mounted at the approximate location indicated at the highest possible point.

MAP FBD

52. F-55 (D Works Corridor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    52.1. Location – The location of camera F-55 is detailed on drawing "FBD –153"
    52.2. NODE – Camera F-55 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBD-205 for a PoE connection to each camera.
    52.3. FOV – Camera F-55 will observe the corridor FBD-D153.
    52.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    52.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

53. F-56 (Dry Goods Storage)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    53.1. Location – The location of camera F-56 is detailed on drawing "FBD –151"
    53.2. NODE – Camera F-56 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBD-205for a PoE connection to each camera.
    53.3. FOV – Camera F-56 will observe the food services dry goods storage cage FBD-D151.
    53.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    53.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

54. F-57 (Shipping and Receiving)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    54.1. Location – The location of camera F-57 is detailed on drawing "FBD –137"
    54.2. NODE – Camera F-57 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBD-205for a PoE connection to each camera.
    54.3. FOV – Camera F-57 will observe the indoor shipping and receiving area FBD-137.
    54.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    54.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

55. F-58 (SIS window)
    The contractor must supply and install a fixed network colour camera that meet the following requirements.
    55.1. Location – The location of camera F-58 is detailed on drawing "FBD-D176"
    55.2. NODE – Camera F-58 will be connected to Node BN5 located in FBD-205. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in FBD-205.
    55.3. FOV – Camera F-58 will observe the SIS window providing a 360° view of corridor FBD-D176.
    55.4. Cameras – The provided cameras will be type #4 as detailed in section 4.5.4.5 of this statement of technical requirements.
    55.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

56. F-59 & F-60 (Driftwood south corridor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    56.1. Location – The location of cameras F-59 & F-60 are detailed on drawing "FBD –134"
    56.2. NODE – Cameras F-59 & F-60 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera locations to the PoE switch in FBD-205 for a PoE connection to each camera.
    56.3. FOV – Cameras F-59 & F-60 will observe Driftwood corridor FBD-D134, each camera will view the opposite end of corridor D134.
    56.4. Cameras – The provided cameras will be type #1B as detailed in section 4.5.4.2 of this statement of technical requirements.
    56.5. Mounting – The cameras will be wall mounted at the approximate location indicated at the highest possible point.

57. F-61 (Hobbycraft area)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    57.1. Location – The location of camera F-61 is detailed on drawing "FBD –102"
    57.2. NODE – Camera F-61 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBD-205 for a PoE connection to each camera.
    57.3. FOV – Camera F-61 will observe the Hobbycraft corridor FBD-102.
    57.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    57.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

58. F-62 & F-63 (Driftwood north corridor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    58.1. Location – The location of cameras F-62 & F-63 are detailed on drawing "FBD –133"
    58.2. NODE – Cameras F-62 & F-63 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera locations to the PoE switch in FBD-205 for a PoE connection to each camera.
    58.3. FOV – Cameras F-62 & F-63 will observe Driftwood corridor FBD-D133, each camera will view the opposite end of corridor D133.
    58.4. Cameras – The provided cameras will be type #1B as detailed in section 4.5.4.2 of this statement of technical requirements.
    58.5. Mounting – The cameras will be wall mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

59. F-64 (Kitchen stockroom corridor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    59.1. Location – The location of camera F-64 is detailed on drawing “FBD –112”
    59.2. NODE – Camera F-64 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBD-205 for a PoE connection to each camera.
    59.3. FOV – Camera F-64 will observe corridor FBD-112.
    59.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    59.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

60. F-65 (SIS window)
    The contractor must supply and install a fixed network colour camera that meet the following requirements.
    60.1. Location – The location of camera F-65 is detailed on drawing “FBD-D102”
    60.2. NODE – Camera F-65 will be connected to Node BN5 located in FBD-205. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in FBD-205.
    60.3. FOV – Camera F-65 will observe the Hobbycraft exit providing a 360° view of the exit vestibule in corridor FBD-D102.
    60.4. Cameras – The provided cameras will be type #4 as detailed in section 4.5.4.5 of this statement of technical requirements.
    60.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

61. F-66 (inmate canteen)
    The contractor must supply and install a fixed network colour camera that meet the following requirements.
    61.1. Location – The location of camera F-66 is detailed on drawing “FBD-D107”
    61.2. NODE – Camera F-66 will be connected to Node BN5 located in FBD-205. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in FBD-205.
    61.3. FOV – Camera F-66 will observe the interior of the inmate canteen providing a 360° view of FBD-D107.
    61.4. Cameras – The provided cameras will be type #4 as detailed in section 4.5.4.5 of this statement of technical requirements.
    61.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

62. F-67 (Inmate Canteen window)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    62.1. Location – The location of camera F-67 is detailed on drawing “FBD –D107A”
    62.2. NODE – Camera F-67 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBD-205 for a PoE connection to each camera.
    62.3. FOV – Camera F-67 will observe corridor FBD-D107A.
    62.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    62.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

63. F-68, F-69 & F-70 (Grocery Store)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    63.1. Location – The location of cameras F-68, F-69 & F-70 are detailed on drawing "FBD –108"
    63.2. NODE – Cameras F-68, F-69 & F-70 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera locations to the PoE switch in FBD-205 for a PoE connection to each camera.
    63.3. FOV – Cameras F-68, F-69 & F-70 will observe Driftwood corridor FBD-D133, each camera will view the opposite end of corridor D108.
    63.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    63.5. Mounting – The cameras will be wall mounted at the approximate location indicated at the highest possible point.

64. F-71 (Kitchen office corridor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    64.1. Location – The location of camera F-71 is detailed on drawing "FBD –118"
    64.2. NODE – Camera F-71 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBD-205 for a PoE connection to each camera.
    64.3. FOV – Camera F-71 will observe corridor FBD-118.
    64.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    64.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

65. F-72 & F-73 (Kitchen)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    65.1. Location – The location of cameras F-72 & F-73 are detailed on drawing "FBD –123"
    65.2. NODE – Cameras F-72 & F-73 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera locations to the PoE switch in FBD-205 for a PoE connection to each camera.
    65.3. FOV – Cameras F-72 & F-73 will observe the main kitchen located in FBD-123.
    65.4. Cameras – The provided cameras will be type #1B as detailed in section 4.5.4.2 of this statement of technical requirements.
    65.5. Mounting – The cameras will be wall mounted at the approximate location indicated at the highest possible point.

66. F-74 (Kitchen)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    66.1. Location – The location of camera F-74 is detailed on drawing "FBD –128"
    66.2. NODE – Camera F-74 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBD-205 for a PoE connection to each camera.
    66.3. FOV – Camera F-74 will observe corridor FBD-128.
    66.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    66.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

67. F-75 & F-76(Leather Craft)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    67.1. Location – The location of cameras F-75 & F-76 are detailed on drawing “FBD –214”
    67.2. NODE – Cameras F-75 & F-76will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera locations to the PoE switch in FBD-205for a PoE connection to each camera.
    67.3. FOV – Cameras F-75 & F-76 will observe the main kitchen located in FBD-214.
    67.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    67.5. Mounting – The cameras will be wall mounted at the approximate location indicated at the highest possible point.

68. F-77 (Driftwood Upper Corridor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    68.1. Location – The location of camera F-77 is detailed on drawing “FBD –202”
    68.2. NODE – Camera F-77 will be connected to Node FN4 located in FBD-205. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBD-205for a PoE connection to each camera.
    68.3. FOV – Camera F-77 will observe corridor FBD-202.
    68.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    68.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

No new or replacement cameras for the following buildings

FBE “Edgewood” – Cameras F77 through F119
FBF “Falcon” – Cameras F120 through F161
FBG “Granite” – Cameras F162 through F203
FBH “Horizon” – Cameras F204 through F245

MAP FBJ

69. F-246 (Juniper Corridor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    69.1. Location – The location of camera F-246 is detailed on drawing “FBJ –137”
    69.2. NODE – Camera F-246 will be connected to Node FN9 located in FBJ –201. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBJ –201 for a PoE connection to each camera.
    69.3. FOV – Camera F-246 will observe corridor FBJ –137.
    69.4. Cameras – The provided camera will be type #1B as detailed in section 4.5.4.2 of this statement of technical requirements.
    69.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

70. F-247 (Juniper Corridor)
The contractor must supply and install a fixed network colour camera that meets the following requirements.
    70.1. Location – The location of camera F-247 is detailed on drawing "FBJ –149"
    70.2. NODE – Camera F-247 will be connected to Node FN9 located in FBJ –201. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBJ –201 for a PoE connection to each camera.
    70.3. FOV – Camera F-247 will observe equipment room FBJ –149.
    70.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    70.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

71. F-248, F-249, F-250 & F-251(Gym)
The contractor must supply and install 4 fixed network colour cameras that meet the following requirements.
    71.1. Location – The location of cameras B-39 – B-42 is detailed on drawing "FBJ-151"
    71.2. NODE – Cameras F-248 – F-151 will be connected to Node FN9 located in FBJ –201. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBJ –201 for a PoE connection to each camera.
    71.3. FOV – Cameras F-248 – F-151 will observe the inmate gym room FBJ-151.
    71.4. Cameras – The provided cameras will be type #1B as detailed in section 4.5.4.2 of this statement of technical requirements.
    71.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

72. F-252 – (Gym PTZ)
The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:
        72.1.1. Location – The location of camera F-252 is detailed on drawing "FBJ-151"
        72.1.2. NODE – Camera F-252 will be connected to the VMS using existing CAT6 outdoor rated cable via existing conduit from the camera location to the switch in FBJ-151. The camera will connect to the VMS via Node FN9 located in FBJ-151.
        72.1.3. FOV – This camera will provide PTZ observation of the main gym area.
        72.1.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.
        72.1.5. Mounting – The camera will be mounted on an existing pendant mount on the gym ceiling.

73. F-253 & F-254 (Weight Room)
The contractor must supply and install a fixed network colour camera that meets the following requirements.
    73.1. Location – The location of camera F-253 & F-254 is detailed on drawing "FBJ –152"
    73.2. NODE – Camera F-253 & F-254 will be connected to Node FN9 located in FBJ –201. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBJ –201 for a PoE connection to each camera.
    73.3. FOV – Camera F-253 & F-254 will observe the weight room FBJ –152.
    73.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    73.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

74. F-255, F-256 & F-257(Juniper Main Corridor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    74.1. Location – The location of cameras F-255, F-256 & F-257 is detailed on drawing "FBJ –134"
    74.2. NODE – Camera F-255, F-256 & F-257 will be connected to Node FN9 located in FBJ –201. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBJ –201 for a PoE connection to each camera.
    74.3. FOV – Cameras F-255, F-256 & F-257 will observe the Corridor areas of FBJ –134.
    74.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    74.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

75. F-258 (Library Computers)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    75.1. Location – The location of camera F-258 is detailed on drawing "FBJ –115"
    75.2. NODE – Camera F-258will be connected to Node FN9 located in FBJ –201. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBJ –201 for a PoE connection to each camera.
    75.3. FOV – Camera F-258 will observe computers in the library FBJ –115.
    75.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    75.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

76. F-259 (Gym Entry)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    76.1. Location – The location of camera F-259 is detailed on drawing "FBJ –158"
    76.2. NODE – Camera F-259will be connected to Node FN9 located in FBJ –201. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBJ –201 for a PoE connection to each camera.
    76.3. FOV – Camera F-259 will observe the gym entry corridor FBJ –158.
    76.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    76.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

77. F-260 (Juniper South Door)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    77.1. Location – The location of camera F-260 is detailed on drawing "FBJ –101"
    77.2. NODE – Camera F-260will be connected to Node FN9 located in FBJ –201. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBJ –201 for a PoE connection to each camera.
    77.3. FOV – Camera F-260 will observe the south Juniper entry door FBJ –201.

    77.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    77.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

No replacement for cameras F-261, 262 & 263

SITE SPECIFIC REQUIREMENTS

MAP FBR

78. F-264 (A&D waiting room)
    The contractor must supply and install an anti-ligature outdoor colour network camera that meets or exceeds the following requirements.
    78.1. Location – The location of camera F-264 is detailed on drawing "FBR-101"
    78.2. NODE – Camera F-264 will be connected to Node FN9 located in FBJ-201. The contractor must supply and install all necessary CAT6, cabling CAT6 PoE extensions, and conduit from the camera location to the PoE switch in FBJ-201.
    78.3. FOV – F-264 will observe the carving area FBR-101.
    78.4. Cameras – The provided cameras will be type #3 as detailed in section 4.5.4.4 of this statement of technical requirements.
    78.5. Mounting – The cameras will be wall/corner mounted at the approximate location indicated at the highest possible point.

MAP FBT

No replacement for cameras F-265 through F-284.

MAP FBU

79. F-285 (Unity Entry)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    79.1. Location – The location of camera F-285 is detailed on drawing "FBU –118"
    79.2. NODE – Camera F-285 will be connected to Node FN12 located in FBU –115A. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBU –115A for a PoE connection to each camera.
    79.3. FOV – Camera F-285 will observe the Unity entry door FBU –118.
    79.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    79.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

80. F-286, F-287 & F-288(Unity Main Corridor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    80.1. Location – The location of cameras F-286, F-287 & F-288 is detailed on drawing "FBU –116"
    80.2. NODE – Camera F-286, F-287 & F-288 will be connected to Node FN12 located in FBU –115A. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBU –115A for a PoE connection to each camera.
    80.3. FOV – Cameras F-286, F-287 & F-288 will observe the Corridor areas of FBU –116.
    80.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    80.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

81. F-289 (Unity 2nd floor)
    The contractor must supply and install a fixed network colour camera that meets the following requirements.
    81.1. Location – The location of camera F-289 is detailed on drawing "FBU –117"
    81.2. NODE – Camera F-289 will be connected to Node FN12 located in FBU –115A. The contractor must supply and install all necessary CAT6 cabling and conduit from the camera location to the PoE switch in FBU –115A for a PoE connection to each camera.
    81.3. FOV – Camera F-289 will observe the Unity entry door FBU –117.
    81.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.
    81.5. Mounting – The camera will be wall mounted at the approximate location indicated at the highest possible point.

Medium Unit Cameras – Perimeter Cameras:

82. P-1 & P-2 (Tower 1)
    The contractor must supply and install 2 fixed colour network cameras that meet or exceed the following requirements:
    82.1. Location – The location of cameras P-1 & P-2 is Tower 1 behind the PFV unit (FBS) and is detailed on drawing "422 Medium Security Unit"
    82.2. NODE – Cameras P-1 & P-2 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.
    82.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.
    82.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.
    82.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

83. P-3, P-4 & P-5 (Tower 2)
    The contractor must supply and install 3 fixed colour network cameras that meet or exceed the following requirements:
    83.1. Location – The location of cameras P-3, P-4 & P-5 is Tower 2 north of building FBN and is detailed on drawing "422 Medium Security Unit"
    83.2. NODE – Cameras P-3, P-4 & P-5 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.
    83.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.
    83.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.
    83.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

SITE SPECIFIC REQUIREMENTS

84. P-6, P-7 & P-8 (Tower 3)
    The contractor must supply and install 3 fixed colour network cameras that meet or exceed the following requirements:
    84.1. Location – The location of cameras P-6, P-7 & P-8 is Tower 3 north of building FBN and is detailed on drawing “422 Medium Security Unit”
    84.2. NODE – Cameras P-6, P-7 & P-8 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.
    84.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.
    84.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.
    84.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

85. P-9 (Tower 4)
    The contractor must supply and install a fixed colour network camera that meets or exceeds the following requirements:
    85.1. Location – The location of cameras P-9 is Tower 4 NW of building FBN and is detailed on drawing “422 Medium Security Unit”
    85.2. NODE – Camera P-9 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.
    85.3. FOV – The camera will be equipped with 12.5-50mm P-Iris type lens with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.
    85.4. Camera – The provided camera will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.
    85.5. Mounting – The camera will be mounted into the existing perimeter camera enclosure. The contractor will provide and install a new CAT6 Ethernet connections between the camera and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

86. P-10, P-11 & P-12 (Tower 5)
    The contractor must supply and install 3 fixed colour network cameras that meet or exceed the following requirements:
    86.1. Location – The location of cameras P-10, P-11 & P-12 is Tower 5 SW of building FBF and is detailed on drawing “422 Medium Security Unit”
    86.2. NODE – Cameras P-10, P-11 & P-12 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.
    86.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.
    86.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

SITE SPECIFIC REQUIREMENTS

86.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

87. P-13, P-14 & P-15 (Tower 6)

The contractor must supply and install 3 fixed colour network cameras that meet or exceed the following requirements:

87.1. Location – The location of cameras P-13, P-14 & P-15 is Tower 6 SW of building FBF and is detailed on drawing "422 Medium Security Unit"

87.2. NODE – Cameras P-13, P-14 & P-15 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.

87.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

87.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

87.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

88. P-16 (Tower 7)

The contractor must supply and install a fixed colour network camera that meets or exceeds the following requirements:

88.1. Location – The location of camera P-16 is Tower 7 SSW of building FBF and is detailed on drawing "422 Medium Security Unit"

88.2. NODE – Camera P-16 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.

88.3. FOV – The camera will be equipped with 12.5-50mm P-Iris type lens with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

88.4. Camera – The provided camera will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

88.5. Mounting – The camera will be mounted into the existing perimeter camera enclosure. The contractor will provide and install a new CAT6 Ethernet connections between the camera and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

89. P-17 (Tower 8)

The contractor must supply and install a fixed colour network camera that meets or exceeds the following requirements:

89.1. Location – The location of camera P-17 is Tower 8 SSE of building FBF and is detailed on drawing "422 Medium Security Unit"

89.2. NODE – Camera P-17 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.

89.3. FOV – The camera will be equipped with 12.5-50mm P-Iris type lens with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

SITE SPECIFIC REQUIREMENTS

89.4. Camera – The provided camera will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

89.5. Mounting – The camera will be mounted into the existing perimeter camera enclosure. The contractor will provide and install a new CAT6 Ethernet connections between the camera and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

90. P-18 & P-19 (Tower 9)

The contractor must supply and install 2 fixed colour network cameras that meet or exceed the following requirements:

90.1. Location – The location of cameras P-18 & P-19 is Tower 9 south of building FBG and is detailed on drawing "422 Medium Security Unit"

90.2. NODE – Cameras P-18 & P-19 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.

90.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

90.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

90.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

91. P-20, P-21 & P-22 (Tower 10)

The contractor must supply and install 3 fixed colour network cameras that meet or exceed the following requirements:

91.1. Location – The location of cameras P-20, P-21 & P-22 is Tower 10 South of building FBG and is detailed on drawing "422 Medium Security Unit"

91.2. NODE – Cameras P-20, P-21 & P-22 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.

91.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

91.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

91.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

92. P-23, P-24 & P-38 (Tower 11)

The contractor must supply and install 3 fixed colour network cameras that meet or exceed the following requirements:

92.1. Location – The location of cameras P-23, P-24 & P-38 is Tower 11 at the south end of the FEN fencing and is detailed on drawing "422 Medium Security Unit"

92.2. NODE – Cameras P-23, P-24 & P-38 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.

SITE SPECIFIC REQUIREMENTS

92.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

92.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

92.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

93. P-25, P-26 & P-27 (Tower 12)

The contractor must supply and install 3 fixed colour network cameras that meet or exceed the following requirements:

93.1. Location – The location of cameras P-25, P-26 & P-27 is Tower 12 on the eastern corner of the FEN and is detailed on drawing “422 Medium Security Unit”.

93.2. NODE – Cameras P-25, P-26 & P-27 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.

93.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

93.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

93.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

94. P-28 & P-29 (Tower 13)

The contractor must supply and install 2 fixed colour network cameras that meet or exceed the following requirements:

94.1. Location – The location of cameras P-28 & P-29 is Tower 13 on the eastern corner of the FEN and is detailed on drawing “422 Medium Security Unit”

94.2. NODE – Cameras P-28 & P-29 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.

94.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

94.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

94.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

SITE SPECIFIC REQUIREMENTS

95. P-30 (Tower 14)
    The contractor must supply and install a fixed colour network camera that meets or exceeds the following requirements:
    95.1. Location – The location of camera P-30 is Tower 14 on the eastern corner of the FEN and is detailed on drawing “422 Medium Security Unit”
    95.2. NODE – Camera P-30 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.
    95.3. FOV – The camera will be equipped with 12.5-50mm P-Iris type lens with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.
    95.4. Camera – The provided camera will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.
    95.5. Mounting – The camera will be mounted into the existing perimeter camera enclosure. The contractor will provide and install a new CAT6 Ethernet connections between the camera and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

96. P-31 & P-32 (Tower 15)
    The contractor must supply and install 2 fixed colour network cameras that meet or exceed the following requirements:
    96.1. Location – The location of cameras P-31 & P-32 is Tower 14 on the northern corner of the FEN and is detailed on drawing “422 Medium Security Unit”
    96.2. NODE – Cameras P-31 & P-32 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.
    96.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.
    96.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.
    96.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

97. P-33 & P-34 (Tower 16)
    The contractor must supply and install 2 fixed colour network cameras that meet or exceed the following requirements:
    97.1. Location – The location of cameras P-33 & P-34 is Tower 16 on the northern corner of the FEN and is detailed on drawing “422 Medium Security Unit”
    97.2. NODE – Cameras P-33 & P-34 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.
    97.3. FOV – The cameras will be equipped with 12.5-50mm P-Iris type lenses with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.
    97.4. Camera – The provided cameras will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

SITE SPECIFIC REQUIREMENTS

97.5. Mounting – The cameras will be mounted into the existing perimeter camera enclosures. The contractor will provide and install a new CAT6 Ethernet connections between the cameras and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

98. P-35 (Perimeter Fence)

The contractor must supply and install a fixed colour network camera that meets or exceeds the following requirements:

98.1. Location – The location of camera P-35 is on the northern inner perimeter fence, north of building FBB and is detailed on drawing "422 Medium Security Unit"

98.2. NODE – Camera P-35 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.

98.3. FOV – The camera will be equipped with 12.5-50mm P-Iris type lens with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

98.4. Camera – The provided camera will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

98.5. Mounting – The camera will be mounted into the existing perimeter camera enclosure. The contractor will provide and install a new CAT6 Ethernet connections between the camera and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure. The contractor will provide a new stainless steel locking cabinet securely mounted to the nearest fence post below the camera. The provided network switch and the AC circuit supporting camera P-35 will be located in the provided cabinet.

99. P-36 (FBA Sallyport inner gate)

The contractor must supply and install a fixed colour network camera that meets or exceeds the following requirements:

99.1. Location – The location of camera P-36 is on the SW corner of building FBA and is detailed on drawing "422 Medium Security Unit".

99.2. NODE – Camera P-36 will be connected to the VMS via a new contractor provided and installed outdoor rated CAT6 cable from the camera tower to Node 1.

99.3. FOV – The camera will be equipped with 2.8-8mm P-Iris type lens with a horizontal field of view no less than 112°–39°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

99.4. Camera – The provided camera will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

99.5. Mounting – The camera will be mounted into the existing perimeter camera enclosure. The contractor will provide and install a new CAT6 Ethernet connections between the camera and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure. The contractor will relocate the existing enclosure approximately 31CM lower on the wall to enable the enclosure to be fully opened under the roof overhang.

100. P-37 (New Tower 17)

The contractor must supply and install a fixed colour network camera that meets or exceeds the following requirements:

100.1. Location – The location of camera P-37 is New Tower 17 on the northern end of the FEN fencing outside of the outer perimeter fence and is detailed on drawing "422 Medium Security Unit".

100.2. NODE – Camera P-37 will be connected to the VMS via and contractor provided outdoor CAT6 cable in a new conduit following the outer perimeter fence from the tower into building FBA-114A and connecting to Node FN1.

100.3. FOV – The camera will be equipped with 12.5-50mm P-Iris type lens with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

SITE SPECIFIC REQUIREMENTS

100.4. Camera – The provided camera will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

100.5. Mounting – The camera will be mounted into the relocated existing perimeter camera enclosure. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

100.6. Tower – The contractor will provide and install a new self-supporting steel tower equal in height to the existing tower located inside the FEN enclosure. The camera will be mounted at a height that allows an unobstructed view of the far end of the FEN side of the FEN separation fence.

101. P-38 (Tower 11)

The contractor must supply and install a fixed colour network camera that meets or exceeds the following requirements:

101.1. Location – The location of camera P-38 is Tower 11 on the southern end of the FEN and is detailed on drawing “422 Medium Security Unit”

101.2. NODE – Camera P-38 will be connected to the VMS using an existing fibre optic cable from the camera tower to Node 1. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports and a minimum of 1x SFP port for direct fibre optic connection. The provided switch will be installed into the CCTV equipment cabinet located at the base of the tower.

101.3. FOV – The camera will be equipped with 12.5-50mm P-Iris type lens with a horizontal field of view no less than 25°–7°. The new camera and lens will be adjusted to duplicate the existing FOV as closely as possible.

101.4. Camera – The provided camera will be type #6 as detailed in section 4.5.4.7 of this statement of technical requirements.

101.5. Mounting – The camera will be mounted into the existing perimeter camera enclosure. The contractor will provide and install a new CAT6 Ethernet connections between the camera and the provided network switch. The contractor will provide and install a new wiper motor, wiper blade, motor coupling and exterior gasket for each existing enclosure.

SITE SPECIFIC REQUIREMENTS

Minimum Unit Cameras – Outdoor Areas:

102. B-1 – SIDS 1

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

102.1. Location – The location of camera B-1 is detailed on drawing "443 Outdoor Plan"

102.2. NODE – Camera B-1 will be connected to the VMS using an existing CAT6 link from the camera tower to Node BN6. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports.

102.3. FOV – This camera will provide observation of the north perimeter fencing along the airport, west of Beaver Creek Drive and east behind BC16, BC05 and BC59.

102.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

102.5. Mounting – The camera will be mounted on a contractor provided double gooseneck pendant mount on top of the existing tower. The gooseneck shall be orientated north/south and the camera shall be mounted on the north arm of the gooseneck. The switch will be installed into a new contractor provided locking stainless steel equipment cabinet. The cabinet shall have a locking hasp that will accommodate a 1" brass padlock. The provided cabinet will have a NEMA 4 rating.

103. B-2 – BCI Minimum Parking Lot

The contractor must supply and install a multi-sensor outdoor colour network camera that meets or exceeds the following requirements:

103.1. Location – The location of camera B-2 is detailed on drawing "443 Outdoor Plan"

103.2. NODE – Camera B-2 will be connected to the VMS using an existing CAT6 link from the camera tower to Node BN6. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports.

103.3. FOV – This camera will provide a 180° view of the BCI minimum unit parking lot.

103.4. Camera – The provided camera will be type #5 as detailed in section 4.5.4.6 of this statement of technical requirements.

103.5. Mounting – The camera will be mounted on a contractor provided double gooseneck pendant mount on top of the existing tower. The gooseneck shall be orientated north/south and the camera shall be mounted on the south arm of the gooseneck. The switch will be installed into the stainless steel equipment cabinet described for camera B-1.

104. B-3 – BCI Minimum Parking Lot #2

The contractor must supply and install a fixed dome outdoor colour network camera that meets or exceeds the following requirements:

104.1. Location – The location of camera B-3 is detailed on drawing "443 Outdoor Plan".

104.2. NODE – Camera B-3 will be connected to the VMS using an existing CAT6 link from the camera tower to Node BN6. The camera will be connected to an environmentally hardened network switch with a minimum of 4 PoE+ RJ45 copper ports.

104.3. FOV – This camera will provide observation of the angle parking area along Beaver Creek Drive and behind BC16.

104.4. Camera – The provided camera will be type #1B as detailed in section 4.5.4.2 of this statement of technical requirements.

104.5. Mounting – The camera assembly will be provided with a T91A47 or equivalent pole mounting bracket. The switch will be installed into the stainless steel equipment cabinet described for camera B-1.

105. B-4 – BC05 Loading Dock

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

105.1. Location – The location of camera B-4 is detailed on drawing "443 Outdoor Plan"

105.2. NODE – Camera B-4 will be connected to the VMS via a contractor installed CAT6 link from the camera to Node BN2.

SITE SPECIFIC REQUIREMENTS

105.3. FOV – This camera will provide observation of the north perimeter fencing along the airport, loading docks on BC05 and the backs of buildings BC03, BC05, BC16, BC59.

105.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

105.5. Mounting – The camera will be mounted on T91L61 pendant mount with internal CAT6 terminations for premise wiring. The pendant mount will be attached to the wall of BC05 with a T91A64 wall mount adapter at a height of 20' minimum or as close as possible under the roof overhang.

106. B-5 – Ball Field

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

106.1. Location – The location of camera B-5 is detailed on drawing "443 Outdoor Plan"

106.2. NODE – Camera B-5 will be connected to the VMS via an existing OM3 fibre optic link from the camera to Node BN6.

106.3. FOV – This camera will provide observation of the north perimeter fencing along the airport, ball field, aboriginal grounds, BC43, BC44, BC45.

106.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

106.5. Mounting – The camera will be mounted onto the existing pendant mount on the CCTV tower.

107. B-6 – Duty Office

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

107.1. Location – The location of camera B-6 is detailed on drawing "443 Outdoor Plan"

107.2. NODE – Camera B-6 will be connected to the VMS via an existing CAT6 link from the camera to Node BN3.

107.3. FOV – This camera will provide observation to the north of the V&C yards, mini golf area, BC10, BC23, BC25, BC41.

107.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

107.5. Mounting – The camera will be mounted onto the pendant mount on the existing CCTV tower.

108. B-7 – South Gym Courtyard

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

108.1. Location – The location of camera B-7 is detailed on drawing "443 Outdoor Plan"

108.2. NODE – Camera B-7 will be connected to the VMS via a contractor provided buried conduit outdoor CAT6 cable from the camera to Node BN5.

108.3. FOV – This camera will provide observation of yard and movement areas between BC10, BC14, BC15, BC19, BC20, BC23, BC25, BC58 & BC62.

108.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

108.5. Mounting – The contractor will provide and install a 12M tilt down tower with an incorporated cabinet base. The tower will be equipped with a gooseneck mount to support the camera. Altron 1545/12 TD/HS cabinet based tilt down tower supplied with winch DW2500/45 is an example of a suitable tower.

109. B-8 – East Roadway

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

109.1. Location – The location of camera B-8 is detailed on drawing "443 Outdoor Plan"

109.2. NODE – Camera B-8 will be connected to the VMS via a contractor provided buried conduit outdoor CAT6 cable from the camera to Node BN7.

109.3. FOV – This camera will provide observation of the east roadway and movement areas between BC19, BC43, BC44, BC46, BC54, & BC62.

109.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

SITE SPECIFIC REQUIREMENTS

109.5. Mounting – The contractor will provide and install a 12M tilt down tower with an incorporated cabinet base. The tower will be equipped with a gooseneck mount to support the camera. Altron 1545/12 TD/HS cabinet based tilt down tower supplied with winch DW2500/45 is an example of a suitable tower.

110. B-9 – Living Unit #5

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

110.1. Location – The location of camera B-9 is detailed on drawing "443 Outdoor Plan"

110.2. NODE – Camera B-9 will be connected to the VMS via an existing fibre-optic link from the camera tower to Node BN7.

110.3. FOV – This camera will provide observation to the south and east areas adjacent to the medium unit parking lot and the roadway to the firing range.

110.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

110.5. Mounting – The camera will be mounted on a contractor provided double gooseneck pendant mount on top of the existing tower. The gooseneck shall be orientated north/south and the camera shall be mounted on the north arm of the gooseneck. The switch will be installed into a new contractor provided locking stainless steel equipment cabinet. The cabinet shall have a locking hasp that will accommodate a 1" brass padlock. The provided cabinet will have a NEMA 4 rating.

111. B-10 – Generator

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

111.1. Location – The location of camera B-10 is detailed on drawing "443 Outdoor Plan"

111.2. NODE – Camera B-10 will be connected to the VMS via an existing fibre-optic link from the camera tower to Node BN3.

111.3. FOV – This camera will provide observation of the west roadway and areas behind buildings BC24, BC25, BC40, & BC41.

111.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

111.5. Mounting – The camera will be mounted onto the pendant mount on the existing CCTV tower.

MAP BC03

112. B-11 & B12 – BC03 Corcan

The contractor must supply and install 2 fixed network colour cameras that meet the following requirements:

112.1. Location – The location of cameras B-11 & B12 is detailed on drawing "BC03"

112.2. NODE – Cameras B-11 & B12 will be connected to Node BN2 located in BC05. The contractor must supply and install all necessary CAT6 and CAT6 extenders, cabling and conduit from the camera location to the PoE switch in BC05 for a PoE connection to each camera.

112.3. FOV – These cameras will observe Corcan area BC03 Room 102.

112.4. Camera – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

112.5. Mounting – The camera will be mounted to the interior wall at the approximate location indicated on map BC03 at the highest possible point.

MAP BC05

113. B-13 to B-16 – BC05 Food Preparation

The contractor must supply and install 4 fixed network colour cameras that meet the following requirements:

SITE SPECIFIC REQUIREMENTS

113.1. Location – The location of cameras B-13 to B-16 is detailed on drawing “BC05”.

113.2. NODE – Cameras B-13 to B-16 will be connected to Node BN2 located in BC05-113. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC05 for a PoE connection to each camera.

113.3. FOV – These cameras will observe food preparation areas in BC03 hallway 111 and rooms 118, 124 & 125.

113.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

113.5. Mounting – The cameras will be mounted to the interior wall at the approximate location indicated on map BC05 at the highest possible point.

114. B-17 & B-19 (Loading dock and breezeway)

The contractor must supply and install 3 fixed network colour cameras that meet the following requirements:

114.1. Location – The location of cameras B-17 to B-19 is detailed on drawing “BC05”

114.2. NODE – Cameras B-17 to B-19 will be connected to Node BN2 located in BC05-113. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC05 for a PoE connection to each camera.

114.3. FOV – These cameras will observe the following areas:

114.3.1. B-17 will face north viewing the indoor truck unloading platform.

114.3.2. B-18 & B19 will view east and west to provide observation of the indoor breezeway area.

114.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

114.5. Mounting – The cameras will be mounted to the interior wall or ceiling at the approximate location indicated on map BC05 at the highest possible point.

MAP BC12

115. B-20 & B-21 – (V&C Yard Areas)

The contractor must supply and install 2 fixed network colour cameras that meet the following requirements:

115.1. Location – The location of cameras B-20 & B-21 is detailed on drawing “BC12”

115.2. NODE – Cameras B-20 & B-21 will be connected to Node BN3 located in BC12-B11. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC12-B11 for a PoE connection to each camera.

115.3. FOV – B-20 & B-21 observes the outdoor visits area to provide a reference in compliment to the PTZ cameras.

115.4. Cameras – The provided cameras will be type #1B as detailed in section 4.5.4.2 of this statement of technical requirements.

115.5. Mounting – The cameras will be mounted to the exterior wall or under the roof overhang at the approximate location indicated at the highest possible point.

116. B-22 & B-23 – (V&C Indoor visits area)

The contractor must supply and install 2 fixed network colour cameras that meet the following requirements:

116.1. Location – The location of cameras B-22 & B-23 is detailed on drawing “BC12”

116.2. NODE – Cameras B-22 & B-23 will be connected to Node BN3 located in BC12-B11. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC12-B11 for a PoE connection to each camera.

116.3. FOV – B-22 & B-23 will observe the indoor visits area BC12-108 to provide a reference in compliment to the PTZ camera.

116.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

116.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

117. B-24 – (BC12 inmate entrance)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements:

117.1. Location – The location of cameras B-24 is detailed on drawing “BC12”

117.2. NODE – Cameras B-22 & B-23 will be connected to Node BN3 located in BC12-B11. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC12-B11 for a PoE connection to each camera.

117.3. FOV – B-24 will observe the inmate entry BC12-113 and staircase to the V&C area.

117.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

117.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

118. B-25 –V&C Indoor PTZ

The contractor must supply and install a PTZ outdoor colour network camera that meets or exceeds the following requirements:

118.1. Location – The location of camera B-25 is detailed on drawing “BC12”.

118.2. NODE – Camera B-25 will be connected to Node BN3 located in BC12-B11. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC12-B11 for a PoE connection to the camera.

118.3. FOV – This camera will provide 360° view of the indoor visits area BC12-108.

118.4. Camera – The provided camera will be type #2 as detailed in section 4.5.4.3 of this statement of technical requirements.

118.5. Mounting – The camera will be mounted to a contractor provided T91B51 pendant mount to provide swivel for the ceiling slope and allow a downward extension to ensure the camera can view the entire visiting area below the T-bar ceiling in the other areas of BC12-108.

119. B-26 – (V&C Search Area)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements:

119.1. Location – The location of cameras B-26 is detailed on drawing “BC12”

119.2. NODE – Camera B-26 will be connected to Node BN3 located in BC12-B11. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC12-B11.

119.3. FOV – B-26 will observe the search area BC12-106.

119.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

119.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

MAP BC13

120. B-27 (Healthcare Inmate Waiting Room)

The contractor must supply and install an anti-ligature outdoor colour network camera that meets or exceeds the following requirements.

120.1. Location – The location of cameras B-27 is detailed on drawing “BC13”

120.2. NODE – Camera B-27 will be connected to Node BN4 located in BC13-B01. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC13-B01.

120.3. FOV – B-27 will observe the healthcare inmate waiting room BC13-107.

120.4. Cameras – The provided cameras will be type #3 as detailed in section 4.5.4.4 of this statement of technical requirements.

120.5. Mounting – The cameras will be wall/corner mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

121. B-28 (Healthcare Corridor 101)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

121.1. Location – The location of cameras B-28 is detailed on drawing “BC13”

121.2. NODE – Camera B-28 will be connected to Node BN4 located in BC13-B01. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC13-B01.

121.3. FOV – B-28 will observe the healthcare health care corridor BC13-101.

121.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

121.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

122. B-29 (Healthcare Corridor 104)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

122.1. Location – The location of cameras B-29 is detailed on drawing “BC13”

122.2. NODE – Camera B-29 will be connected to Node BN4 located in BC13-B01. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC13-B01.

122.3. FOV – B-29 will observe the healthcare health care corridor BC13-101.

122.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

122.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

123. B-30 (SIS Cleaning room 116)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

123.1. Location – The location of cameras B-30 is detailed on drawing “BC13”

123.2. NODE – Camera B-30 will be connected to Node BN4 located in BC13-B01. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC13-B01.

123.3. FOV – B-30 will observe the cleaning room BC13-116.

123.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

123.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

124. B-31 & B-32 (SIS General Area room 116)

The contractor must supply and install 2 fixed network colour cameras that meet the following requirements.

124.1. Location – The location of cameras B-31 & B32 are detailed on drawing “BC13”

124.2. NODE – Cameras B-31 & B32 will be connected to Node BN4 located in BC13-B01. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC13-B01.

124.3. FOV – Cameras B-31 & B32 will observe the general area providing reverse angle views of room BC13-112.

124.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

124.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

MAP BC15

125. B-33 (Inmate Canteen (min))

The contractor must supply and install a fixed network colour camera that meet the following requirements.

125.1. Location – The location of camera B-33 is detailed on drawing “BC15”.

125.2. NODE – Camera B-33 will be connected to Node BN5 located in BC15-113. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC15-113.

125.3. FOV – Camera B-33 will observe the inmate canteen interior providing a 360° view of room BC15-102.

125.4. Cameras – The provided cameras will be type #4 as detailed in section 4.5.4.5 of this statement of technical requirements.

125.5. Mounting – The cameras will be ceiling mounted at the approximate location indicated at the highest possible point.

126. B-34 & B-35 (Inmate Canteen Window)

The contractor must supply and install 2 fixed network colour cameras that meet the following requirements.

126.1. Location – The location of cameras B-34 & B-35 is detailed on drawing “BC15”

126.2. NODE – Cameras B-34 & B-35 will be connected to Node BN5 located in BC15-113. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC15-113.

126.3. FOV – Cameras B-34 & B-35 will observe the inmate canteen corridor providing reverse angle views of room BC15-101.

126.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

126.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

127. B-36 (Hobby Craft room 104)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

127.1. Location – The location of camera B-36 is detailed on drawing “BC15”

127.2. NODE – Camera B-36 will be connected to Node BN5 located in BC15-113. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC15-113.

127.3. FOV – B-36 will observe the hobby craft room BC15-104.

127.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

127.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

128. B-37 (Hobby Craft room 104A)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

128.1. Location – The location of camera B-37 is detailed on drawing “BC15”

128.2. NODE – Camera B-37 will be connected to Node BN5 located in BC15-113. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC15-113.

128.3. FOV – B-37 will observe the hobby craft room BC15-104A.

128.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

128.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

129. B-38 (Weight Pit north)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

129.1. Location – The location of camera B-38 is detailed on drawing “BC15”

129.2. NODE – Camera B-38 will be connected to Node BN5 located in BC15-113. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC15-113.

129.3. FOV – B-38 will observe the north weight pit room BC15-110.

129.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

129.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

130. B-39, B-40, B-41 & B-42 (Gym)

The contractor must supply and install 4 fixed network colour cameras that meet the following requirements.

130.1. Location – The location of cameras B-39 – B-42 is detailed on drawing “BC15”

130.2. NODE – Cameras B-39 – B-42 will be connected to Node BN5 located in BC15-113. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC15-113.

130.3. FOV – Cameras B-39 – B-42 will observe the inmate gym room BC15-111.

130.4. Cameras – The provided cameras will be type #1B as detailed in section 4.5.4.2 of this statement of technical requirements.

130.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

131. B-43 (Weight Pit south)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

131.1. Location – The location of camera B-43 is detailed on drawing “BC15”

131.2. NODE – Camera B-43 will be connected to Node BN5 located in BC15-113. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC15-113.

131.3. FOV – B-43 will observe the north weight pit room BC15-112.

131.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

131.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

MAP BC20

132. B-44 (Neighbourhood 2 Common Room)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

132.1. Location – The location of camera B-44 is detailed on drawing “BC20”

132.2. NODE – Camera B-44 will be connected to Node BN7 located in BC19. The contractor must supply and install all necessary CAT6 and CAT6 PoE extenders, cabling and conduit from the camera location to the PoE switch in BC19 for a PoE connection to the camera.

132.3. FOV – B-44 will observe the neighbourhood common room, BC20-112.

132.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

132.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

MAP BC23

133. B-45 (Neighbourhood 1Common Room)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

133.1. Location – The location of camera B-45 is detailed on drawing "BC23"

133.2. NODE – Camera B-45 will be connected to Node BN8 located in BC24. The contractor must supply and install all necessary CAT6 and CAT6 PoE extenders, cabling and conduit from the camera location to the PoE switch in BC24 for a PoE connection to the camera.

133.3. FOV – B-45 will observe the neighbourhood common room, BC23-112.

133.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

133.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

MAP BC41

134. B-46 (Programs entrance vestibule)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

134.1. Location – The location of camera B-46 is detailed on drawing "BC41"

134.2. NODE – Camera B-46 will be connected to Node BN9 located in BC41-126. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC41-126.

134.3. FOV – B-46 will observe the programs entrance vestibule, BC41-101.

134.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

134.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

135. B-47 (Programs classrooms – main floor)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

135.1. Location – The location of camera B-47 is detailed on drawing "BC41"

135.2. NODE – Camera B-47 will be connected to Node BN9 located in BC41-126. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC41-126.

135.3. FOV – B-47 will observe the main floor programs classrooms corridor, BC41-109.

135.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

135.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

136. B-48 (Programs classrooms – 2nd floor)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

136.1. Location – The location of camera B-48 is detailed on drawing "BC41"

136.2. NODE – Camera B-48 will be connected to Node BN9 located in BC41-126. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC41-126.

136.3. FOV – B-48 will observe the 2nd floor programs classrooms corridor, BC41-202.

136.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

SITE SPECIFIC REQUIREMENTS

136.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

MAP BC55

137. B-49 (ID Building entrance vestibule)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

137.1. Location – The location of camera B-49 is detailed on drawing “BC55”

137.2. NODE – Camera B-49 will be connected to Node BN1 located in BC55-105. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC55-105.

137.3. FOV – B-49 will observe the entrance vestibule and the visitor sign-in window, BC55-113.

137.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

137.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

138. B-50 (ID Building mailboxes)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

138.1. Location – The location of camera B-50 is detailed on drawing “BC55”

138.2. NODE – Camera B-50 will be connected to Node BN1 located in BC55-105. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC55-105.

138.3. FOV – B-50 will observe the key safes, inmate mailboxes and duty office door, BC55-116.

138.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

138.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

139. B-51 (Visitor Search Area)

The contractor must supply and install a fixed network colour camera that meets or exceeds the following requirements.

139.1. Location – The location of camera B-51 is detailed on drawing “BC55”

139.2. NODE – Camera B-51 will be connected to Node BN1 located in BC55-105. The contractor must supply and install all necessary CAT6, cabling and conduit from the camera location to the PoE switch in BC55-105.

139.3. FOV – B-51 will observe the visitor search area and x-ray baggage scanning area, BC55-114.

139.4. Cameras – The provided camera will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

139.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

MAP BC58

140. B-52 & B-53 (Small Gym)

The contractor must supply and install 2 fixed network colour cameras that meet the following requirements.

140.1. Location – The location of cameras B-52 & B-53 is detailed on drawing “BC58”

140.2. NODE – Cameras B-52 & B-53 will be connected to Node BN5 located in BC15. The contractor must supply and install all necessary CAT6 and CAT6 extenders, cabling and conduit from the camera location to the PoE switch in BC15 for a PoE connection to each camera.

SITE SPECIFIC REQUIREMENTS

140.3. FOV – Cameras B-52 & B-53 will observe the small gym providing reverse angle views of room BC58-101.

140.4. Cameras – The provided cameras will be type #1A as detailed in section 4.5.4.1 of this statement of technical requirements.

140.5. Mounting – The cameras will be wall or ceiling mounted at the approximate location indicated at the highest possible point.

SITE SPECIFIC REQUIREMENTS

CCTV Client installation details - Medium Security Unit

Monitors and associated NVUS Clients:

FBA – Aurora Building (main entrance/sallyport):

141. M7 – M10 – FBA-104 (MCCP)

The contractor must supply and install 2 complete network clients that meet or exceed all of the requirements detailed in ES/STD-0228 with the following inclusions:

141.1. Monitor – Monitors M7 through M10 will replace the existing CCTV monitors in the MCCP console in FBA-104. The provided monitors will be mounted in the console exactly replacing the existing PIDS monitors.

141.2. Client CPU – The contractor must supply and install 2 type 1 rack mount clients into the CCTV equipment cabinet located in FBA-103 (CER).

141.3. Monitor Specification – The contractor must supply and install 4 type 4 monitors into the existing spaces in the MCCP console. Monitors will display no less than 1024x768 resolution.

141.4. Configuration – Each monitor will display CCTV as directed by the S100 system via the Genetec CCTV clients. The provided clients will be programmed to receive and display CCTV images in the current configuration.

142. M11 – M14 – FBA-104 (MCCP)

The contractor must supply and install 2 complete network clients that meet or exceed all of the requirements detailed in ES/STD-0228 with the following inclusions:

142.1. Monitor – Monitors M11 through M14 will replace the existing CCTV monitors in the MCCP console in FBA-104. The provided monitors will be mounted in the console exactly replacing the existing SIDS monitors.

142.2. Client CPU – The contractor must supply and install 2 type 2 rack mount clients into the CCTV equipment cabinet located in FBA-103 (CER).

142.3. Monitor Specification – The contractor must supply and install 4 type 4 monitors into the existing spaces in the MCCP console. Monitors will display no less than 1024x768 resolution.

142.4. Mouse – The contractor will provide 1 x mouse which will provide control of monitors M11 through M14 and monitor M19.

142.5. Configuration – Each monitor will display CCTV as selected by the MCCP operator on Monitor 19 vis the Genetec camera tree. Monitors M11 through M14 will permit spot or quad split display via the Genetec CCTV clients. The provided clients will be programmed to receive and display CCTV images in the current configuration.

143. M15 – M18 – FBA-104 (MCCP)

The contractor must supply and install 2 complete network clients that meet or exceed all of the requirements detailed in ES/STD-0228 with the following inclusions:

143.1. Monitor – Monitors M15 through M18 will replace the existing CCTV monitors in the MCCP in FBA-104. The provided monitors will be wall mounted above the console exactly replacing the existing SIDS monitors.

143.2. Client CPU – The contractor must supply and install 2 type 2 rack mount clients into the CCTV equipment cabinet located in FBA-103 (CER).

143.3. Monitor Specification – The contractor must supply and install 4 type 2 monitors to replace the existing monitor above the MCCP console. Monitors will display no less than 1920 x 1080 resolution.

143.4. Configuration – Each monitor will display CCTV as selected by the provided clients which will be programmed to receive and display CCTV images in the current configuration.

SITE SPECIFIC REQUIREMENTS

144. M19 – FBA-104 (MCCP)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

144.1. Monitor – Monitor M19 will replace the existing CCTV monitor in the MCCP console in FBA-104. The provided monitors will be mounted in the console exactly replacing the existing SIDS monitor.

144.2. Client CPU – The contractor must supply and install a type 2 rack mount clients into the CCTV equipment cabinet located in FBA-103 (CER).

144.3. Monitor Specification – The contractor must supply and install a type 4 monitor into the existing spaces in the MCCP console. The monitor will display no less than 1024x768 resolution.

144.4. Mouse – The contractor will provide 1 x mouse which will provide control of monitors M11 through M14 and monitor M19.

144.5. Configuration – Each monitor will display CCTV as selected by the MCCP operator on Monitor 19 vis the Genetec camera tree. Monitors M11 through M14 will permit spot or quad split display via the Genetec CCTV clients. The provided clients will be programmed to receive and display CCTV images in the current configuration.

145. M20 – FBA-102 (PECP)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

145.1. Monitor – The location of monitor M20 will replace the existing CCTV monitor on the west side (Sallyport) of the PECP in FBA-102. The provided monitor will be mounted on the desktop in the control post on a fixed VESA desktop post with an articulated arm equipped with an adaptor plate for mounting the associated KVM extender.

145.2. Mouse – The contractor must supply a mouse for this monitor to allow camera selection and PTZ camera operation. The mouse shall be USB connected.

145.3. Client CPU – The contractor must supply and install a type 2 rack mount client into the CCTV equipment cabinet located in FBA-103 (CER).

145.4. Monitor Specification – The contractor must supply and install a type 2 monitor.

145.5. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F.

146. M21 – FBA-102 (PECP)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

146.1. Monitor – The location of monitor M21 will replace the existing CCTV monitor on the east side (Main entrance) of the PECP in FBA-102. The provided monitor will be mounted on the desktop in the control post on a fixed VESA desktop post with an articulated arm equipped with an adaptor plate for mounting the associated KVM extender.

146.2. Mouse – The contractor must supply a mouse for this monitor to allow camera selection and PTZ camera operation. The mouse shall be USB connected.

146.3. Client CPU – The contractor must supply and install a type 2 rack mount client into the CCTV equipment cabinet located in FBA-103 (CER).

146.4. Monitor Specification – The contractor must supply and install a type 2 monitor.

146.5. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F.

SITE SPECIFIC REQUIREMENTS

147. M22 – FBA-209A (CMO)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

147.1. Monitor – Monitor M22 will be a type 3 desktop monitor located in the CMO office located at FBA-209A.

147.2. Mouse/Keyboard – The contractor must supply a USB mouse/keyboard for this monitor to allow all the functions of a type 4 client.

147.3. KVM Switch – The contractor will provide a KVM switch with the client to allow another computer to share the monitor, mouse and keyboard provided with this client. The KVM switch will allow transition from one computer to the other via a connected desktop button or via soft-key switching on the attached keyboard.

147.4. Client CPU – The contractor must supply and install a type 4 desktop tower computer into the office FBA-209A.

147.5. Monitor Specification – The contractor must supply and install a type 3 monitor.

147.6. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will permit both live view and archive playback of any video collected on the Genetec system.

148. M23, M24 & M25 – FBA-212/211 (SIO)

The contractor must supply and install 3 complete network clients that meet or exceed all of the requirements detailed in ES/STD-0228 with the following inclusions:

148.1. Monitor – Monitor M23, M24 & M25 will be a type 3 desktop monitor located in the SIO offices located at FBA-209A.

148.2. Mouse/Keyboard – The contractor must supply a USB mouse/keyboard for this monitor to allow all the functions of a type 4 client.

148.3. KVM Switch – The contractor will provide a KVM switch with the client to allow another computer to share the monitor, mouse and keyboard provided with this client. The KVM switch will allow transition from one computer to the other via a connected desktop button or via soft-key switching on the attached keyboard.

148.4. Client CPU – The contractor must supply and install a type 4 desktop tower computer into the office FBA-212/211.

148.5. Monitor Specification – The contractor must supply and install a type 3 monitor.

148.6. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will permit both live view and archive playback of any video collected on the Genetec system.

149. M26 – FBA-07 (ADGA)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

149.1. Monitor – Monitor M26 will be a type 3 desktop monitor located in the ADGA office located at FBA-07.

149.2. Mouse/Keyboard – The contractor must supply a USB mouse/keyboard for this monitor to allow all the functions of a type 4 client.

149.3. KVM Switch – The contractor will provide a KVM switch with the client to allow another computer to share the monitor, mouse and keyboard provided with this client. The KVM switch will allow transition from one computer to the other via a connected desktop button or via soft-key switching on the attached keyboard.

149.4. Client CPU – The contractor must supply and install a type 4 desktop tower computer into the office FBA-07.

149.5. Monitor Specification – The contractor must supply and install a type 3 monitor.

149.6. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will permit both live view and archive playback of any video collected on the Genetec system.

FBB – Borealis (visits and correspondence):

150. M27 – M30 – FBB-110 (V&C)

The contractor must supply and install 2 complete network clients that meet or exceed all of the requirements detailed in ES/STD-0228 with the following inclusions:

150.1. Monitor – Monitor M27 to M30 will be a type 2 desktop monitors located in the V&C post located at FBB-110.

150.2. Mouse/Keyboard – The contractor must supply a USB mouse/keyboard for this monitor to allow all the functions of a type 3 client.

150.3. KVM Switch – The contractor will provide a KVM switch with the client to allow another computer to share the monitor, mouse and keyboard provided with this client. The KVM switch will allow transition from one computer to the other via a connected desktop button or via soft-key switching on the attached keyboard.

150.4. Client CPU – The contractor must supply and install a type 3 rackmount computer into the equipment cabinet located in FBB-127.

150.5. Monitor Specification – The contractor must supply and install a type 2 monitors.

150.6. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will permit both live view and archive playback (up to 24hrs) of any video collected on the Genetec system, these clients will not permit video extraction.

FBC – Cedar (segregation and healthcare):

151. M31 & M32 – FBC-143 (Segregation)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

151.1. Monitor – The location of monitors M31 & M32 will be in Segregation control post located in FBC-143. The provided monitor will be mounted on the desktop in the control post on a fixed VESA desktop post with an articulated arm equipped with an adaptor plate for mounting the associated KVM extender.

151.2. Mouse – The contractor must supply a mouse for this monitor to allow camera. The mouse shall be USB connected.

151.3. Client CPU – The contractor must supply and install a type 2 rack mount client into the CCTV equipment cabinet located in FBC-138.

151.4. Monitor Specification – The contractor must supply and install a type 1 monitors.

151.5. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F

152. M33 – FBC-143 (SEG DRY CELL)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

152.1. Monitor – The location of monitor M33 will be in Segregation control post located in FBC-143. The provided monitor will be mounted on the desktop in the control post on a fixed VESA desktop post with an articulated arm equipped with an adaptor plate for mounting the associated KVM extender.

152.2. Mouse – The contractor must supply a mouse for this monitor to allow camera selection. The mouse shall be USB connected.

152.3. Client CPU – The contractor must supply and install a type 2 rack mount client into the CCTV equipment cabinet located in FBC-138.

152.4. Monitor Specification – The contractor must supply and install a type 1 monitor.

152.5. Configuration – The monitor will display a cameras F-49 & F-50 in a 2 split. The mouse will permit either camera to be viewed as a spot image. Cameras detailed in appendix F.

153. M34 – FBC-139 (Health Care)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

153.1. Monitor – The location of monitor M34 will be in Segregation control post located in FBC-139. The provided monitor will be mounted on the desktop in the control post on a fixed VESA desktop post with an articulated arm equipped with an adaptor plate for mounting the associated KVM extender.

153.2. Mouse – The contractor must supply a mouse for this monitor to allow camera selection. The mouse shall be USB connected.

153.3. Client CPU – The contractor must supply and install a type 2 rack mount client into the CCTV equipment cabinet located in FBC-138.

153.4. Monitor Specification – The contractor must supply and install a type 1 monitor.

153.5. Configuration – The monitor will display cameras in a spot, 2 split or quad split image. Cameras detailed in appendix F.

FBD – Driftwood (kitchen):

154. M35 – FBD-120 (Kitchen Office)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

154.1. Monitor – The location of monitor M35 will be in kitchen manager's office located in FBD-120. The provided monitor will be mounted on the desktop in the office on the desk.

154.2. Mouse/Keyboard – The contractor must supply a USB mouse/keyboard for this monitor to allow all the functions of a type 3 client.

154.3. KVM Switch – The contractor will provide a KVM switch with the client to allow another computer to share the monitor, mouse and keyboard provided with this client. The KVM switch will allow transition from one computer to the other via a connected desktop button or via soft-key switching on the attached keyboard.

154.4. Client CPU – The contractor must supply and install a type 3 rack mount client into the CCTV equipment cabinet located in FBD-205.

154.5. Monitor Specification – The contractor must supply and install a type 2 monitor.

154.6. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will permit both live view and archive playback (up to 24hrs) of any video collected on the Genetec system, these clients will not permit video extraction.

SITE SPECIFIC REQUIREMENTS

FBE – Edgewood:

155. M36 – FBE-122 (Edgewood Living Unit)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

155.1. Monitor – The location of monitor M36 will be in integrated into the CX counter located in FBE-122. The provided monitor will be mounted into the millwork on the desk.

155.2. Mouse – The contractor must supply a mouse for this monitor to allow camera selection. The mouse shall be USB connected.

155.3. Client CPU – The contractor must supply and install a type 2 rack mount client into the CCTV equipment cabinet located in FBE-211.

155.4. Monitor Specification – The contractor must supply and install a type 1 monitor.

155.5. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will also display 6 tabs on the bottom control bar. Each tab will present a 6 split view of cameras in each of the 6 pair of ranges in the living unit.

FBE – Falcon:

156. M37 – FBF-122 (Falcon Living Unit)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

156.1. Monitor – The location of monitor M37 will be in integrated into the CX counter located in FBF-122. The provided monitor will be mounted into the millwork on the desk.

156.2. Mouse – The contractor must supply a mouse for this monitor to allow camera selection. The mouse shall be USB connected.

156.3. Client CPU – The contractor must supply and install a type 2 rack mount client into the CCTV equipment cabinet located in FBF-211.

156.4. Monitor Specification – The contractor must supply and install a type 1 monitor.

156.5. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will also display 6 tabs on the bottom control bar. Each tab will present a 6 split view of cameras in each of the 6 pair of ranges in the living unit.

FBG – Granite:

157. M38 – FBG-122 (Falcon Living Unit)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

157.1. Monitor – The location of monitor M38 will be in integrated into the CX counter located in FBG-122. The provided monitor will be mounted into the millwork on the desk.

157.2. Mouse – The contractor must supply a mouse for this monitor to allow camera selection. The mouse shall be USB connected.

157.3. Client CPU – The contractor must supply and install a type 2 rack mount client into the CCTV equipment cabinet located in FBG-211.

157.4. Monitor Specification – The contractor must supply and install a type 1 monitor.

157.5. Configuration – The monitor will display a camera tree on the left side of the screen allowing

the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will also display 6 tabs on the bottom control bar. Each tab will present a 6 split view of cameras in each of the 6 pair of ranges in the living unit.

FBG – Horizon:

158. M39 – FBH-122 (Horizon Living Unit)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

158.1. Monitor – The location of monitor M39 will be in integrated into the CX counter located in FBH-122. The provided monitor will be mounted into the millwork on the desk.

158.2. Mouse – The contractor must supply a mouse for this monitor to allow camera selection. The mouse shall be USB connected.

158.3. Client CPU – The contractor must supply and install a type 2 rack mount client into the CCTV equipment cabinet located in FBH-211.

158.4. Monitor Specification – The contractor must supply and install a type 1 monitor.

158.5. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will also display 6 tabs on the bottom control bar. Each tab will present a 6 split view of cameras in each of the 6 pair of ranges in the living unit.

SITE SPECIFIC REQUIREMENTS

CCTV Client installation details - Minimum Security Unit

Monitors and associated NVUS Clients:

BC05 – Food Services:

159. M1 – BC05-113 (Kitchen Office)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

159.1. Monitor – The location of monitor M1 will be in kitchen manager's office located in BC05-113. The provided monitor will be mounted on the desktop in the office on the desk.

159.2. Mouse/Keyboard – The contractor must supply a USB mouse/keyboard for this monitor to allow all the functions of a type 3 client.

159.3. KVM Switch – The contractor will provide a KVM switch with the client to allow another computer to share the monitor, mouse and keyboard provided with this client. The KVM switch will allow transition from one computer to the other via a connected desktop button or via soft-key switching on the attached keyboard.

159.4. Client CPU – The contractor must supply and install a type 3 rack mount client into the CCTV equipment cabinet located in BC05-E113.

159.5. Monitor Specification – The contractor must supply and install a type 2 monitor.

159.6. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will permit both live view and archive playback (up to 24hrs) of any video collected on the Genetec system, these clients will not permit video extraction.

BC12 – Visits and Correspondence:

160. M2 & M3 – BC12-103 (V&C Office)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

160.1. Monitor – The location of monitor M2 & M3 will be in V&C Office located in BC12-103. The provided monitors will be mounted on the desktop in the office on the desk.

160.2. Mouse/Keyboard – The contractor must supply a USB mouse/keyboard for this monitor to allow all the functions of a type 3 client.

160.3. Client CPU – The contractor must supply and install a type 3 rack mount client into the CCTV equipment cabinet located in BC12-11.

160.4. Monitor Specification – The contractor must supply and install a 2 type 2 monitors.

160.5. Configuration – The monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F. The client will permit both live view and archive playback (up to 24hrs) of any video collected on the Genetec system, these clients will not permit video extraction.

SITE SPECIFIC REQUIREMENTS

BC55 – Visitor Entrance and Duty Office:

161. M4 & M5 – BC55-100 (Duty Office)

The contractor must supply and install a complete network client that meets or exceeds all of the requirements detailed in ES/STD-0228 with the following inclusions:

161.1. Monitor – The location of monitor M4 & M5 will be in Duty Office located in BC55-100. The provided monitors will be mounted on VESA mount articulated arm with an attached bracket for the KVM extender.

161.2. Mouse – The contractor must supply a mouse for these monitors to allow camera selection. The mouse shall be USB connected.

161.3. Client CPU – The contractor must supply and install a type 2 rack mount client into the CCTV equipment cabinet located in BC55-105.

161.4. Monitor Specification – The contractor must supply and install a type 2 monitors.

161.5. Configuration – One monitor will display a camera tree on the left side of the screen allowing the operator to select cameras in a spot, quad or six split configuration, permitted cameras are detailed in appendix F.

CCTV Node installation details

Nodes and associated Equipment Cabinets:

General:

The contractor must supply and install new network switches, new fibre optic and CAT6 cabling, termination bays and all necessary SFP modules, patch cords and electronic equipment cabinets to provide a complete CCTV network throughout the institution. All cabinets will be dressed and labeled to *ANSI/TIA-568* standards

The contractor will relocate necessary CCTV and other electronic systems equipment to provide to electronic cabinets dedicated to CCTV system equipment to be provided in this project. The contractor must temporarily relocate equipment and maintain that equipment operability while installing and relocating equipment to ensure cabinets housing CCTV are dedicated to CCTV related equipment.

162. **Node #1 Main Archive (FBA-103)**

The contractor must provide a Core switch cluster consisting of a minimum of two 48 port switches (see section 4.7) supporting a Minimum of 16 1Gbps SFP ports, in addition to these core switches the Contractor will provide an “edge” stackable 48-port 10/100/1000 MBps switch to connect cameras linking to this location as specified in this STR. The provided network switches will be mounted into existing EIA/TIA standard 19” rack mount equipment cabinets. All perimeter cameras will be connected directly to dedicated PIDS 48 port network switch. This switch will be a logical extension of Node #1. The contractor must provide new three power outlet strips. 2 x Horizontal power strips will have at least 5 outlets on the rear and at least 1 outlet on the front of each strip. Each strip must have at least six outlets. 1 x vertical 20A power strip equipped with a twist lock plug and a minimum of 16 outlets. The new vertical power bar will be connected to a dedicated UPS supported circuit in the CER AC distribution panel.

SITE SPECIFIC REQUIREMENTS

Medium Security Unit:

163. Node FN1 (FBA-114) Aurora

This node is the fibre optic termination point for all other buildings on the medium security side of the institution except FN11, FN12 & FN13. Nodes FN2 through FN10 will connect to the core via node FN1. The contractor must provide two 48 port switches (see section 4.7) supporting a Minimum of 16 1Gbps SFP ports each. The contractor will provide and install a new 12 strand 0S2 loose tube riser fibre optic cable from FBA-114 to Node 1 located in FBA-103. All strands will be terminated and labeled in termination bays in existing equipment cabinets.

164. Node FN2 (FBB-127) Borealis

Node FN2 will connect to the Node FN1 via existing OS1 fibre. The contractor will provide 2 x 24 port network switches. Each provided switch will be connected to Node FN1 via 1 strand of existing OS1 fibre optic cable connected to a SFP directly into the switch. Each switch will have a minimum 10GB link to form 1 virtual switch. The clients supporting monitors M27 through M30 will be mounted into this cabinet as detailed in Appendix F. The contractor must provide and install a floor mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

165. Node FN3 (FBC-138) Cedar

Node FN3 will connect to the Node FN1 via existing OS1 fibre. The contractor will provide 2 x 24 port network switches. Each provided switch will be connected to Node FN1 via 1 strand of existing OS1 fibre optic cable connected to a SFP directly into the switch. Each switch will have a minimum 10GB link to form 1 virtual switch. The clients supporting monitors M31 through M34 will be mounted into this cabinet as detailed in Appendix F. The contractor must provide and install a floor mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

166. Node FN4 (FBD-205) Driftwood

Node FN4 will connect to the Node FN1 via existing OS1 fibre. The contractor will provide 2 x 24 port network switches. Each provided switch will be connected to Node FN1 via 1 strand of existing OS1 fibre optic cable connected to a SFP directly into the switch. Each switch will have a minimum 10GB link to form 1 virtual switch. The client supporting monitor M35 be mounted into this cabinet as detailed in Appendix F. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

167. Node FN5 (FBE-211) Edgewood

Node FN5 will connect to the Node FN1 via existing OS1 fibre. The contractor will provide 2 x 48 port network switches. Each provided switch will be connected to Node FN1 via 1 strand of existing OS1 fibre optic cable connected to a SFP directly into the switch. Each switch will have a minimum 10GB link to form 1 virtual switch. The client supporting monitor M36 be mounted into this cabinet as detailed in Appendix F. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

168. Node FN6 (FBF-211) Falcon

Node FN6 will connect to the Node FN1 via existing OS1 fibre. The contractor will provide 2 x 48 port network switches. Each provided switch will be connected to Node FN1 via 1 strand of existing OS1 fibre optic cable connected to a SFP directly into the switch. Each switch will have a minimum 10GB link to form 1 virtual switch. The client supporting monitor M37 be mounted into this cabinet as detailed in Appendix F. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

169. Node FN7 (FBG-211) Granite

Node FN7 will connect to the Node FN1 via existing OS1 fibre. The contractor will provide 2 x 48 port network switches. Each provided switch will be connected to Node FN1 via 1 strand of existing OS1 fibre optic cable connected to a SFP directly into the switch. Each switch will have a minimum 10GB link to form 1 virtual switch. The client supporting monitor M38 be mounted into this cabinet as detailed in Appendix F. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

SITE SPECIFIC REQUIREMENTS

170. Node FN8 (FBH-209) Horizon

Node FN8 will connect to the Node FN1 via existing OS1 fibre. The contractor will provide 2 x 48 port network switches. Each provided switch will be connected to Node FN1 via 1 strand of existing OS1 fibre optic cable connected to a SFP directly into the switch. Each switch will have a minimum 10GB link to form 1 virtual switch. The client supporting monitor M39 be mounted into this cabinet as detailed in Appendix F. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

171. Node FN9 (FBJ-201) Juniper

Node FN9 will connect to the Node FN1 via existing OS1 fibre. The contractor will provide 2 x 24 port network switches. Each provided switch will be connected to Node FN1 via 1 strand of existing OS1 fibre optic cable connected to a SFP directly into the switch. Each switch will have a minimum 10GB link to form 1 virtual switch. The client supporting monitor M39 be mounted into this cabinet as detailed in Appendix F. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

172. Node FN10 (FBK-151) Katimavik

Node FN10 will connect to the Node FN1 via existing OS1 fibre. The contractor will provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 1 strand of existing OS1 fibre optic cable connected to a SFP directly into the switch. The contractor must provide and install a floor mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

173. Node FN11 (FBT-203) Tundra

Node FN11 will connect to the Node FN1 via existing OM3 fibre. The contractor will provide 2 x 48 port network switches. Each provided switch will be connected to Node FN1 via 2 strands (each) of existing OM3 fibre optic cable connected to a SFP directly into the switch. Each switch will have a minimum 10GB link to form 1 virtual switch. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

174. Node FN12 (FBU-115A) Unity

Node FN12 will connect to the Node FN11 via existing OM3 fibre. The contractor will provide 1 x 24 port network switch. The provided switch will be connected to Node FN11 (Tundra) via 2 strands of existing OM3 fibre optic cable connected to a SFP directly into each switch. The contractor must provide and install a floor mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

175. Node FN13 (FBV-201A) Vista

Node FN13 will connect to the Node FN1 via existing OM3 fibre. The contractor will provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 2 strands of existing OM3 fibre optic cable connected to a SFP directly into each switch. The contractor must provide and install a floor mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

SITE SPECIFIC REQUIREMENTS

Minimum Security Unit:

176. Node BN1 (BC55-105) Duty Office

This node is the fibre optic termination point for all buildings on the minimum security side of the institution, Nodes BN2 through BN10 will connect to the core via node BN1. The contractor must provide two 48 port switches (see section 4.7) supporting a Minimum of 16 1Gbps SFP ports. The provided network switches will be mounted into existing EIA/TIA standard 19" rack mount equipment cabinets. The contractor must provide new three power outlet strips. 2 x Horizontal power strips will have at least 5 outlets on the rear and at least 1 outlet on the front of each strip. Each strip must have at least six outlets. 1 x vertical 20A power strip equipped with a twist lock plug and a minimum of 16 outlets. The new vertical power bar will be connected to a dedicated UPS supported circuit in the CER AC distribution panel. The contractor will provide and install into existing duct banks a new 24 strand OS2 loose tube plenum fibre optic cable from the equipment cabinet in BC55-105 to the fibre termination point FN1 located in FBA-114. All fibre strands will be terminated and mounted in a EIA/TIA fibre termination bay.

177. Node BN2 (BC05-E113) Stores/Food Services

Node BN2 will connect to the Node BN1 via existing OM3 fibre. The contractor will provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 2 strands of existing OM3 fibre optic cable connected to a SFP directly into the switch. The client supporting monitor M1 will be mounted into this cabinet as detailed in Appendix F. The contractor must provide and install a floor mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet. The contractor will provide and install a wall mount, vertical hang EIA/TIA 19" rack mount cabinet for equipment in this Node.

178. Node BN3 (BC12-B11) V&C

Node BN3 will connect to the Node BN1 via existing OM3 fibre. The contractor will provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 2 strands of existing OM3 fibre optic cable connected to a SFP directly into the switch. The client supporting monitors M2 & M3 will be mounted into this cabinet as detailed in Appendix F. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

179. Node BN4 (BC13-108) Health Care/SIS

Node BN4 will connect to the Node BN1 via a new 12 strand OM3 fibre. The contractor will provide and install a new 12 strand OM3 fibre optic cable between BC13 and BC55, all strands will be terminated and mounted into a new fibre termination bay. The contractor must provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 2 strands of new OM3 fibre optic cable connected to a SFP directly into the switch. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet. The contractor will provide and install a new 24RU equipment cabinet that meets the requirements described in section 4.14 for the STR.

180. Node BN5 (BC15-113) Recreation/Gym

Node BN5 will connect to the Node BN1 via a new 12 strand OM3 fibre. The contractor will provide and install a new 12 strand OM3 fibre optic cable between BC15 and BC55, all strands will be terminated and mounted into a new fibre termination bay. The contractor must provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 2 strands of new OM3 fibre optic cable connected to a SFP directly into the switch. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet. The contractor will provide and install a new 24RU equipment cabinet that meets the requirements described in section 4.14 for the STR.

SITE SPECIFIC REQUIREMENTS

181. Node BN6 (BC16-B02) Administration

Node BN6 will connect to the Node BN1 via existing OM3 fibre. The contractor will provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 2 strands of existing OM3 fibre optic cable connected to a SFP directly into the switch. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet.

182. Node BN7 (BC19-P14) Unit 5

Node BN7 will connect to the Node BN1 via existing OM3 fibre. The contractor will provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 2 strands of existing OM3 fibre optic cable connected to a SFP directly into the switch. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet. The contractor will provide and install a wall mount, vertical hang EIA/TIA 19" rack mount cabinet for equipment in this Node.

183. Node BN8 (BC24-P27) Unit 3

Node BN8 will connect to the Node BN1 via a new 12 strand OM3 fibre. The contractor will provide and install a new 12 strand OM3 fibre optic cable between BC24 and BC55, all strands will be terminated and mounted into a new fibre termination bay. The contractor must provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 2 strands of existing OM3 fibre optic cable connected to a SFP directly into the switch. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet. The contractor will provide and install a wall mount, vertical hang EIA/TIA 19" rack mount cabinet for equipment in this Node.

184. Node BN9 (BC41-126) Programs Building

Node BN9 will connect to the Node BN1 via a new 12 strand OM3 fibre. The contractor will provide and install a new 12 strand OM3 fibre optic cable between BC41 and BC55, all strands will be terminated and mounted into a new fibre termination bay. The contractor must provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 2 strands of existing OM3 fibre optic cable connected to a SFP directly into the switch. The contractor must provide and install a rack mount UPS that will provide a minimum of 20 minutes' run-time for all equipment housed in this cabinet. The contractor will provide and install a wall mount, vertical hang EIA/TIA 19" rack mount cabinet for equipment in this Node.

185. Node BN10 (BC62-004) 50 Bed Unit

Node BN10 will connect to the Node BN1 via a new 12 strand OM3 fibre. The contractor will provide and install a new 12 strand OM3 fibre optic cable between BC62 and BC55, all strands will be terminated and mounted into a new fibre termination bay. The contractor must provide 1 x 24 port network switch. The provided switch will be connected to Node FN1 via 2 strands of existing OM3 fibre optic cable connected to a SFP directly into the switch.

FIN

Correctional Service Canada
Technical Services Branch
Electronics Systems

Issue 1
February 28, 2018

STATEMENT
OF
TECHNICAL REQUIREMENTS

UPGRADE

of

CCTV SYSTEMS

at

BEAVER CREEK INSTITUTION

Appendix D

Camera Totals

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the existing Hybrid CCTV System at Beaver Creek Institution.

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - Minimum Security Unit

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	count box	nc
1	B-1	OD		1				1	
2	B-2	OD					1	1	
3	B-3	OD	1					1	
4	B-4	OD		1				1	
5	B-5	OD		1				1	
6	B-6	OD		1				1	
7	B-7	OD		1				1	
8	B-8	OD		1				1	
9	B-9	OD		1				1	
10	B-10	OD		1				1	
11	B-11	BC03	1					1	
12	B-12	BC03	1					1	
13	B-13	BC05	1					1	
14	B-14	BC05	1					1	
15	B-15	BC05	1					1	
16	B-16	BC05	1					1	
17	B-17	BC05	1					1	
18	B-18	BC05	1					1	
19	B-19	BC05	1					1	
20	B-20	BC12	1					1	
21	B-21	BC12	1					1	
22	B-22	BC12	1					1	
23	B-23	BC12	1					1	
24	B-24	BC12	1					1	
25	B-25	BC12		1				1	
26	B-26	BC12		1				1	
27	B-27	BC13			1			1	
28	B-28	BC13	1					1	
29	B-29	BC13	1					1	
30	B-30	BC13	1					1	
	Total		18	10	1	0	1	30	

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - Minimum Security Unit

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	count box	nc
31	B-31	BC13	1					1	
32	B-32	BC13	1					1	
33	B-33	BC15				1		1	
34	B-34	BC15	1					1	
35	B-35	BC15	1					1	
36	B-36	BC15	1					1	
37	B-37	BC15	1					1	
38	B-38	BC15	1					1	
39	B-39	BC15	1					1	
40	B-40	BC15	1					1	
41	B-41	BC15	1					1	
42	B-42	BC15	1					1	
43	B-43	BC15	1					1	
44	B-44	BC20	1					1	
45	B-45	BC23	1					1	
46	B-46	BC41	1					1	
47	B-47	BC41	1					1	
48	B-48	BC41	1					1	
49	B-49	BC55	1					1	
50	B-50	BC55	1					1	
51	B-51	BC55				1		1	
52	B-52	BC58	1					1	
53	B-53	BC58	1					1	
	Total		21	0	0	2	0	23	
	Grand Total		39	10	1	2	1	53	

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - Medium Security Unit

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	Type 6	count box	nc
54	F-1	OD		1					1	
55	F-2	OD		1					1	
56	F-3	OD		1					1	
57	F-4	OD		1					1	
58	F-5	OD		1					1	
59	F-6	OD						1	1	
60	F-7	OD		1					1	
61	F-8	OD		1					1	
62	F-9	OD		1					1	
63	F-10	OD		1					1	
64	F-11	OD		1					1	
65	F-12	OD	1						1	
66	F-13	OD	1						1	
67	F-14	OD		1					1	
68	F-15	OD					1		1	
69	F-16	OD					1		1	
70	F-17	OD					1		1	
71	F-18	OD	1						1	
72	F-19	OD	1						1	
73	F-20	OD	1						1	
74	F-21	OD	1						1	
75	F-22	OD	1						1	
76	F-23	OD	1						1	
77	F-24	OD	1						1	
78	F-25	OD	1						1	
79	F-26	FBA-1	1						1	
80	F-27	FBA-1	1						1	
81	F-28	FBA-1	1						1	
82	F-29	FBA-1	1						1	
83	F-30	FBA-1			1				1	
84	F-31	FBA-1				1			1	
85	F-32	FBA-B		1					1	
86	F-33	FBB-1	1						1	
87	F-34	FBB-1	1						1	
88	F-35	FBB-1			1				1	
89	F-36	FBB-1			1				1	
90	F-37	FBB-1		1					1	
91	F-38	FBB-1	1						1	
92	F-39	FBB-1		1					1	
93	F-40	FBB-1	1						1	
94	F-41	FBB-1	1						1	
95	F-42	FBB-1		1					1	
	Total		19	15	3	1	3	1	42	0

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - Medium Security Unit

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	Type 6	count box	nc
96	F-43	FBB-1		1					1	
97	F-44	FBB-1		1					1	
98	F-45	FBC-1	1						1	
99	F-46	FBC-1	1						1	
100	F-47	FBC-1	1						1	
101	F-48	FBC-1	1						1	
102	F-49	FBC-1			1				1	
103	F-50	FBC-1			1				1	
104	F-51	FBC-1	1						1	
105	F-52	FBC-1	1						1	
106	F-53	FBC-1	1						1	
107	F-54	FBC-1	1						1	
108	F-55	FBD-1	1						1	
109	F-56	FBD-1	1						1	
110	F-57	FBD-1	1						1	
111	F-58	FBD-1				1			1	
112	F-59	FBD-1	1						1	
113	F-60	FBD-1	1						1	
114	F-61	FBD-1	1						1	
115	F-62	FBD-1	1						1	
116	F-63	FBD-1	1						1	
117	F-64	FBD-1	1						1	
118	F-65	FBD-1				1			1	
119	F-66	FBD-1				1			1	
120	F-67	FBD-1			1				1	
121	F-68	FBD-1	1						1	
122	F-69	FBD-1	1						1	
123	F-70	FBD-1	1						1	
124	F-71	FBD-1	1						1	
125	F-72	FBD-1	1						1	
126	F-73	FBD-1	1						1	
127	F-74	FBD-1	1						1	
128	F-75	FBD-2	1						1	
129	F-76	FBD-2	1						1	
130	F-77	FBD-2	1						1	
	Total		27	2	3	3	0	0	35	0

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - Medium Security Unit

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	Type 6	count box	nc
131	F-78	FBE-1							0	1
132	F-79	FBE-1							0	1
133	F-80	FBE-1							0	1
134	F-81	FBE-1							0	1
135	F-82	FBE-1							0	1
136	F-83	FBE-1							0	1
137	F-84	FBE-1							0	1
138	F-85	FBE-1							0	1
139	F-86	FBE-1							0	1
140	F-87	FBE-1							0	1
141	F-88	FBE-1							0	1
142	F-89	FBE-1							0	1
143	F-90	FBE-1							0	1
144	F-91	FBE-1							0	1
145	F-92	FBE-1							0	1
146	F-93	FBE-1							0	1
147	F-94	FBE-1							0	1
148	F-95	FBE-1							0	1
149	F-96	FBE-1							0	1
150	F-97	FBE-1							0	1
151	F-98	FBE-2							0	1
152	F-99	FBE-2							0	1
153	F-100	FBE-2							0	1
154	F-101	FBE-2							0	1
155	F-102	FBE-2							0	1
156	F-103	FBE-2							0	1
157	F-104	FBE-2							0	1
158	F-105	FBE-2							0	1
159	F-106	FBE-2							0	1
160	F-107	FBE-2							0	1
161	F-108	FBE-2							0	1
162	F-109	FBE-2							0	1
163	F-110	FBE-2							0	1
164	F-111	FBE-2							0	1
165	F-112	FBE-2							0	1
166	F-113	FBE-2							0	1
167	F-114	FBE-2							0	1
168	F-115	FBE-2							0	1
169	F-116	FBE-2							0	1
170	F-117	FBE-2							0	1
171	F-118	FBE-2							0	1
172	F-119	FBE-2							0	1
	Total		0	0	0	0	0	0	0	42

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - Medium Security Unit

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	Type 6	count box	nc
173	F-120	FBF-1							0	1
174	F-121	FBF-1							0	1
175	F-122	FBF-1							0	1
176	F-123	FBF-1							0	1
177	F-124	FBF-1							0	1
178	F-125	FBF-1							0	1
179	F-126	FBF-1							0	1
180	F-127	FBF-1							0	1
181	F-128	FBF-1							0	1
182	F-129	FBF-1							0	1
183	F-130	FBF-1							0	1
184	F-131	FBF-1							0	1
185	F-132	FBF-1							0	1
186	F-133	FBF-1							0	1
187	F-134	FBF-1							0	1
188	F-135	FBF-1							0	1
189	F-136	FBF-1							0	1
190	F-137	FBF-1							0	1
191	F-138	FBF-1							0	1
192	F-139	FBF-1							0	1
193	F-140	FBF-2							0	1
194	F-141	FBF-2							0	1
195	F-142	FBF-2							0	1
196	F-143	FBF-2							0	1
197	F-144	FBF-2							0	1
198	F-145	FBF-2							0	1
199	F-146	FBF-2							0	1
200	F-147	FBF-2							0	1
201	F-148	FBF-2							0	1
202	F-149	FBF-2							0	1
203	F-150	FBF-2							0	1
204	F-151	FBF-2							0	1
205	F-152	FBF-2							0	1
206	F-153	FBF-2							0	1
207	F-154	FBF-2							0	1
208	F-155	FBF-2							0	1
209	F-156	FBF-2							0	1
210	F-157	FBF-2							0	1
211	F-158	FBF-2							0	1
212	F-159	FBF-2							0	1
213	F-160	FBF-2							0	1
214	F-161	FBF-2							0	1
	Total		0	0	0	0	0	0	0	42

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - Medium Security Unit

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	Type 6	count box	nc
215	F-162	FBG-1							0	1
216	F-163	FBG-1							0	1
217	F-164	FBG-1							0	1
218	F-165	FBG-1							0	1
219	F-166	FBG-1							0	1
220	F-167	FBG-1							0	1
221	F-168	FBG-1							0	1
222	F-169	FBG-1							0	1
223	F-170	FBG-1							0	1
224	F-171	FBG-1							0	1
225	F-172	FBG-1							0	1
226	F-173	FBG-1							0	1
227	F-174	FBG-1							0	1
228	F-175	FBG-1							0	1
229	F-176	FBG-1							0	1
230	F-177	FBG-1							0	1
231	F-178	FBG-1							0	1
232	F-179	FBG-1							0	1
233	F-180	FBG-1							0	1
234	F-181	FBG-1							0	1
235	F-182	FBG-2							0	1
236	F-183	FBG-2							0	1
237	F-184	FBG-2							0	1
238	F-185	FBG-2							0	1
239	F-186	FBG-2							0	1
240	F-187	FBG-2							0	1
241	F-188	FBG-2							0	1
242	F-189	FBG-2							0	1
243	F-190	FBG-2							0	1
244	F-191	FBG-2							0	1
245	F-192	FBG-2							0	1
246	F-193	FBG-2							0	1
247	F-194	FBG-2							0	1
248	F-195	FBG-2							0	1
249	F-196	FBG-2							0	1
250	F-197	FBG-2							0	1
251	F-198	FBG-2							0	1
252	F-199	FBG-2							0	1
253	F-200	FBG-2							0	1
254	F-201	FBG-2							0	1
255	F-202	FBG-2							0	1
256	F-203	FBG-2							0	1
	Total		0	0	0	0	0	0	0	42

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - Medium Security Unit

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	Type 6	count box	nc
257	F-204	FBH-1							0	1
258	F-205	FBH-1							0	1
259	F-206	FBH-1							0	1
260	F207	FBH-1							0	1
261	F-208	FBH-1							0	1
262	F-209	FBH-1							0	1
263	F-210	FBH-1							0	1
264	F-211	FBH-1							0	1
265	F-212	FBH-1							0	1
266	F-213	FBH-1							0	1
267	F-214	FBH-1							0	1
268	F-215	FBH-1							0	1
269	F-216	FBH-1							0	1
270	F-217	FBH-1							0	1
271	F-218	FBH-1							0	1
272	F-219	FBH-1							0	1
273	F-220	FBH-1							0	1
274	F-221	FBH-1							0	1
275	F-222	FBH-1							0	1
276	F-223	FBH-1							0	1
277	F-224	FBH-2							0	1
278	F-225	FBH-2							0	1
279	F-226	FBH-2							0	1
280	F-227	FBH-2							0	1
281	F-228	FBH-2							0	1
282	F-229	FBH-2							0	1
283	F-230	FBH-2							0	1
284	F-231	FBH-2							0	1
285	F-232	FBH-2							0	1
286	F-233	FBH-2							0	1
287	F-234	FBH-2							0	1
288	F-235	FBH-2							0	1
289	F-236	FBH-2							0	1
290	F-237	FBH-2							0	1
291	F-238	FBH-2							0	1
292	F-239	FBH-2							0	1
293	F-240	FBH-2							0	1
294	F-241	FBH-2							0	1
295	F-242	FBH-2							0	1
296	F-243	FBH-2							0	1
297	F-244	FBH-2							0	1
298	F-245	FBH-2							0	1
	Total		0	0	0	0	0	0	0	42

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - Medium Security Unit

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	Type 6	count box	nc
299	F-246	FBJ-1	1						1	
300	F-247	FBJ-1	1						1	
301	F-248	FBJ-1	1						1	
302	F-249	FBJ-1	1						1	
303	F-250	FBJ-1	1						1	
304	F-251	FBJ-1	1						1	
305	F-252	FBJ-1	1						1	
306	F-253	FBJ-1	1						1	
307	F-254	FBJ-1	1						1	
308	F-255	FBJ-1	1						1	
309	F-256	FBJ-1	1						1	
310	F-257	FBJ-1	1						1	
311	F-258	FBJ-1	1						1	
312	F-259	FBJ-1	1						1	
313	F-260	FBJ-1	1						1	
314	F-261	FBJ-1							0	1
315	F-262	FBJ-1							0	1
316	F-263	FBJ-1							0	1
317	F-264	FBR-1	1						1	
318	F-265	FBT							0	1
319	F-266	FBT							0	1
320	F-267	FBT							0	1
321	F-268	FBT							0	1
322	F-269	FBT							0	1
323	F-270	FBT							0	1
324	F-271	FBT							0	1
325	F-272	FBT							0	1
326	F-273	FBT							0	1
327	F-274	FBT							0	1
328	F-275	FBT							0	1
329	F-276	FBT							0	1
330	F-277	FBT							0	1
331	F-278	FBT							0	1
332	F-279	FBT							0	1
333	F-280	FBT							0	1
334	F-281	FBT							0	1
335	F-282	FBT							0	1
336	F-283	FBT							0	1
337	F-284	FBT							0	1
	Total		16	0	0	0	0	0	16	23

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - Medium Security Unit

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	Type 6	count box	nc
338	F-285	FBU	1						1	
339	F-286	FBU	1						1	
340	F-287	FBU	1						1	
341	F-288	FBU	1						1	
342	F-289	FBU	1						1	
	Total		5	0	0	0	0	0	5	0
Grand	Total		67	17	6	4	3	1	98	191

Beaver Creek Institution Digital CCTV Upgrade Camera Totals - - Medium Security PIDS

#	Camera	Building	Type 1A/B	Type 2	Type 3	Type 4	Type 5	Type 6	count box
343	P-1	Perimeter						1	1
344	P-2	Perimeter						1	1
345	P-3	Perimeter						1	1
346	P-4	Perimeter						1	1
347	P-5	Perimeter						1	1
348	P-6	Perimeter						1	1
349	P-7	Perimeter						1	1
350	P-8	Perimeter						1	1
351	P-9	Perimeter						1	1
352	P-10	Perimeter						1	1
353	P-11	Perimeter						1	1
354	P-12	Perimeter						1	1
355	P-13	Perimeter						1	1
356	P-14	Perimeter						1	1
357	P-15	Perimeter						1	1
358	P-16	Perimeter						1	1
359	P-17	Perimeter						1	1
360	P-18	Perimeter						1	1
361	P-19	Perimeter						1	1
362	P-20	Perimeter						1	1
363	P-21	Perimeter						1	1
364	P-22	Perimeter						1	1
365	P-23	Perimeter						1	1
366	P-24	Perimeter						1	1
367	P-25	Perimeter						1	1
368	P-26	Perimeter						1	1
369	P-27	Perimeter						1	1
370	P-28	Perimeter						1	1
371	P-29	Perimeter						1	1
372	P-30	Perimeter						1	1
373	B-31	Perimeter						1	1
374	B-32	Perimeter						1	1
375	B-33	Perimeter						1	1
376	B-34	Perimeter						1	1
377	B-35	Perimeter						1	1
378	B-36	Perimeter						1	1
379	B-37	Perimeter						1	1
380	B-38	Perimeter						1	1
	Total		0	0	0	0	0	38	38

Correctional Service Canada
Technical Services Branch
Electronics Systems

Issue 1
February 28, 2018

STATEMENT
OF
TECHNICAL REQUIREMENTS

UPGRADE

of

CCTV SYSTEMS

at

BEAVER CREEK INSTITUTION

Appendix E

Camera Assignment Tables

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the existing Hybrid CCTV System at Beaver Creek Institution.

Camera Assignment Tables - Minimum Unit

#	Camera #	Former Camera #	Map/Location	existing model	replacement model	camera location	mounting instructions
1	B-1	C2	443-key (outdoor)	AXIS 233D	Type 2 Camera	BCI Min Parking Lot (entry road)	pendant mount on dual gooseneck/tiltdown tower
2	B-2	n/a	443-key (outdoor)	new	Type 5 Camera	BCI Min Parking Lot (entry road)	pendant mount on dual gooseneck/tiltdown tower
3	B-3	n/a	443-key (outdoor)	new	Type 1 A/B Camera	BCI Min Parking Lot (entry road)	pendant mount with pole mount adapter on tower
4	B-4	n/a	443-key (outdoor)	new	Type 2 Camera	North Loading Dock BC05	pendant mount on corner of building BC05
5	B-5	C3	443-key (outdoor)	Q6042-E	Type 2 Camera	Ball Field	pendant mount on gooseneck/tiltdown tower
6	B-6	C4	443-key (outdoor)	AXIS 233D	Type 2 Camera	Duty Office (south side of BC12)	pendant mount on gooseneck/tiltdown tower
7	B-7	C5	443-key (outdoor)	AXIS 233D	Type 2 Camera	South of Gym (BC15)	pendant mount on gooseneck/tiltdown tower
8	B-8	n/a	443-key (outdoor)	new	Type 2 Camera	Between BC62 and Carving Shed	pendant mount on gooseneck/tiltdown tower
9	B-9	C7	443-key (outdoor)	AXIS 233D	Type 2 Camera	Living Unit #5	pendant mount on dual gooseneck/tiltdown tower
10	B-10	C6	443-key (outdoor)	AXIS 233D	Type 2 Camera	North of BCI Generator	pendant mount on gooseneck/tiltdown tower
11	B-11	n/a	BC03-102	new	Type 1 A/B Camera	Inmate workshop	wall mount / opposing views
12	B-12	n/a	BC03-102	new	Type 1 A/B Camera	Inmate workshop	wall mount / opposing views
13	B-13	n/a	BC05-124	new	Type 1 A/B Camera	Kitchen / food prep	Ceiling mounted
14	B-14	n/a	BC05-118	new	Type 1 A/B Camera	Kitchen / food prep	Ceiling mounted
15	B-15	n/a	BC05-118	new	Type 1 A/B Camera	Kitchen / food prep	Ceiling mounted
16	B-16	n/a	BC05-111	new	Type 1 A/B Camera	Kitchen / food prep	Ceiling mounted
17	B-17	n/a	BC05-103	new	Type 1 A/B Camera	Loading Dock	Ceiling mounted
18	B-18	n/a	BC05-101	new	Type 1 A/B Camera	Breezeway	Ceiling mounted
19	B-19	n/a	BC05-101	new	Type 1 A/B Camera	Breezeway	Ceiling mounted
20	B-20	n/a	BC12-103	new	Type 1 A/B Camera	Outside Duty office facing SW	Ceiling mounted under soffit
21	B-21	n/a	BC12-103	new	Type 1 A/B Camera	Outside Duty office facing NW	Ceiling mounted under soffit
22	B-22	n/a	BC12-108	new	Type 1 A/B Camera	V&C indoor area NW corner	Ceiling mounted
23	B-23	n/a	BC12-108	new	Type 1 A/B Camera	V&C indoor area SE corner	Ceiling mounted
24	B-24	n/a	BC12-113	new	Type 1 A/B Camera	BC12 Stairs	Wall or ceiling mounted
25	B-25	n/a	BC12-108	new	Type 2 Camera	V&C indoor visit area	Ceiling mounted
26	B-26	n/a	BC12-106	new	Type 2 Camera	V&C search area	Ceiling mounted
27	B-27	n/a	BC13-107	new	Type 3 Camera	Methadone waiting room	Corner mounted
28	B-28	n/a	BC13-101	new	Type 1 A/B Camera	South entrance corridor	Ceiling mounted
29	B-29	n/a	BC13-104A	new	Type 1 A/B Camera	West corridor	Ceiling mounted
30	B-30	n/a	BC13-116	new	Type 1 A/B Camera	South corner	Ceiling mounted
31	B-31	n/a	BC13-112	new	Type 1 A/B Camera	South side	Ceiling mounted / opposing views
32	B-32	n/a	BC13-112	new	Type 1 A/B Camera	North Side	Ceiling mounted / opposing views

#	Camera #	n/a	Map/Location	existing	replacement	camera location	mounting instructions
33	B-33	n/a	BC15-102	new	Type 4 Camera	360 Center Inmate Canteen	Ceiling mounted
34	B-34	n/a	BC15-101	new	Type 1 A/B Camera	North end of hall	Ceiling mounted
35	B-35	n/a	BC15-101	new	Type 1 A/B Camera	SE corner	Ceiling mounted
36	B-36	n/a	BC15-104	new	Type 1 A/B Camera	NE corner of room	Ceiling mounted
37	B-37	n/a	BC15-104A	new	Type 1 A/B Camera	NW corner of room	Ceiling mounted
38	B-38	n/a	BC15-110	new	Type 1 A/B Camera	NW corner of weight room	Ceiling mounted
39	B-39	n/a	BC15-111	new	Type 1 A/B Camera	NW corner of gym	Ceiling mounted
40	B-40	n/a	BC15-111	new	Type 1 A/B Camera	NE corner of gym	Ceiling mounted
41	B-41	n/a	BC15-111	new	Type 1 A/B Camera	SW corner of gym	Ceiling mounted
42	B-42	n/a	BC15-111	new	Type 1 A/B Camera	SE corner of gym	Ceiling mounted
43	B-43	n/a	BC15-112	new	Type 1 A/B Camera	SE corner of room	Ceiling mounted
44	B-44	n/a	BC20-112	new	Type 1 A/B Camera	NW corner of room	Ceiling mounted
45	B-45	n/a	BC23-112	new	Type 1 A/B Camera	corner of room	Ceiling mounted
46	B-46	n/a	BC41-101	new	Type 1 A/B Camera	North corner of entry	Ceiling mounted
47	B-47	n/a	BC41-109	new	Type 1 A/B Camera	SE end corridor 109	Wall or ceiling mounted
48	B-48	n/a	BC41-202	new	Type 1 A/B Camera	SE end corridor 202	Wall or ceiling mounted
49	B-49	n/a	BC55-113	new	Type 1 A/B Camera	entry vestibule outside corner	Ceiling mounted
50	B-50	n/a	BC55-116	new	Type 1 A/B Camera	corridor viewing mailboxes	Ceiling mounted
51	B-51	n/a	BC55-114	new	Type 4 Camera	360 above dog search area	Ceiling mounted
52	B-52	n/a	BC58-101	new	Type 1 A/B Camera	corner of room	Ceiling mounted
53	B-53	n/a	BC58-101	new	Type 1 A/B Camera	opposite corner of room	Ceiling mounted

Camera Assignment Tables - Medium Unit

#	Camera #	Former Camera #	Map/Location	existing model	replacement model	camera location	mounting instructions
54	F-1	69	422-key (outdoor)	WV-NW964	Type 2 Camera	V&C Tower	pendant mount on gooseneck PIDS tower #
55	F-2	67	422-key (outdoor)	WV-NW964	Type 2 Camera	Katimavik PTZ	pendant mount on existing gooseneck/ exist tower
56	F-3	n/a	422-key (outdoor)	new	Type 2 Camera	Katimavik PTZ	pendant mount on gooseneck/ exist new SW corner
57	F-4	n/a	422-key (outdoor)	new	Type 2 Camera	Tundra compund PTZ	pendant mount on gooseneck/tiltdown tower
58	F-5	108	422-key (outdoor)	WV-NW964	Type 2 Camera	Juniper South Roof PTZ	pendant mount on gooseneck exist wall mount
59	F-6	n/a	422-key (outdoor)	new	Type 6 Camera	Juniper Roof Fixed (canteen view)	tripod mounted 6' in from parapet
60	F-7	107	422-key (outdoor)	WV-NW964	Type 2 Camera	Granite PTZ	pendant mount on gooseneck/ exist tiltdown tower
61	F-8	71	422-key (outdoor)	WV-NW964	Type 2 Camera	Native Grounds PTZ	pendant mount on perimeter tower T8
62	F-9	106	422-key (outdoor)	WV-NW964	Type 2 Camera	Falcon PTZ	pendant mount on gooseneck/ exist tiltdown tower
63	F-10	86	422-key (outdoor)	WV-NW964	Type 2 Camera	Driftwood PTZ	pendant mount on gooseneck/ exist tower
64	F-11	analogue	422-key (outdoor)	WV-CP474(A)	Type 2 Camera	Sallyport PTZ	pendant mount on gooseneck/ exist tower
65	F-12	analogue	422-key (outdoor)	WV-BP554(A)	Type 1 A/B Camera	Pedestrian Gate S	Wall Mounted viewing gates
66	F-13	analogue	422-key (outdoor)	WV-CP474(A)	Type 1 A/B Camera	Pedestrian Gate N	Mounted above gate viewing FBA
67	F-14	49	422-key (outdoor)	WV-NW964	Type 2 Camera	V&C Outdoor PTZ	V&C outdoor visits area
68	F-15	n/a	422-key (outdoor)	new	Type 5 Camera	BCI Med West Parking Lot	pendant mount on gooseneck/tiltdown tower
69	F-16	n/a	422-key (outdoor)	new	Type 5 Camera	BCI Med Center Parking Lot	pendant mount on gooseneck/tiltdown tower
70	F-17	n/a	422-key (outdoor)	new	Type 5 Camera	BCI Med East Parking Lot	pendant mount on dual gooseneck/tiltdown tower
71	F-18	n/a	422-key (outdoor)	new	Type 1 A/B Camera	Edgewood Entrance	Wall mount
72	F-19	n/a	422-key (outdoor)	new	Type 1 A/B Camera	Falcon Entrance	Wall mount
73	F-20	n/a	422-key (outdoor)	new	Type 1 A/B Camera	Granite Entrance	Wall mount
74	F-21	n/a	422-key (outdoor)	new	Type 1 A/B Camera	Horizon Entrance	Wall mount
75	F-22	n/a	FBC-SEG YARD N	new	Type 1 A/B Camera	North Yard	Wall mounted
76	F-23	261	FBC-SEG YARD N	AXIS 3343-VE	Type 1 A/B Camera	North Yard	Wall mounted
77	F-24	n/a	FBC-SEG YARD S	new	Type 1 A/B Camera	South Yard	Wall mounted
78	F-25	259	FBC-SEG YARD S	AXIS 3343-VE	Type 1 A/B Camera	South Yard	Wall mounted
79	F-26	n/a	FBA-A122	new	Type 1 A/B Camera	Visitor Waiting E	wall mounted facing west
80	F-27	n/a	FBA-A122	new	Type 1 A/B Camera	Visitor Waiting W	wall mounted facing east
81	F-28	analogue	FBA-A113	WV-CW244(A)	Type 1 A/B Camera	Bldg "A" lobby	Ceiling mounted facing south at exit doors
82	F-29	analogue	FBA-A117	WV-CP474(A)	Type 1 A/B Camera	X-Ray	Ceiling mounted facing north at PE and MCCP entrance
83	F-30	n/a	FBA-111	new	Type 3 Camera	A&D waiting	Corner mounted as per drawing
84	F-31	70	FBA-113	WV-NW502s	Type 4 Camera	360 Dog Search Area	above dog search area
85	F-32	analogue	FBA-A01	WV-CL354	Type 2 Camera	"A" Bldg basement hall	Ceiling or wall mounted
86	F-33	n/a	FBB-B111	new	Type 1 A/B Camera	V&C visitor entry	Ceiling mounted
87	F-34	n/a	FBB-B109	new	Type 1 A/B Camera	NPB Boardroom	Corner mounted
88	F-35	n/a	FBB-B122	new	Type 3 Camera	Closed visit - visitor	Corner mounted
89	F-36	n/a	FBB-B121	new	Type 3 Camera	Closed visit - inmate	Ceiling mounted
90	F-37	258	FBB-B102	WV-NS202	Type 2 Camera	V&C - NW	Ceiling mounted
91	F-38	n/a	FBB-B102	new	Type 1 A/B Camera	V&C vending	Ceiling mounted
92	F-39	257	FBB-B102	AXIS Q6032-E	Type 2 Camera	V&C - NE	Ceiling mounted
93	F-40	n/a	FBB-B102	new	Type 1 A/B Camera	V&C Reference	Wall mounted
94	F-41	n/a	FBB-B102	new	Type 1 A/B Camera	V&C Reference	Wall mounted

Camera Assignment Tables - Medium Unit

#	Camera #	Former #	Map/Location	existing	replacement	camera location	mounting instructions
95	F-42	n/a	FBB-B101	new	Type 2 Camera	V&C inmate entry	Ceiling mounted
96	F-43	61	FBB-B102	WV-NS202	Type 2 Camera	V&C - SW	Ceiling mounted
97	F-44	62	FBB-B102	AXIS Q6032-E	Type 2 Camera	V&C - SE	Ceiling mounted
98	F-45	n/a	FBC-C160	new	Type 1 A/B Camera	Day Room S	Ceiling mounted
99	F-46	n/a	FBC-C150	new	Type 1 A/B Camera	Day Room N	Ceiling mounted
100	F-47	262	FBC-C159	AXIS 3343-VE	Type 1 A/B Camera	SEG Range S	Wall mounted
101	F-48	260	FBC-C149	AXIS 3343-VE	Type 1 A/B Camera	SEG Range N	Wall mounted
102	F-49	266	FBC-C141	NCN 9000	Type 3 Camera	Dry Cell	Corner mounted
103	F-50	267	FBC-C136	NCN 9000	Type 3 Camera	Observation	Corner mounted
104	F-51	261	FBC-C108	AXIS 3343-VE	Type 1 A/B Camera	HC lobby	Ceiling or wall mounted
105	F-52	264	FBC-C128	AXIS 3343-VE	Type 1 A/B Camera	HC Corridor N	Wall mounted
106	F-53	n/a	FBC-C116	new	Type 1 A/B Camera	HC Corridor S	Wall mounted
107	F-54	n/a	FBC-C104	new	Type 1 A/B Camera	SEG Court	Ceiling mounted
108	F-55	270	FBD-D153	AXIS 3343-VE	Type 1 A/B Camera	D Works Corridor	Wall mounted
109	F-56	n/a	FBD-D151	new	Type 1 A/B Camera	Dry Food Storage	Wall mounted
110	F-57	n/a	FBD-D137	new	Type 1 A/B Camera	Indoor Loading Area	Wall mounted
111	F-58	n/a	FBD-D176	new	Type 4 Camera	SIS window	Ceiling mounted
112	F-59	100	FBD-D134	AXIS 3343-VE	Type 1 A/B Camera	D Corridor S1	Ceiling or wall mounted
113	F-60	n/a	FBD-D134	new	Type 1 A/B Camera	D Corridor S2	Wall mounted above doors
114	F-61	n/a	FBD-D102	new	Type 1 A/B Camera	D Corridor E	Wall mounted above doors
115	F-62	n/a	FBD-D133	new	Type 1 A/B Camera	D Corridor N1	Wall mounted above doors
116	F-63	269	FBD-D133	AXIS 3343-VE	Type 1 A/B Camera	D Corridor N2	Wall mounted above doors
117	F-64	n/a	FBD-D112	new	Type 1 A/B Camera	Canteen corridor	Wall mounted above doors
118	F-65	n/a	FBD-D101	new	Type 4 Camera	Hobby Craft Corridor	Ceiling mounted
119	F-66	n/a	FBD-D107	new	Type 4 Camera	Inmate Canteen	Ceiling mounted
120	F-67	n/a	FBD-D107	new	Type 3 Camera	Canteen window	Corner mounted
121	F-68	n/a	FBD-D108	new	Type 1 A/B Camera	inmate store	Ceiling mounted
122	F-69	n/a	FBD-D108	new	Type 1 A/B Camera	inmate store	Ceiling mounted
123	F-70	n/a	FBD-D108	new	Type 1 A/B Camera	inmate store	Ceiling mounted
124	F-71	n/a	FBD-D118	new	Type 1 A/B Camera	Kitchen corridor	Wall mounted above doors
125	F-72	n/a	FBD-D123	new	Type 1 A/B Camera	Food prep S	Ceiling or wall mounted
126	F-73	n/a	FBD-D123	new	Type 1 A/B Camera	Food prep N	Ceiling or wall mounted
127	F-74	n/a	FBD-D128	new	Type 1 A/B Camera	Food Prep E	Ceiling or wall mounted
128	F-75	n/a	FBD-D214	new	Type 1 A/B Camera	Leather Craft	Ceiling or wall mounted
129	F-76	n/a	FBD-D214	new	Type 1 A/B Camera	Leather Craft	Ceiling or wall mounted
130	F-77	271	FBD-D202	AXIS 3343-VE	Type 1 A/B Camera	D-upstairs exit	Ceiling or wall mounted

Camera Assignment Tables - Medium Unit

#	Camera #	Former #	Map/Location	existing	replacement	camera location	mounting instructions
131	F-78	C-9	FBE-EA02	AXIS 3343-VE	no replacment	no change	n/a
132	F-79	C-11	FBE-EA04	AXIS 3343-VE	no replacment	no change	n/a
133	F-80	C-12	FBE-EA05	AXIS 3343-VE	no replacment	no change	n/a
134	F-81	C-13	FBE-EB02	AXIS 3343-VE	no replacment	no change	n/a
135	F-82	C-14	FBE-EB04	AXIS 3343-VE	no replacment	no change	n/a
136	F-83	C-15	FBE-EB05	AXIS 3343-VE	no replacment	no change	n/a
137	F-84	C-16	FBE-EC02	AXIS 3343-VE	no replacment	no change	n/a
138	F-85	C-17	FBE-EC04	AXIS 3343-VE	no replacment	no change	n/a
139	F-86	C-18	FBE-EC05	AXIS 3343-VE	no replacment	no change	n/a
140	F-87	C-19	FBE-ED02	AXIS 3343-VE	no replacment	no change	n/a
141	F-88	C-20	FBE-ED04	AXIS 3343-VE	no replacment	no change	n/a
142	F-89	C-21	FBE-ED05	AXIS 3343-VE	no replacment	no change	n/a
143	F-90	C-22	FBE-EE02	AXIS 3343-VE	no replacment	no change	n/a
144	F-91	C-23	FBE-EE04	AXIS 3343-VE	no replacment	no change	n/a
145	F-92	C-24	FBE-EE05	AXIS 3343-VE	no replacment	no change	n/a
146	F-93	C-25	FBE-EF02	AXIS 3343-VE	no replacment	no change	n/a
147	F-94	C-26	FBE-EF04	AXIS 3343-VE	no replacment	no change	n/a
148	F-95	C-27	FBE-EF05	AXIS 3343-VE	no replacment	no change	n/a
149	F-96	C-28	FBE-E131	AXIS 3343-VE	no replacment	no change	n/a
150	F-97	C-29	FBE-E137	AXIS 3343-VE	no replacment	no change	n/a
151	F-98	C-30	FBE-EG02	AXIS 3343-VE	no replacment	no change	n/a
152	F-99	C-31	FBE-EG04	AXIS 3343-VE	no replacment	no change	n/a
153	F-100	C-32	FBE-EG05	AXIS 3343-VE	no replacment	no change	n/a
154	F-101	C-33	FBE-EH02	AXIS 3343-VE	no replacment	no change	n/a
155	F-102	C-34	FBE-EH04	AXIS 3343-VE	no replacment	no change	n/a
156	F-103	C-35	FBE-EH05	AXIS 3343-VE	no replacment	no change	n/a
157	F-104	C-36	FBE-EJ02	AXIS 3343-VE	no replacment	no change	n/a
158	F-105	C-37	FBE-EJ04	AXIS 3343-VE	no replacment	no change	n/a
159	F-106	C-38	FBE-EJ05	AXIS 3343-VE	no replacment	no change	n/a
160	F-107	C39	FBE-EK02	AXIS 3343-VE	no replacment	no change	n/a
161	F-108	C-40	FBE-EK04	AXIS 3343-VE	no replacment	no change	n/a
162	F-109	C-41	FBE-EK05	AXIS 3343-VE	no replacment	no change	n/a
163	F-110	C-42	FBE-EL02	AXIS 3343-VE	no replacment	no change	n/a
164	F-111	C-43	FBE-EL04	AXIS 3343-VE	no replacment	no change	n/a
165	F-112	C-44	FBE-EL05	AXIS 3343-VE	no replacment	no change	n/a
166	F-113	C-45	FBE-EM02	AXIS 3343-VE	no replacment	no change	n/a
167	F-114	C-46	FBE-EM04	AXIS 3343-VE	no replacment	no change	n/a
168	F-115	C-47	FBE-EM05	AXIS 3343-VE	no replacment	no change	n/a
169	F-116	C-48	FBE-E204	AXIS 3343-VE	no replacment	no change	n/a
170	F-117	C-49	FBE-E206	AXIS 3343-VE	no replacment	no change	n/a
171	F-118	C-50	FBE-E202	AXIS 3343-VE	no replacment	no change	n/a
172	F-119	C-51	FBE-E202	AXIS 3343-VE	no replacment	no change	n/a

Camera Assignment Tables - Medium Unit

#	Camera #	Former #	Map/Location	existing	replacement	camera location	mounting instructions
173	F-120	C-52	FBF-FA02	AXIS 3343-VE	no replacment	no change	n/a
174	F-121	C-53	FBF-FA04	AXIS 3343-VE	no replacment	no change	n/a
175	F-122	C-54	FBF-FA05	AXIS 3343-VE	no replacment	no change	n/a
176	F-123	C-55	FBF-FB02	AXIS 3343-VE	no replacment	no change	n/a
177	F-124	C-56	FBF-FB04	AXIS 3343-VE	no replacment	no change	n/a
178	F-125	C-57	FBF-FB05	AXIS 3343-VE	no replacment	no change	n/a
179	F-126	C-58	FBF-FC02	AXIS 3343-VE	no replacment	no change	n/a
180	F-127	C-59	FBF-FC04	AXIS 3343-VE	no replacment	no change	n/a
181	F-128	C-60	FBF-FC05	AXIS 3343-VE	no replacment	no change	n/a
182	F-129	C-61	FBF-FD02	AXIS 3343-VE	no replacment	no change	n/a
183	F-130	C-62	FBF-FD04	AXIS 3343-VE	no replacment	no change	n/a
184	F-131	C-63	FBF-FD05	AXIS 3343-VE	no replacment	no change	n/a
185	F-132	C-64	FBF-FE02	AXIS 3343-VE	no replacment	no change	n/a
186	F-133	C-65	FBF-FE04	AXIS 3343-VE	no replacment	no change	n/a
187	F-134	C-66	FBF-FE05	AXIS 3343-VE	no replacment	no change	n/a
188	F-135	C-67	FBF-FF02	AXIS 3343-VE	no replacment	no change	n/a
189	F-136	C-68	FBF-FF04	AXIS 3343-VE	no replacment	no change	n/a
190	F-137	C-69	FBF-FF05	AXIS 3343-VE	no replacment	no change	n/a
191	F-138	C-70	FBF-F131	AXIS 3343-VE	no replacment	no change	n/a
192	F-139	C-71	FBF-F137	AXIS 3343-VE	no replacment	no change	n/a
193	F-140	C-72	FBF-FG02	AXIS 3343-VE	no replacment	no change	n/a
194	F-141	C-73	FBF-FG04	AXIS 3343-VE	no replacment	no change	n/a
195	F-142	C-74	FBF-FG05	AXIS 3343-VE	no replacment	no change	n/a
196	F-143	C-75	FBF-FH02	AXIS 3343-VE	no replacment	no change	n/a
197	F-144	C-76	FBF-FH04	AXIS 3343-VE	no replacment	no change	n/a
198	F-145	C-77	FBF-FH05	AXIS 3343-VE	no replacment	no change	n/a
199	F-146	C-78	FBF-FJ02	AXIS 3343-VE	no replacment	no change	n/a
200	F-147	C-79	FBF-FJ04	AXIS 3343-VE	no replacment	no change	n/a
201	F-148	C-80	FBF-FJ05	AXIS 3343-VE	no replacment	no change	n/a
202	F-149	C-81	FBF-FK02	AXIS 3343-VE	no replacment	no change	n/a
203	F-150	C-82	FBF-FK04	AXIS 3343-VE	no replacment	no change	n/a
204	F-151	C-83	FBF-FK05	AXIS 3343-VE	no replacment	no change	n/a
205	F-152	C-84	FBF-FL02	AXIS 3343-VE	no replacment	no change	n/a
206	F-153	C-85	FBF-FL04	AXIS 3343-VE	no replacment	no change	n/a
207	F-154	C-86	FBF-FL05	AXIS 3343-VE	no replacment	no change	n/a
208	F-155	C-87	FBF-FM02	AXIS 3343-VE	no replacment	no change	n/a
209	F-156	C-88	FBF-FM04	AXIS 3343-VE	no replacment	no change	n/a
210	F-157	C-89	FBF-FM05	AXIS 3343-VE	no replacment	no change	n/a
211	F-158	C-90	FBF-F204	AXIS 3343-VE	no replacment	no change	n/a
212	F-159	C-91	FBF-F206	AXIS 3343-VE	no replacment	no change	n/a
213	F-160	C-92	FBF-F202	AXIS 3343-VE	no replacment	no change	n/a
214	F-161	C-93	FBF-F202	AXIS 3343-VE	no replacment	no change	n/a

Camera Assignment Tables - Medium Unit

#	Camera #	Former #	Map/Location	existing	replacement	camera location	mounting instructions
215	F-162	C-109	FBG-GA02	AXIS 3343-VE	no replacment	no change	n/a
216	F-163	C-110	FBG-GA04	AXIS 3343-VE	no replacment	no change	n/a
217	F-164	C-111	FBG-GA05	AXIS 3343-VE	no replacment	no change	n/a
218	F-165	C-106	FBG-GB02	AXIS 3343-VE	no replacment	no change	n/a
219	F-166	C-107	FBG-GB04	AXIS 3343-VE	no replacment	no change	n/a
220	F-167	C-108	FBG-GB05	AXIS 3343-VE	no replacment	no change	n/a
221	F-168	C-103	FBG-GC02	AXIS 3343-VE	no replacment	no change	n/a
222	F-169	C-104	FBG-GC04	AXIS 3343-VE	no replacment	no change	n/a
223	F-170	C-105	FBG-GC05	AXIS 3343-VE	no replacment	no change	n/a
224	F-171	C-100	FBG-GD02	AXIS 3343-VE	no replacment	no change	n/a
225	F-172	C-101	FBG-GD04	AXIS 3343-VE	no replacment	no change	n/a
226	F-173	C-102	FBG-GD05	AXIS 3343-VE	no replacment	no change	n/a
227	F-174	C-97	FBG-GE02	AXIS 3343-VE	no replacment	no change	n/a
228	F-175	C-98	FBG-GE04	AXIS 3343-VE	no replacment	no change	n/a
229	F-176	C-99	FBG-GE05	AXIS 3343-VE	no replacment	no change	n/a
230	F-177	C-94	FBG-GF02	AXIS 3343-VE	no replacment	no change	n/a
231	F-178	C-95	FBG-GF04	AXIS 3343-VE	no replacment	no change	n/a
232	F-179	C-96	FBG-GF05	AXIS 3343-VE	no replacment	no change	n/a
233	F-180	C-112	FBG-G137	AXIS 3343-VE	no replacment	no change	n/a
234	F-181	C-113	FBG-G131	AXIS 3343-VE	no replacment	no change	n/a
235	F-182	C-114	FBG-GG02	AXIS 3343-VE	no replacment	no change	n/a
236	F-183	C-115	FBG-GG04	AXIS 3343-VE	no replacment	no change	n/a
237	F-184	C-116	FBG-GG05	AXIS 3343-VE	no replacment	no change	n/a
238	F-185	C-117	FBG-GH02	AXIS 3343-VE	no replacment	no change	n/a
239	F-186	C-118	FBG-GH04	AXIS 3343-VE	no replacment	no change	n/a
240	F-187	C-119	FBG-GH05	AXIS 3343-VE	no replacment	no change	n/a
241	F-188	C-120	FBG-GJ02	AXIS 3343-VE	no replacment	no change	n/a
242	F-189	C-121	FBG-GJ04	AXIS 3343-VE	no replacment	no change	n/a
243	F-190	C-122	FBG-GJ05	AXIS 3343-VE	no replacment	no change	n/a
244	F-191	C-123	FBG-GK02	AXIS 3343-VE	no replacment	no change	n/a
245	F-192	C-124	FBG-GK04	AXIS 3343-VE	no replacment	no change	n/a
246	F-193	C-125	FBG-GK05	AXIS 3343-VE	no replacment	no change	n/a
247	F-194	C-126	FBG-GL02	AXIS 3343-VE	no replacment	no change	n/a
248	F-195	C-127	FBG-GL04	AXIS 3343-VE	no replacment	no change	n/a
249	F-196	C-128	FBG-GL05	AXIS 3343-VE	no replacment	no change	n/a
250	F-197	C-129	FBG-GM02	AXIS 3343-VE	no replacment	no change	n/a
251	F-198	C-130	FBG-GM04	AXIS 3343-VE	no replacment	no change	n/a
252	F-199	C-131	FBG-GM05	AXIS 3343-VE	no replacment	no change	n/a
253	F-200	C-132	FBG-G206	AXIS 3343-VE	no replacment	no change	n/a
254	F-201	C-133	FBG-G204	AXIS 3343-VE	no replacment	no change	n/a
255	F-202	C-134	FBG-G202	AXIS 3343-VE	no replacment	no change	n/a
256	F-203	C-135	FBG-G202	AXIS 3343-VE	no replacment	no change	n/a

#	Camera #	Former #	Map/Location	existing	replacement	camera location	mounting instructions
257	F-204	C-136	FBH-HA02	AXIS 3343-VE	no replacment	no change	n/a
258	F-205	C-137	FBH-HA04	AXIS 3343-VE	no replacment	no change	n/a
259	F-206	C-138	FBH-HA05	AXIS 3343-VE	no replacment	no change	n/a
260	F207	C-139	FBH-HB02	AXIS 3343-VE	no replacment	no change	n/a
261	F-208	C-140	FBH-HB04	AXIS 3343-VE	no replacment	no change	n/a
262	F-209	C-141	FBH-HB05	AXIS 3343-VE	no replacment	no change	n/a
263	F-210	C-142	FBH-HC02	AXIS 3343-VE	no replacment	no change	n/a
264	F-211	C-143	FBH-HC04	AXIS 3343-VE	no replacment	no change	n/a
265	F-212	C-144	FBH-HC05	AXIS 3343-VE	no replacment	no change	n/a
266	F-213	C-145	FBH-HD02	AXIS 3343-VE	no replacment	no change	n/a
267	F-214	C-146	FBH-HD04	AXIS 3343-VE	no replacment	no change	n/a
268	F-215	C-147	FBH-HD05	AXIS 3343-VE	no replacment	no change	n/a
269	F-216	C-148	FBH-HE02	AXIS 3343-VE	no replacment	no change	n/a
270	F-217	C-149	FBH-HE04	AXIS 3343-VE	no replacment	no change	n/a
271	F-218	C-150	FBH-HE05	AXIS 3343-VE	no replacment	no change	n/a
272	F-219	C-151	FBH-HF02	AXIS 3343-VE	no replacment	no change	n/a
273	F-220	C-152	FBH-HF04	AXIS 3343-VE	no replacment	no change	n/a
274	F-221	C-153	FBH-HF05	AXIS 3343-VE	no replacment	no change	n/a
275	F-222	C-154	FBH-H130	AXIS 3343-VE	no replacment	no change	n/a
276	F-223	C-155	FBH-H134	AXIS 3343-VE	no replacment	no change	n/a
277	F-224	C-156	FBH-HG02	AXIS 3343-VE	no replacment	no change	n/a
278	F-225	C-157	FBH-HG04	AXIS 3343-VE	no replacment	no change	n/a
279	F-226	C-158	FBH-HG05	AXIS 3343-VE	no replacment	no change	n/a
280	F-227	C-159	FBH-HH02	AXIS 3343-VE	no replacment	no change	n/a
281	F-228	C-160	FBH-HH04	AXIS 3343-VE	no replacment	no change	n/a
282	F-229	C-161	FBH-HH05	AXIS 3343-VE	no replacment	no change	n/a
283	F-230	C-162	FBH-HJ02	AXIS 3343-VE	no replacment	no change	n/a
284	F-231	C-163	FBH-HJ04	AXIS 3343-VE	no replacment	no change	n/a
285	F-232	C-164	FBH-HJ05	AXIS 3343-VE	no replacment	no change	n/a
286	F-233	C-165	FBH-HK02	AXIS 3343-VE	no replacment	no change	n/a
287	F-234	C-166	FBH-HK04	AXIS 3343-VE	no replacment	no change	n/a
288	F-235	C-167	FBH-HK05	AXIS 3343-VE	no replacment	no change	n/a
289	F-236	C-168	FBH-HL02	AXIS 3343-VE	no replacment	no change	n/a
290	F-237	C-169	FBH-HL04	AXIS 3343-VE	no replacment	no change	n/a
291	F-238	C-170	FBH-HL05	AXIS 3343-VE	no replacment	no change	n/a
292	F-239	C-171	FBH-HM02	AXIS 3343-VE	no replacment	no change	n/a
293	F-240	C-172	FBH-HM04	AXIS 3343-VE	no replacment	no change	n/a
294	F-241	C-173	FBH-HM05	AXIS 3343-VE	no replacment	no change	n/a
295	F-242	C-174	FBH-H204	AXIS 3343-VE	no replacment	no change	n/a
296	F-243	C-175	FBH-H206	AXIS 3343-VE	no replacment	no change	n/a
297	F-244	C-176	FBH-H202	AXIS 3343-VE	no replacment	no change	n/a
298	F-245	C-177	FBH-H202	AXIS 3343-VE	no replacment	no change	n/a

Camera Assignment Tables - Medium Unit

#	Camera #	Former #	Map/Location	existing	replacement	camera location	mounting instructions
299	F-246	C-178	FBJ-J137	WV-NP304	Type 1 A/B Camera	Juniper Hobbycraft	Wall mounted above door
300	F-247	n/a	FBJ-J149	new	Type 1 A/B Camera	Gym Equipment Storage	Ceiling mounted
301	F-248	n/a	FBJ-J151	new	Type 1 A/B Camera	Gym NW	Wall mounted
302	F-249	n/a	FBJ-J151	new	Type 1 A/B Camera	Gym NE	Wall mounted
303	F-250	n/a	FBJ-J151	new	Type 1 A/B Camera	Gym SE	Wall mounted
304	F-251	n/a	FBJ-J151	new	Type 1 A/B Camera	Gym SW	Wall mounted
305	F-252	68	FBJ-J151	AXIS 231D	Type 1 A/B Camera	Gym PTZ	Ceiling/Pendant mounted
306	F-253	n/a	FBJ-J152	new	Type 1 A/B Camera	Weight Pit NW	Ceiling or wall mounted
307	F-254	n/a	FBJ-J152	new	Type 1 A/B Camera	Weight Pit SE	Ceiling or wall mounted
308	F-255	63	FBJ-J134	WV-NP304	Type 1 A/B Camera	Juniper North Lobby	Wall mount replace existing camera
309	F-256	n/a	FBJ-J134	new	Type 1 A/B Camera	Juniper Hall S	Ceiling mounted
310	F-257	n/a	FBJ-J134	new	Type 1 A/B Camera	Juniper Hall N	Ceiling mounted
311	F-258	n/a	FBJ-J115	new	Type 1 A/B Camera	Juniper Library	Ceiling mounted
312	F-259	65	FBJ-J134	new	Type 1 A/B Camera	Gym Corridor	Wall mounted
313	F-260	n/a	FBJ-1 south exit	new	Type 1 A/B Camera	Juniper south exit	Ceiling or wall mounted
314	F-261	C-122	FBJ-J128	AXIS 3343-VE	Juniper East hall	no replacment	n/a
315	F-262	C-123	FBJ-J128	AXIS 3343-VE	Juniper NE hall	no replacment	n/a
316	F-263	C-124	FBJ-J112	AXIS 3343-VE	Juniper SE hall	no replacment	n/a
317	F-264	101	FBR-R101	WV-NP304	Type 1 A/B Camera	Carving Shack	Ceiling mounted
318	F-265	290	FBT	AXIS 3343-VE	Bldg T - Range B&F C	no replacment	Ceiling mounted
319	F-266	298	FBT	AXIS 3343-VE	Bldg T - Range A&E C	no replacment	Ceiling mounted
320	F-267	291	FBT	AXIS 3343-VE	Bldg T - Range C&G C	no replacment	Ceiling mounted
321	F-268	289	FBT	AXIS 3343-VE	Bldg T - Range D&H C	no replacment	Ceiling mounted
322	F-269	248	FBT	AXIS 3343-VE	Bldg T - Range A	no replacment	Ceiling mounted
323	F-270	119	FBT	AXIS 3343-VE	Bldg T - Range A	no replacment	Ceiling mounted
324	F-271	282	FBT	AXIS 3343-VE	Bldg T - Range B	no replacment	Ceiling mounted
325	F-272	276	FBT	AXIS 3343-VE	Bldg T - Range B	no replacment	Ceiling mounted
326	F-273	280	FBT	AXIS 3343-VE	Bldg T - Range C	no replacment	Ceiling mounted
327	F-274	279	FBT	AXIS 3343-VE	Bldg T - Range C	no replacment	Ceiling mounted
328	F-275	180	FBT	AXIS 3343-VE	Bldg T - Range D	no replacment	Ceiling mounted
329	F-276	281	FBT	AXIS 3343-VE	Bldg T - Range D	no replacment	Ceiling mounted
330	F-277	286	FBT	AXIS 3343-VE	Bldg T - Range E	no replacment	Ceiling mounted
331	F-278	292	FBT	AXIS 3343-VE	Bldg T - Range E	no replacment	Ceiling mounted
332	F-279	285	FBT	AXIS 3343-VE	Bldg T - Range F	no replacment	Ceiling mounted
333	F-280	287	FBT	AXIS 3343-VE	Bldg T - Range F	no replacment	Ceiling mounted
334	F-281	283	FBT	AXIS 3343-VE	Bldg T - Range G	no replacment	Ceiling mounted
335	F-282	278	FBT	AXIS 3343-VE	Bldg T - Range G	no replacment	Ceiling mounted
336	F-283	277	FBT	AXIS 3343-VE	Bldg T - Range H	no replacment	Ceiling mounted
337	F-284	256	FBT	AXIS 3343-VE	Bldg T - Range H	no replacment	Ceiling mounted

Camera Assignment Tables - Medium Unit

#	Camera #	Former #	Map/Location	existing	replacement	camera location	mounting instructions
338	F-285	n/a	FBU-ST02	new	Type 1 A/B Camera	Unity Vestibule	Wall mounted
339	F-286	n/a	FBU-116	new	Type 1 A/B Camera	Unity 1st floor North	Ceiling mounted
340	F-287	n/a	FBU-116	new	Type 1 A/B Camera	Unity 1st floor entry	Wall mounted
341	F-288	n/a	FBU-116	new	Type 1 A/B Camera	Unity 1st floor South	Ceiling mounted
342	F-289	n/a	FBU-216	new	Type 1 A/B Camera	Unity 2nd floor entry	Wall mounted

Camera Assignment Tables - Medium PIDS

#	Camera #	Former Camera #	Map/Location	existing model	replacement model	camera location	mounting instructions
343	P-1	P-1	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 1	Box Camera in enclosure on tower
344	P-2	P-2	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 1	Box Camera in enclosure on tower
345	P-3	P-3	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 2	Box Camera in enclosure on tower
346	P-4	P-4	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 2	Box Camera in enclosure on tower
347	P-5	P-5	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 2	Box Camera in enclosure on tower
348	P-6	P-6	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 3	Box Camera in enclosure on tower
349	P-7	P-7	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 3	Box Camera in enclosure on tower
350	P-8	P-8	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 3	Box Camera in enclosure on tower
351	P-9	P-9	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 4	Box Camera in enclosure on tower
352	P-10	P-10	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 5	Box Camera in enclosure on tower
353	P-11	P-11	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 5	Box Camera in enclosure on tower
354	P-12	P-12	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 5	Box Camera in enclosure on tower
355	P-13	P-13	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 6	Box Camera in enclosure on tower
356	P-14	P-14	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 6	Box Camera in enclosure on tower
357	P-15	P-15	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 6	Box Camera in enclosure on tower
358	P-16	P-16	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 7	Box Camera in enclosure on tower
359	P-17	P-17	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 8	Box Camera in enclosure on tower
360	P-18	P-18	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 9	Box Camera in enclosure on tower
361	P-19	P-19	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 9	Box Camera in enclosure on tower
362	P-20	P-20	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 10	Box Camera in enclosure on tower
363	P-21	P-21	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 10	Box Camera in enclosure on tower
364	P-22	P-22	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 10	Box Camera in enclosure on tower
365	P-23	P-23	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 11	Box Camera in enclosure on tower
366	P-24	P-24	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 11	Box Camera in enclosure on tower
367	P-25	P-25	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 11	Box Camera in enclosure on tower
368	P-26	P-26	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 12	Box Camera in enclosure on tower
369	P-27	P-27	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 12	Box Camera in enclosure on tower
370	P-28	P-28	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 12	Box Camera in enclosure on tower
371	P-29	P-29	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 13	Box Camera in enclosure on tower
372	P-30	P-30	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 13	Box Camera in enclosure on tower
373	P-31	P-31	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 14	Box Camera in enclosure on tower
374	P-32	P-32	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 15	Box Camera in enclosure on tower
375	P-33	P-33	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 15	Box Camera in enclosure on tower
376	P-34	P-34	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 16	Box Camera in enclosure on tower
377	P-35	P-35	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 16	Box Camera in enclosure on tower
378	P-36	P-36	422-key (outdoor)	AXIS 221	Type 6 Camera	FBA south wall	Box Camera in enclosure on wall
379	P-37	P-37	422-key (outdoor)	AXIS 221	Type 6 Camera	New Tower	Box Camera in enclosure on tower
380	P-38	P-38	422-key (outdoor)	AXIS 221	Type 6 Camera	Tower 11	Box Camera in enclosure on tower

Correctional Service Canada
Technical Services Branch
Electronics Systems

Issue 1
February 28, 2018

STATEMENT
OF
TECHNICAL REQUIREMENTS

UPGRADE

of

CCTV SYSTEMS

at

BEAVER CREEK INSTITUTION

Appendix F

Monitor and Client Assignment Tables

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the existing Hybrid CCTV System at Beaver Creek Institution.

Monitor and Client Assignments

Monitor	Location	Monitor Type	Name	Client #	Client Location	Client type	Node	View	Cameras Assigned
M1	BC05-113	Type 1	Kitchen	1	BC05-E113	Type 3	BN2	M&T - Quad	B11 - B17
M2	BC12-103	Type 1	V&C #1	2	FBA-103	Type 3	BN3	M&T - Quad	B1, B6, B20 - B24
M3	BC12-103	Type 1	V&C #2	2	FBA-103	n/a	BN3	M&T - Quad	B1, B6, B20 - B24
M4	BC55-100	Type 1	PECP	3	FBA-103	Type 2	BN1	M&T - Quad	B1 - B53
M5	BC55-100	Type 1	PECP	3	FBA-103	Type 2	BN1	M&T - Quad	B1 - B53
M6	BC55-105	Type 4	ADGA	4	FBA-103	Type 4	BN1	Unrestricted	B1 - B53

Abreviations:

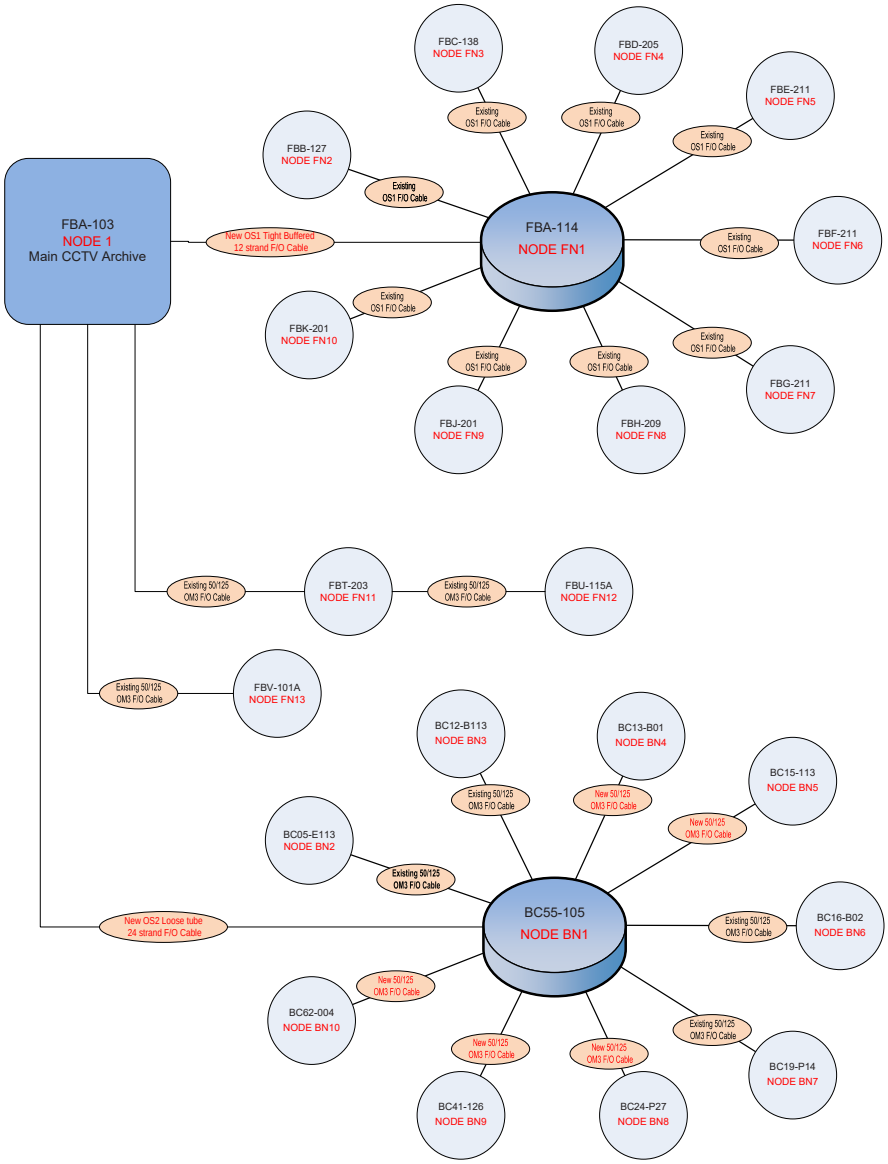
CCS = Camera Control Screen
Spot = single selectable image
Dual = 2 cameras displayed horizontally on a 16:9 monitor
Quad = 4 cameras display in standard quad split configuration
Six Split = 6 cameras ina horizontal six split configuration
Presets=STR defined presets will be defined for operator selection
UR = unrestricted

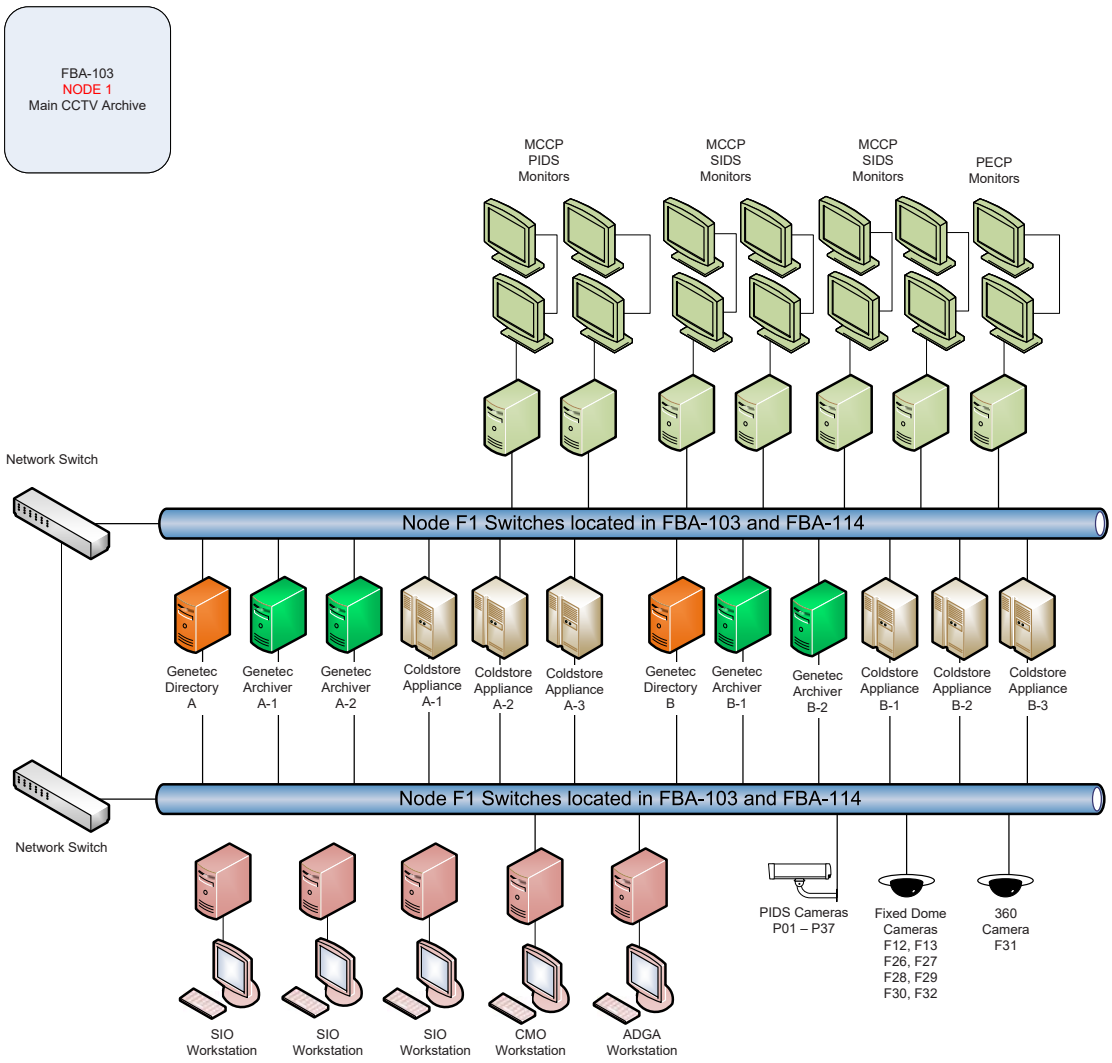
M&T = Mouse and Camera Tree
M&P = Mouse and preset tabs
Spot = single image
Slave (Mx) = Mouse shared from Monitor x
Unrestricted = Mouse/Keyboard and camera tree, all cameras available

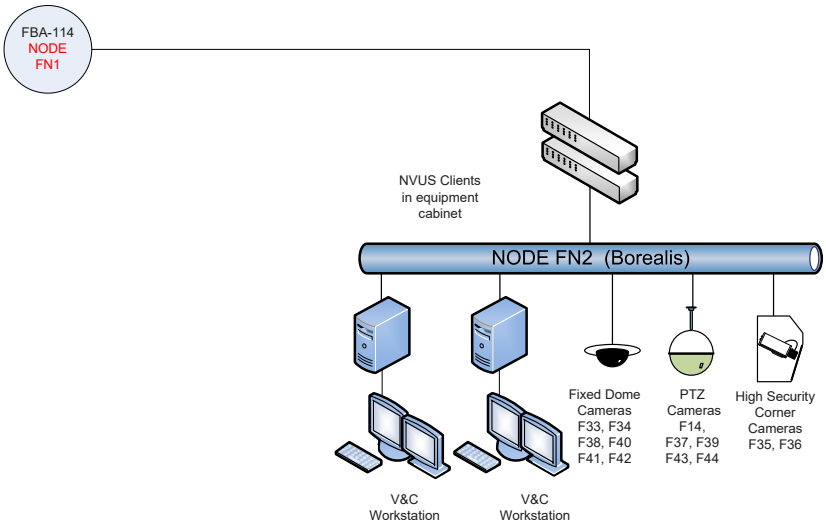
Monitor and Client Assignments

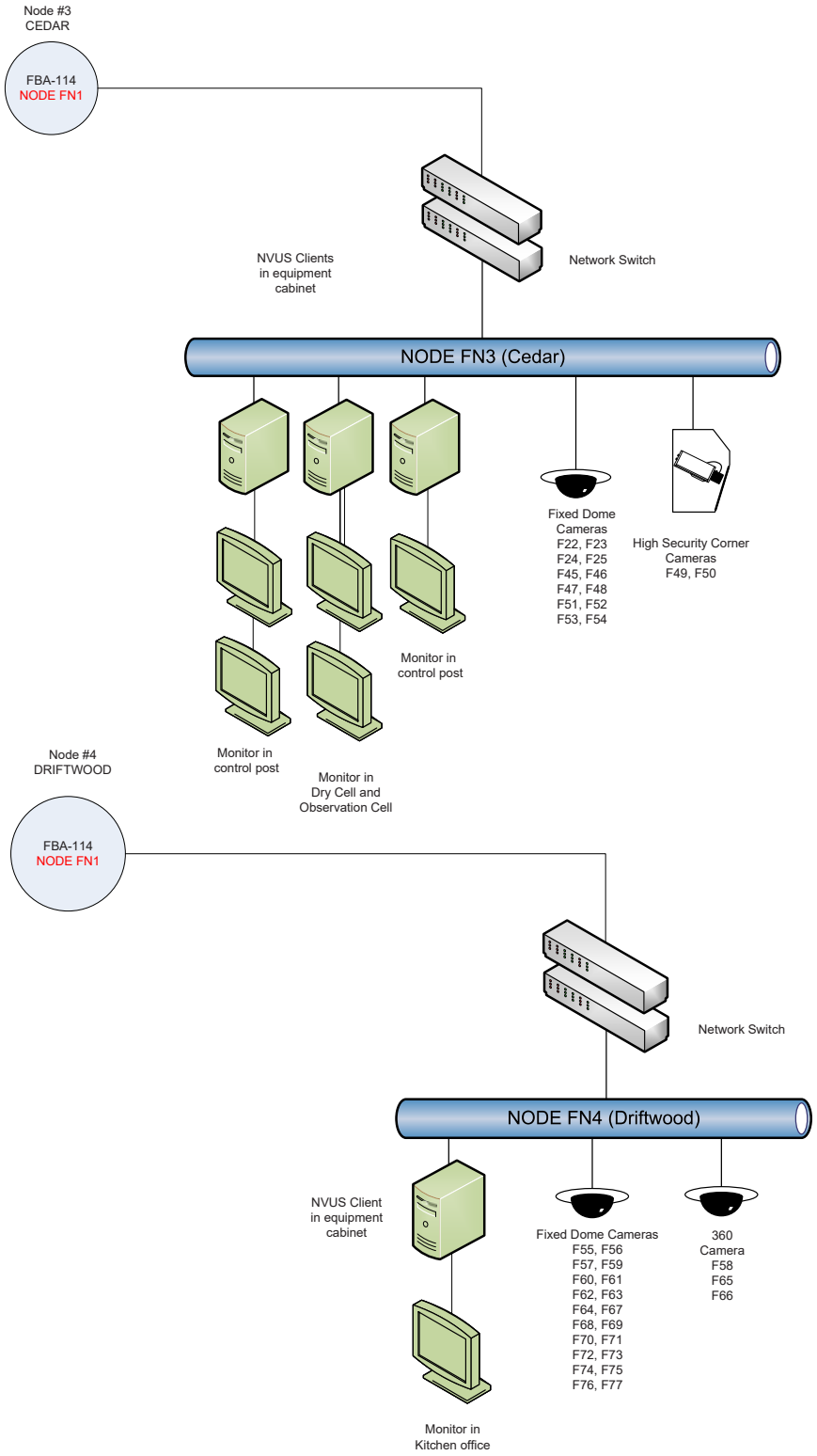
Monitor	Location	Monitor Type	Name	Client # and type	Client Location	Client Type	Node	View	Cameras Assigned
M7	FBA-104	Type 1	PIDS #1	5	FBA-103	Type 1	1	Spot	All PIDS
M8	FBA-104	Type 1	PIDS #2	5	FBA-103	n/a	1	Spot	All PIDS
M9	FBA-104	Type 1	PIDS #3	6	FBA-103	Type 1	1	Spot	All PIDS
M10	FBA-104	Type 1	PIDS #4	6	FBA-103	n/a	1	Spot	All PIDS
M11	FBA-104	Type 1	SIDS #1	7	FBA-103	Type 2	1	M&T - Spot	All CCTV - except F49, F50
M12	FBA-104	Type 1	SIDS #2	7	FBA-103	n/a	1	Spot	slave (M5)
M13	FBA-104	Type 1	SIDS #3	8	FBA-103	Type 2	1	Spot	slave (M5)
M14	FBA-104	Type 1	SIDS #4	8	FBA-103	n/a	1	Spot	slave (M5)
M15	FBA-104	Type 1	SIDS #5	9	FBA-103	Type 2	1	M&T - Spot	All CCTV - except F49, F50
M16	FBA-104	Type 1	SIDS #6	9	FBA-103	n/a	1	Spot	slave (M9)
M17	FBA-104	Type 1	SIDS #7	10	FBA-103	Type 2	1	Spot	slave (M9)
M18	FBA-104	Type 1	SIDS #8	10	FBA-103	n/a	1	Spot	slave (M9)
M19	FBA-104	Type 1	SIDS #9	11	FBA-103	Type 2	1	M&T - Quad	All CCTV - except F49, F50
M20	FBA-102	Type 2	PECP #1	12	FBA-103	Type 2	1	M&T - Quad	F11, F12, F13, F16, F26, F27, F28, F29, F30
M21	FBA-102	Type 2	PECP #2	13	FBA-103	Type 2	1	M&T - Quad	F11, F12, F13, F16, F26, F27, F28, F29, F30
M22	FBA-209A	Type 3	CMO	14	FBA-209A	Type 4	1	Unrestricted	All CCTV - except F49, F50
M23	FBA-212	Type 4	SIO #1	15	FBA-212	Type 4	FN1	Unrestricted	All CCTV
M24	FBA-212	Type 4	SIO #2	16	FBA-212	Type 4	FN1	Unrestricted	All CCTV
M25	FBA-212	Type 4	SIO #3	17	FBA-212	Type 4	FN1	Unrestricted	All CCTV
M26	FBA-07	Type 2	ADGA	18	FBA-07	Type 4	FN1	Unrestricted	All CCTV - except F49, F50
M27	FBB-110	Type 3	V&C #1	19	FBB-127	Type 3	FN2	M&T - Quad	F33 through F42
M28	FBB-110	Type 3	V&C #2	19	FBB-127	n/a	FN2	M&T - Quad	F33 through F42
M29	FBB-110	Type 3	V&C #3	20	FBB-127	Type 3	FN2	M&T - Quad	F33 through F42
M30	FBB-110	Type 3	V&C #4	20	FBB-127	n/a	FN2	M&T - Quad	F33 through F42
M31	FBC-143	Type 2	SEG #1	21	FBC-138	Type 2	FN3	M&T - Quad	F22 - F25, F45 - F48, F54
M32	FBC-143	Type 2	SEG #2	22	FBC-138	Type 2	FN3	M&T - Quad	F22 - F25, F45 - F48, F54
M33	FBC-143	Type 2	DRY CELLS	23	FBC-138	Type 2	FN3	M&P - Dual	F49, F50
M34	FBC-139	Type 2	Healthcare	24	FBC-138	Type 2	FN3	M& Quad	F10, F51, F52, F53
M35	FBD-120	Type 2	Kitchen	25	FBD-205	Type 3	FN4	M&T - Quad	F56, F57, F62,F63, F66 - F74
M36	FBE-122	Type 2	Edgewood	26	FBE-211	Type 2	FN5	M&T+6 SPLIT	F78 - F119
M37	FBF-122	Type 2	Falcon	27	FBF-211	Type 2	FN6	M&T+6 SPLIT	F120 - F161
M38	FBG-122	Type 2	Granite	28	FBG-211	Type 2	FN7	M&T+6 SPLIT	F162 - 203
M39	FBH-122	Type 2	Horizon	29	FBH-209	Type 2	FN8	M&T+6 SPLIT	F204 - F245

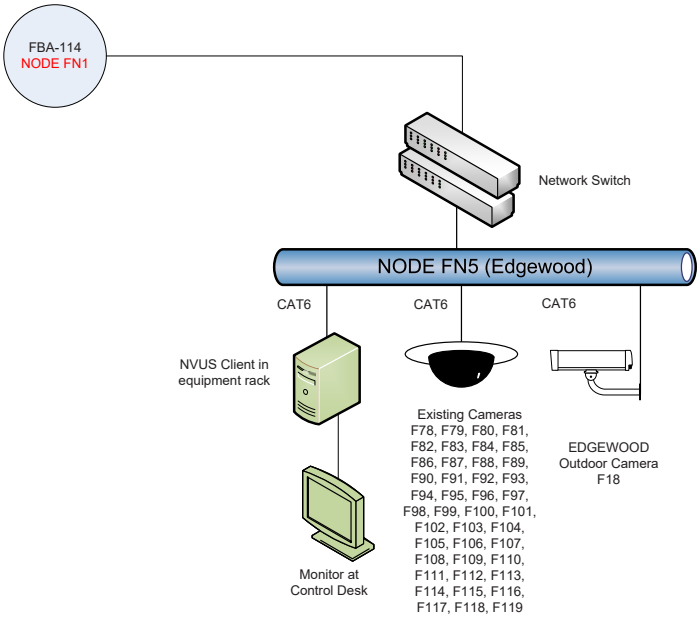
Beaver Creek - Digital CCTV Upgrade
Fibre Optic Cable & Node Logical Layout

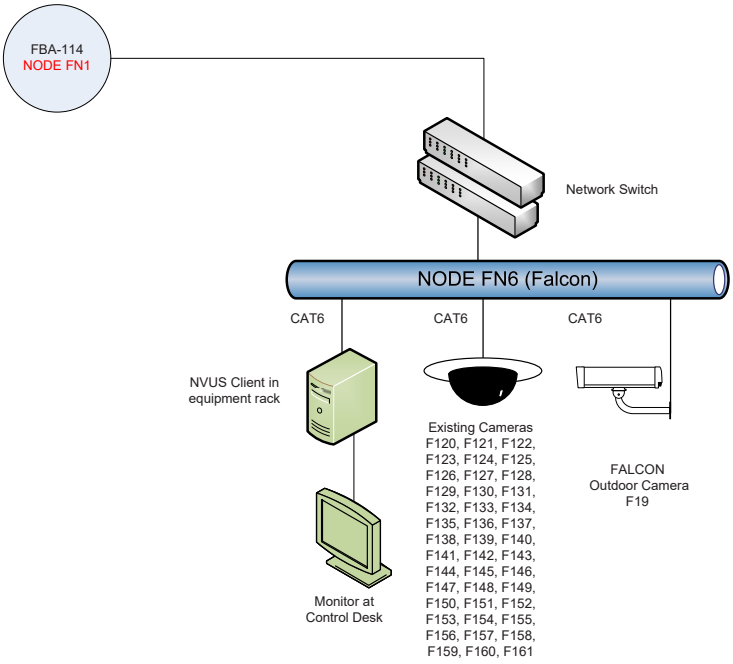


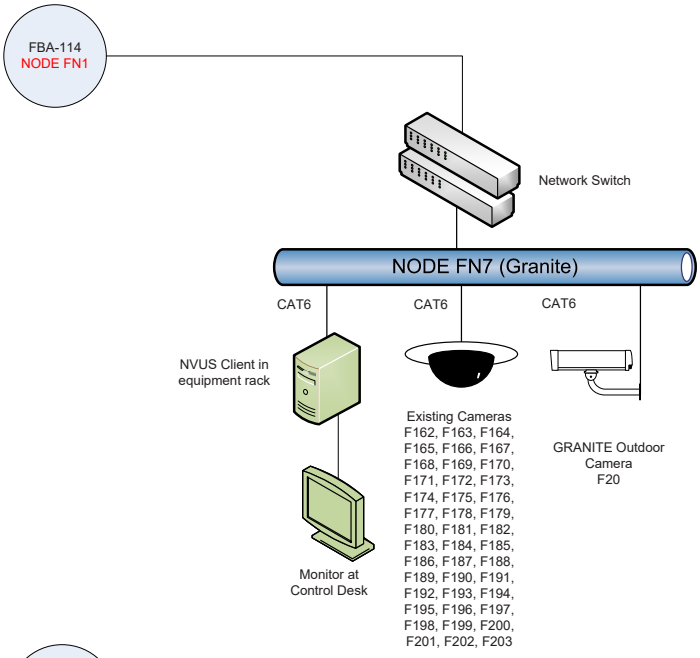

FBA-103
NODE 1
Main CCTV Archive
MCCP
PIDS
Monitors
MCCP
SIDS
Monitors
MCCP
SIDS
Monitors
PECP
Monitors
Network Switch
Node F1 Switches located in FBA-103 and FBA-114
Genetec
Directory
A
Genetec
Archiver
A-1
Genetec
Archiver
A-2
Coldstore
Appliance
A-1
Coldstore
Appliance
A-2
Coldstore
Appliance
A-3
Genetec
Directory
B
Genetec
Archiver
B-1
Genetec
Archiver
B-2
Coldstore
Appliance
B-1
Coldstore
Appliance
B-2
Coldstore
Appliance
B-3
Network Switch
Node F1 Switches located in FBA-103 and FBA-114
SIO
Workstation
SIO
Workstation
SIO
Workstation
CMO
Workstation
ADGA
Workstation
PIDS Cameras
P01 – P37
Fixed Dome
Cameras
F12, F13
F26, F27
F28, F29
F30, F32
360
Camera
F31

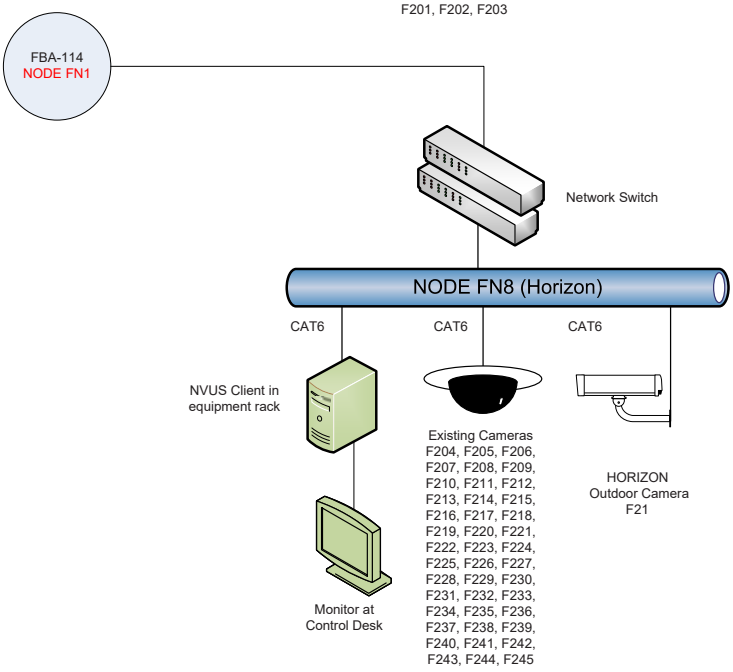

FBA-114
NODE
FN1
NVUS Clients
in equipment
cabinet
NODE FN2 (Borealis)
V&C
Workstation
V&C
Workstation
Fixed Dome
Cameras
F33, F34
F38, F40
F41, F42
PTZ
Cameras
F14,
F37, F39
F43, F44
High Security
Corner
Cameras
F35, F36

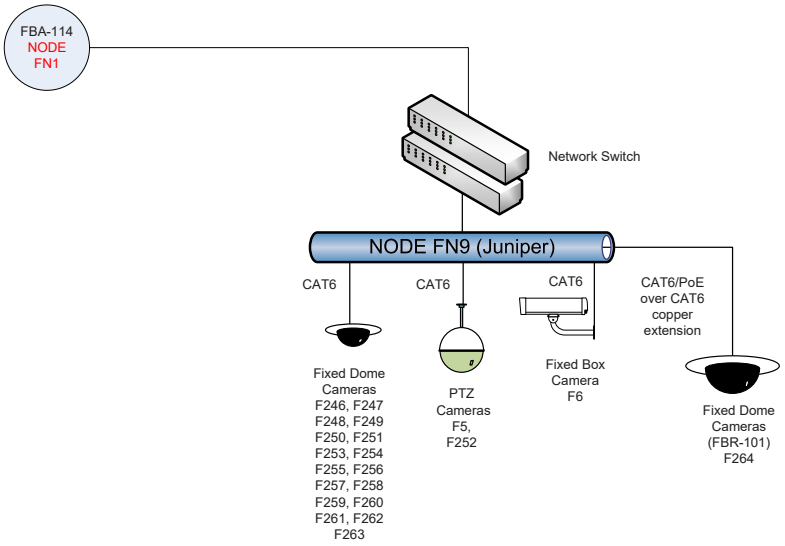

Node #3
CEDAR
FBA-114
NODE FN1
NVUS Clients
in equipment
cabinet
Network Switch
NODE FN3 (Cedar)
Fixed Dome
Cameras
F22, F23
F24, F25
F45, F46
F47, F48
F51, F52
F53, F54
High Security Corner
Cameras
F49, F50
Monitor in
control post
Monitor in
control post
Monitor in
Dry Cell and
Observation Cell
Node #4
DRIFTWOOD
FBA-114
NODE FN1
Network Switch
NODE FN4 (Driftwood)
NVUS Client
in equipment
cabinet
Fixed Dome Cameras
F55, F56
F57, F59
F60, F61
F62, F63
F64, F67
F68, F69
F70, F71
F72, F73
F74, F75
F76, F77
360
Camera
F58
F65
F66
Monitor in
Kitchen office

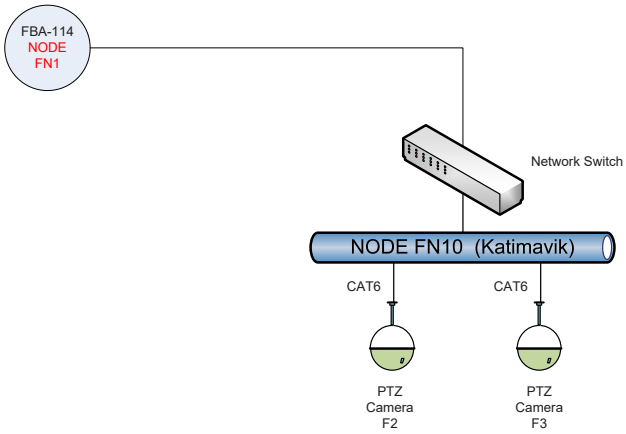

FBA-114
NODE FN1
Network Switch
NODE FN5 (Edgewood)
CAT6
CAT6
CAT6
NVUS Client in
equipment rack
Existing Cameras
F78, F79, F80, F81,
F82, F83, F84, F85,
F86, F87, F88, F89,
F90, F91, F92, F93,
F94, F95, F96, F97,
F98, F99, F100, F101,
F102, F103, F104,
F105, F106, F107,
F108, F109, F110,
F111, F112, F113,
F114, F115, F116,
F117, F118, F119
EDGEWOOD
Outdoor Camera
F18
Monitor at
Control Desk

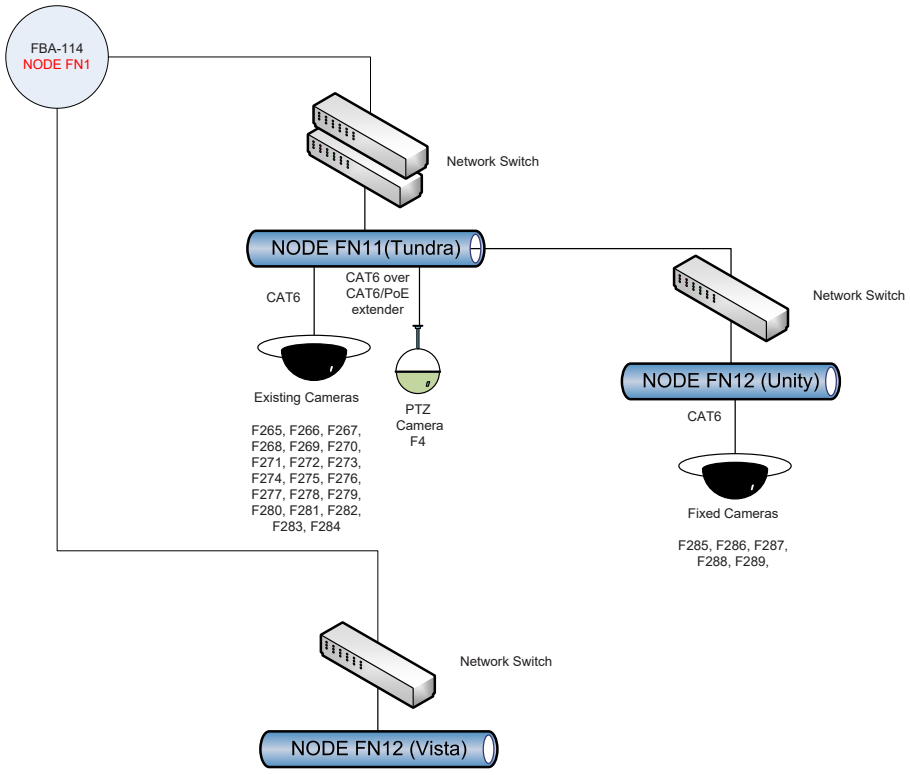

FBA-114
NODE FN1
Network Switch
NODE FN6 (Falcon)
CAT6
CAT6
CAT6
NVUS Client in
equipment rack
Existing Cameras
F120, F121, F122,
F123, F124, F125,
F126, F127, F128,
F129, F130, F131,
F132, F133, F134,
F135, F136, F137,
F138, F139, F140,
F141, F142, F143,
F144, F145, F146,
F147, F148, F149,
F150, F151, F152,
F153, F154, F155,
F156, F157, F158,
F159, F160, F161
FALCON
Outdoor Camera
F19
Monitor at
Control Desk

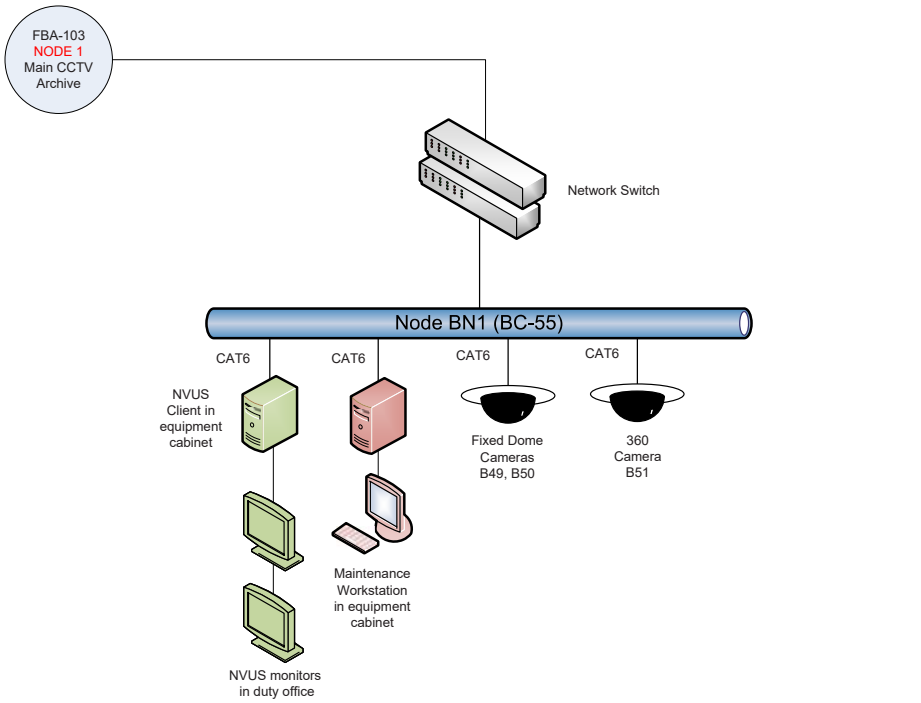

FBA-114
NODE FN1
Network Switch
NODE FN7 (Granite)
CAT6
CAT6
CAT6
NVUS Client in equipment rack
Existing Cameras F162, F163, F164, F165, F166, F167, F168, F169, F170, F171, F172, F173, F174, F175, F176, F177, F178, F179, F180, F181, F182, F183, F184, F185, F186, F187, F188, F189, F190, F191, F192, F193, F194, F195, F196, F197, F198, F199, F200, F201, F202, F203
GRANITE Outdoor Camera F20
Monitor at Control Desk

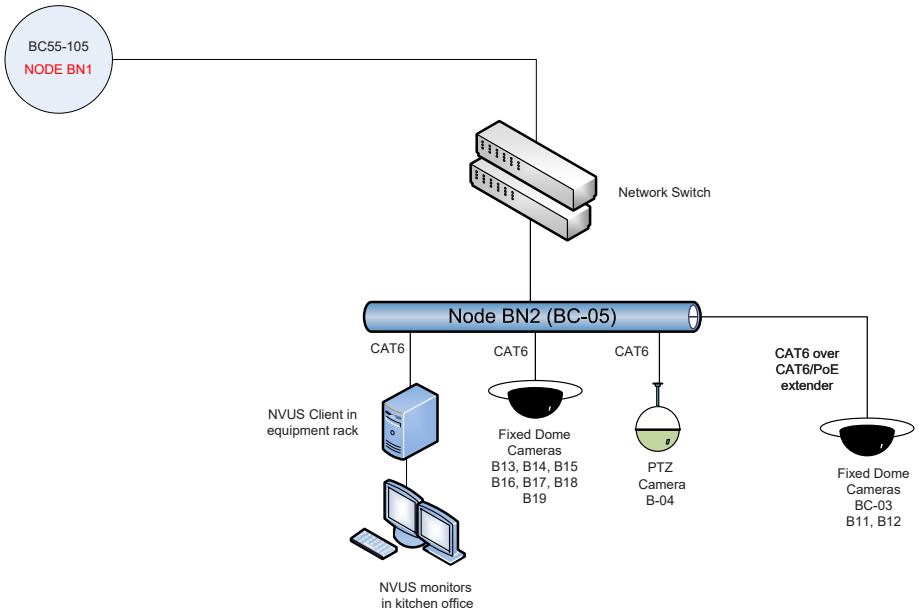

FBA-114
NODE FN1
Network Switch
NODE FN8 (Horizon)
CAT6
CAT6
CAT6
NVUS Client in equipment rack
Existing Cameras F204, F205, F206, F207, F208, F209, F210, F211, F212, F213, F214, F215, F216, F217, F218, F219, F220, F221, F222, F223, F224, F225, F226, F227, F228, F229, F230, F231, F232, F233, F234, F235, F236, F237, F238, F239, F240, F241, F242, F243, F244, F245
HORIZON Outdoor Camera F21
Monitor at Control Desk

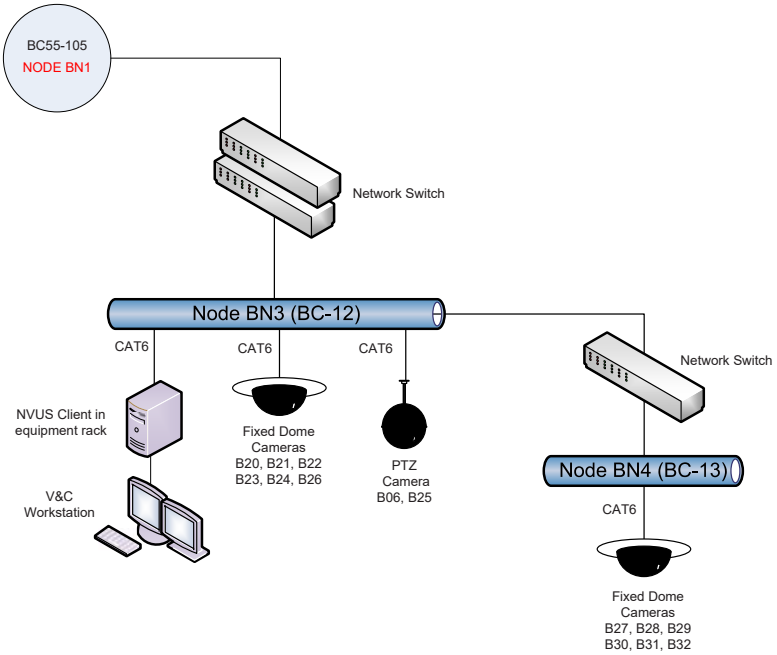

FBA-114
NODE
FN1
Network Switch
NODE FN9 (Juniper)
CAT6
CAT6
CAT6
CAT6/PoE
over CAT6
copper
extension
Fixed Dome
Cameras
F246, F247
F248, F249
F250, F251
F253, F254
F255, F256
F257, F258
F259, F260
F261, F262
F263
PTZ
Cameras
F5,
F252
Fixed Box
Camera
F6
Fixed Dome
Cameras
(FBR-101)
F264

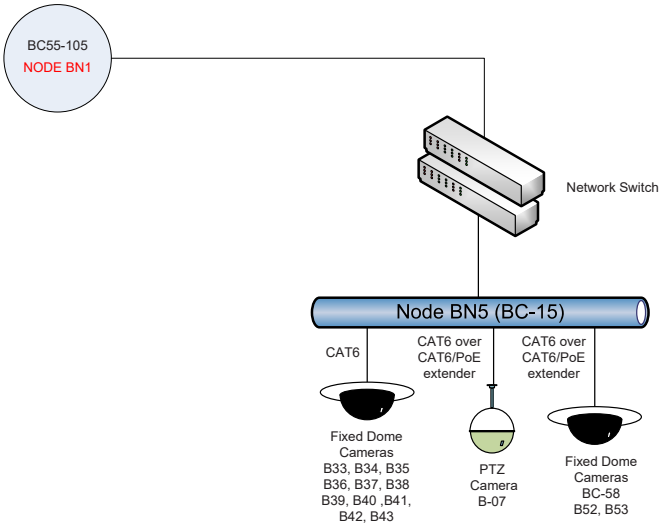

FBA-114
NODE
FN1
Network Switch
NODE FN10 (Katimavik)
CAT6
CAT6
PTZ
Camera
F2
PTZ
Camera
F3

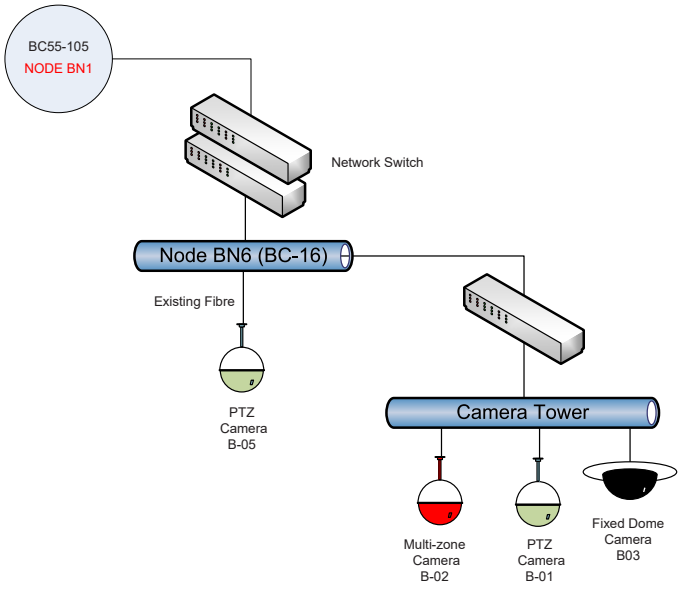

FBA-114
NODE FN1
Network Switch
NODE FN11(Tundra)
CAT6
CAT6 over
CAT6/PoE
extender
Existing Cameras
F265, F266, F267,
F268, F269, F270,
F271, F272, F273,
F274, F275, F276,
F277, F278, F279,
F280, F281, F282,
F283, F284
PTZ
Camera
F4
Network Switch
NODE FN12 (Unity)
CAT6
Fixed Cameras
F285, F286, F287,
F288, F289,
Network Switch
NODE FN12 (Vista)

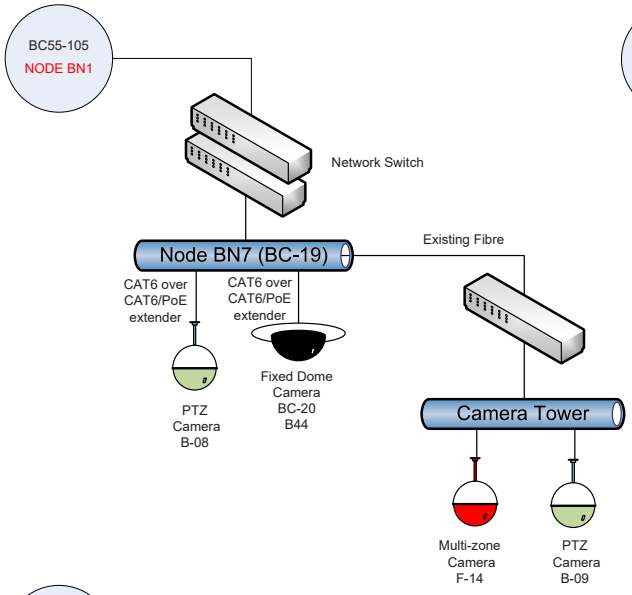

FBA-103
NODE 1
Main CCTV
Archive
Network Switch
Node BN1 (BC-55)
CAT6
CAT6
CAT6
CAT6
NVUS
Client in
equipment
cabinet
Fixed Dome
Cameras
B49, B50
360
Camera
B51
Maintenance
Workstation
in equipment
cabinet
NVUS monitors
in duty office

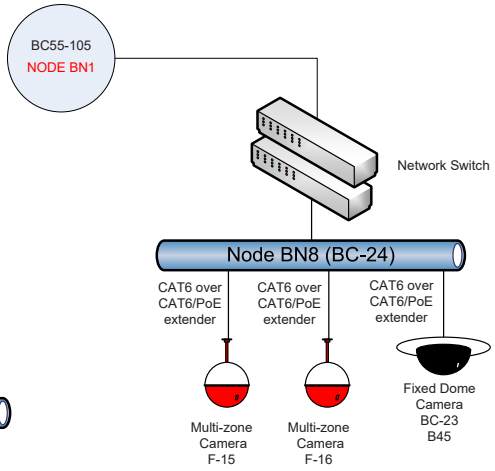

BC55-105
NODE BN1
Network Switch
Node BN2 (BC-05)
CAT6
CAT6
CAT6
CAT6 over
CAT6/PoE
extender
NVUS Client in
equipment rack
Fixed Dome
Cameras
B13, B14, B15
B16, B17, B18
B19
PTZ
Camera
B-04
Fixed Dome
Cameras
BC-03
B11, B12
NVUS monitors
in kitchen office

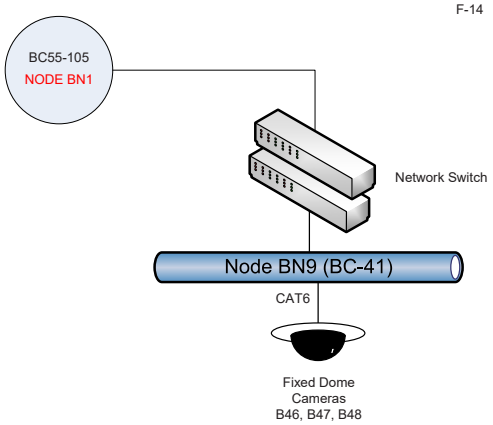

BC55-105
NODE BN1
Network Switch
Node BN3 (BC-12)
CAT6
CAT6
CAT6
NVUS Client in equipment rack
V&C Workstation
Fixed Dome Cameras B20, B21, B22 B23, B24, B26
PTZ Camera B06, B25
Network Switch
Node BN4 (BC-13)
CAT6
Fixed Dome Cameras B27, B28, B29 B30, B31, B32

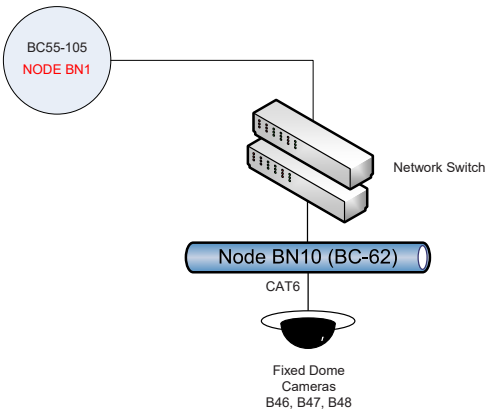

BC55-105
NODE BN1
Network Switch
Node BN5 (BC-15)
CAT6
CAT6 over CAT6/PoE extender
CAT6 over CAT6/PoE extender
Fixed Dome Cameras B33, B34, B35 B36, B37, B38 B39, B40 ,B41, B42, B43
PTZ Camera B-07
Fixed Dome Cameras BC-58 B52, B53


BC55-105
NODE BN1
Network Switch
Node BN6 (BC-16)
Existing Fibre
PTZ Camera B-05
Camera Tower
Multi-zone Camera B-02
PTZ Camera B-01
Fixed Dome Camera B03


BC55-105
NODE BN1
Network Switch
Node BN7 (BC-19)
Existing Fibre
CAT6 over CAT6/PoE extender
CAT6 over CAT6/PoE extender
PTZ Camera B-08
Fixed Dome Camera BC-20 B44
Camera Tower
Multi-zone Camera F-14
PTZ Camera B-09


BC55-105
NODE BN1
Network Switch
Node BN8 (BC-24)
CAT6 over CAT6/PoE extender
CAT6 over CAT6/PoE extender
CAT6 over CAT6/PoE extender
Multi-zone Camera F-15
Multi-zone Camera F-16
Fixed Dome Camera BC-23 B45


BC55-105
NODE BN1
Network Switch
Node BN9 (BC-41)
CAT6
Fixed Dome Cameras B46, B47, B48

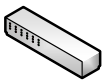

BC55-105
NODE BN1
Network Switch
Node BN10 (BC-62)
CAT6
Fixed Dome Cameras B46, B47, B48

Legend

FBA-103
NODE 1
Main CCTV Archive

FBB-127
NODE FN2

Node Number, Location


Network switch

Media Converter

Genetec Directory Server

Genetec Archiver

Video Storage Array

Type 1 & 2 – NVUS Client

Type 3 – NVUS Client

Type 4 – NVUS Client

Type 1 Monitor – Control Post Monitor 22” LED

Type 2 Monitor – Control Post Monitor 27” LED

Type 3 Monitor – Control Post Monitor 32” LED

PTZ Dome Camera

Multi-Sensor Dome Camera

High Security Corner Mount Camera

Fixed Dome Camera

Outdoor Fixed Box Camera

Correctional Service Canada
Technical Services Branch
Electronics Systems

Issue 1
February 28, 2018

STATEMENT
OF
TECHNICAL REQUIREMENTS

UPGRADE

of

CCTV SYSTEMS

at

BEAVER CREEK INSTITUTION

Appendix H

Site Maps and Floor Plans

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the existing Hybrid CCTV System at Beaver Creek Institution.

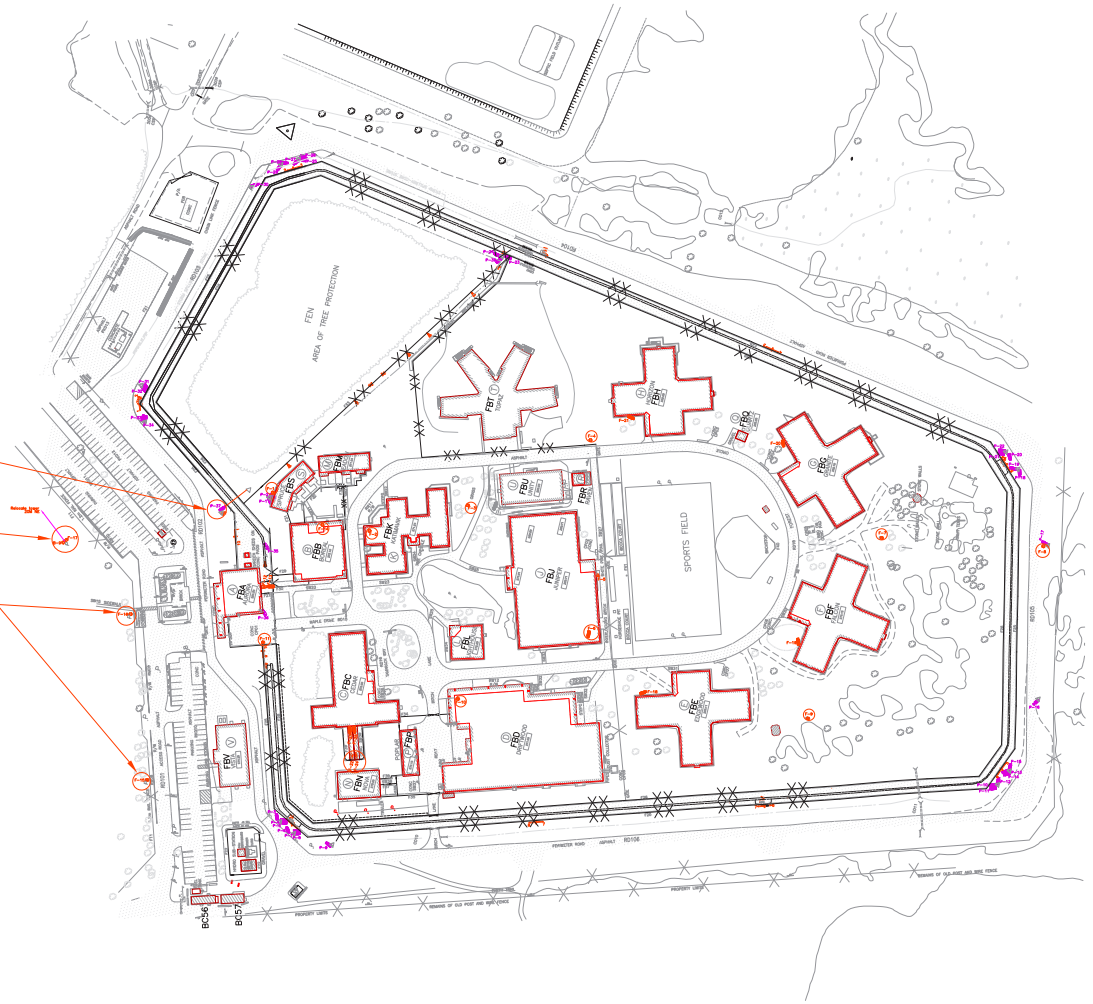
CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- MULTI–SENSOR CAMERA
- FIXED CAMERA
- 360 Camera
- EQUIPMENT CABINET

Relocate PIDS Camera P–37 and CCTV tower outside perimeter fence. Route PoE CAT6 outdoor cabling for camera underground directly into FBA–114A.

Add double goose neck to existing tower and provide a multi–sensor camera facing parking lot. Relocate CCTV Tower 20M North–East

Provide 2 x 12M tilt–down CCTV towers with goose neck brackets. Provide 2 x multi–sensor cameras facing parking lot.



FENBROOK BUILDING INDEX

FBA	GATEHOUSE/ADMISSIONS
FBB	VISITATION & CORRESPONDENCE FBC HEALTHCARE & SEGREGATION
FBD	CORCAN/INDUSTRIES
FBE	NON SECURE RESIDENCE
FBF	NON SECURE RESIDENCE
FBG	NON SECURE RESIDENCE
FBH	SECURE RESIDENCE
FBJ	PROGRAMS/GYM
FBK	ADMINISTRATION
FBL	CHAPEL
FBM	FAMILY VISITATION
FBN	CO–GENERATION
FBP	GARAGES
FBQ	SANITARY PUMPING STATION
FBR	INUIT HOBBY/CRAFT BUILDING
FBS	FAMILY VISITATION
FBT	SECURE RESIDENCE T
FBU	INTERIOR MULTIPURPOSE BUILDING FBV EXTERIOR MULTIPURPOSE BUILDING

OUTDOOR CCTV PLAN

Cameras F1–F25
Perimieter P1–37

OUTDOOR CCTV LOCATION INDEX

F–1	V&C TOWER (PTZ)
F–2	KATIMAVIK ROOF (PTZ)
F–3	KATIMAVIK ROOF (PTZ)
F–4	TUNDRA COMPOUND (PTZ)
F–5	JUNIPER SOUTH ROOF (PTZ)
F–6	JUNIPER ROOF (FIXED)
F–7	GRANITE (PTZ)
F–8	NATIVE GROUNDS (PTZ)
F–9	FALCON (PTZ)
F–10	DRIFTWOOD (PTZ)
F–11	SALLYPORT (PTZ)
F–12	PEDESTRIAN GATE S (FIXED)
F–13	PEDESTRIAN GATE N (FIXED)
F–14	V&C OUTDOOR (PTZ)
F–15	West Parking Lot (Multi–Sensor)
F–16	Middle Parking Lot (Multi–Sensor)
F–17	East Parking Lot (Multi–Sensor)
F–18	Edgewood Entrance (FIXED)
F–19	Falcon Entrance (FIXED)
F–20	Granite Entrance (FIXED)
F–21	Horizon Entrance (FIXED)
F–22	SEG YARD NORTH BACK (FIXED)
F–23	SEG YARD NORTH FRONT (FIXED)
F–24	SEG YARD SOUTH BACK (FIXED)
F–25	SEG YARD SOUTH BACK (FIXED)

PIDS CCTV LOCATION INDEX

P–1	TOWER 1
P–2	TOWER 1
P–3	TOWER 2
P–4	TOWER 2
P–5	TOWER 2
P–6	TOWER 3
P–7	TOWER 3
P–8	TOWER 3
P–9	TOWER 4
P–10	TOWER 5
P–11	TOWER 5
P–12	TOWER 5
P–13	TOWER 6
P–14	TOWER 6
P–15	TOWER 6
P–16	TOWER 7
P–17	TOWER 8
P–18	TOWER 9
P–19	TOWER 9
P–20	TOWER 10
P–21	TOWER 10
P–22	TOWER 10
P–23	TOWER 11
P–24	TOWER 11
P–38	TOWER 11
P–25	TOWER 12
P–26	TOWER 12
P–27	TOWER 12
P–28	TOWER 13
P–29	TOWER 13
P–30	TOWER 14
P–31	TOWER 15
P–32	TOWER 15
P–33	TOWER 16
P–34	TOWER 16
P–35	FENCE ZONE X
P–36	SW CORNER FBA
P–37	FEN TOWER NORTH

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

SCALE
1:750

FILED:FILE
UPDATED: DATE
PLOT SCALE: SCALE

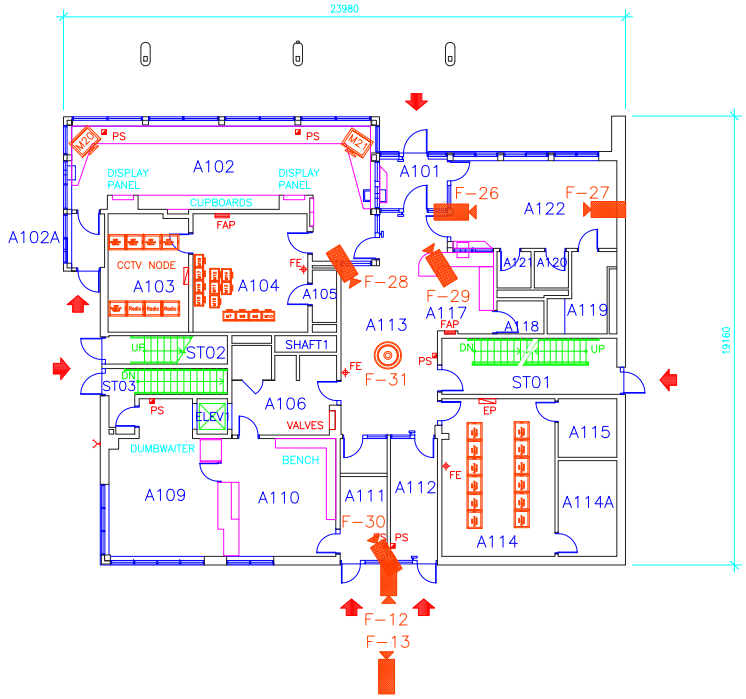
FBA GATEHOUSE (AURORA)

CCTV PLAN

Cameras F12 & F13, F26–F31
Monitor M7–M21

CCTV INDEX

F–12 OUTDOOR
F–13 OUTDOOR
F–26 A122
F–27 A122
F–28 A113
F–29 A117
F–30 A111
F–31 A113
M7–A104
M8–A104
M9–A104
M10–A104
M11–A104
M12–A104
M13–A104
M14–A104
M15–A104
M16–A104
M17–A104
M18–A104
M19–A104
M20–A102
M21–A102
CCTV NODE A103
CCTV Fibre bay A114



ROOM INDEX

A101	VESTIBULE
A102	ENTRY/RECEPTION/CONTROL POST
A102A	VESTIBULE
A103	CENTRAL EQUIPMENT ROOM
A104	MAIN COMMUNICATION CNTRL POST
A105	WASHROOM
A106	SEARCH/SHOWER/CHANGE
A109	A&D OFFICE
A110	A&D PROCESSING
A111	A&D WAITING
A112	VESTIBULE
A113	VISITOR PROCESSING
A114	TELEPHONE ENTRANCE
A114A	ELECTRICAL ROOM
A115	TELEPHONE ROOM
A117	RECEPTION
A118	JANITOR
A119	VISITOR CHANGE ROOM
A120	MALE WASHROOM
A121	FEMALE WASHROOM
A122	VISITOR RECEPTION
ST01	STAIR NO.1
ST02	STAIR NO.2
ST03	STAIR NO.3

CCTV KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
360 Camera
EQUIPMENT CABINET

FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

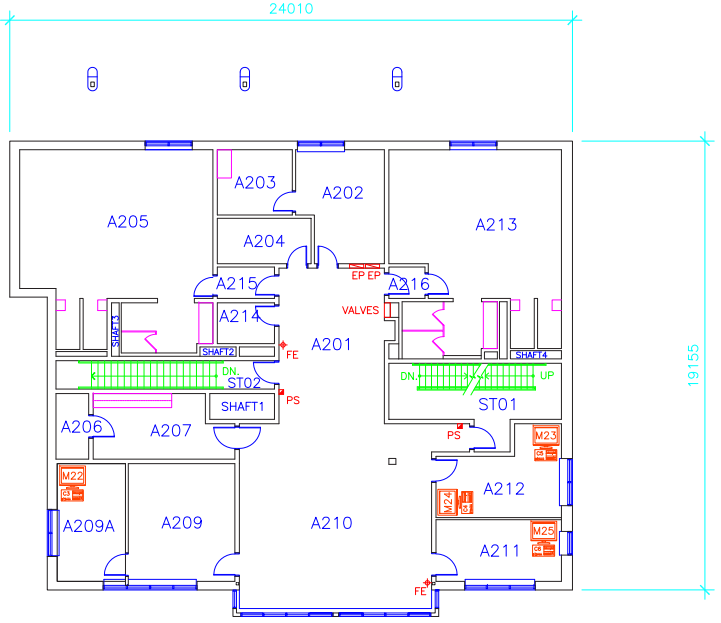
0 1m 5m 10m 20m

FILED:FBA–1 Range CCTV
UPDATED: 2010–01–08
PLOT SCALE: 1:200

FBA GATEHOUSE (AURORA)

CCTV PLAN

Monitors M22–M25



CCTV INDEX

M22 A209A
M23 A212
M24 A212
M25 A211

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET

ROOM INDEX

A201	CORRIDOR
A202	SECURITY MAINTENANCE OFFICER
A203	KEY ROOM/WORKSHOP
A204	SMO EQUIPMENT STORAGE
A205	ERT CHANGE ROOM
A206	AMMUNITION/GAS VAULT
A207	ARMOURY
A208	COORDINATOR SECURITY OPERATION
A209	SECURITY CLERKS
A210	MUSTER ROOM
A211	PEN SQUAD/SECURITY ANALYST
A212	IPSO OFFICER
A213	WOMEN'S/MEN'S WASHROOM
A214	JANITOR
A215	VESTIBULE
A216	VESTIBULE
ST01	STAIR NO.1
ST02	STAIR NO.2

SECOND FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

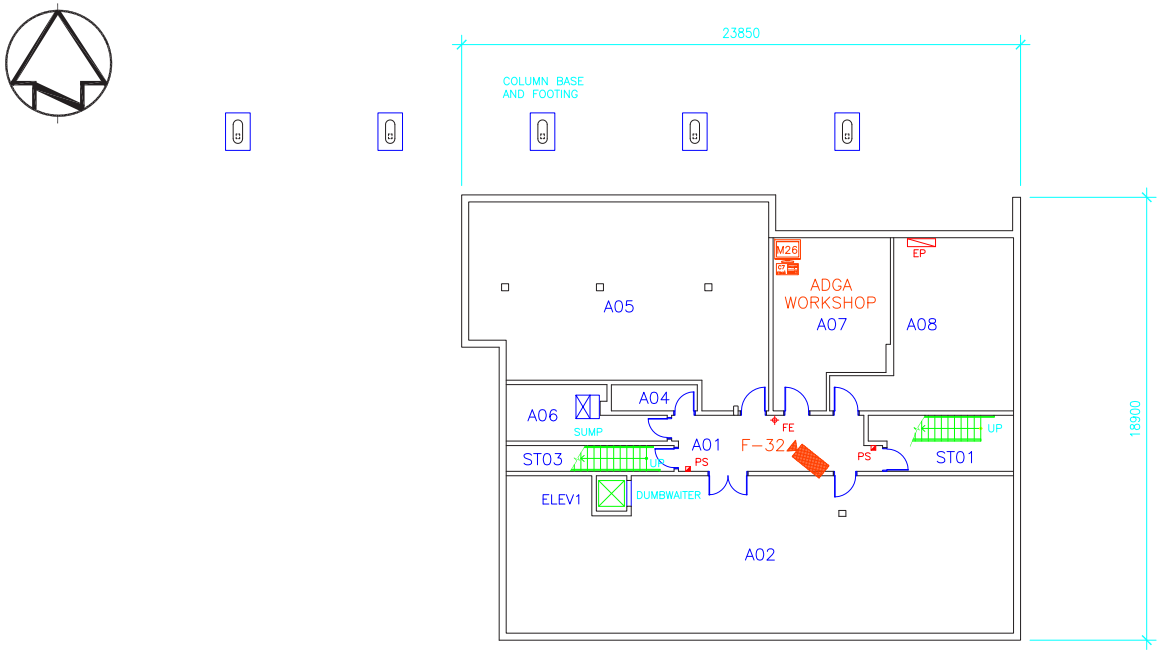
0 1m 5m 10m 20m

FILED: S:\...\FBA-2.DWG
UPDATED: 2001-11-16
PLOT SCALE: 1:200

FBA GATEHOUSE (AURORA)

CCTV PLAN

Camera F32
Monitor M26



ROOM INDEX

A01 CORRIDOR
A02 INMATE EFFECTS STORAGE
A04 JANITOR
A05 STORAGE ROOM
A06 VALVE ROOM
A07 ELECTRONICS WORKSHOP
A08 INFORMATICS HUB ROOM
ST01 STAIR NO.1
ST03 STAIR NO.3

CCTV INDEX

F-32 A01
M26 A07
ADGA WORKSHOP A07

CCTV KEY

NVUS - GUI
NVUS - CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET

BASEMENT PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
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Travaux publics
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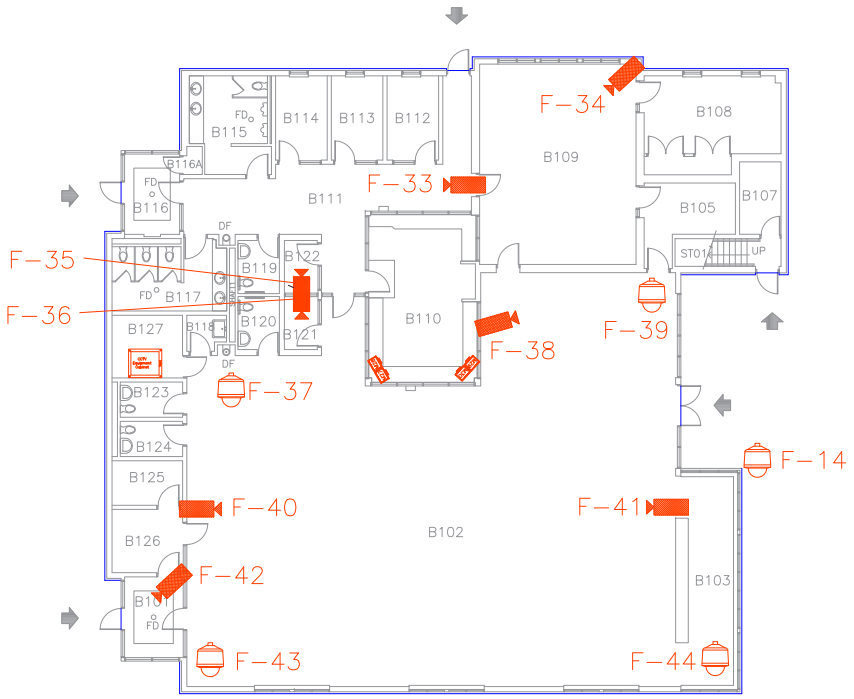
Région de l'Ontario

0 1m 5m 10m 20m

FILED:FBA-B Range CCTV
UPDATED: 2010-01-08
PLOT SCALE: 1:200

FBB VISITS & CORRESPONDENCE (BOREALIS)

CCTV PLAN



ROOM INDEX

B101	VESTIBULE
B102	OPEN CONTACT VISIT
B103	INDOOR PLAY AREA
B105	STORAGE
B107	VALVE ROOM
B108	DELIBERATION ROOM
B109	NPB HEARING ROOM
B110	V & C OFFICE
B111	CORRIDOR
B112	PRIVATE VISITS
B113	PRIVATE VISITS
B114	PRIVATE VISITS
B115	MALE VISITOR WASHROOM
B116	VESTIBULE
B116A	VALVE CLOSET
B117	FEMALE VISITOR WASHROOM
B118	JANITOR
B119	VISITOR H.C. WASHROOM
B120	INMATE H.C. WASHROOM
B121	INMATE RESTRICTED VISITS
B122	VISITOR RESTRICTED VISITS
B123	INMATE WASHROOM
B124	INMATE WASHROOM
B125	SEARCH
B126	INMATE WAITING
B127	ELECTRICAL ROOM
ST01	STAIR NO.1

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- 360 Camera
- EQUIPMENT CABINET

Cameras F14, F33–F44
Monitors M27–M30

CCTV INDEX

F-14	OUTDOOR
F-33	B111
F-34	B109
F-35	B122
F-36	B121
F-37	B102
F-38	B102
F-39	B102
F-40	B102
F-41	B102
F-42	B101
F-43	B102
F-44	B102
M27	B110
M28	B110
M29	B110
M30	B110

CCTV NODE B127

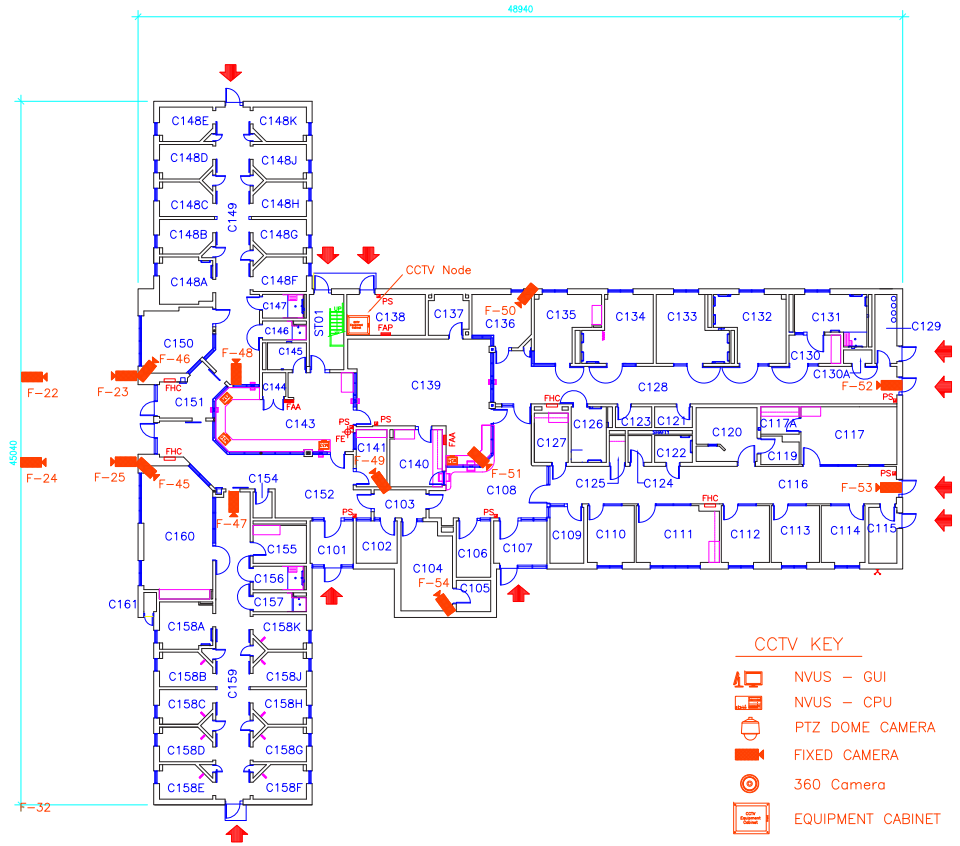
FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

0 1m 5m 10m 20m

FILED:S:\...\FBB-1.DWG
UPDATED: 2001-11-16
PLOT SCALE: 1:200



CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- 360 Camera
- EQUIPMENT CABINET

ROOM INDEX

C101	VESTIBULE
C102	INTERVIEW ROOM
C103	CORRIDOR
C104	COURT
C105	CLOSET
C106	WAITING
C107	VESTIBULE
C108	CORRIDOR
C109	WAITING
C110	OPTOMETRIST
C111	TREATMENT PHYSIO.
C112	OFFICE PHYSICIAN
C113	CHIEF HEALTH SERVICES
C114	HEALTH SERVICES OFFICE
C115	VALVE ROOM
C116	OUTPATIENT CORRIDOR
C117	DENTAL OPERATORY
C117A	DENTAL LABS
C119	X-RAY DARKROOM
C120	X-RAY ROOM
C121	SOILED LAUNDRY STORAGE
C122	STAFF WASHROOM
C123	CLEAN LAUNDRY STORAGE
C124	WASHROOM
C125	JANITOR
C126	TUB ROOM
C127	EXAMINATION ROOM
C128	INPATIENT CORRIDOR
C129	OXYGEN STORAGE
C130	VESTIBULE
C130A	STORAGE
C131	ISOLATION ROOM
C132	INPATIENT DOUBLE
C133	INPATIENT DOUBLE
C134	INPATIENT DOUBLE
C135	DAY ROOM/ KITCHENETTE
C136	OBSERVATION ROOM
C137	MEDICAL STORAGE
C138	ELECTRICAL ROOM
C139	NURSING STATION
C140	PHARMACY / DISPENSARY
C141	SEARCH/ HOLDING
C143	CONTROL POST
C144	EQUIPMENT ROOM
C145	WASHROOM
C146	SHOWER N
C147	HANDICAP SHOWER N
C148A	SEGREGATION CELL N CB1
C148B	SEGREGATION CELL N CB2
C148C	SEGREGATION CELL N CB3
C148D	SEGREGATION CELL N CB4
C148E	SEGREGATION CELL N CB5
C148F	SEGREGATION CELL N CB10
C148G	SEGREGATION CELL N CB9
C148H	SEGREGATION CELL N CB8
C148J	SEGREGATION CELL N CB7
C148K	SEGREGATION CELL N CB6
C149	SEGREGATION CORRIDOR N
C150	SEGREGATION DAY ROOM N
C151	CORRIDOR
C152	CORRIDOR
C154	JANITOR ROOM
C155	LAUNDRY ROOM S
C156	HANDICAP SHOWER S
C157	SHOWER S
C158A	SEGREGATION CELL S CA1
C158B	SEGREGATION CELL S CA2
C158C	SEGREGATION CELL S CA3
C158D	SEGREGATION CELL S CA4
C158E	SEGREGATION CELL S CA5
C158F	SEGREGATION CELL S CA6
C158G	SEGREGATION CELL S CA7
C158H	SEGREGATION CELL S CA8
C158J	SEGREGATION CELL S CA9
C158K	SEGREGATION CELL S CA10
C159	SEGREGATION CORRIDOR S
C160	SEGREGATION DAY ROOM S
C161	VALVE CLOSET
ST01	STAIR NO.1

Cameras F22–F25 & F45–F54
Monitors M31–M34

CCTV INDEX

F–22,23,24,25 OUTDOOR YARDS

F45	C160
F46	C150
F47	C159
F48	C149
F49	C141
F50	C136
F51	C108
F52	C128
F53	C116
F54	C104
M31	C143
M32	C143
M33	C143
M34	C139

FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

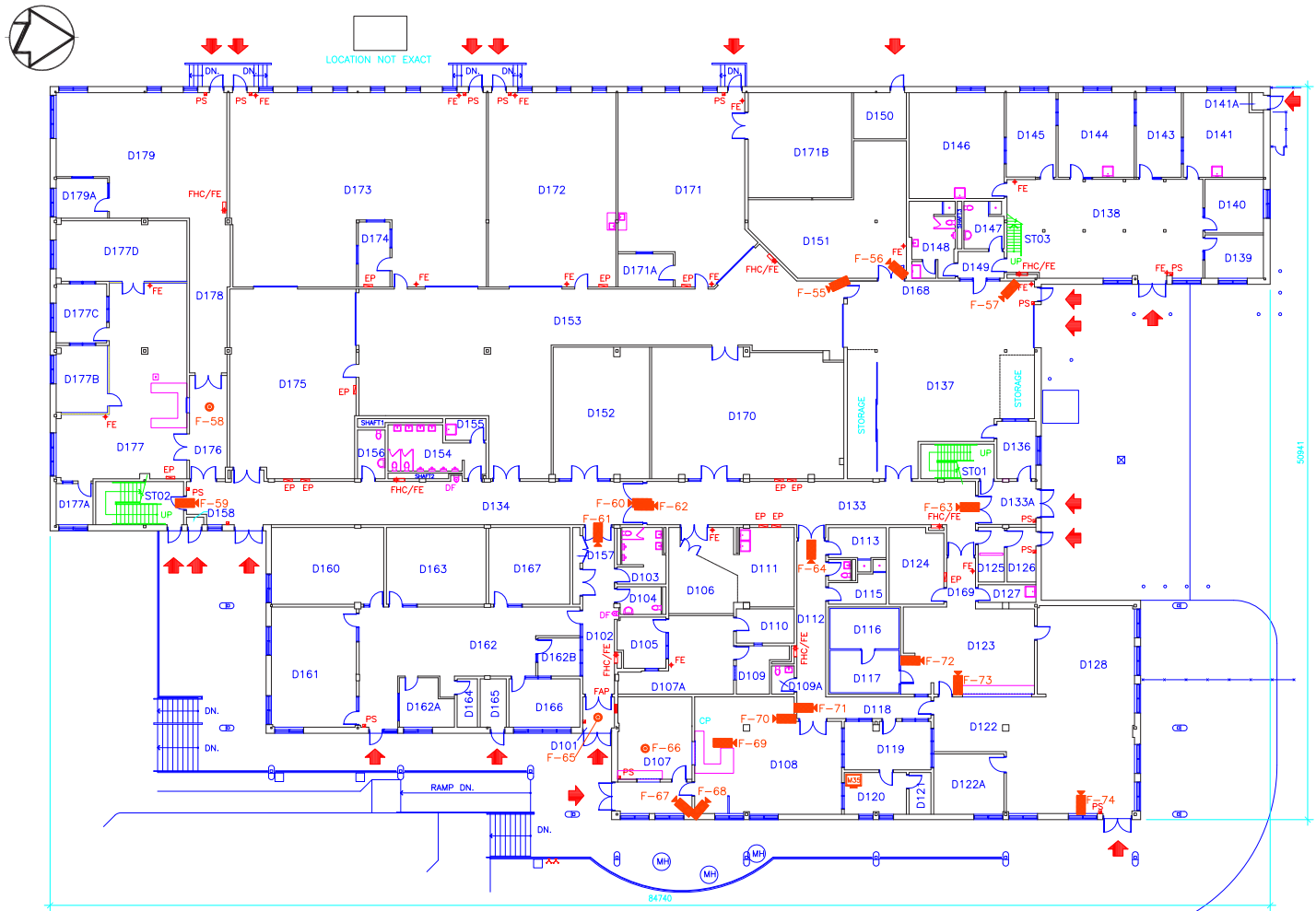
Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

0 2m 10m 20m

FILED:FBC–1Range CCTV
UPDATED: 2010–01–08
PLOT SCALE: 1:300

FBD INDUSTRIES (DRIFTWOOD)

CCTV PLAN



ROOM INDEX

D101	VESTIBULE
D102	CORRIDOR
D103	MEN'S WASHROOM
D104	WOMEN'S WASHROOM
D105	OFFICE
D106	GENERAL STORAGE SIS
D107	VESTIBULE
D107A	INMATE PURCHASING CANTEEN
D108	GROCERY STORE
D109	STORAGE ROOM
D109A	INMATE WASHROOM
D110	STORAGE
D111	LAUNDRY ROOM
D112	CORRIDOR
D113	STOCK ROOM
D114	STAFF WASHROOM
D115	STOCK ROOM
D116	FREEZER STORAGE
D117	REFRIGERATOR STORAGE
D118	CORRIDOR
D119	GENERAL OFFICE
D120	OFFICE
D121	STORAGE
D122	DINER
D122A	OFFICE
D123	TRAINING KITCHEN
D124	DRY GOODS STORAGE
D125	CAN WASH
D126	GARBAGE ROOM
D127	CLEAN /JANITOR ROOM
D128	DINER
D129	WASHROOM
D130	WASHROOM
D131	WASHROOM
D132	VESTIBULE
D133	CORRIDOR
D133A	VESTIBULE
D134	CORRIDOR
D136	FOOD SERVICE OFFICE
D137	SHIPPING & RECEIVING
D138	GENERAL MAINTENANCE SHOP
D139	WORK'S SUPERVISOR OFFICE
D140	WORK'S CLERK
D141	MAINTENANCE ELECTRICAL SHOP
D141A	VALVE CLOSET
D143	INSTRUCTOR'S OFFICE
D144	MAINTENANCE PLUMBING SHOP
D145	INSTRUCTOR'S OFFICE

Cameras F55–F74
Monitor M35

D146	CARPENTRY SHOP
D147	WOMEN'S WASHROOM
D148	MEN'S WASHROOM/CHANGE
D149	CORRIDOR
D150	DUST COLLECTION ROOM
D151	STORAGE
D152	INMATE CANTEEN STORAGE
D153	CORRIDOR
D154	INMATE WASHROOM
D155	JANITOR CLOSET
D156	WOMEN'S WASHROOM
D157	ELECTRICAL CLOSET
D158	VALVE CLOSET
D160	ABORIGINAL PROGRAMS
D161	ABORIGINAL PROGRAMS
D162	COMMON AREA
D162A	OFFICE
D162B	OFFICE
D163	INUIT LIASON OFFICER
D164	STORAGE/REPR.
D165	VALVE ROOM
D166	EMPLOYMENT OFFICE
D167	ABORIGINAL LIASON OFFICER
D168	JANITOR
D169	CORRIDOR
D170	CORCAN LIGHT INDUSTRIAL
D171	SMALL ENGINE REPAIR
D171A	SMALL ENGINE REPAIR OFFICE
D171B	SMALL ENGINE REPAIR
D172	CORCAN INDUSTRIES
D173	CORCAN INDUSTRIES
D174	OFFICE
D175	CORCAN INDUSTRIES
D176	CORRIDOR
D177	SIS AREA
D177A	SIS CHIEF OFFICE
D177B	TAILOR SHOP
D177C	OFFICE
D177D	STORAGE
D178	CORRIDOR
D179	CLASSROOM
D179A	OFFICE
ST01	STAIR NO 1
ST02	STAIR NO 2
ST03	STAIR NO 3

CCTV INDEX

F-55	D153
F-56	D151
F-57	D137
F-58	176
F-59	D134 (south)
F-60	D134 (north)
F-61	D102
F-62	D133 (south)
F-63	D133 (north)
F-64	D112
F-65	D101
F-66	D107
F-67	D107B (canteen window)
F-68	D108
F-69	D108
F-70	D108
F-71	D118
F-72	D123
F-73	D123
F-74	D128
M35	D120

KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET
- 360 Camera

FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de genie
Région de l'Ontario

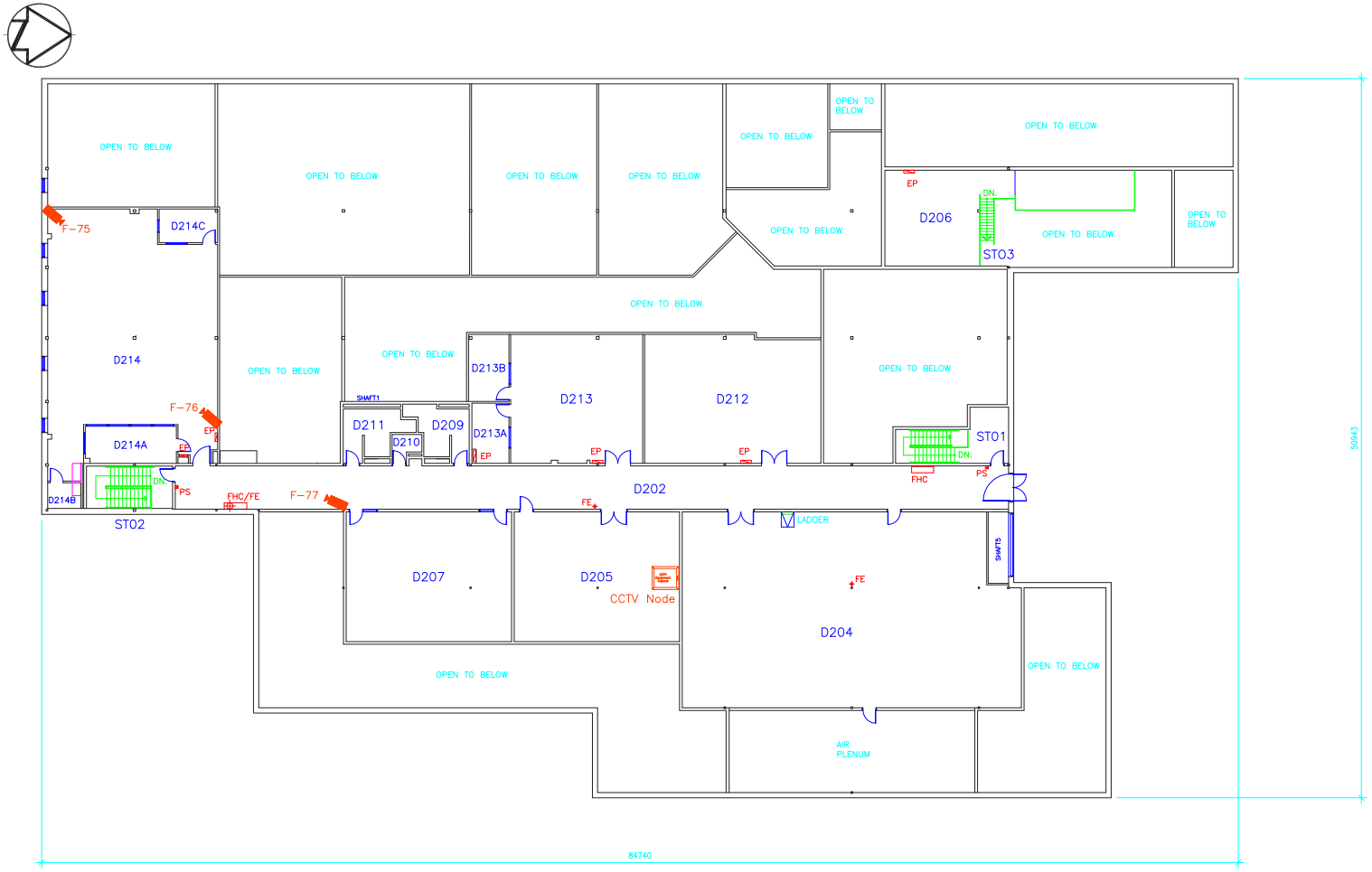
0 2m 10m 20m

FILED:FBD-1 Range CCTV
UPDATED: 2010-01-08
PLOT SCALE: 1:300

FBD INDUSTRIES (DRIFTWOOD)

CCTV PLAN

Camera F75 – F77



ROOM INDEX

D202	CORRIDOR
D204	MECHANICAL ROOM
D205	MAIN ELECTRICAL ROOM
D206	STORAGE MEZZANINE
D207	STAFF GYM
D209	FEMALE WASHROOM
D210	JANITOR ROOM
D211	MEN'S WASHROOM
D212	STAFF CANTEEN
D213	CALL-US
D213A	EQUIPMENT ROOM
D213B	CALL-US OFFICE
D214	CALL-US CENTRE
D214A	OFFICE
D214B	WASHROOM
D214C	OFFICE
ST01	STAIR NO.1
ST02	STAIR NO.2
ST03	STAIR NO.3

CCTV INDEX

F-75 D214
F-76 D214
F-77 D202
CCTV NODE D205

KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET
- 360 Camera

MECHANICAL ROOM FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

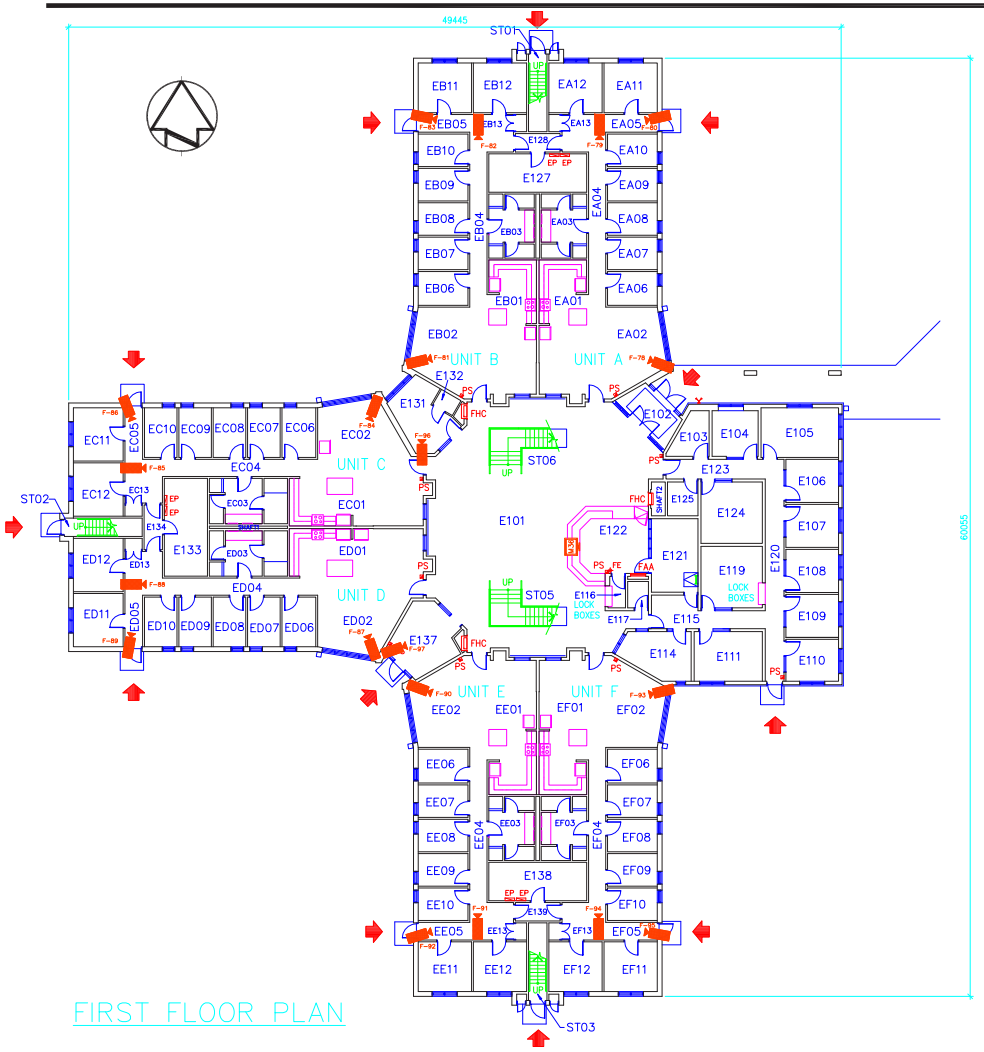
Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

0 2m 10m 20m

FILED:FBD-M Range CCTV
UPDATED: 2010-01-08
PLOT SCALE: 1:300

FBE NON SECURE RESIDENCE (EDGEWOOD)

CCTV PLAN



FIRST FLOOR PLAN

ROOM INDEX

E101 HALL
E102 VESTIBULE
E103 VALVE ROOM
E104 CASE MANAGEMENT
E105 UNIT MANAGER
E106 CASE MANAGEMENT
E107 CASE MANAGEMENT
E108 CASE MANAGEMENT
E109 CASE MANAGEMENT
E110 PSYCHOLOGIST
E111 UNIT ASSISTANT
E114 CORRECTIONAL SUPERVISOR
E115 CORRIDOR
E116 MAIL
E117 WASHROOM
E119 UNIT CLERK
E120 CORRIDOR
E121 CORR. OFFICER WORK AREA
E122 CONTROL/RECEPTION DESK
E123 CORRIDOR
E124 BOARDROOM
E125 H.C. WASHROOM
E127 MECHANICAL ROOM
E128 VESTIBULE
E131 LAUNDRY ROOM
E132 JANITOR
E133 MECHANICAL ROOM
E134 VESTIBULE
E137 VESTIBULE
E138 MECHANICAL ROOM
E139 VESTIBULE
ST01 STAIR NO.1
ST02 STAIR NO.2
ST03 STAIR NO.3
ST05 STAIR NO.5
ST06 STAIR NO.6

UNIT A
EA01 KITCHEN/EATING AREA
EA02 LIVING ROOM
EA03 WASHROOM
EA04 CORRIDOR
EA05 CORRIDOR
EA06 BEDROOM
EA07 BEDROOM
EA08 BEDROOM
EA09 BEDROOM
EA10 BEDROOM
EA11 BEDROOM
EA12 BEDROOM
EA13 JANITOR

UNIT B
EB01 KITCHEN/EATING AREA
EB02 LIVING ROOM
EB03 WASHROOM
EB04 CORRIDOR
EB05 CORRIDOR
EB06 BEDROOM
EB07 BEDROOM
EB08 BEDROOM
EB09 BEDROOM
EB10 BEDROOM
EB11 BEDROOM
EB12 BEDROOM
EB13 JANITOR

UNIT C
EC01 KITCHEN/EATING AREA
EC02 LIVING ROOM
EC03 WASHROOM
EC04 CORRIDOR
EC05 CORRIDOR
EC06 BEDROOM
EC07 BEDROOM
EC08 BEDROOM
EC09 BEDROOM
EC10 BEDROOM
EC11 BEDROOM
EC12 BEDROOM
EC13 JANITOR

UNIT D
ED01 KITCHEN/EATING AREA
ED02 LIVING ROOM
ED03 WASHROOM
ED04 CORRIDOR
ED05 CORRIDOR
ED06 BEDROOM
ED07 BEDROOM
ED08 BEDROOM
ED09 BEDROOM
ED10 BEDROOM
ED11 BEDROOM
ED12 BEDROOM
ED13 JANITOR

UNIT E
EE01 KITCHEN/EATING AREA
EE02 LIVING ROOM
EE03 WASHROOM
EE04 CORRIDOR
EE05 CORRIDOR
EE06 BEDROOM
EE07 BEDROOM
EE08 BEDROOM
EE09 BEDROOM
EE10 BEDROOM
EE11 BEDROOM
EE12 BEDROOM
EE13 JANITOR

UNIT F
EF01 KITCHEN/EATING AREA
EF02 LIVING ROOM
EF03 WASHROOM
EF04 CORRIDOR
EF05 CORRIDOR
EF06 BEDROOM
EF07 BEDROOM
EF08 BEDROOM
EF09 BEDROOM
EF10 BEDROOM
EF11 BEDROOM
EF12 BEDROOM
EF13 JANITOR

Cameras F78 to F97
Monitor M36

CCTV INDEX

F-78 EA02
F-79 EA04
F-80 EA05
F-81 EB02
F-82 EB04
F-83 EB05
F-84 EC02
F-85 EC04
F-86 EC05
F-87 ED02
F-88 ED04
F-89 ED05
F-90 EE02
F-91 EE04
F-92 EE05
F-93 EF02
F-94 EF04
F-95 EF05
F-96 E131
F-97 E137
M36 E122

KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET
360 Camera

Public Works
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Région de l'Ontario

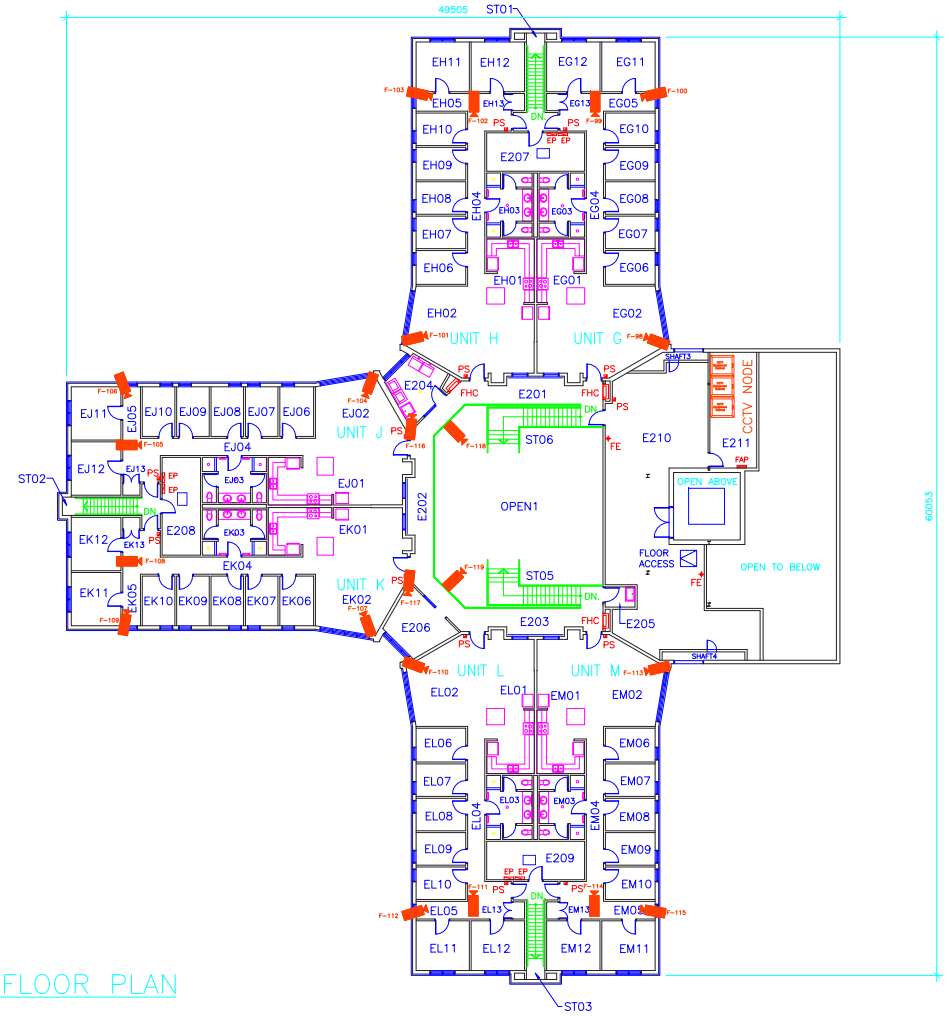
0 2m 10m 20m

FILED: FBE–1Range CCTV
UPDATED: 2010–01–08
PLOT SCALE: 1:300

FBE NON SECURE RESIDENCE (EDGEWOOD)

CCTV PLAN

Cameras F98 to F119



SECOND FLOOR PLAN

ROOM INDEX

E201	CORRIDOR
E202	CORRIDOR
E203	CORRIDOR
E204	LAUNDRY
E205	JANITOR
E206	SOCIAL ROOM
E207	MECHANICAL ROOM
E208	MECHANICAL ROOM
E209	MECHANICAL ROOM
E210	MECHANICAL ROOM
E211	ELECTRICAL ROOM
ST01	STAIR NO.1
ST02	STAIR NO.2
ST03	STAIR NO.3
ST05	STAIR NO.5
ST06	STAIR NO.6

UNIT G

EG01	KITCHEN/EATING AREA
EG02	LIVING ROOM
EG03	WASHROOM
EG04	CORRIDOR
EG05	CORRIDOR
EG06	BEDROOM
EG07	BEDROOM
EG08	BEDROOM
EG09	BEDROOM
EG10	BEDROOM
EG11	BEDROOM
EG12	BEDROOM
EG13	JANITOR

UNIT H

EH01	KITCHEN/EATING AREA
EH02	LIVING ROOM
EH03	WASHROOM
EH04	CORRIDOR
EH05	CORRIDOR
EH06	BEDROOM
EH07	BEDROOM
EH08	BEDROOM
EH09	BEDROOM
EH10	BEDROOM
EH11	BEDROOM
EH12	BEDROOM
EH13	JANITOR

UNIT J

EJ01	KITCHEN/EATING AREA
EJ02	LIVING ROOM
EJ03	WASHROOM
EJ04	CORRIDOR
EJ05	CORRIDOR
EJ06	BEDROOM
EJ07	BEDROOM
EJ08	BEDROOM
EJ09	BEDROOM
EJ10	BEDROOM
EJ11	BEDROOM
EJ12	BEDROOM
EJ13	JANITOR

UNIT K

EK01	KITCHEN/EATING AREA
EK02	LIVING ROOM
EK03	WASHROOM
EK04	CORRIDOR
EK05	CORRIDOR
EK06	BEDROOM
EK07	BEDROOM
EK08	BEDROOM
EK09	BEDROOM
EK10	BEDROOM
EK11	BEDROOM
EK12	BEDROOM
EK13	JANITOR

UNIT L

EL01	KITCHEN/EATING AREA
EL02	LIVING ROOM
EL03	WASHROOM
EL04	CORRIDOR
EL05	CORRIDOR
EL06	BEDROOM
EL07	BEDROOM
EL08	BEDROOM
EL09	BEDROOM
EL10	BEDROOM
EL11	BEDROOM
EL12	BEDROOM
EL13	JANITOR

UNIT M

EM01	KITCHEN/EATING AREA
EM02	LIVING ROOM
EM03	WASHROOM
EM04	CORRIDOR
EM05	CORRIDOR
EM06	BEDROOM
EM07	BEDROOM
EM08	BEDROOM
EM09	BEDROOM
EM10	BEDROOM
EM11	BEDROOM
EM12	BEDROOM
EM13	JANITOR

CCTV INDEX

F-98	EG02
F-99	EG04
F-100	EG05
F-101	EH02
F-102	EH04
F-103	EH05
F-104	EJ02
F-105	EJ04
F-106	EJ05
F-107	EK02
F-108	EK04
F-109	EK05
F-110	EL02
F-111	EL04
F-112	EL05
F-113	EM02
F-114	EM04
F-115	EM05
F-116	E204
F-117	E206
F-118	E202
F-119	E202
CCTV NODE	E211

KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET
- 360 Camera

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

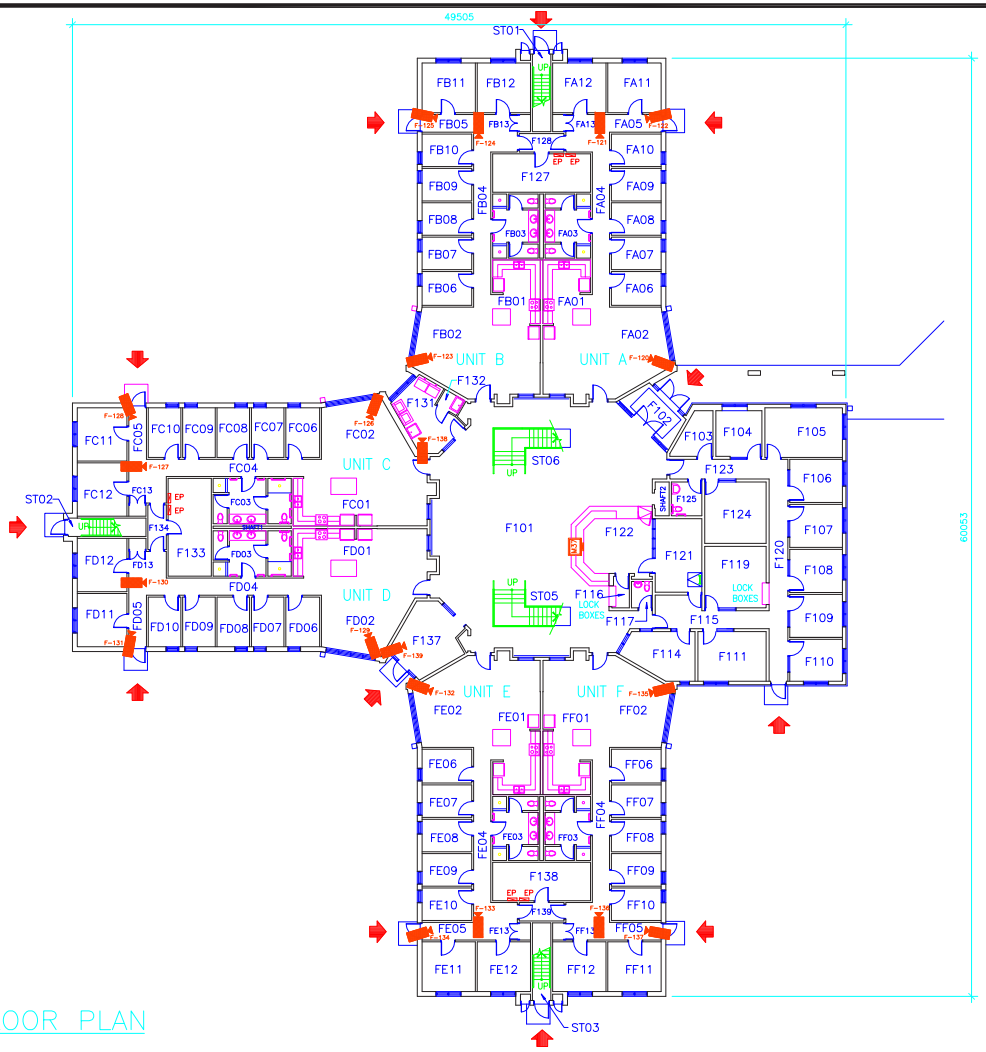
Travaux publics
Services gouvernementaux Canada
Services d'architecture et de genie
Région de l'Ontario

0 2m 10m 20m

FILED:FBE-2 Range CCTV
UPDATED: 2010-01-08
PLOT SCALE: 1:300

FBF NON SECURE RESIDENCE (FALCON)

CCTV PLAN



FIRST FLOOR PLAN

Cameras F120 to F139
Monitor M37

ROOM INDEX

F101	HALL
F102	VESTIBULE
F103	VALVE ROOM
F104	CASE MANAGEMENT
F105	UNIT MANAGER
F106	CASE MANAGEMENT
F107	CASE MANAGEMENT
F108	CASE MANAGEMENT
F109	CASE MANAGEMENT
F110	PAROLE OFFICER
F111	UNIT ASSISTANT
F114	CORRECTIONAL SUPERVISOR
F115	CORRIDOR
F116	MAIL
F117	WASHROOM
F119	UNIT CLERK
F120	CORRIDOR
F121	CORR. OFFICER WORK AREA
F122	CONTROL/RECEPTION DESK
F123	CORRIDOR
F124	BOARDROOM
F125	H.C. WASHROOM
F127	MECHANICAL ROOM
F128	VESTIBULE
F131	LAUNDRY ROOM
F132	JANITOR
F133	MECHANICAL ROOM
F134	VESTIBULE
F137	VESTIBULE
F138	MECHANICAL ROOM
F139	VESTIBULE
ST01	STAIR NO.1
ST02	STAIR NO.2
ST03	STAIR NO.3
ST05	STAIR NO.5
ST06	STAIR NO.6

CCTV INDEX

F-120	FA02
F-121	FA04
F-122	FA05
F-123	FB02
F-124	FB04
F-125	FB05
F-126	FC02
F-127	FC04
F-128	FC05
F-129	FD02
F-130	FD04
F-131	FD05
F-132	FE02
F-133	FE04
F-134	FE05
F-135	FF02
F-136	FF04
F-137	FF05
F-138	F131
F-139	F137
M37	F122

UNIT A

FA01	KITCHEN/EATING AREA
FA02	LIVING ROOM
FA03	WASHROOM
FA04	CORRIDOR
FA05	CORRIDOR
FA06	BEDROOM
FA07	BEDROOM
FA08	BEDROOM
FA09	BEDROOM
FA10	BEDROOM
FA11	BEDROOM
FA12	BEDROOM
FA13	JANITOR

UNIT B

FB01	KITCHEN/EATING AREA
FB02	LIVING ROOM
FB03	WASHROOM
FB04	CORRIDOR
FB05	CORRIDOR
FB06	BEDROOM
FB07	BEDROOM
FB08	BEDROOM
FB09	BEDROOM
FB10	BEDROOM
FB11	BEDROOM
FB12	BEDROOM
FB13	JANITOR

UNIT C

FC01	KITCHEN/EATING AREA
FC02	LIVING ROOM
FC03	WASHROOM
FC04	CORRIDOR
FC05	CORRIDOR
FC06	BEDROOM
FC07	BEDROOM
FC08	BEDROOM
FC09	BEDROOM
FC10	BEDROOM
FC11	BEDROOM
FC12	BEDROOM
FC13	JANITOR

UNIT D

FD01	KITCHEN/EATING AREA
FD02	LIVING ROOM
FD03	WASHROOM
FD04	CORRIDOR
FD05	CORRIDOR
FD06	BEDROOM
FD07	BEDROOM
FD08	BEDROOM
FD09	BEDROOM
FD10	BEDROOM
FD11	BEDROOM
FD12	BEDROOM
FD13	JANITOR

UNIT E

FE01	KITCHEN/EATING AREA
FE02	LIVING ROOM
FE03	WASHROOM
FE04	CORRIDOR
FE05	CORRIDOR
FE06	BEDROOM
FE07	BEDROOM
FE08	BEDROOM
FE09	BEDROOM
FE10	BEDROOM
FE11	BEDROOM
FE12	BEDROOM
FE13	JANITOR

UNIT F

FF01	KITCHEN/EATING AREA
FF02	LIVING ROOM
FF03	WASHROOM
FF04	CORRIDOR
FF05	CORRIDOR
FF06	BEDROOM
FF07	BEDROOM
FF08	BEDROOM
FF09	BEDROOM
FF10	BEDROOM
FF11	BEDROOM
FF12	BEDROOM
FF13	JANITOR

KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET
- 360 Camera

Public Works
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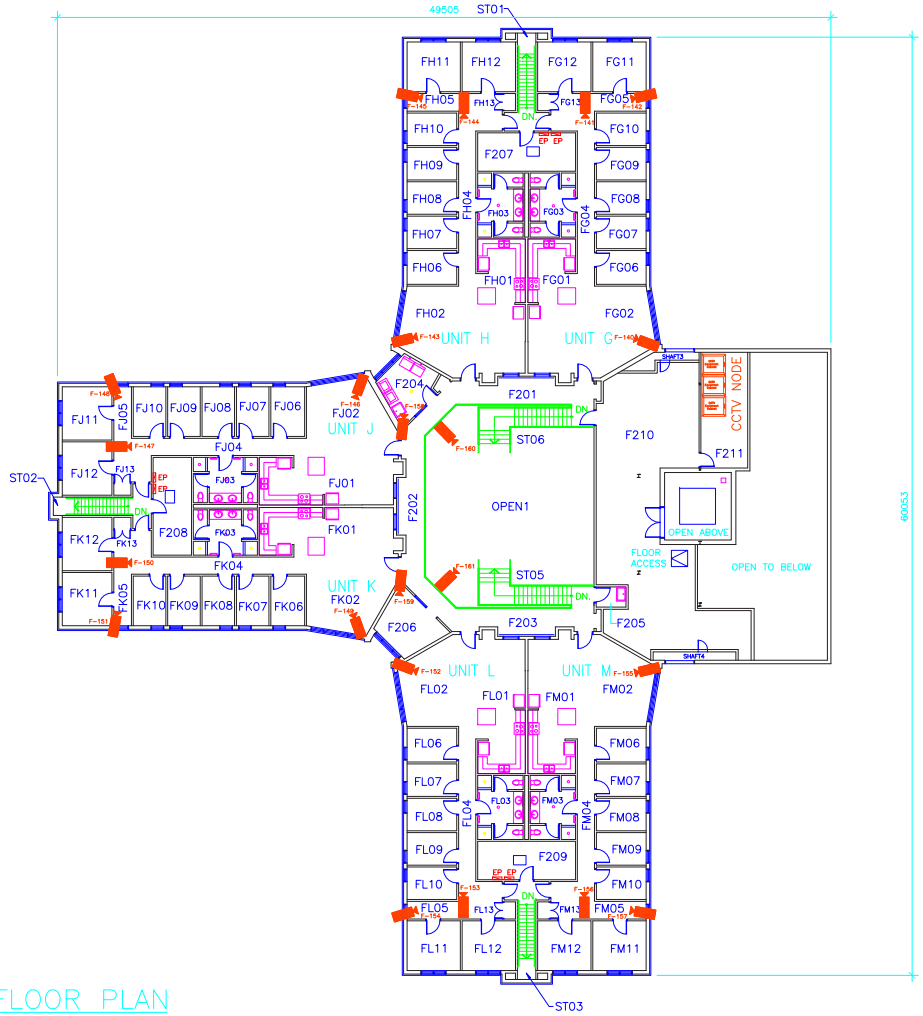
Région de l'Ontario

0 2m 10m 20m

FILED:FBF-1 Range CCTV
UPDATED: 2010-01-08
PLOT SCALE: 1:300

Cameras F140 to F161



ROOM INDEX

F201	CORRIDOR
F202	CORRIDOR
F203	CORRIDOR
F204	LAUNDRY
F205	JANITOR
F206	SOCIAL ROOM
F207	MECHANICAL ROOM
F208	MECHANICAL ROOM
F209	MECHANICAL ROOM
F210	MECHANICAL ROOM
F211	ELECTRICAL ROOM
ST01	STAIR NO.1
ST02	STAIR NO.2
ST03	STAIR NO.3
ST05	STAIR NO.5
ST06	STAIR NO.6

UNIT G

FG01	KITCHEN/EATING AREA
FG02	LIVING ROOM
FG03	WASHROOM
FG04	CORRIDOR
FG05	CORRIDOR
FG06	BEDROOM
FG07	BEDROOM
FG08	BEDROOM
FG09	BEDROOM
FG10	BEDROOM
FG11	BEDROOM
FG12	BEDROOM
FG13	JANITOR

UNIT H

FH01	KITCHEN/EATING AREA
FH02	LIVING ROOM
FH03	WASHROOM
FH04	CORRIDOR
FH05	CORRIDOR
FH06	BEDROOM
FH07	BEDROOM
FH08	BEDROOM
FH09	BEDROOM
FH10	BEDROOM
FH11	BEDROOM
FH12	BEDROOM
FH13	JANITOR

UNIT J

FJ01	KITCHEN/EATING AREA
FJ02	LIVING ROOM
FJ03	WASHROOM
FJ04	CORRIDOR
FJ05	CORRIDOR
FJ06	BEDROOM
FJ07	BEDROOM
FJ08	BEDROOM
FJ09	BEDROOM
FJ10	BEDROOM
FJ11	BEDROOM
FJ12	BEDROOM
FJ13	JANITOR

UNIT K

FK01	KITCHEN/EATING AREA
FK02	LIVING ROOM
FK03	WASHROOM
FK04	CORRIDOR
FK05	CORRIDOR
FK06	BEDROOM
FK07	BEDROOM
FK08	BEDROOM
FK09	BEDROOM
FK10	BEDROOM
FK11	BEDROOM
FK12	BEDROOM
FK13	JANITOR

UNIT L

FL01	KITCHEN/EATING AREA
FL02	LIVING ROOM
FL03	WASHROOM
FL04	CORRIDOR
FL05	CORRIDOR
FL06	BEDROOM
FL07	BEDROOM
FL08	BEDROOM
FL09	BEDROOM
FL10	BEDROOM
FL11	BEDROOM
FL12	BEDROOM
FL13	JANITOR

UNIT M

FM01	KITCHEN/EATING AREA
FM02	LIVING ROOM
FM03	WASHROOM
FM04	CORRIDOR
FM05	CORRIDOR
FM06	BEDROOM
FM07	BEDROOM
FM08	BEDROOM
FM09	BEDROOM
FM10	BEDROOM
FM11	BEDROOM
FM12	BEDROOM
FM13	JANITOR

CCTV INDEX

F-140	FG02
F-141	FG04
F-142	FG05
F-143	FH02
F-144	FH04
F-145	FH05
F-146	FJ02
F-147	FJ04
F-148	FJ05
F-149	FK02
F-150	FK04
F-151	FK05
F-152	FL02
F-153	FL04
F-154	FL05
F-155	FM02
F-156	FM04
F-157	FM05
F-158	F204
F-159	F206
F-160	F202
F-161	F202
CCTV NODE	F211

KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET
- 360 Camera

SECOND FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

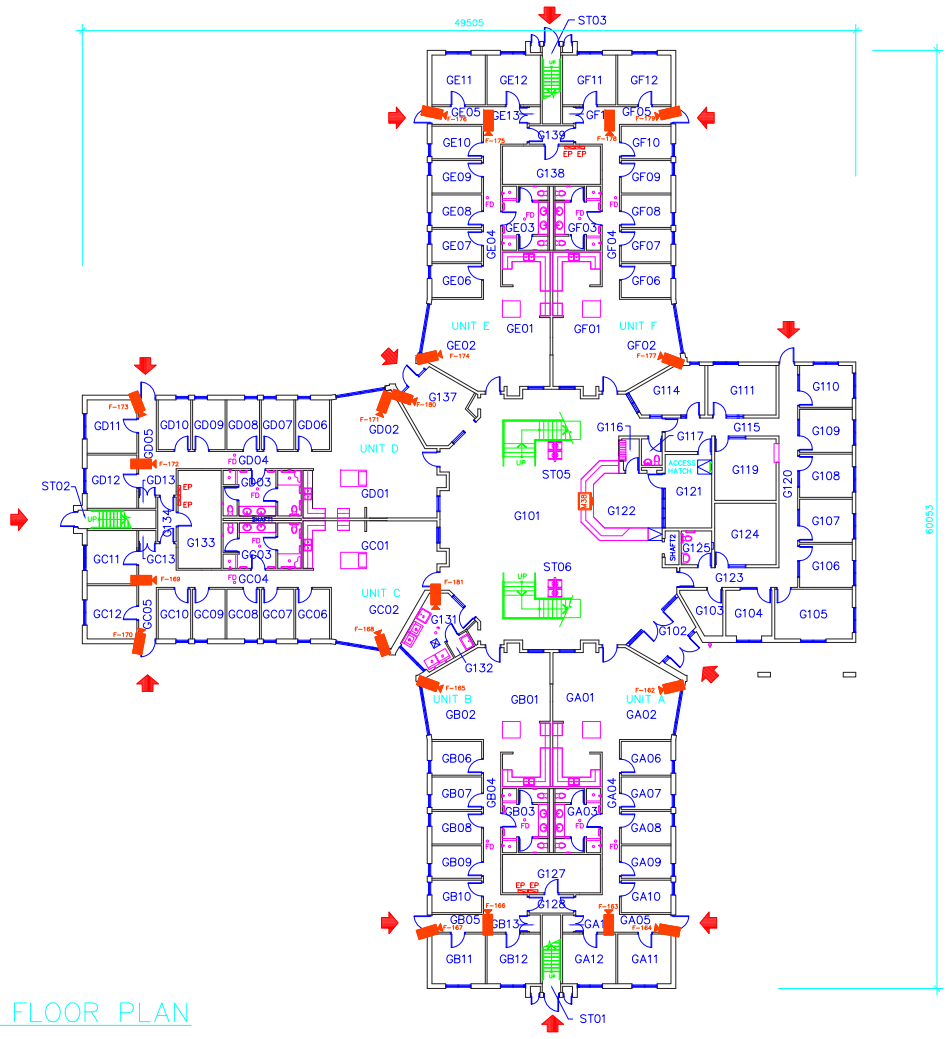
Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

0 2m 10m 20m

FILED:FBF-2 Range CCTV
UPDATED: 2010-01-08
PLOT SCALE: 1:300

FBG NON SECURE RESIDENTIAL (GRANITE)

CCTV PLAN



ROOM INDEX

G101 – HALL
G102 – VESTIBULE
G103 – VALVE ROOM
G104 – CASE MANAGEMENT
G105 – UNIT MANAGER
G106 – CASE MANAGEMENT
G107 – CASE MANAGEMENT
G108 – CASE MANAGEMENT
G109 – CASE MANAGEMENT
G110 – PSYCHOLOGIST
G111 – UNIT ASSISSTANT
G114 – CORRECTIONAL SUPERVISOR
G115 – CORRIDOR
G116 – MAIL
G117 – WASHROOM
G119 – UNIT CLERK
G120 – CORRIDOR
G121 – CORR. OFFICER WORK AREA
G122 – CONTROL/RECEPT'N DESK
G123 – CORRIDOR
G124 – BOARDROOM
G125 – HANDICAP WASHROOM
G127 – MECHANICAL ROOM
G128 – VESTIBULE
G131 – LAUNDRY
G132 – JANITOR
G133 – MECHANICAL ROOM
G134 – VESTIBULE
G137 – VESTIBULE
G138 – MECHANICAL ROOM
G139 – VESTIBULE
ST01 – STAIR NO.1
ST02 – STAIR NO. 2
ST03 – STAIR NO. 3
ST05 – STAIR NO. 5
ST06 – STAIR NO. 6

CCTV INDEX

F–162 GA02
F–163 GA04
F–164 GA05
F–165 GB02
F–166 GB04
F–167 GB05
F–168 GC02
F–169 GC04
F–170 GC05
F–171 GD02
F–172 GD04
F–173 GD05
F–174 GE02
F–175 GE04
F–176 GE05
F–177 GF02
F–178 GF04
F–179 GF05
F–180 G137
F–181 G131
M38 G122

UNIT A

GA01 – KITCHEN/EATING AREA
GA02 – LIVING ROOM
GA03 – WASHROOM
GA04 – CORRIDOR
GA05 – CORRIDOR
GA06 – BEDROOM
GA07 – BEDROOM
GA08 – BEDROOM
GA09 – BEDROOM
GA10 – BEDROOM
GA11 – BEDROOM
GA12 – BEDROOM
GA13 – JANITOR

UNIT B

GB01 – KITCHEN/EATING AREA
GB02 – LIVING ROOM
GB03 – WASHROOM
GB04 – CORRIDOR
GB05 – CORRIDOR
GB06 – BEDROOM
GB07 – BEDROOM
GB08 – BEDROOM
GB09 – BEDROOM
GB10 – BEDROOM
GB11 – BEDROOM
GB12 – BEDROOM
GB13 – JANITOR

UNIT C

GC01 – KITCHEN/EATING AREA
GC02 – LIVING ROOM
GC03 – WASHROOM
GC04 – CORRIDOR
GC05 – CORRIDOR
GC06 – BEDROOM
GC07 – BEDROOM
GC08 – BEDROOM
GC09 – BEDROOM
GC10 – BEDROOM
GC11 – BEDROOM
GC12 – BEDROOM
GC13 – JANITOR

KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET
360 Camera

Cameras F162 to F181
Monitor 38

UNIT D

GD01 – KITCHEN/EATING AREA
GD02 – LIVING ROOM
GD03 – WASHROOM
GD04 – CORRIDOR
GD05 – CORRIDOR
GD06 – BEDROOM
GD07 – BEDROOM
GD08 – BEDROOM
GD09 – BEDROOM
GD10 – BEDROOM
GD11 – BEDROOM
GD12 – BEDROOM
GD13 – JANITOR

UNIT E

GE01 – KITCHEN/EATING AREA
GE02 – LIVING ROOM
GE03 – WASHROOM
GE04 – CORRIDOR
GE05 – CORRIDOR
GE06 – BEDROOM
GE07 – BEDROOM
GE08 – BEDROOM
GE09 – BEDROOM
GE10 – BEDROOM
GE11 – BEDROOM
GE12 – BEDROOM
GE13 – JANITOR

UNIT F

GF01 – KITCHEN/EATING AREA
GF02 – LIVING ROOM
GF03 – WASHROOM
GF04 – CORRIDOR
GF05 – CORRIDOR
GF06 – BEDROOM
GF07 – BEDROOM
GF08 – BEDROOM
GF09 – BEDROOM
GF10 – BEDROOM
GF11 – BEDROOM
GF12 – BEDROOM
GF13 – JANITOR

FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
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Région de l'Ontario

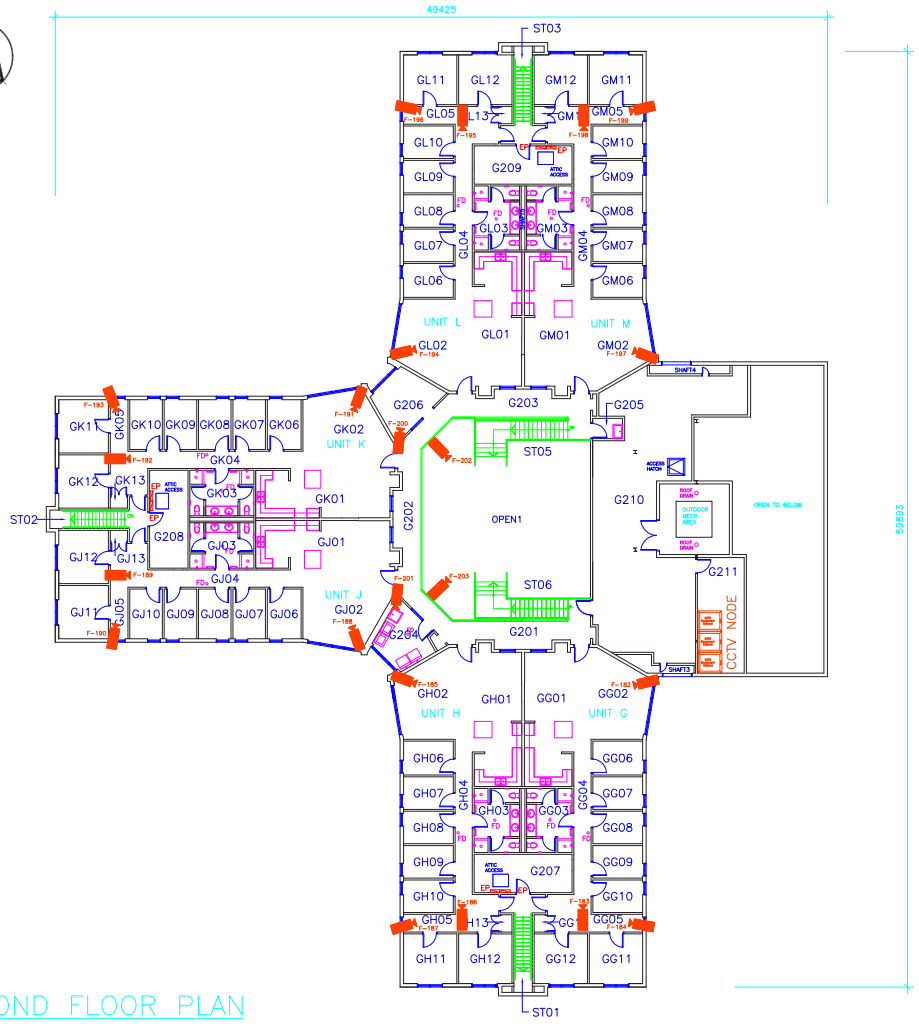
0 2m 10m 20m

FILED:FBG–1 Range CCTV
UPDATED: 2010–01–08
PLOT SCALE: 1:300

FBG NON SECURE RESIDENTIAL (GRANITE)

CCTV PLAN

Cameras F182 to F203



ROOM INDEX

G201 – OPEN CORRIDOR
G202 – OPEN CORRIDOR
G203 – OPEN CORRIDOR
G204 – LAUNDRY
G205 – JANITOR
G206 – SOCIAL ROOM
G207 – MECHANICAL ROOM
G208 – MECHANICAL ROOM
G209 – MECHANICAL ROOM
G210 – MECHANICAL ROOM
G211 – ELECTRICAL ROOM

ST01 – STAIR NO.1
ST02 – STAIR NO. 2
ST03 – STAIR NO. 3
ST05 – STAIR NO. 5
ST06 – STAIR NO. 6

CCTV INDEX

F–182 GG02
F–183 GG04
F–184 GG05
F–185 GH02
F–186 GH04
F–187 GH05
F–188 GJ02
F–189 GJ04
F–190 GJ05
F–191 GK02
F–192 GK04
F–193 GK05
F–194 GL02
F–195 GL04
F–196 GL05
F–197 GM02
F–198 GM04
F–199 GM05
F–200 G204
F–201 G206
F–202 G202
F–203 G202
CCTV NODE G211

KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET
360 Camera

UNIT G

GG01 – KITCHEN/EATING AREA
GG02 – LIVING ROOM
GG03 – WASHROOM
GG04 – CORRIDOR
GG05 – CORRIDOR
GG06 – BEDROOM
GG07 – BEDROOM
GG08 – BEDROOM
GG09 – BEDROOM
GG10 – BEDROOM
GG11 – BEDROOM
GG12 – BEDROOM
GG13 – JANITOR

UNIT H

GH01 – KITCHEN/EATING AREA
GH02 – LIVING ROOM
GH03 – WASHROOM
GH04 – CORRIDOR
GH05 – CORRIDOR
GH06 – BEDROOM
GH07 – BEDROOM
GH08 – BEDROOM
GH09 – BEDROOM
GH10 – BEDROOM
GH11 – BEDROOM
GH12 – BEDROOM
GH13 – JANITOR

UNIT J

GJ01 – KITCHEN/EATING AREA
GJ02 – LIVING ROOM
GJ03 – WASHROOM
GJ04 – CORRIDOR
GJ05 – CORRIDOR
GJ06 – BEDROOM
GJ07 – BEDROOM
GJ08 – BEDROOM
GJ09 – BEDROOM
GJ10 – BEDROOM
GJ11 – BEDROOM
GJ12 – BEDROOM
GJ13 – JANITOR

UNIT K

GK01 – KITCHEN/EATING AREA
GK02 – LIVING ROOM
GK03 – WASHROOM
GK04 – CORRIDOR
GK05 – CORRIDOR
GK06 – BEDROOM
GK07 – BEDROOM
GK08 – BEDROOM
GK09 – BEDROOM
GK10 – BEDROOM
GK11 – BEDROOM
GK12 – BEDROOM
GK13 – JANITOR

UNIT L

GL01 – KITCHEN/EATING AREA
GL02 – LIVING ROOM
GL03 – WASHROOM
GL04 – CORRIDOR
GL05 – CORRIDOR
GL06 – BEDROOM
GL07 – BEDROOM
GL08 – BEDROOM
GL09 – BEDROOM
GL10 – BEDROOM
GL11 – BEDROOM
GL12 – BEDROOM
GL13 – JANITOR

UNIT M

GM01 – KITCHEN/EATING AREA
GM02 – LIVING ROOM
GM03 – WASHROOM
GM04 – CORRIDOR
GM05 – CORRIDOR
GM06 – BEDROOM
GM07 – BEDROOM
GM08 – BEDROOM
GM09 – BEDROOM
GM10 – BEDROOM
GM11 – BEDROOM
GM12 – BEDROOM
GM13 – JANITOR

SECOND FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

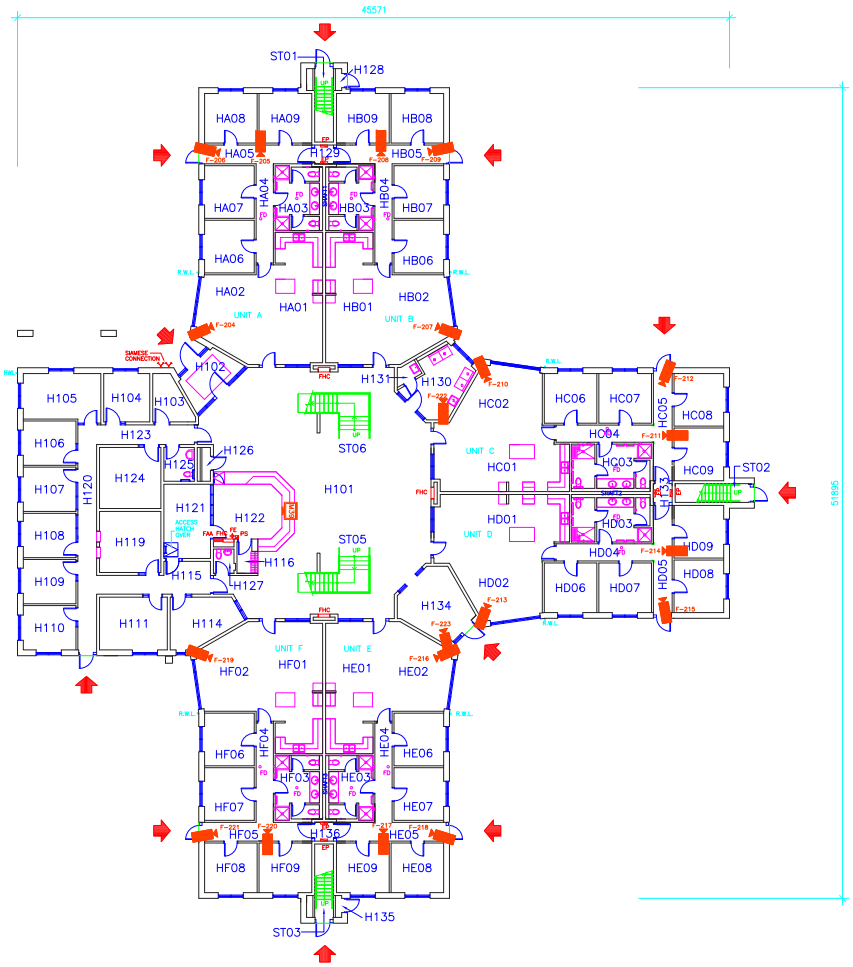
Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

0 2m 10m 20m

FILED:FBG–2 Range CCTV
UPDATED: 2010–01–08
PLOT SCALE: 1:300

FBH SECURE RESIDENCE (HORIZON)

CCTV PLAN



ROOM INDEX

H101 – HALL
H102 – VESTIBULE
H103 – VALVE ROOM
H104 – CASE MANAGEMENT
H105 – UNIT MANAGER
H106 – CASE MANAGEMENT
H107 – CASE MANAGEMENT
H108 – CASE MANAGEMENT
H109 – CASE MANAGEMENT
H110 – PSYCHOLOGIST
H111 – UNIT ASSISSTANT
H114 – CORRECTIONAL SUPERVISOR
H115 – CORRIDOR
H116 – MAIL
H119 – UNIT CLERK
H120 – CORRIDOR
H121 – CORR. OFFICER WORK AREA
H122 – CONTROL/RECEPT'N DESK
H123 – CORRIDOR
H124 – BOARDROOM
H125 – HANDICAP WASHROOM
H126 – EQUIPMENT CLOSET
H127 – WASHROOM
H128 – VALVE CLOSET
H129 – VESTIBULE
H130 – LAUNDRY
H131 – JANITOR
H133 – VESTIBULE
H134 – VESTIBULE
H135 – VALVE CLOSET
H136 – VESTIBULE
ST01 – STAIR NO.1
ST02 – STAIR NO. 2
ST03 – STAIR NO. 3
ST05 – STAIR NO. 5
ST06 – STAIR NO. 6

CCTV INDEX

F–204 HA02
F–205 HA04
F–206 HA05
F–207 HB02
F–208 HB04
F–209 HB05
F–210 HC02
F–211 HC04
F–212 HC05
F–213 HD02
F–214 HD04
F–215 HD05
F–216 HE02
F–217 HE04
F–218 HE05
F–219 HF02
F–220 HF04
F–221 HF05
F–222 H130
F–223 H134
M39 G122

UNIT A

HA01 – KITCHEN/EATING AREA
HA02 – LIVING ROOM
HA03 – WASHROOM
HA04 – CORRIDOR
HA05 – CORRIDOR
HA06 – BEDROOM
HA07 – BEDROOM
HA08 – BEDROOM
HA09 – BEDROOM

UNIT B

HB01 – KITCHEN/EATING AREA
HB02 – LIVING ROOM
HB03 – WASHROOM
HB04 – CORRIDOR
HB05 – CORRIDOR
HB06 – BEDROOM
HB07 – BEDROOM
HB08 – BEDROOM
HB09 – BEDROOM

UNIT C

HC01 – KITCHEN/EATING AREA
HC02 – LIVING ROOM
HC03 – WASHROOM
HC04 – CORRIDOR
HC05 – CORRIDOR
HC06 – BEDROOM
HC07 – BEDROOM
HC08 – BEDROOM
HC09 – BEDROOM

Cameras F204 to F223
Monitor M39

UNIT E

HE01 – KITCHEN/EATING AREA
HE02 – LIVING ROOM
HE03 – WASHROOM
HE04 – CORRIDOR
HE05 – CORRIDOR
HE06 – BEDROOM
HE07 – BEDROOM
HE08 – BEDROOM
HE09 – BEDROOM

UNIT F

HF01 – KITCHEN/EATING AREA
HF02 – LIVING ROOM
HF03 – WASHROOM
HF04 – CORRIDOR
HF05 – CORRIDOR
HF06 – BEDROOM
HF07 – BEDROOM
HF08 – BEDROOM
HF09 – BEDROOM

UNIT D

HD01 – KITCHEN/EATING AREA
HD02 – LIVING ROOM
HD03 – WASHROOM
HD04 – CORRIDOR
HD05 – CORRIDOR
HD06 – BEDROOM
HD07 – BEDROOM
HD08 – BEDROOM
HD09 – BEDROOM

KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET
360 Camera

FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

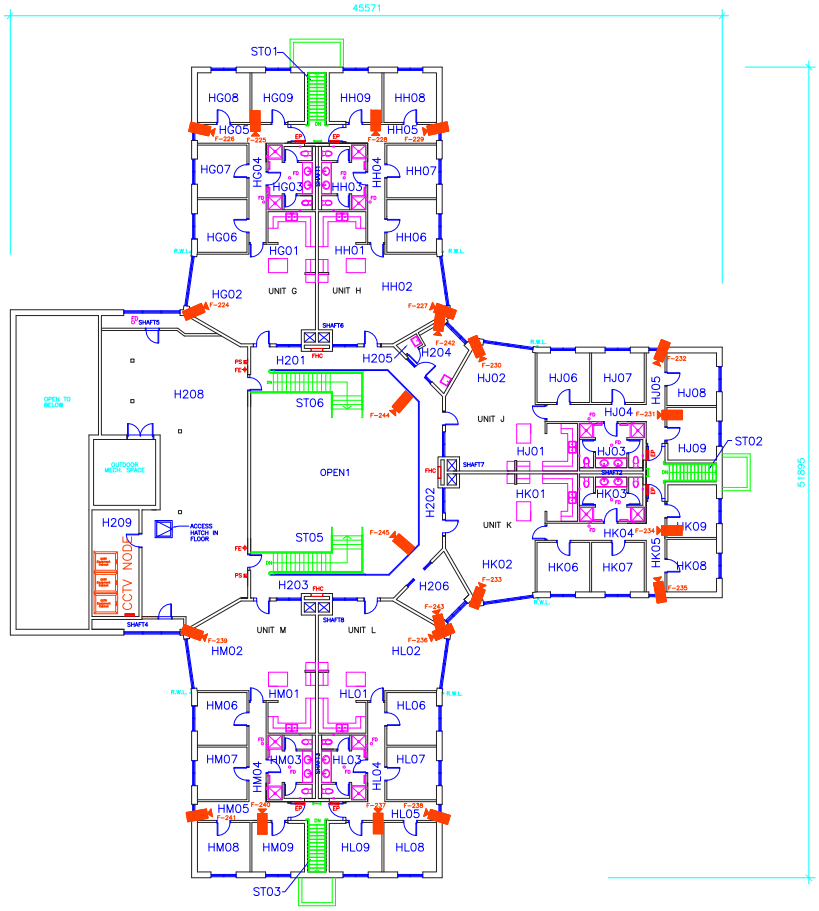
0 2m 10m 20m

FILED:FBH–1 Range CCTV
UPDATED: 2010–01–08
PLOT SCALE: 1:300

FBH SECURE RESIDENCE (HORIZON)

CCTV PLAN

Cameras F224 to F245



ROOM INDEX

H201 – OPEN CORRIDOR
H202 – OPEN CORRIDOR
H203 – OPEN CORRIDOR
H204 – LAUNDRY
H205 – JANITOR CLOSET
H206 – SOCIAL ROOM
H208 – MECHANICAL ROOM
H209 – ELECT. EQUIPMENT ROOM

ST01 – STAIR NO.1
ST02 – STAIR NO. 2
ST03 – STAIR NO. 3
ST05 – STAIR NO. 5
ST06 – STAIR NO. 6

CCTV INDEX

F–224 HG02
F–225 HG04
F–226 HG05
F–227 HH02
F–228 HH04
F–229 HH05
F–230 HJ02
F–231 HJ04
F–232 HJ05
F–233 HK02
F–234 HK04
F–235 HK05
F–236 HL02
F–237 HL04
F–238 HL05
F–239 HM02
F–240 HM04
F–241 HM05
F–242 H204
F–243 H206
F–244 H202
F–245 H202
CCTV NODE H209

KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET
360 Camera

UNIT G

HG01 – KITCHEN/EATING AREA
HG02 – LIVING ROOM
HG03 – WASHROOM
HG04 – CORRIDOR
HG05 – CORRIDOR
HG06 – BEDROOM
HG07 – BEDROOM
HG08 – BEDROOM
HG09 – BEDROOM

UNIT H

HH01 – KITCHEN/EATING AREA
HH02 – LIVING ROOM
HH03 – WASHROOM
HH04 – CORRIDOR
HH05 – CORRIDOR
HH06 – BEDROOM
HH07 – BEDROOM
HH08 – BEDROOM
HH09 – BEDROOM

UNIT J

HJ01 – KITCHEN/EATING AREA
HJ02 – LIVING ROOM
HJ03 – WASHROOM
HJ04 – CORRIDOR
HJ05 – CORRIDOR
HJ06 – BEDROOM
HJ07 – BEDROOM
HJ08 – BEDROOM
HJ09 – BEDROOM

UNIT K

HK01 – KITCHEN/EATING AREA
HK02 – LIVING ROOM
HK03 – WASHROOM
HK04 – CORRIDOR
HK05 – CORRIDOR
HK06 – BEDROOM
HK07 – BEDROOM
HK08 – BEDROOM
HK09 – BEDROOM

UNIT L

HL01 – KITCHEN/EATING AREA
HL02 – LIVING ROOM
HL03 – WASHROOM
HL04 – CORRIDOR
HL05 – CORRIDOR
HL06 – BEDROOM
HL07 – BEDROOM
HL08 – BEDROOM
HL09 – BEDROOM

UNIT M

HM01 – KITCHEN/EATING AREA
HM02 – LIVING ROOM
HM03 – WASHROOM
HM04 – CORRIDOR
HM05 – CORRIDOR
HM06 – BEDROOM
HM07 – BEDROOM
HM08 – BEDROOM
HM09 – BEDROOM

SECOND FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

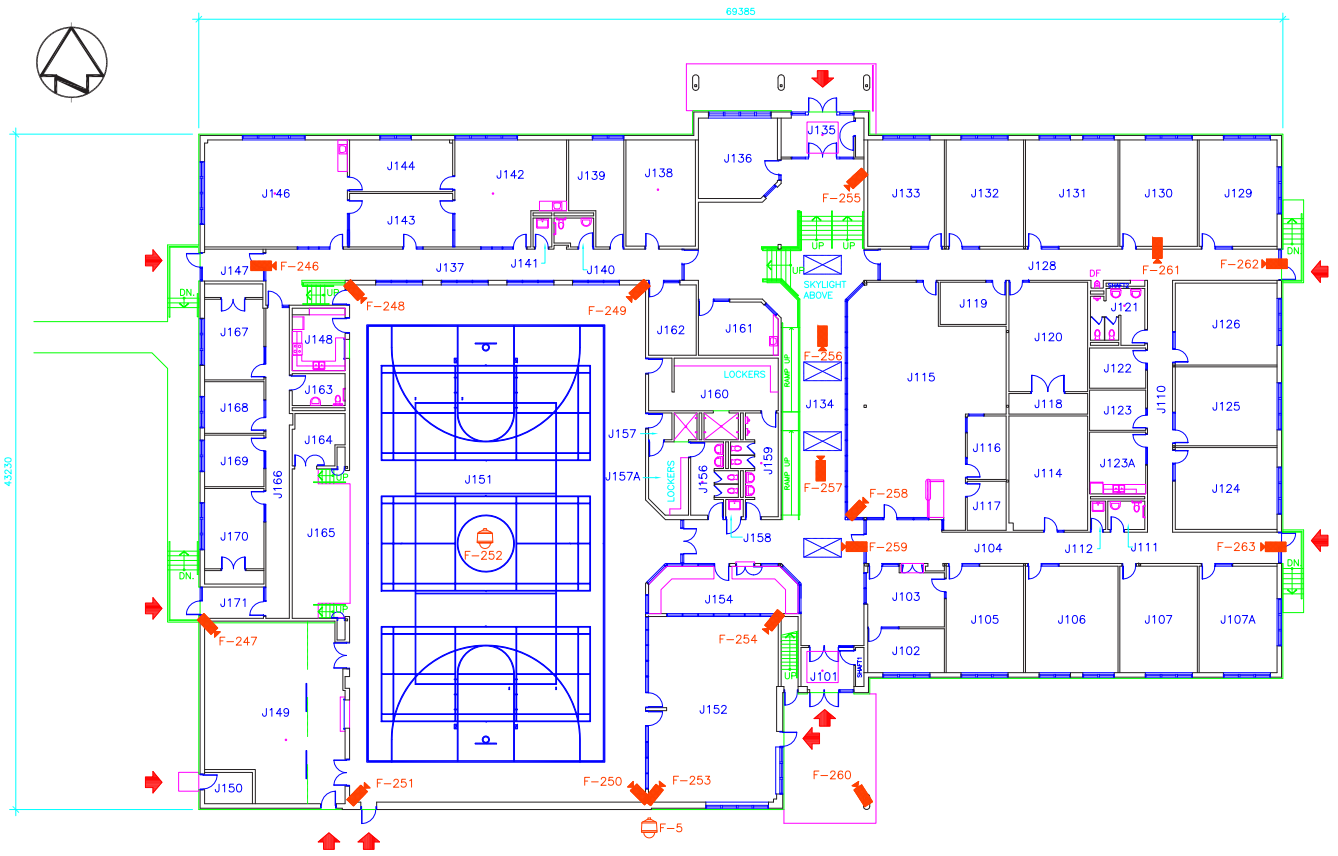
Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

0 2m 10m 20m

FILED:FBH–2 Range CCTV
UPDATED: 2010–01–08
PLOT SCALE: 1:300

FBJ PROGRAMS (JUNIPER)

CCTV PLAN



ROOM INDEX

J101	MAIN ENTRY	J143	HC SOCIAL DEVELOPMENT OFFICE
J102	CCM PROGRAMS	J144	A&C/HOBBYCRAFT STORAGE
J103	PROGRAM DELIVERY OFFICE	J146	HC/WOODWORKING SHOP
J104	CORRIDOR	J147	VESTIBULE
J105	CLASSROOM	J148	KITCHEN
J106	CLASSROOM	J149	EQUIP'T/CHAIR STORAGE
J107	ED./PROG. DELIVERY	J150	VALVE ROOM
J107A	CLASSROOM	J151	GYMNASIUM
J110	CORRIDOR	J152	EXERCISE ROOM
J111	WOMENS/HC WASHROOM	J154	RECREATION OFFICER
J112	JANITOR	J156	WOMEN'S WASHROOM
J114	CLASSROOM	J157	WOMEN'S CHANGE VESTIBULE
J115	RESOURCE CENTRE	J157A	WOMEN VISITOR CHANGE/SHOWER
J116	LIBRARIAN'S OFFICE	J158	JANITOR
J117	BOOK CONTROL	J159	MEN'S WASHROOM
J118	STORAGE	J160	MEN VISITOR CHANGE/SHOWER
J119	TEACHER'S OFFICE	J161	BARBER SHOP
J120	CLASSROOM	J162	PEER HEALTH COUNSELLING
J121	MENS WASHROOM	J163	HC WASHROOM
J122	PRINCIPAL'S OFFICE	J164	SIDE STAGE
J123	EDUCATION CLERK'S OFFICE	J165	STAGE
J123A	STAFF LOUNGE	J166	CORRIDOR
J124	CLASSROOM	J167	OFFICE
J125	CLASSROOM	J168	OFFICE
J126	CLASSROOM	J169	PROG. DELIVERY OFFICE
J128	CORRIDOR	J170	KEEPER/CORRECTIONAL SUPERVISOR
J129	CLASSROOM	J171	VESTIBULE
J130	ED./PROG. DELIVERY	ST01	STAIR NO.1
J131	CLASSROOM		
J132	CLASSROOM		
J133	CLASSROOM		
J134	INDOOR COMMONS		
J135	VESTIBULE		
J136	INMATE COMMITTEE		
J137	CORRIDOR		
J138	STORAGE		
J139	LIFELINE ROOM		
J140	HC WASHROOM		
J141	STORAGE/JANITORIAL		
J142	ARTS & CRAFTS STUDIO		

KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET
- 360 Camera

Cameras F246 to F263

CCTV INDEX

F-5 OUTDOOR PTZ
F-246 J137
F-247 J149
F-248 J151
F-249 J151
F-250 J151
F-251 J151
F-252 J151
F-253 J152
F-254 J152
F-255 J134
F-256 J134
F-257 J134
F-258 J115
F-259 J158
F-260 OUTSIDE SOUTH EXIT
F-261 J128
F-262 J128
F-263 J112

FIRST FLOOR PLAN

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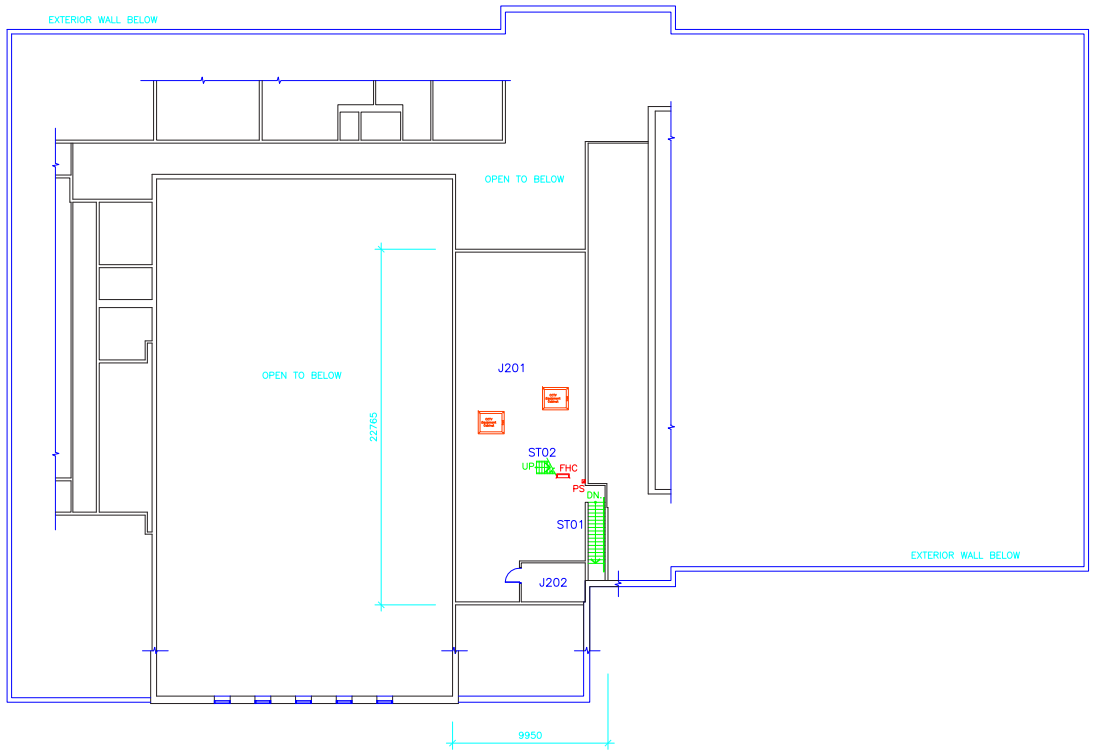
0 2m 10m 20m

FILED:FBJ-1 Range CCTV
UPDATED: 2010-01-08
PLOT SCALE: 1:300



ROOM INDEX

J201	MECHANICAL ROOM
J202	ELECTRICAL ROOM
ST01	STAIR NO.1
ST02	STAIR NO.2

CCTV INDEX

CCTV Node J201

KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET
- 360 Camera

MECHANICAL ROOM FLOOR PLAN

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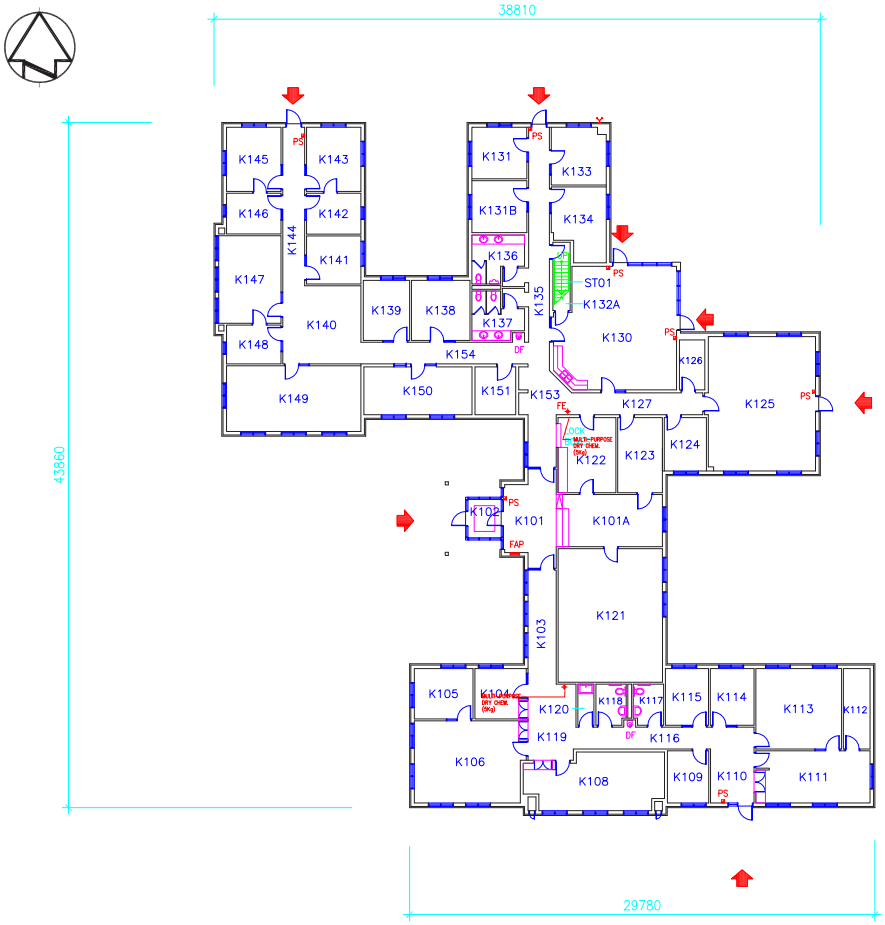
Services d'architecture et de génie
Région de l'Ontario

0 2m 10m 20m

FILED: S:\...\FBJ-M.DWG
UPDATED: 2001-11-16
PLOT SCALE: 1:300

FBK ADMINISTRATION (KATIMAVIK)

CCTV PLAN



ROOM INDEX

K101 ENTRY/RECEPTION
K101A OFFICE
K102 VESTIBULE
K103 CORRIDOR
K104 UNION OFFICE
K105 SENTENCE MANAGEMENT
K106 SENTENCE MANAGEMENT
K108 STAFF TRAINING OFFICE
K109 INFORMATICS OFFICER
K110 WAITING
K111 INFORMATICS OFFICER
K112 STORAGE
K113 INFORMATICS OFFICER
K114 INFORMATICS OFFICER
K115 INFORMATICS OFFICER
K116 CORRIDOR
K117 MEN'S HC WASHROOM
K118 WOMEN'S HC WASHROOM
K119 CUSTOMER SERVICE AREA
K120 JANITOR
K121 REGISTRY
K122 MAIL ROOM/OFFICE SUPPLIES
K123 ADMINISTRATION SERVICES
K124 ADMINISTRATION SERVICES
K125 MULTI-PURPOSE WORK SPACE
K126 VALVE ROOM
K127 CORRIDOR
K130 STAFF LOUNGE/KIT./MEETING
K131 WORKS OFFICE
K131B CHIEF ADMIN. SERVICES
K132A STORAGE
K133 CPM OFFICE
K134 FMO OFFICER
K135 CORRIDOR
K136 MEN'S WASHROOM
K137 WOMEN'S WASHROOM
K138 C.I.T. ADVISOR
K139 COMMUNITY LIASON
K140 WAITING
K141 PRIVATE LIASON OFFICE
K142 ADMINISTRATOR OFFICER
K143 ASSOCIATE WARDEN
K144 CORRIDOR
K145 DEPUTY WARDEN
K146 CLERK TO DEPUTY WARDEN
K147 WARDEN'S OFFICE
K148 SECRETARY
K149 BOARD ROOM
K150 VOLUNTEER OFFICE/CITIZEN'S ADV. COMM.
K151 ELECTRICAL ROOM
K153 CORRIDOR
K154 CORRIDOR
ST01 STAIR NO.1

KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET
360 Camera

FIRST FLOOR PLAN

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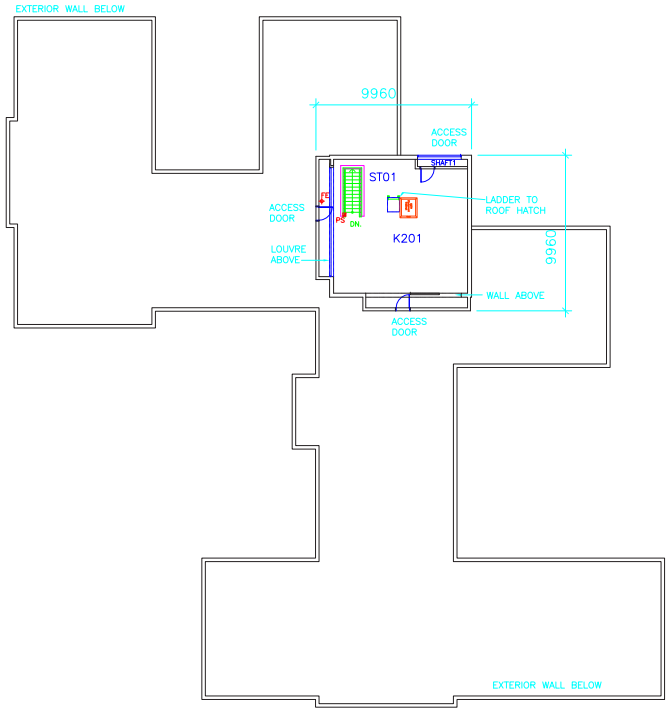
0 2m 10m 20m

FILED: S:\...\FBK-1.DWG
UPDATED: 2001-11-16
PLOT SCALE: 1:300

FBK ADMINISTRATION (KATIMAVIK)

CCTV PLAN



ROOM INDEX

K201 MECHANICAL ROOM
ST01 STAIR NO.1

CCTV INDEX

K201 CCTV NODE

KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET
- 360 Camera

MECHANICAL ROOM FLOOR PLAN

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Services d'architecture et de genie
Region de l'Ontario

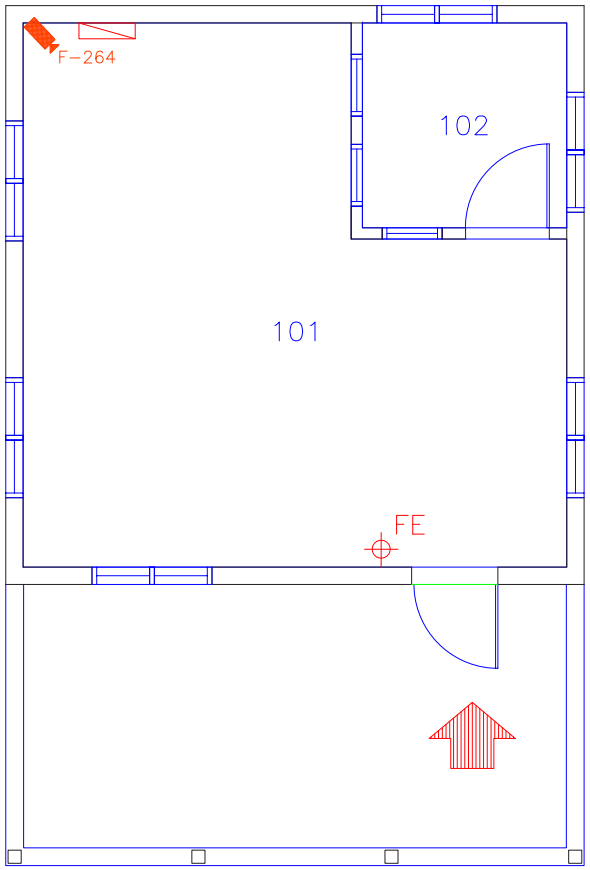
0 2m 10m 20m

FILED: S:\...\FBK-M.DWG
UPDATED: 2001-11-16
PLOT SCALE: 1:1

FBR INUIT HOBBY/CRAFT BUILDING

CCTV PLAN

Camera F264



ROOM INDEX

101 OPEN AREA
102 OFFICE

CCTV INDEX

F-264 101

KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET
360 Camera

FIRST FLOOR PLAN

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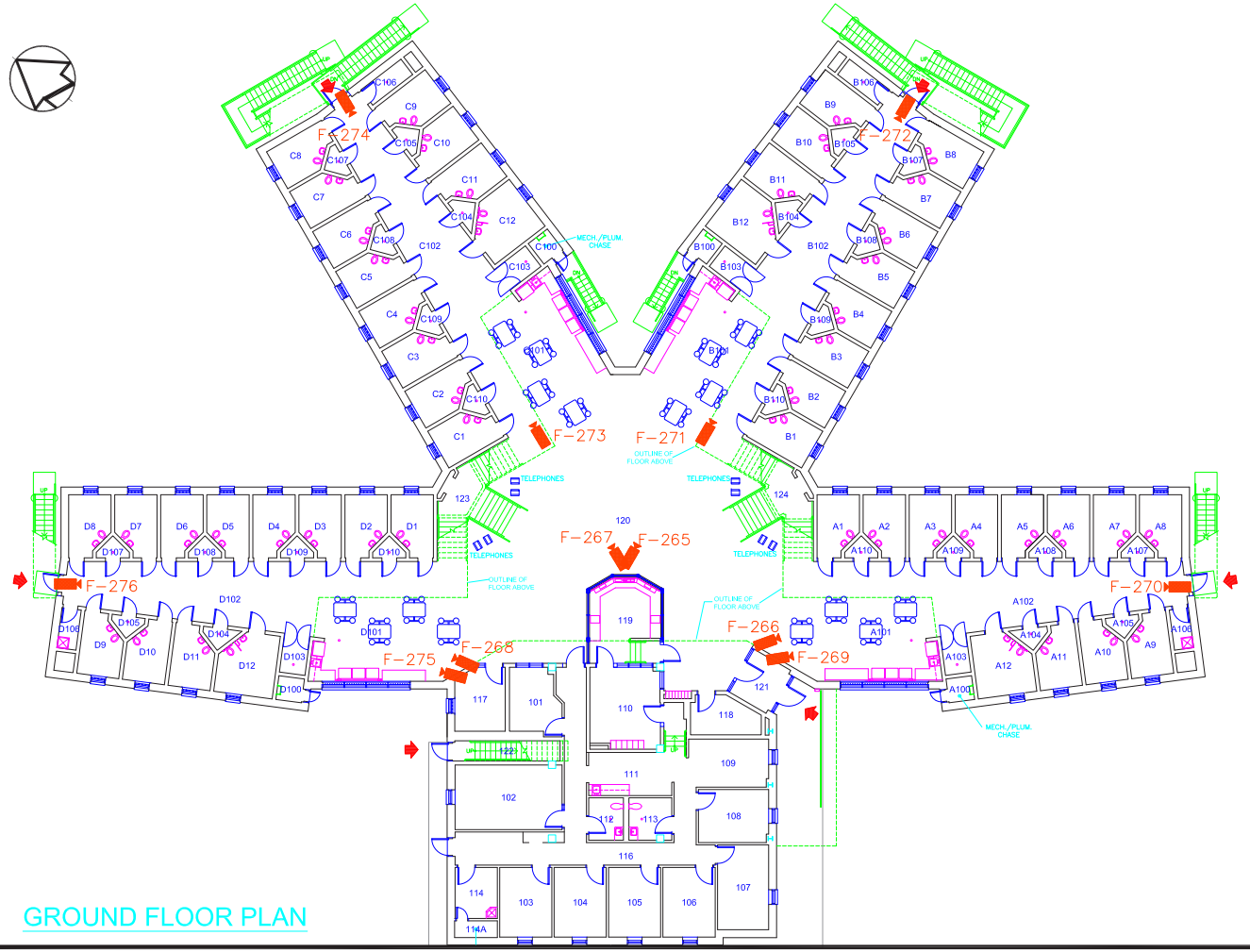
0 1m 5m

FILED:S:\...\FBR-1.DWG
UPDATED: 2014-04-01
PLOT SCALE: 1:1

FBT 96 BED ACCOMMODATION BUILDING

CCTV PLAN

Cameras F265 to F276



GROUND FLOOR PLAN

ROOM INDEX

101 - OFFICE
102 - MEETING ROOM
103 - OFFICE
104 - OFFICE
105 - OFFICE
106 - OFFICE
107 - OFFICE
108 - OFFICE
109 - OFFICE
110 - OFFICE
111 - SUPPORT AREA
112 - WASHROOM
113 - WASHROOM
114 - JANITOR ROOM
114A - MECHANICAL CHASE
116 - CORRIDOR
117 - INTERVIEW ROOM
118 - SIS
119 - CONTROL POST
120 - CIRCULATION
121 - VESTIBULE
122 - STAIR
123 - STAIR A
124 - STAIR B

A-UNIT
A100 - MECHANCIAL/PLUMBING CHASE
A101 - COMMON AREA
A102 - CORRIDOR
A103 - SHOWER
A104 - MECH. CHASE
A105 - MECH. CHASE
A106 - JANITOR CLOSET
A107 - MECH. CHASE
A108 - MECH. CHASE
A109 - MECH. CHASE
A110 - MECH. CHASE

A1 TO A11 - CELLS
A12 - BARRIER FREE CELL

C-UNIT
C100 - MECHANCIAL/PLUMBING CHASE
C101 - COMMON AREA
C102 - CORRIDOR
C103 - SHOWER
C104 - MECH. CHASE
C105 - MECH. CHASE
C106 - JANITOR CLOSET
C107 - MECH. CHASE
C108 - MECH. CHASE
C109 - MECH. CHASE
C110 - MECH. CHASE

C1 TO C11 - CELLS
C12 - BARRIER FREE CELL

B-UNIT
B100 - MECHANCIAL/PLUMBING CHASE
B101 - COMMON AREA
B102 - CORRIDOR
B103 - SHOWER
B104 - MECH. CHASE
B105 - MECH. CHASE
B106 - JANITOR CLOSET
B107 - MECH. CHASE
B108 - MECH. CHASE
B109 - MECH. CHASE
B110 - MECH. CHASE

B1 TO B11 - CELLS
B12 - BARRIER FREE CELL

D-UNIT
D100 - MECHANCIAL/PLUMBING CHASE
D101 - COMMON AREA
D102 - CORRIDOR
D103 - SHOWER
D104 - MECH. CHASE
D105 - MECH. CHASE
D106 - JANITOR CLOSET
D107 - MECH. CHASE
D108 - MECH. CHASE
D109 - MECH. CHASE
D110 - MECH. CHASE

D1 TO D11 - CELLS
B12 - BARRIER FREE CELL

CCTV INDEX

F-265 Range B&F C
F-266 Range A&E C
F-267 Range C&G C
F-268 Range D&H C
F-269 Range A
F-270 Range A
F-271 Range B
F-272 Range B
F-273 Range C
F-274 Range C
F-275 Range D
F-276 Range D

KEY

NVUS - GUI
NVUS - CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET
360 Camera

Public Works
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Région de l'Ontario

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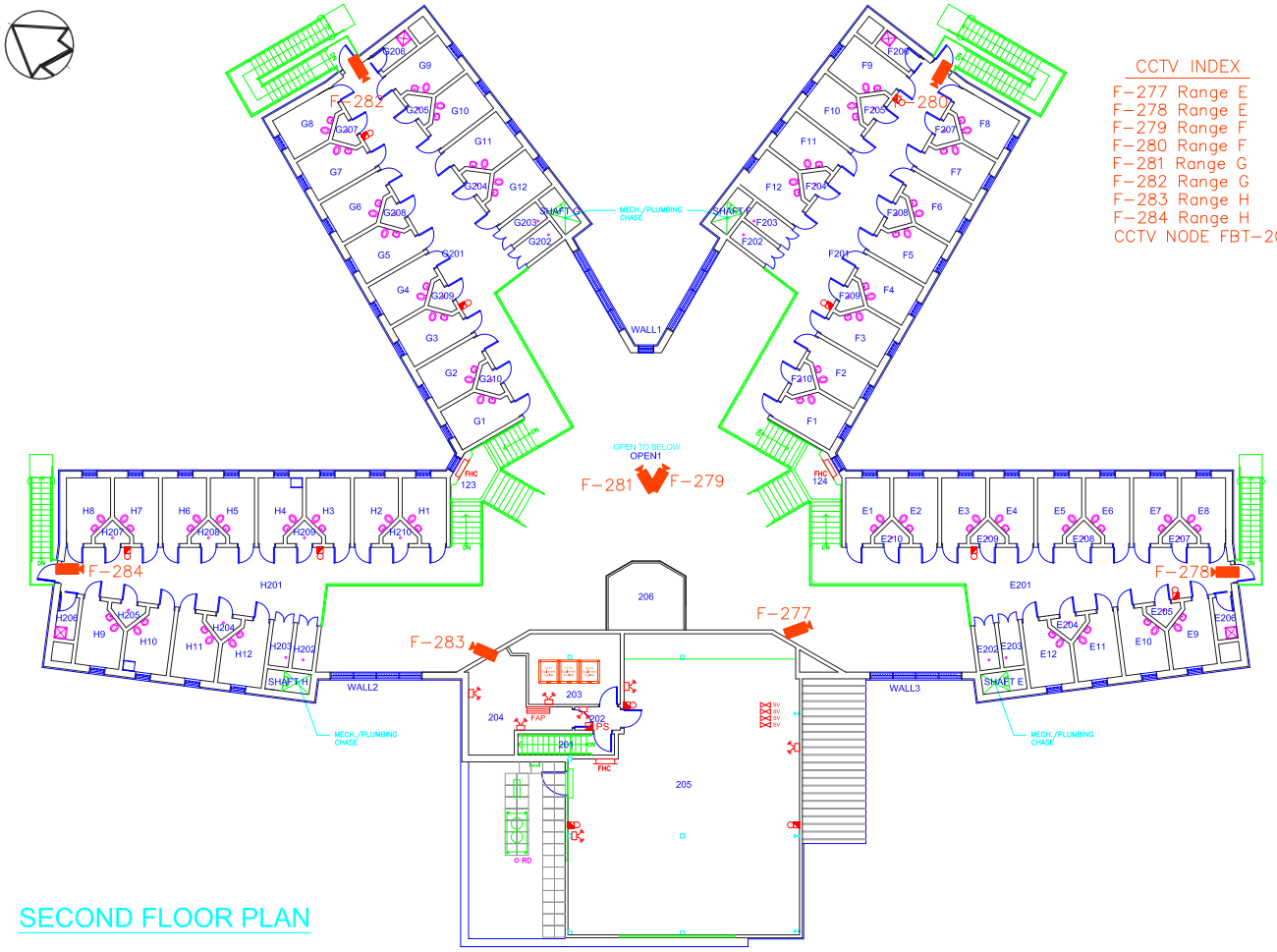
FILED: S: \...\FBT-1.DWG
UPDATED: 14-04-10
PLOT SCALE: 1:100

Cameras F277 - F284



CCTV INDEX

F-277 Range E
F-278 Range E
F-279 Range F
F-280 Range F
F-281 Range G
F-282 Range G
F-283 Range H
F-284 Range H
CCTV NODE FBT-203

ROOM INDEX

201 - STAIR
202 - CORRIDOR
203 - TES
204 - ELECTRICAL ROOM
205 - MECHANICAL ROOM
206 - UNOCCUPIED SPACE

E-UNIT

E201 - CORRIDOR
E202 - SHOWER
E203 - SHOWER
E204 - MECH. CHASE
E205 - MECH. CHASE
E206 - JANITOR CLOSET
E207 - MECH. CHASE
E208 - MECH. CHASE
E209 - MECH. CHASE
E210 - MECH. CHASE

E1 TO E12 - CELLS

G-UNIT

G201 - CORRIDOR
G202 - SHOWER
G203 - SHOWER
G204 - MECH. CHASE
G205 - MECH. CHASE
G206 - JANITOR CLOSET
G207 - MECH. CHASE
G208 - MECH. CHASE
G209 - MECH. CHASE
G210 - MECH. CHASE

G1 TO G12 - CELLS

F-UNIT

F201 - CORRIDOR
F202 - SHOWER
F203 - SHOWER
F204 - MECH. CHASE
F205 - MECH. CHASE
F206 - JANITOR CLOSET
F207 - MECH. CHASE
F208 - MECH. CHASE
F209 - MECH. CHASE
F210 - MECH. CHASE

F1 TO F12 - CELLS

H-UNIT

H201 - CORRIDOR
H202 - SHOWER
H203 - SHOWER
H204 - MECH. CHASE
H205 - MECH. CHASE
H206 - JANITOR CLOSET
H207 - MECH. CHASE
H208 - MECH. CHASE
H209 - MECH. CHASE
H210 - MECH. CHASE

H1 TO H12 - CELLS

KEY

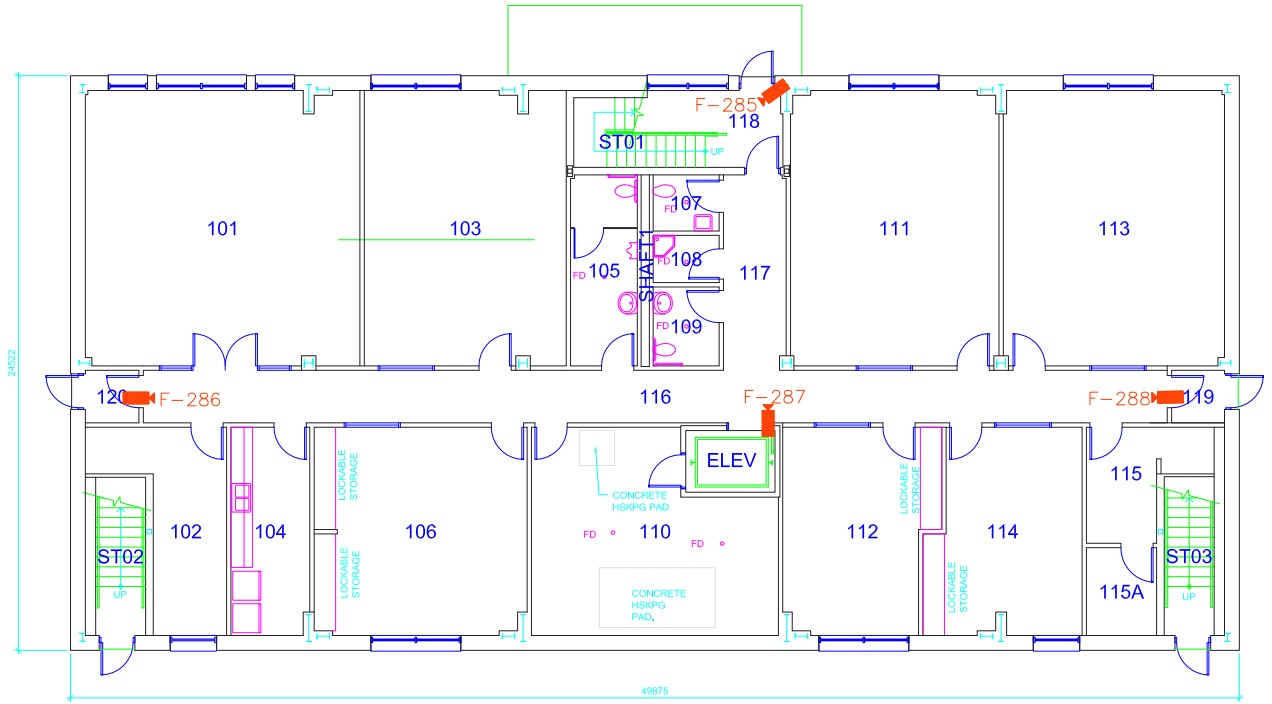
NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET

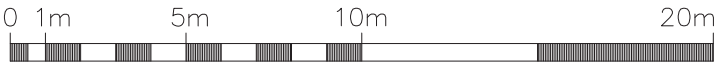
SECOND FLOOR PLAN

UNITY FLOOR–1

CCTV PLAN

Camera F285 TO F288





ROOM INDEX

101 MULTI-PURPOSE ROOM
102 STORAGE & SUPPORT
103 MULTI-PURPOSE ROOM
104 KITCHEN
105 INMATE BF WASHROOM
106 PROGRAM ROOM
107 STAFF WASHROOM
108 JANITOR
109 STAFF BF WASHROOM
110 MECHANICAL ROOM
111 PROGRAM ROOM
112 PROGRAM ROOM
113 PROGRAM ROOM
114 PROGRAM ROOM
115 ELECTRICAL ROOM
115A LAN & TELECOM ROOM
116 CORRIDOR
117 CORRIDOR
118 VESTIBULE
119 VESTIBULE
120 VESTIBULE

ST01 STAIR NO. 1
ST02 STAIR NO. 2
ST03 STAIR NO. 3

CCTV INDEX

F–285 ST01
F–286 116
F–287 116
F–288 116
CCTV NODE 115A

KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET

FIRST FLOOR PLAN

Public Works
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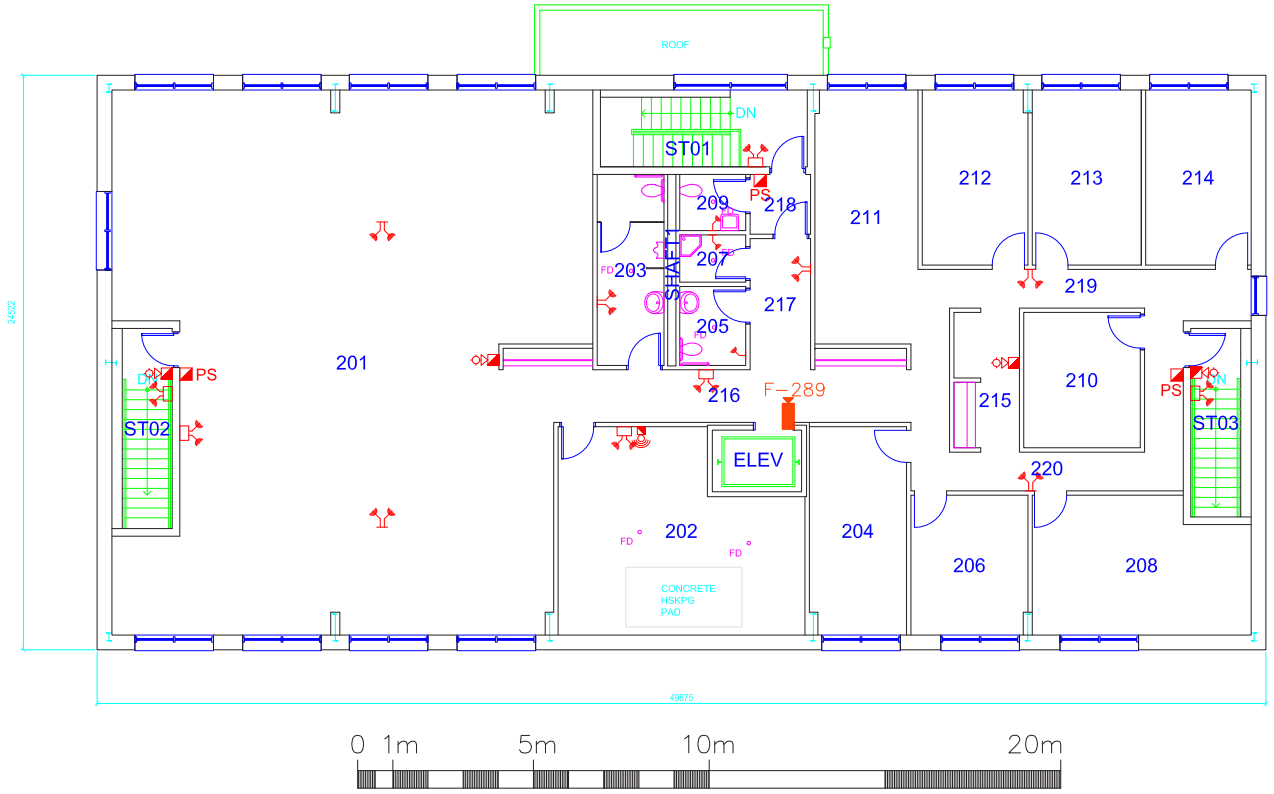
Région de l'Ontario

FILED: FILE
UPDATED: DATE
PLOT SCALE: SCALE

UNITY FLOOR–2

CCTV PLAN

Camera F289



0 1m 5m 10m 20m

CCTV INDEX

F–289 216

KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET

ROOM INDEX

201 OPEN WORKSTATIONS
202 MECHANICAL ROOM
203 STAFF M BF WASHROOM
204 OFFICE
205 STAFF F BF WASHROOM
206 OFFICE
207 JANITOR ROOM
208 MEETING ROOM
209 INMATE WASHROOM
210 SUPPORT & STORAGE ROOM
211 OPEN WORKSTATION
212 OFFICE
213 OFFICE
214 OFFICE
215 COPIER /PRINTER ALCOVE
216 CORRIDOR
217 CORRIDOR
218 CORRIDOR
219 CORRIDOR
220 CORRIDOR

ST01 STAIR NO. 1
ST02 STAIR NO. 2
ST03 STAIR NO. 3

SECOND FLOOR PLAN

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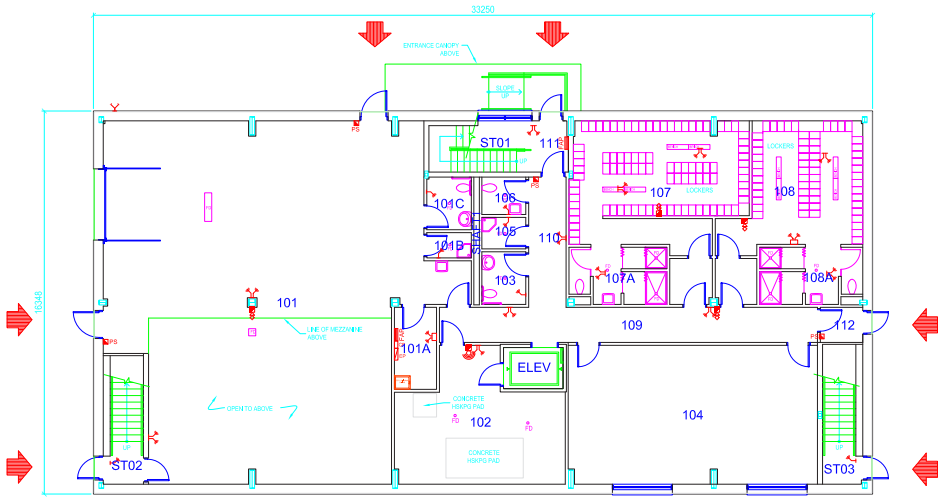
FILED: FILE
UPDATED: DATE
PLOT SCALE: SCALE

CCTV PLAN



ROOM INDEX

101 - WAREHOUSE
101A- ELECTRICAL / LAN / TELECOM ROOM
101B- JANITOR ROOM
101C- STAFF BARRIER FREE WASHROOM
102 - MECHANICAL ROOM
103 - STAFF BARRIER FREE WASHROOM
104 - MEETING ROOM
105 - JANITOR ROOM
106 - STAFF WASHROOM
107 - STAFF MEN'S LOCKER ROOM
107A- STAFF MEN'S SHOWER
108 - STAFF WOMEN'S LOCKER ROOM
108A- STAFF WOMEN'S SHOWER
109 - CORRIDOR
110 - CORRIDOR
111 - VESTIBULE
112 - VESTIBULE

ST01 - STAIR # 1
ST02 - STAIR # 2
ST03 - STAIR # 3

CCTV INDEX

101A CCTV NODE

KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET
360 Camera

GROUND FLOOR PLAN

0 1m 5m 10m 20m

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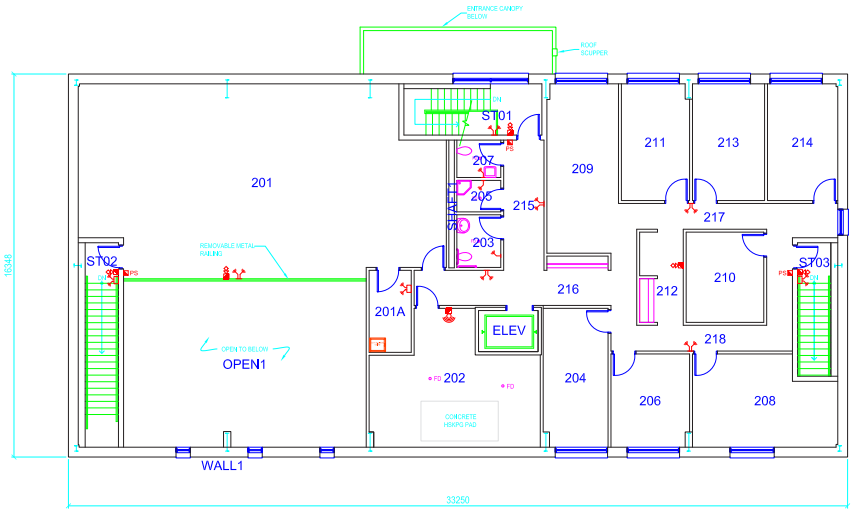
FILED: S: \FBV–1.DWG
UPDATED: 14.04.15
PLOT SCALE: 1:200

CCTV PLAN



ROOM INDEX

201 - MEZZANINE WAREHOUSE
201A- ELECTRICAL / LAN / TELECOM ROOM
202 - MECHANICAL ROOM
203 - STAFF BARRIER FREE WASHROOM
204 - OFFICE
205 - JANITOR ROOM
206 - OFFICE
207 - STAFF WASHROOM
208 - MEETING ROOM
209 - OPEN WORKSTATIONS
210 - STORAGE & SUPPORT ROOM
211 - OFFICE
212 - COPIER /PRINTER ALCOVE
213 - OFFICE
214 - OFFICE
215 - CORRIDIOR
216 - CORRIDIOR
217 - CORRIDIOR
218 - CORRIDIOR

ST01 - STAIR # 1
ST02 - STAIR # 2
ST03 - STAIR # 3

CCTV INDEX

201A CCTV NODE

KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET
360 Camera

SECOND FLOOR PLAN

0 1m 5m 10m 20m

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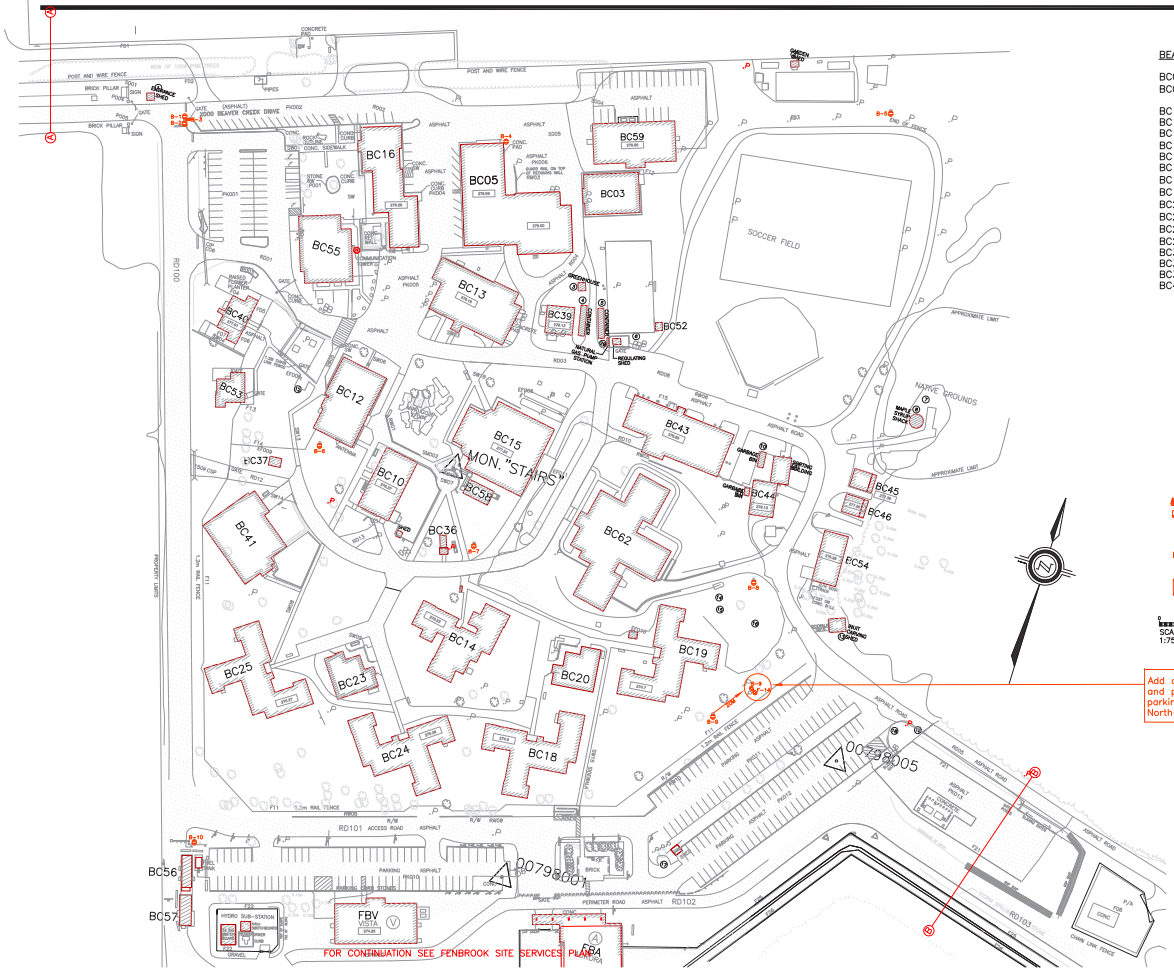
Services d'architecture et de génie
Région de l'Ontario

FILED: S: \FBV–2.DWG
UPDATED: 14.04.15
PLOT SCALE: 1:200

443 MINIMUM_SECURITY_UNIT

CCTV PLAN

Cameras B–1 to B–10



BEAVER CREEK BUILDING INDEX

BC03	INFORMATICS AND A & D BUILDING
BC05	STORES/PROCUREMENT/ FOOD DISTRIBUTION BUILDING
BC10	KITCHEN BUILDING
BC12	ACTIVITY BUILDING
BC13	HEALTH SERVICES AND S.I.S. BUILDING
BC14	ACCOMMODATION UNIT #1
BC15	RECREATION BUILDING
BC16	ADMINISTRATION BUILDING
BC18	ACCOMMODATION UNIT #4
BC19	ACCOMMODATION UNIT #5
BC20	NEIGHBOURHOOD BUILDING #2
BC23	NEIGHBOURHOOD BUILDING #1
BC24	ACCOMMODATION UNIT #3
BC25	ACCOMMODATION UNIT #2
BC36	GARBAGE STORAGE BUILDING
BC37	PICNIC SHELTER
BC39	FIREHALL
BC40	FAMILY VISITS

CCTV INDEX

B–1 Entry Road
B–2 Parking lot
B–3 Parking lot
B–4 Back of Stores
B–5 Ball Field
B–6 V&C Yard
B–7 GYM South
B–8 Behind BC62
B–9 Behind BC19
B–10 Generator

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- MULTI–SENSOR CAMERA
- FIXED CAMERA
- 360 Camera
- EQUIPMENT CABINET

SCALE 1:750

Add double goose neck to existing tower and provide a multi–sensor camera facing parking lot. Relocate CCTV Tower 20M North–East

OUTDOOR PLAN

Public Works
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Architectural and Engineering Services
Ontario Region

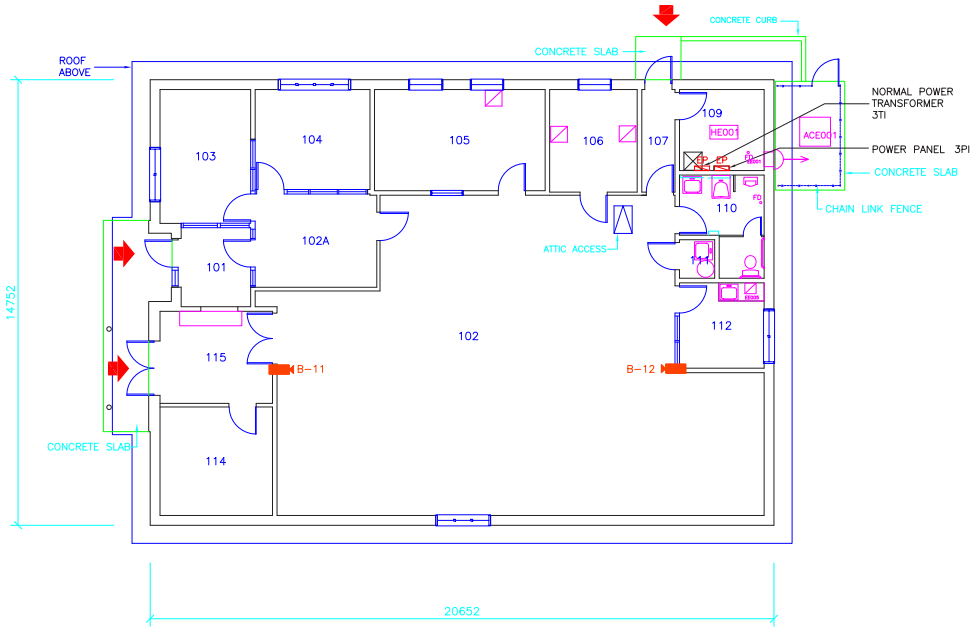
Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

FILED: FILE
UPDATED: DATE
PLOT SCALE: SCALE

BC 03 INFORMATICS AND A & D BUILDING

CCTV PLAN

Cameras B11–B12



ROOM INDEX

101 VESTIBULE
102 CORCAN MANUFACTURING

103 OFFICE
104 OFFICE
105 OFFICE
106 OFFICE
107 CORRIDOR

109 MECHANICAL
110 WASHROOM
111 JANITOR
112 COFFEE ROOM

114 STORAGE
115 VESTIBULE

CCTV INDEX

B–11 102
B–12 102
CCTV NODE 109

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- MULTI–SENSOR CAMERA
- FIXED CAMERA
- 360 CAMERA
- EQUIPMENT CABINET

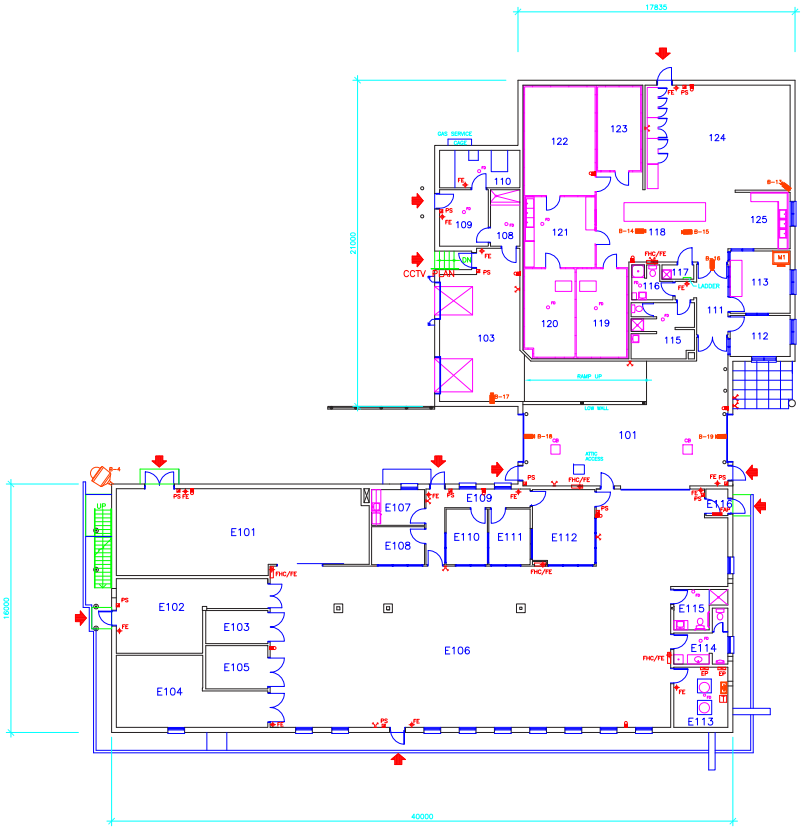
FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de genie
Region de l'Ontario

0 1m 5m 10m 20m

FILE : S:\...\BC03–1.DWG
UPDATED: 2015–05–29
PLOT SCALE: 1:200



Cameras B04, B13–B19
Monitor M1

ROOM INDEX

101	SHIPPING/RECEIVING
103	SHIPPING/RECEIVING
108	STORAGE
109	OFFICE/STORAGE
110	MECHANICAL ROOM
111	CORRIDOR
112	OFFICE
113	OFFICE
115	WASHROOM/STAFF UNISEX
116	WASHROOM/INMATES
117	JANITOR
118	FOOD PREPARATION
119	FRIDGE
120	FREEZER
121	MEAT PREPARTION
122	FREEZER
123	FREEZER
124	FOOD STORAGE
125	FOOD PREPARATION

ROOM INDEX

E101	SHIPPING/RECEIVING
E102	STORAGE/SUPPLIES
E103	STORAGE
E104	CANTEEN
E105	STORAGE
E106	STORAGE
E107	KITCHEN
E108	OFFICE
E109	CORRIDOR
E110	OFFICE
E111	OFFICE
E112	OFFICE
E113	MECHANICAL ROOM
E114	WASHROOM
E115	WASHROOM/HANDICAPPED
E116	VESTIBULE

CCTV INDEX

B–04 Outdoor
B–13 124
B–14 118
B–15 118
B–16 111
B–17 103
B–18 101
B–19 101
M1 101
CCTV NODE E113

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- MULTI–SENSOR CAMERA
- FIXED CAMERA
- 360 CAMERA
- EQUIPMENT CABINET

FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

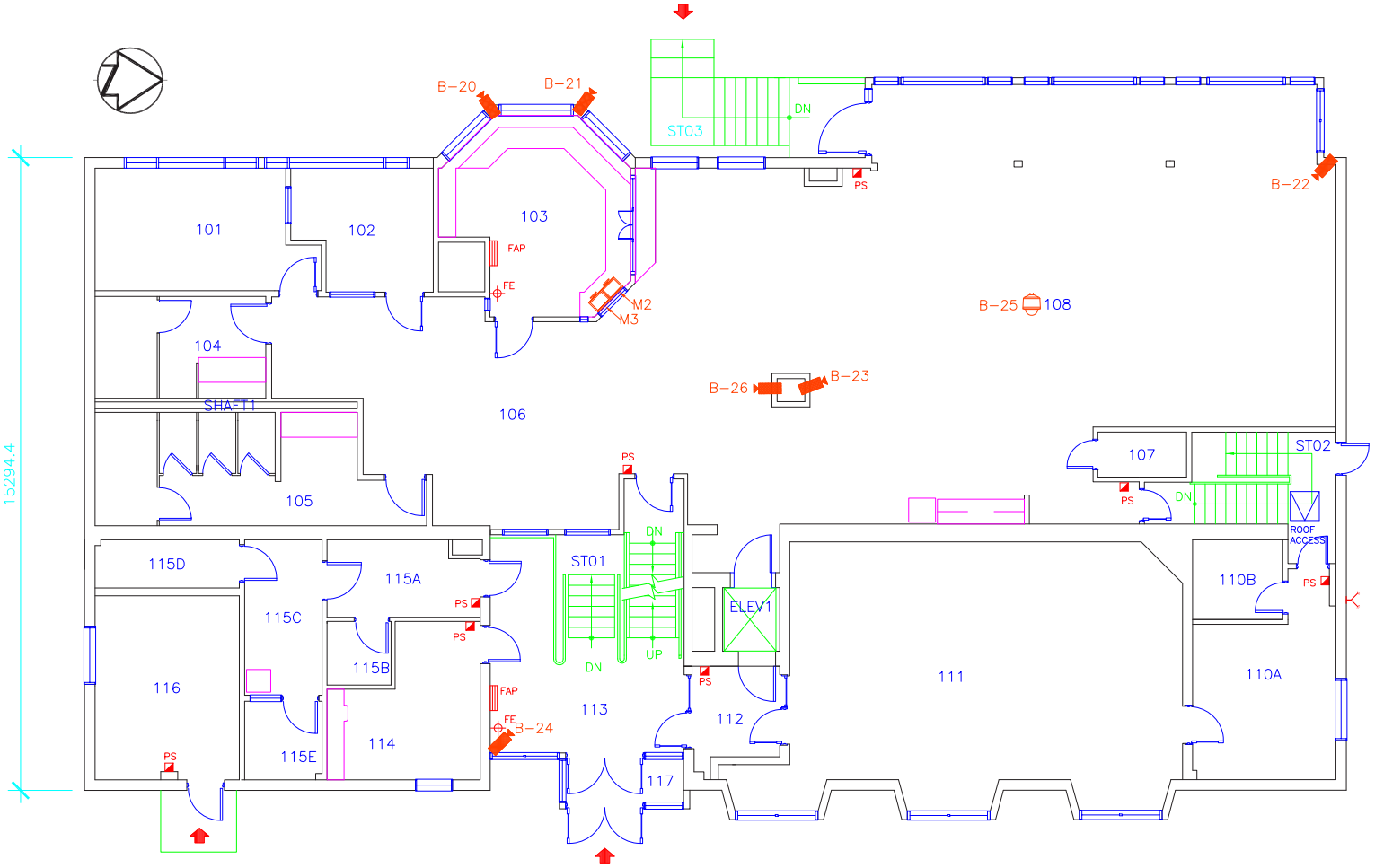
Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

0 2m 10m 20m

FILED: S:\...\BC05–1.DWG
UPDATED: 01–11–05
PLOT SCALE: 1:300

BC12 ACTIVITY BUILDING

CCTV PLAN



FIRST FLOOR PLAN

Cameras B20–B26
Monitors M2, M3

ROOM INDEX

101 – V & C OFFICE
102 – OFFICE
103 – DUTY OFFICE SEC/COMM EQUIP RM
104 – MEN'S WASHROOM
105 – WOMEN'S WASHROOM/HANDICAPPED
106 – QUIET AREA
107 – JANITOR ROOM
108 – VISITS
110A – CHAPLAIN'S OFFICE
110B – SPRINKLER ROOM
111 – CHAPEL
112 – ELEVATOR VESTIBULE
113 – MAIN ENTRANCE
114 – BARBER SHOP
115A – CORRIDOR
115B – JANITOR ROOM
115C – URINAL ANALYSIS ROOM
115D – STORAGE
115E – WASHROOM
116 – INMATE COMMITTEE ROOM
117 – VESTIBULE
ST01 – STAIR NO. 1
ST02 – STAIR NO. 2
ST03 – STAIR NO. 3

CCTV INDEX

B-20 Outdoor
B-21 Outdoor
B-22 108
B-23 108
B-24 113
B-25 108
B-26 106
M2 103
M3 103

CCTV KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET

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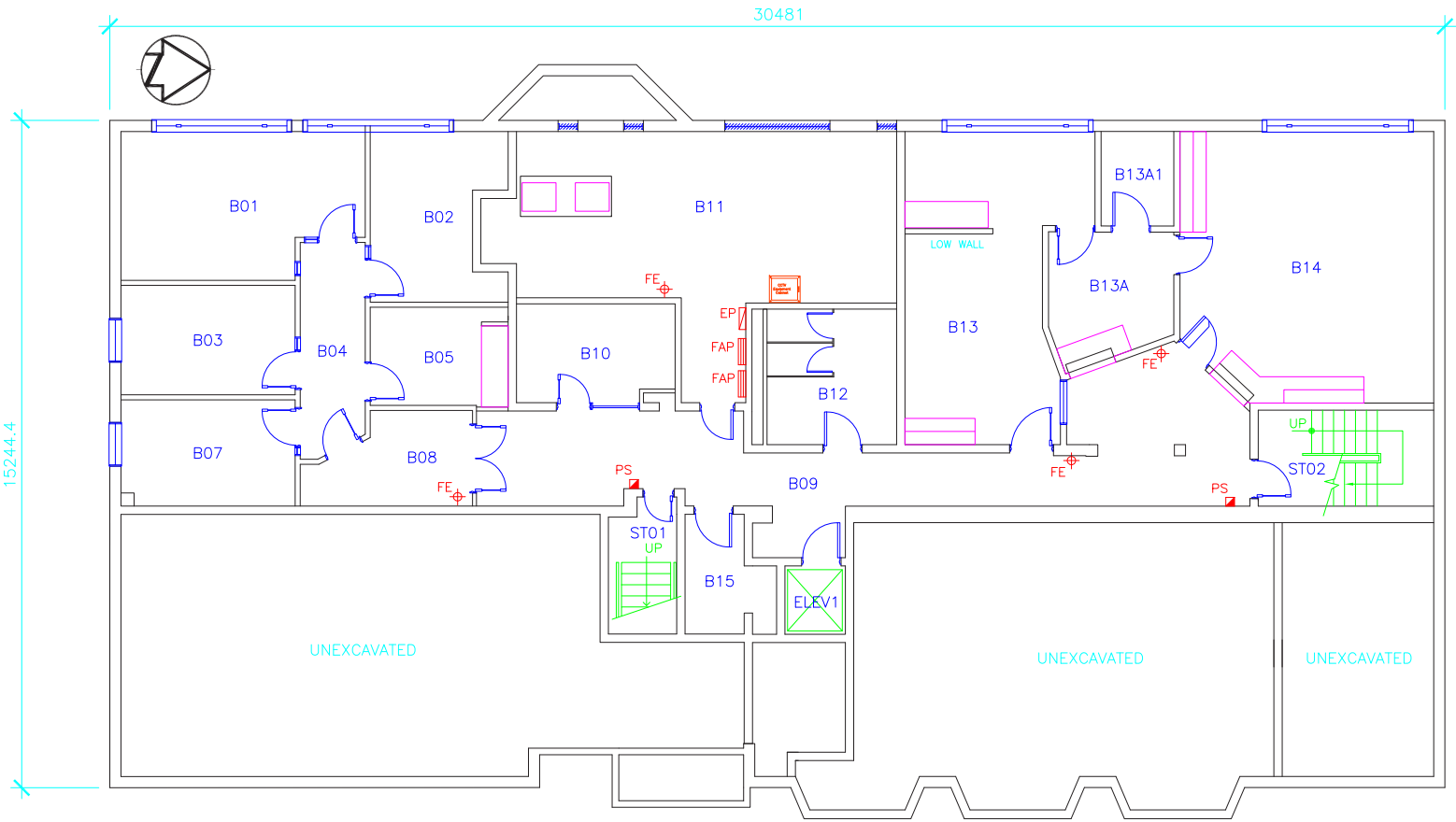
0 1m 5m 10m

FILED: S:\...\BC12-1.DWG
UPDATED: 2001-11-05
PLOT SCALE: 1:100

BC12 ACTIVITY BUILDING

CCTV PLAN



ROOM INDEX

B01 – PSYCOLOGY BOARDROOM
B02 – PSYCOLOGY OFFICE
B03 – PSYCOLOGY OFFICE
B04 – PSYCHOLOGY CORRIDOR
B05 – PSYCOLOGY FILE ROOM
B07 – PSYCOLOGY OFFICE
B08 – PSYCOLOGY WAITING AREA
B09 – MAIN CORRIDOR
B10 – INDUCTION TRAINING OFFICE
B11 – MECHANICAL/ELECTRICAL ROOM
B12 – STAFF WASHROOM
B13 – HEALTHCARE EXAMINATION ROOM
B13A – HEALTHCARE DISPENSARY
B13A1 – HEALTHCARE SECURE ROOM
B14 – ADMISSIONS & DISCHARGE
B15 – ELEVATOR MECHANICAL ROOM

ST01 – BASEMENT STAIRS NORTH
ST02 – BASEMENT STAIRS EAST

CCTV INDEX

B11 – CCTV NODE

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET

BASEMENT PLAN

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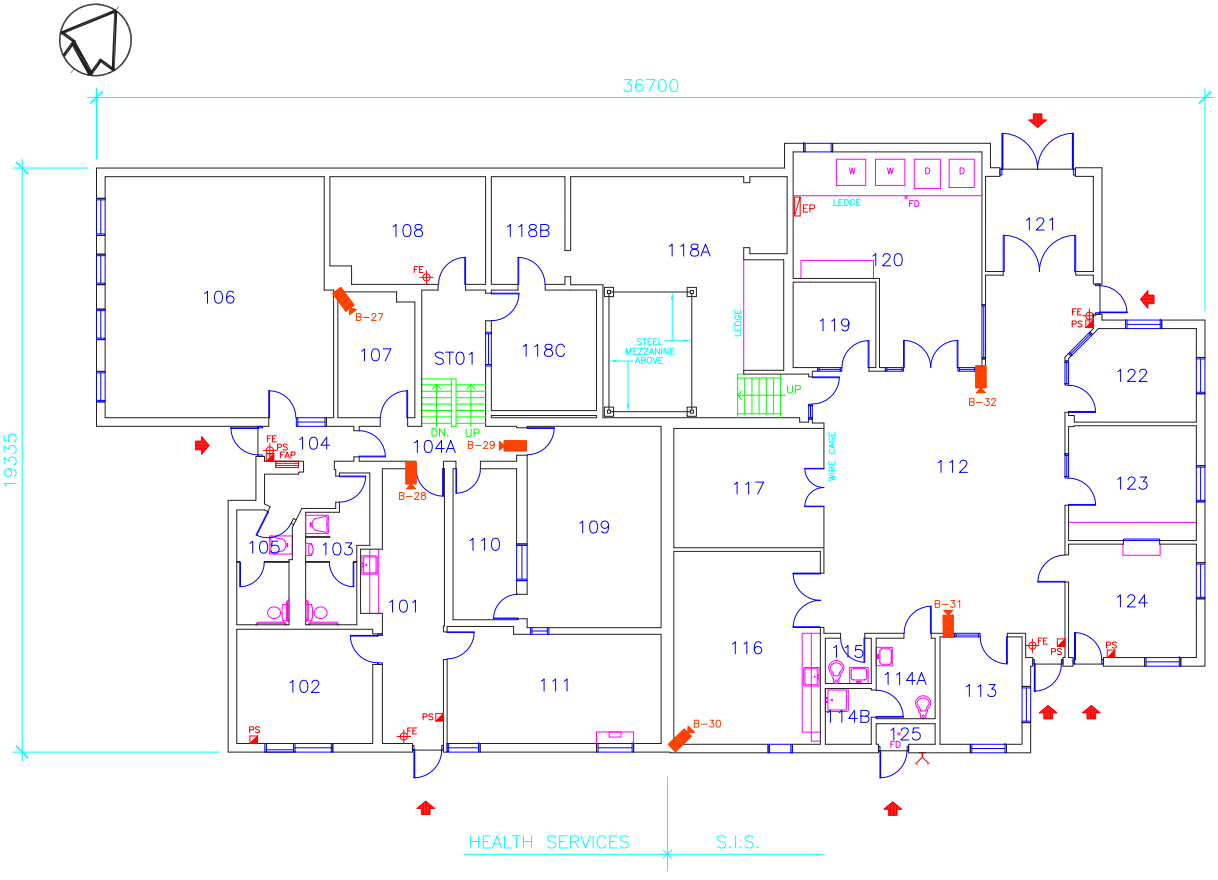
Services d'architecture et de génie
Région de l'Ontario

0 1m 5m 10m

FILED: S:\...\BC12-b.DWG
UPDATED: 2001-11-05
PLOT SCALE: 1:100

BC13 HEALTH SERVICES AND S.I.S. BUILDING CCTV PLAN

Cameras B27–B32



ROOM INDEX

101	CORRIDOR
102	OFFICE
103	MEN'S WASHROOM/HANDICAP
104	CORRIDOR
104A	CORRIDOR
105	WOMEN'S WASHROOM
106	BOARDROOM/TRAINING
107	STORAGE
108	LAN ROOM
109	COMPUTER TRAINING
110	BREAK-OUT ROOM
111	INFORMATICS WORK SHOP
112	GENERAL AREA
113	OFFICE
114A	MEN'S WASHROOM
114B	JANITOR'S ROOM
115	WOMEN'S WASHROOM
116	CLEANING
117	INMATE CLOTHING
118A	STAFF CLOTHING
118B	STORAGE
118C	X-RAY AND STERILIZATON
119	OFFICE
120	LAUNDRY ROOM
121	SHIPPING/RECEIVING
122	OFFICE
123	ISSUE
124	DISTRIBUTION
125	SPRINKLER ROOM
ST01	STAIR NO.1

CCTV INDEX

B-27	107
B-28	101
B-29	104A
B-30	116
B-31	112
B-32	112

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- FIXED CAMERA
- EQUIPMENT CABINET

FIRST FLOOR PLAN

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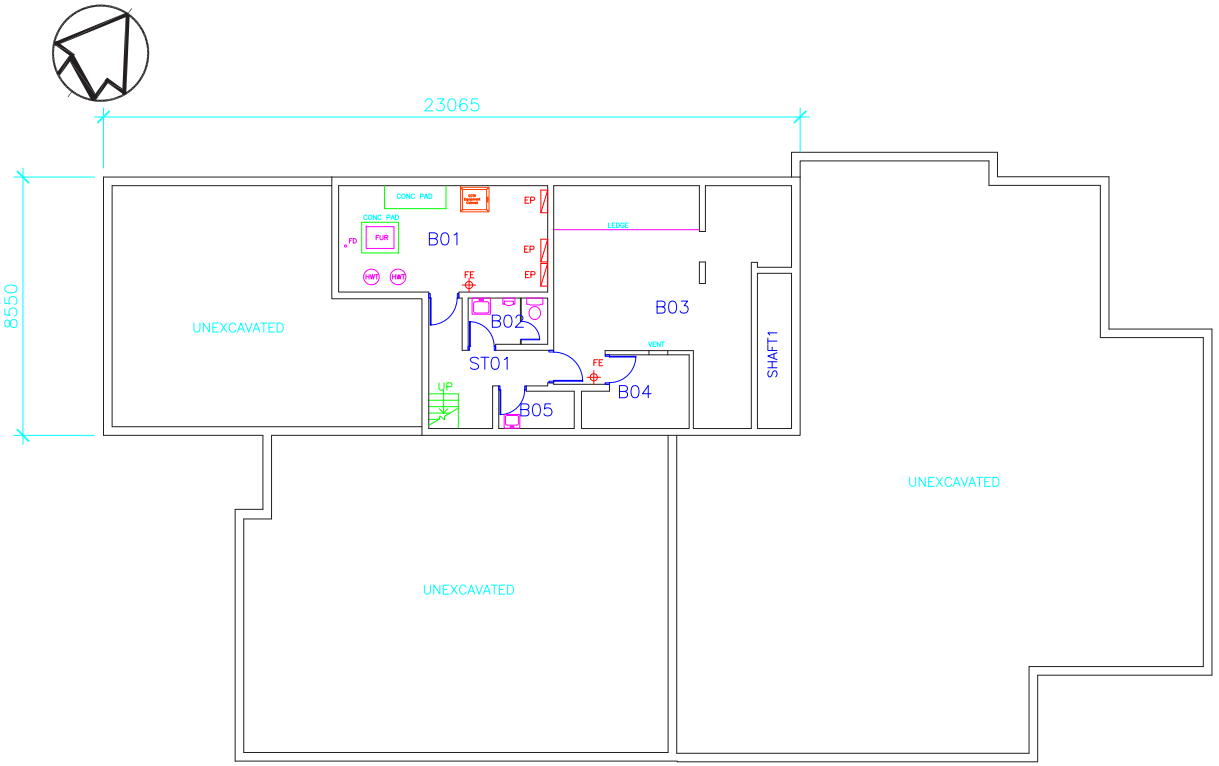
0 5m 10m

FILE : S:\...\BC13-1.DWG
UPDATED: 2001-11-05
PLOT SCALE: 1:200

BC13 HEALTH SERVICES AND S.I.S. BUILDING CCTV PLAN



ROOM INDEX

B01 MECH./ELECT. ROOM
B02 WASHROOM
B03 STORAGE
B04 STORAGE
B05 JANITOR'S ROOM
ST01 STAIR NO.1

CCTV INDEX

B01 CCTV NODE

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET

BASEMENT FLOOR PLAN

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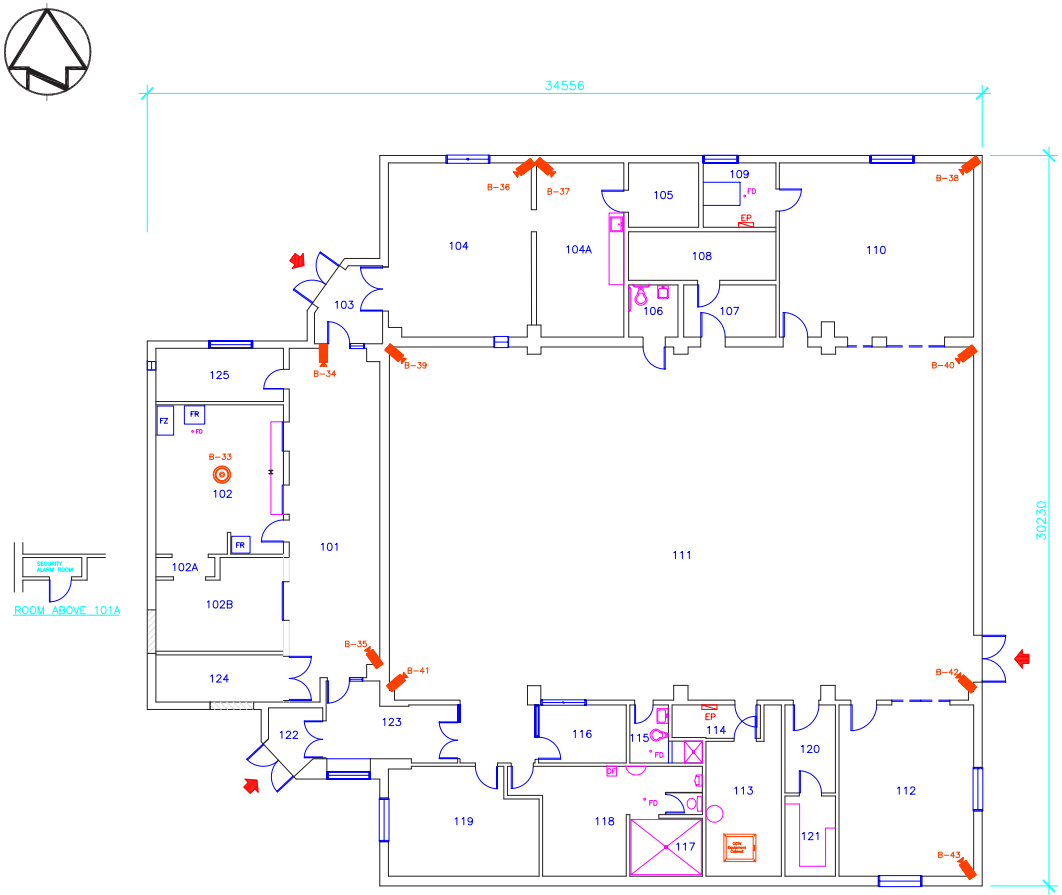
Région de l'Ontario

0 5m 10m

FILE : S:\...\BCI\BC13-B.DWG
UPDATED: 1:200
PLOT SCALE: 99-10-21

BC15 RECREATION BUILDING

CCTV PLAN



Cameras B33–B43

ROOM INDEX

101 CORRIDOR
102 CANTEEN
102A WALKTHROUGH
102B INMATE CANTEEN
103 VESTIBULE
104 HOBBY CRAFT ROOM
105 PAINT ROOM
106 WASHROOM
107 STORAGE
108 STORAGE
109 MECHANICAL ROOM
110 FITNESS ROOM
111 GYMNASIUM ROOM
112 EXERCISE ROOM
113 MECHANICAL ROOM
114 ELECTRICAL ROOM
115 WASHROOM
116 OFFICE
117 SHOWER
118 LOCKER ROOM AND WASHROOM
119 MUSIC ROOM
120 STORAGE
121 STORAGE ROOM
122 VESTIBULE
123 LOBBY
124 STORAGE ROOM
125 OFFICE

CCTV INDEX

B–33 102
B–34 101
B–35 101
B–36 104
B–37 104A
B–38 110
B–39 111
B–40 111
B–41 111
B–42 111
B–43 112
CCTV Node 113

CCTV KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
MULTI–SENSOR CAMERA
FIXED CAMERA
360 CAMERA
EQUIPMENT CABINET

FIRST FLOOR PLAN

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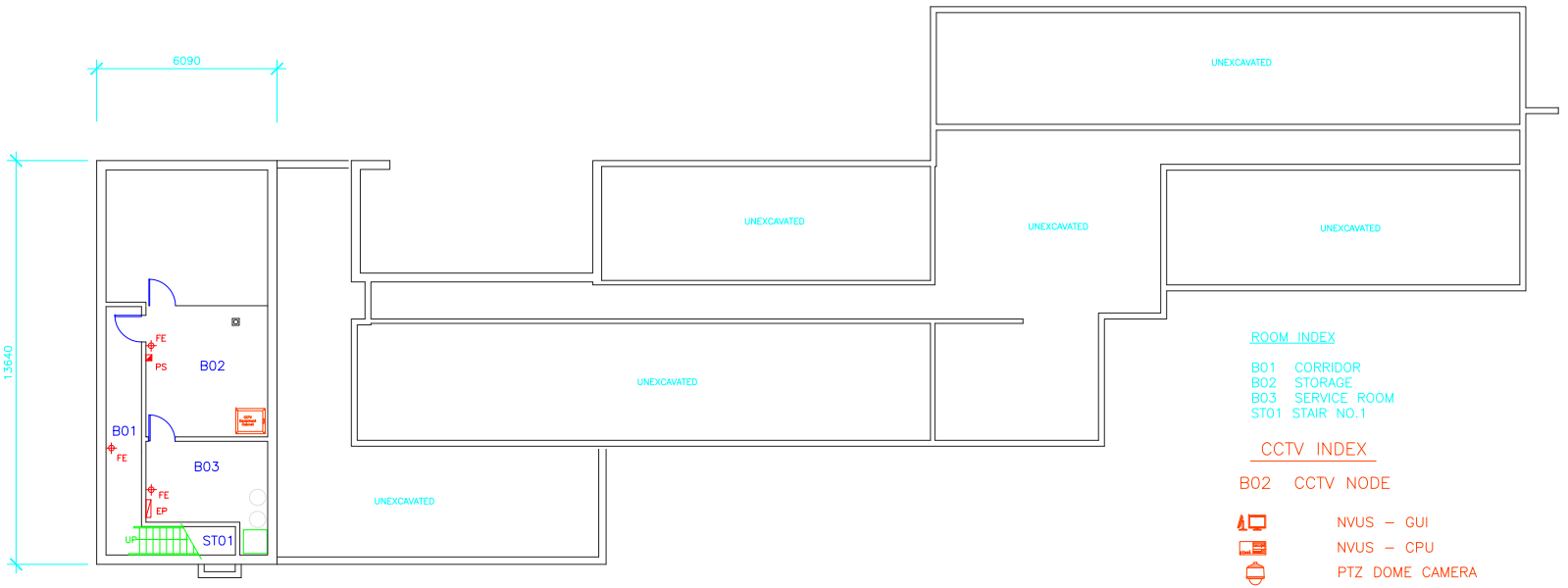
0 5m 10m
1:250

FILED: S:\...\BC15–1.DWG
UPDATED: 2013–05–29
PLOT SCALE: 1:250

BC 16 ADMINISTRATION BUILDING

CCTV PLAN



ROOM INDEX

B01 CORRIDOR
B02 STORAGE
B03 SERVICE ROOM
ST01 STAIR NO.1

CCTV INDEX

B02 CCTV NODE

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
EQUIPMENT CABINET

BASEMENT/FOUNDATION PLAN

Public Works
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Architectural and Engineering Services
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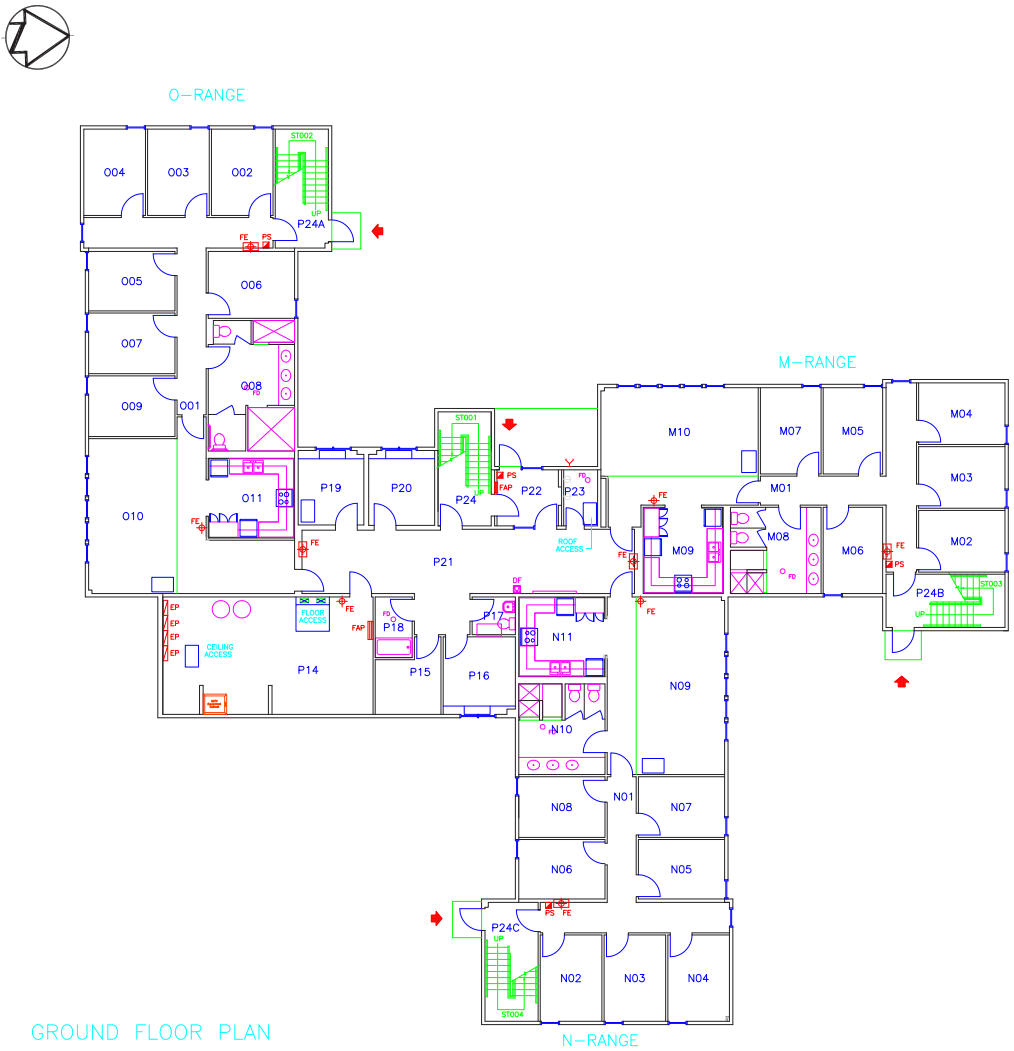
Région de l'Ontario

0 5m 10m
1:200

FILE : S:\...\BC16-B.DWG
UPDATED: 01-11-05
PLOT SCALE: 1:200

BC 19 ACCOMODATION UNIT #5

CCTV PLAN



GROUND FLOOR PLAN

ROOM INDEX

M01 CORRIDOR
M02 INMATE ROOM M-01
M03 INMATE ROOM M-2
M04 INMATE ROOM M-3
M05 INMATE ROOM M-4
M06 INMATE ROOM M-5
M07 INMATE ROOM M-6
M08 WASHROOM
M09 KITCHEN
M10 LIVING ROOM
N01 CORRIDOR
N02 INMATE ROOM N-01
N03 INMATE ROOM N-2
N04 INMATE ROOM N-3
N05 INMATE ROOM N-4
N06 INMATE ROOM N-5
N07 INMATE ROOM N-6
N08 INMATE ROOM N-7
N09 LIVING ROOM
N10 WASHROOM
N11 KITCHEN
O01 CORRIDOR
O02 INMATE ROOM O-1
O03 INMATE ROOM O-2
O04 INMATE ROOM O-3
O05 INMATE ROOM O-4
O06 INMATE ROOM O-5
O07 INMATE ROOM O-6
O08 WASHROOM
O09 INMATE ROOM O-7
O10 LIVING ROOM
O11 KITCHEN
P14 MECHANICAL/ELECTRICAL
P15 STORAGE
P16 OFFICE
P17 STAFF WASHROOM
P18 BATHROOM/HANDICAPPED
P19 OFFICE
P20 OFFICE
P21 CORRIDOR
P22 VESTIBULE
P23 SPRINKLER ROOM
P24 P RANGE STAIR
P24A O RANGE STAIR
P24B M RANGE STAIR
P24C N RANGE STAIR

CCTV INDEX

CCTV NODE P14

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- MULTI-SENSOR CAMERA
- FIXED CAMERA
- 360 CAMERA
- EQUIPMENT CABINET

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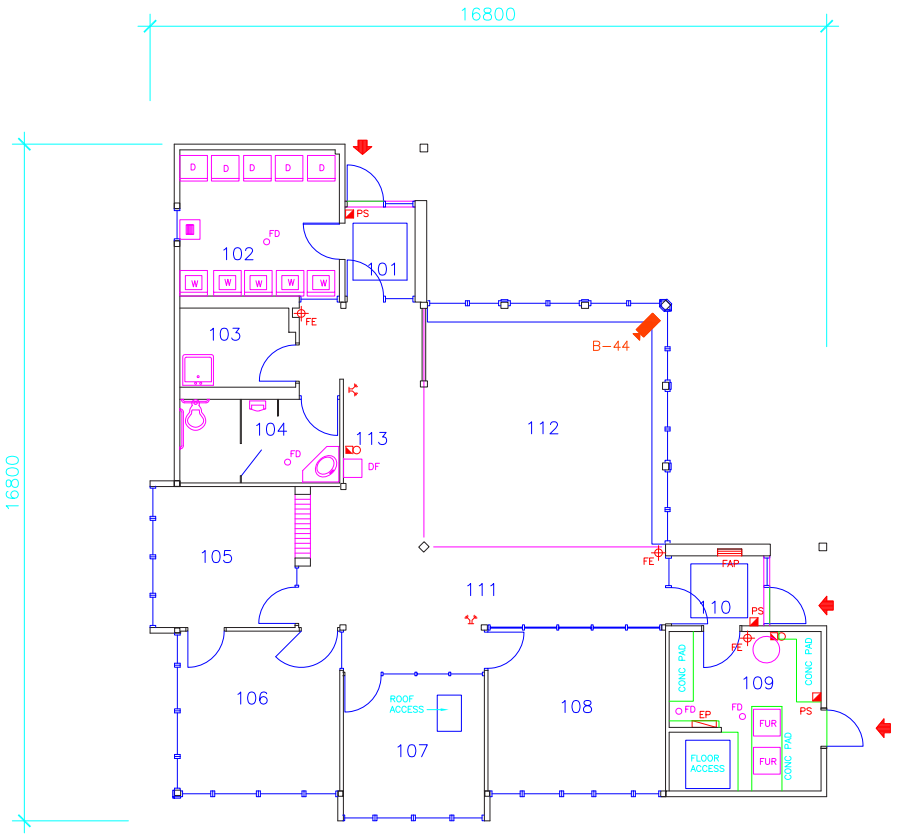
0 5m 10m
1:250

FILED: S:\...\BC19-1.DWG
UPDATED: 2001-11-05
PLOT SCALE: 1:250

BC 20 NEIGHBOURHOOD BUILDING #2

CCTV PLAN

Camera B44



ROOM INDEX

101 VESTIBULE
102 LAUNDRY
103 STORAGE/JANITOR
104 WASHROOM/HANDICAPPED
105 UNIT MANAGER
106 WORKING STATION
107 SUPERVISOR
108 SMALL GROUP MEETING
109 MECHANICAL
110 VESTIBULE
111 CORRIDOR
112 COMMON ROOM
113 CORRIDOR

CCTV INDEX

B-44 112

CCTV KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
MULTI-SENSOR CAMERA
FIXED CAMERA
360 CAMERA
EQUIPMENT CABINET

FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

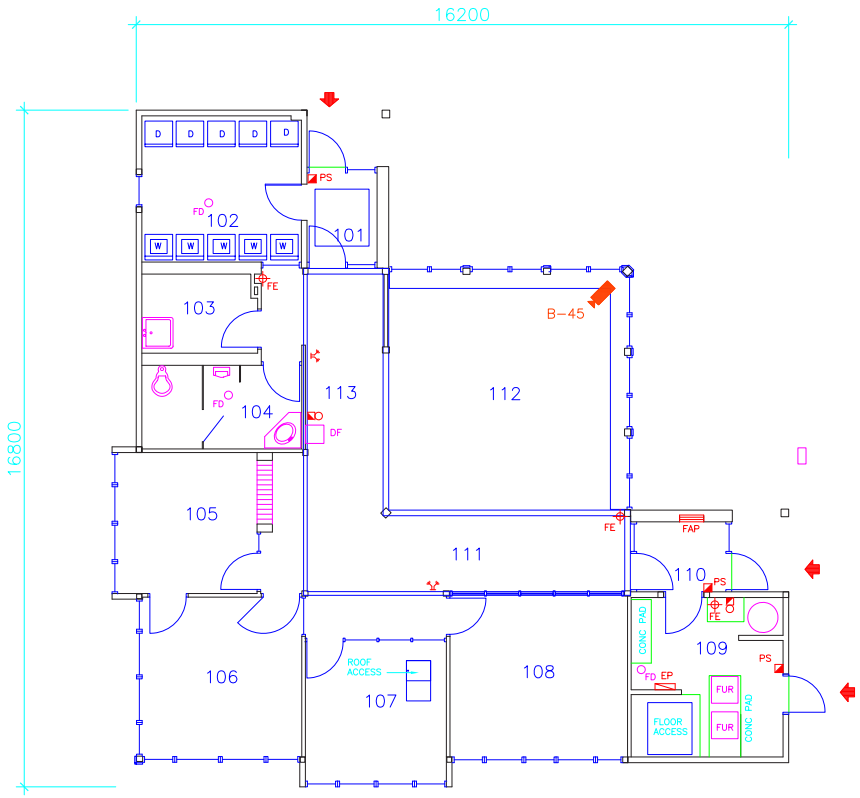
0 5m 10m
1:150

FILE : S:\...\BC20-1.DWG
UPDATED: 2001-11-05
PLOT SCALE: 1:150

BC 23 NEIGHBOURHOOD BUILDING #1

CCTV PLAN

Camera B45



ROOM INDEX

101 VESTIBULE
102 LAUNDRY
103 STORAGE/JANITOR
104 WASHROOM/HANDICAPPED
105 UNIT MANAGER
106 WORKING STATION
107 SUPERVISOR
108 SMALL GROUP MEETING
109 MECHANICAL
110 VESTIBULE
111 CORRIDOR
112 COMMON ROOM
113 CORRIDOR

CCTV INDEX

B-45 112

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- MULTI-SENSOR CAMERA
- FIXED CAMERA
- 360 CAMERA
- EQUIPMENT CABINET

FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
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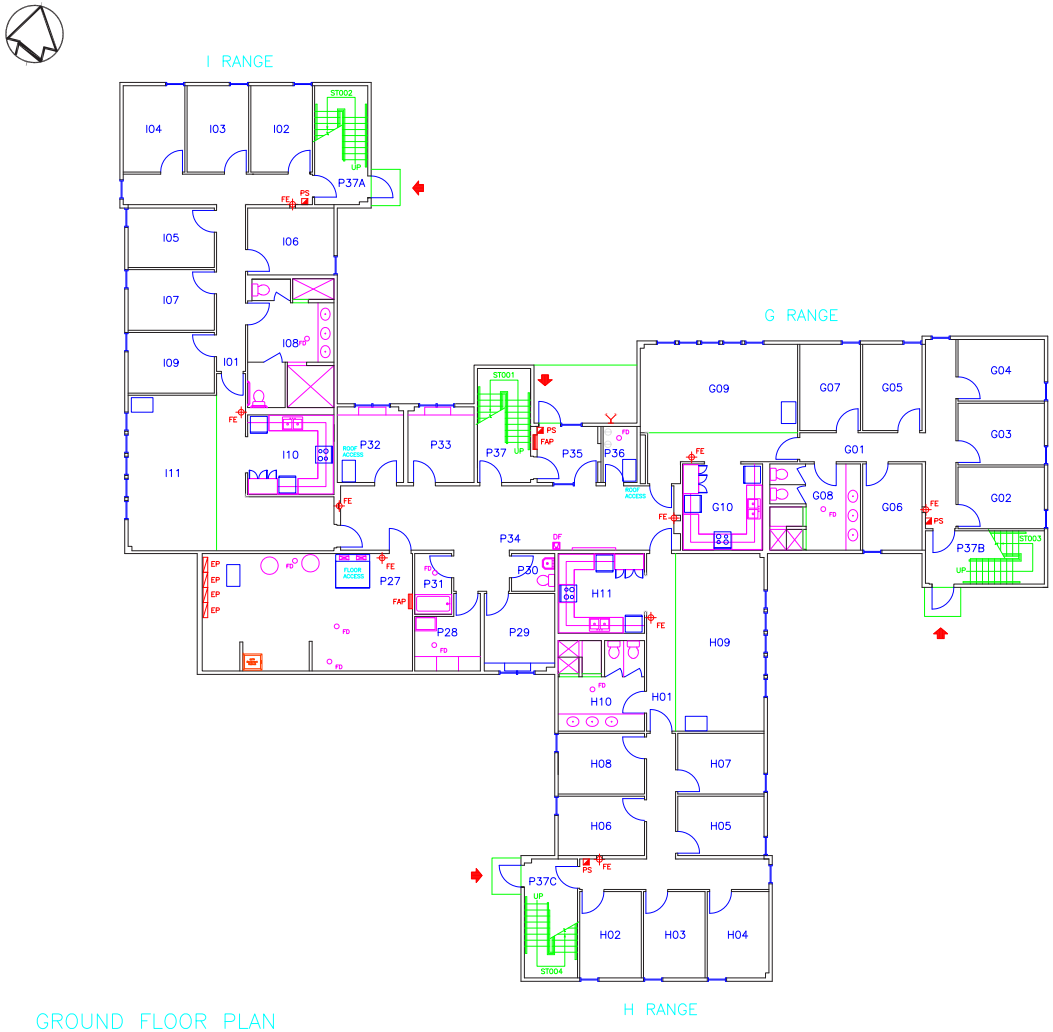
Région de l'Ontario

0 5m 10m
1:150

FILE : S:\...\BC23-1.DWG
UPDATED: 2001-11-05
PLOT SCALE: 1:150

BC 24 ACCOMODATION UNIT #3

CCTV PLAN



GROUND FLOOR PLAN

ROOM INDEX

G01 CORRIDOR
G02 INMATE ROOM 01
G03 INMATE ROOM 2
G04 INMATE ROOM 3
G05 INMATE ROOM 4
G06 INMATE ROOM 5
G07 INMATE ROOM 6
G08 WASHROOM
G09 LIVING ROOM
G10 KITCHEN
H01 CORRIDOR
H02 INMATE ROOM 01
H03 INMATE ROOM 2
H04 INMATE ROOM 3
H05 INMATE ROOM 5
H06 INMATE ROOM 4
H07 INMATE ROOM 7
H08 INMATE ROOM 6
H09 LIVING ROOM
H10 WASHROOM
H11 KITCHEN
I01 CORRIDOR
I02 INMATE ROOM 01
I03 INMATE ROOM 2
I04 INMATE ROOM 3
I05 INMATE ROOM 4
I06 INMATE ROOM 5
I07 INMATE ROOM 6
I08 WASHROOM
I09 INMATE ROOM 7
I10 KITCHEN
I11 LIVING ROOM
P27 MECHANICAL/ELECTRICAL
P28 JANITOR
P29 OFFICE
P30 WASHROOM
P31 BATHROOM
P32 OFFICE
P33 OFFICE
P34 CORRIDOR
P35 VESTIBULE
P36 SPRINKLER ROOM
P37 P RANGE STAIR
P37A I RANGE STAIR
P37B G RANGE STAIR
P37C H RANGE STAIR

CCTV INDEX

CCTV NODE P27

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- MULTI–SENSOR CAMERA
- FIXED CAMERA
- 360 CAMERA
- EQUIPMENT CABINET

Public Works
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Ontario Region

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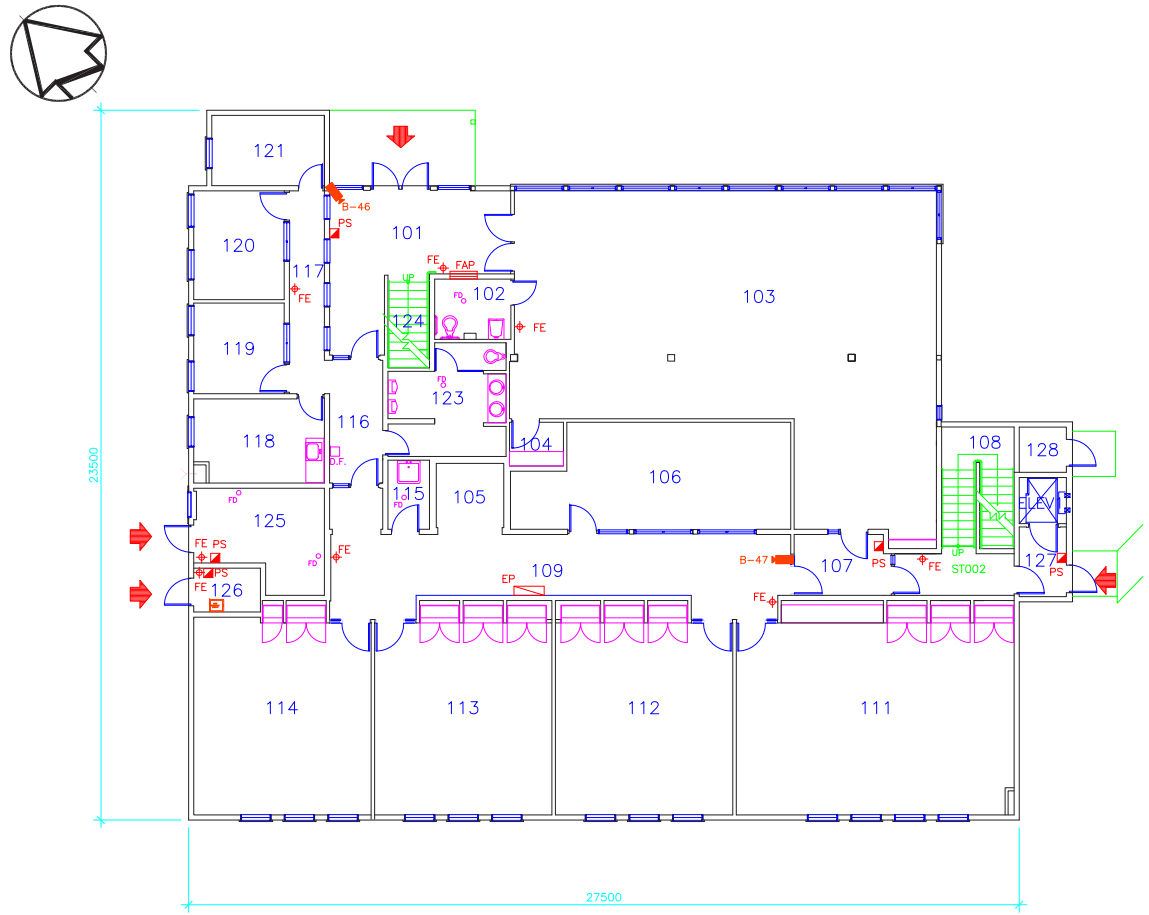
0 5m 10m
1:250

FILED: S:\...\BC24–1.DWG
UPDATED: 2001–11–05
PLOT SCALE: 1:250

BC41 PROGRAMS BUILDING

CCTV PLAN



Camera B46 & B47

ROOM INDEX

101	LOBBY
102	WOMEN'S WASHROOM
103	LIBRARY
104	STORAGE ROOM
105	STORAGE
106	TEACHER'S PREPARATION
107	VESTIBULE
108	STAIR NO.2
109	CORRIDOR
111	CLASSROOM
112	CLASSROOM
113	CLASSROOM
114	CLASSROOM
115	JANITOR'S ROOM
116	CORRIDOR
117	CORRIDOR
118	STAFF ROOM/LOUNGE
119	OFFICE
120	OFFICE
121	OFFICE
123	MEN'S WASHROOM
124	STAIR NO.1
125	MECHANICAL ROOM
126	ELECTRICAL ROOM
127	VESTIBULE
128	STORAGE

CCTV INDEX

B-46 101
B-47 109
CCTV Node 126

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- MULTI-SENSOR CAMERA
- FIXED CAMERA
- 360 CAMERA
- EQUIPMENT CABINET

FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

0 1m 5m 10m 20m

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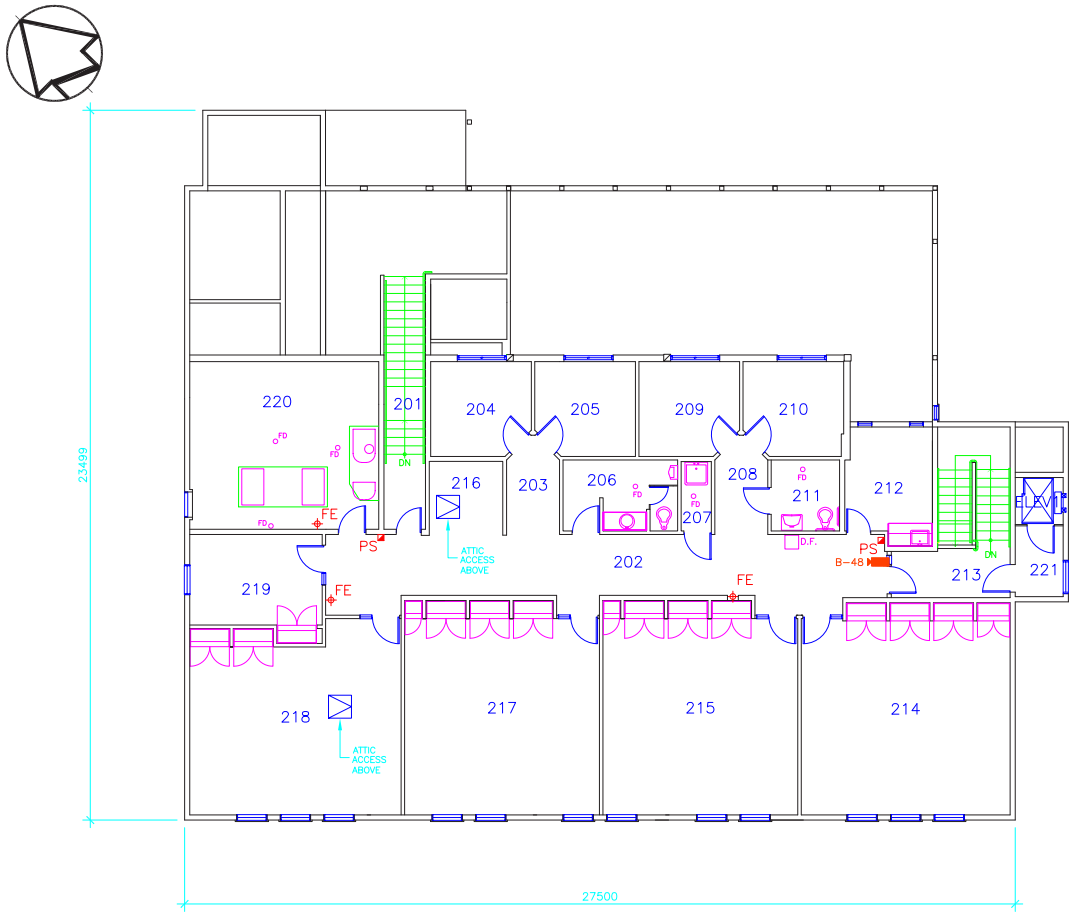
UPDATED: 01-11-05
PLOT SCALE: 1:200

BC41 PROGRAMS BUILDING

CCTV PLAN



ROOM INDEX

Camera B48

201	STAIR #1
202	CORRIDOR
203	HALLWAY
204	OFFICE
205	OFFICE
206	MEN'S WASHROOM
207	JANITOR'S ROOM
208	HALLWAY
209	OFFICE
210	OFFICE
211	WOMEN'S WASHROOM/HANDICAPPED
212	STAFF ROOM/LOUNGE
213	STAIR #2
214	CLASSROOM
215	CLASSROOM
216	WAITING AREA
217	CLASSROOM
218	BOARDROOM
219	OFFICE
220	MECHANICAL ROOM
221	VESTIBULE

CCTV INDEX

B-48 202

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- MULTI-SENSOR CAMERA
- FIXED CAMERA
- 360 CAMERA
- EQUIPMENT CABINET

SECOND FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

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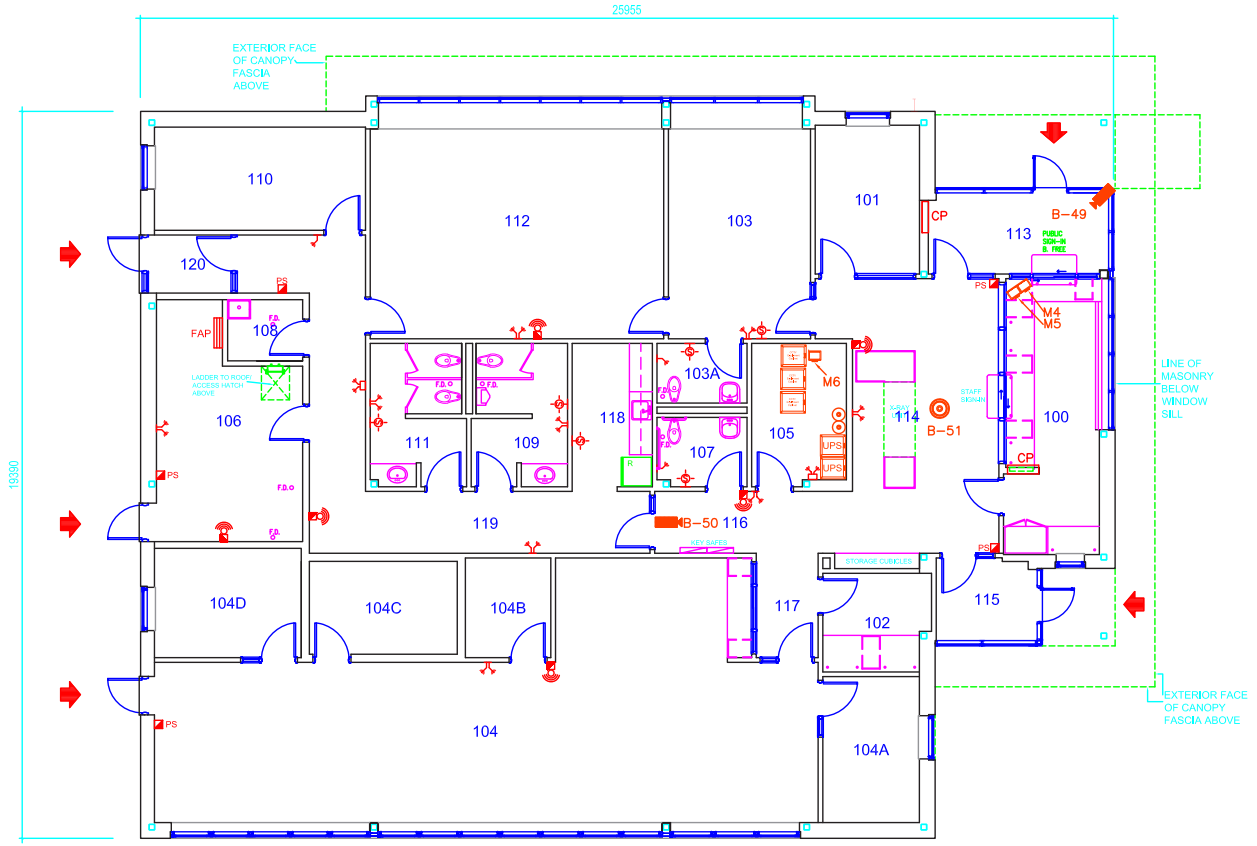
UPDATED: 01-11-05
PLOT SCALE: 1:200

Cameras B49-B51
Monitors M4 - M6



GROUND FLOOR PLAN

0 1m 5m 10m

ROOM INDEX

100 - 24-HOUR DUTY POST
101 - CORRECTIONAL MANAGER
102 - INTERVIEW ROOM
103 - VICTIMS / GENERAL WAITING
103A - WASHROOM
104 - FINANCE OFFICE
104A - FINANCE ANALYST GENERAL ACCOUNTS
104B - OFFICE EQUIPMENT
104C - ACCOUNTS ROOM
104D - CHIEF FINANCE OFFICE
105 - SYSTEMS EQUIPMENT ROOM
106 - MECHANICAL / ELECTRICAL ROOM
107 - BARRIER FREE WASHROOM
108 - JANITOR CLOSET
109 - MEN'S WASHROOM
110 - SVW INMATE
111 - WOMEN'S WASHROOM
112 - NPB HEARING ROOM
113 - VESTIBULE
114 - RECEPTION / WAITING
115 - VESTIBULE
116 - CORRIDOR
117 - RECEPTION
118 - KITCHEN
119 - CORRIDOR
120 - VESTIBULE

CCTV INDEX

B-49 113
B-50 116
B-51 114
M4 100
M5 100
M6 105
CCTV Node 105

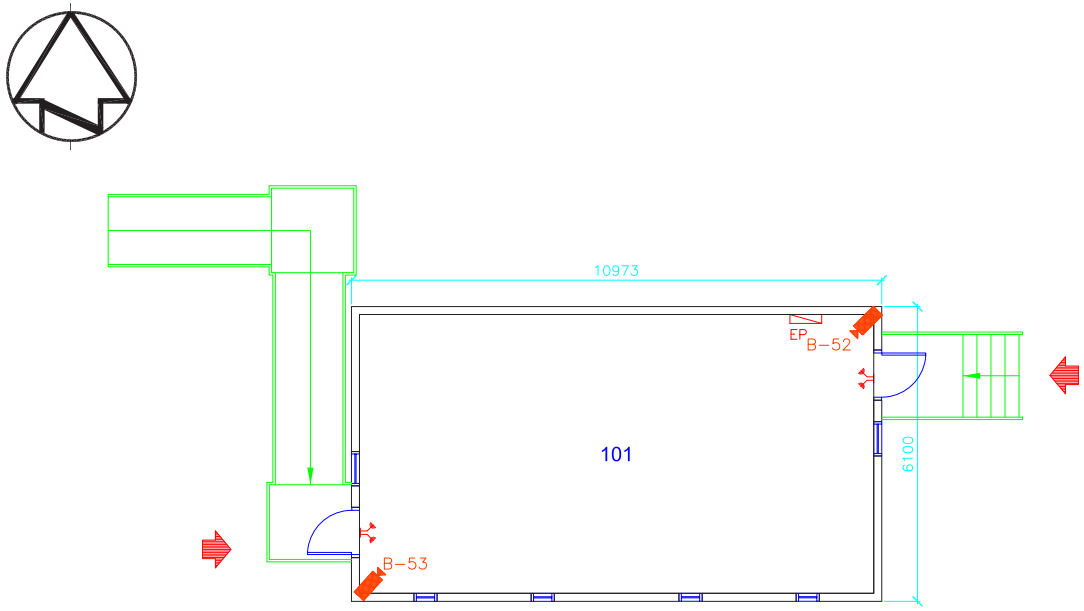
CCTV KEY

NVUS – GUI
NVUS – CPU
PTZ DOME CAMERA
FIXED CAMERA
360 Camera
EQUIPMENT CABINET

BC58 GYM BUILDING

CCTV PLAN

Cameras B52-B53



ROOM INDEX

101 GYM

CCTV INDEX

B-52 101

B-53 101

CCTV KEY

NVUS – GUI

NVUS – CPU

PTZ DOME CAMERA

FIXED CAMERA

EQUIPMENT CABINET

FIRST FLOOR PLAN

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

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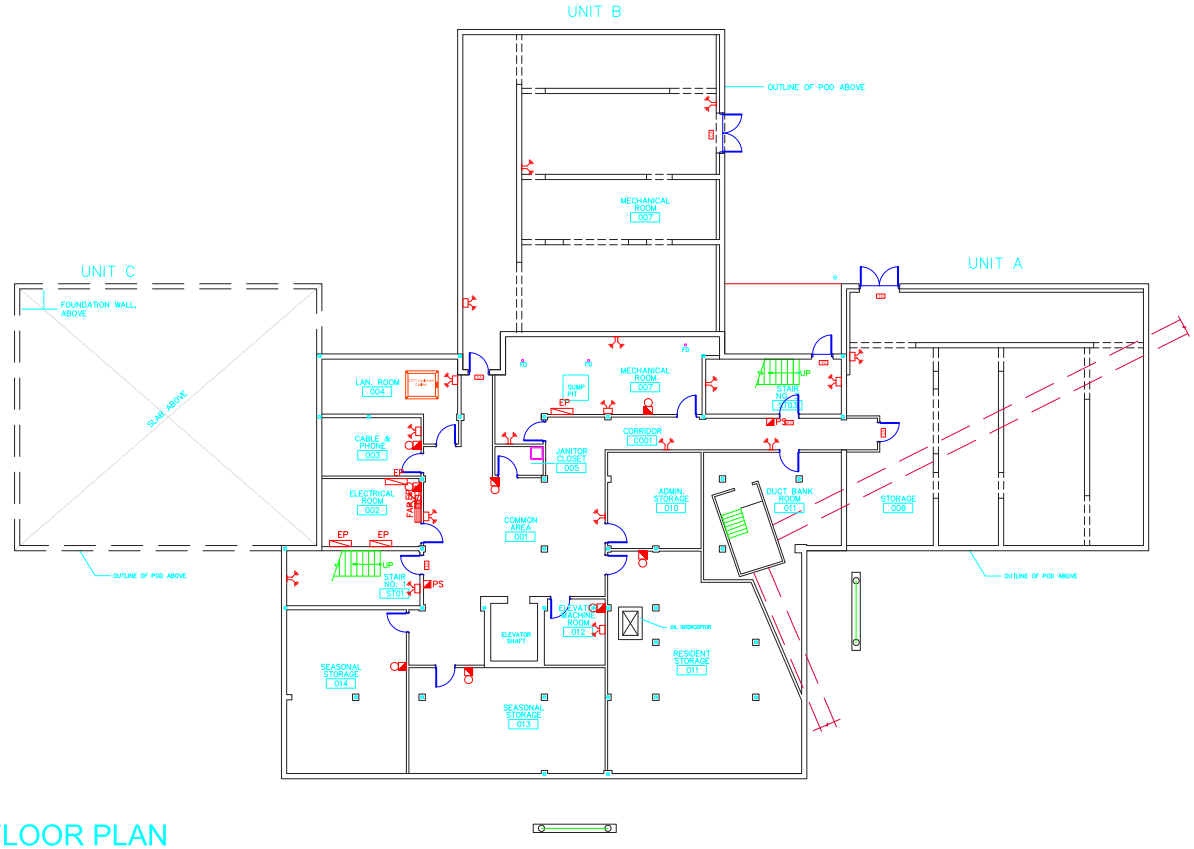
UPDATED: 2011-12-21
PLOT SCALE: 1:100

CCTV PLAN



BASEMENT FLOOR PLAN

ROOM INDEX

001 - Common Area
002 - Main Electrical Room
003 - Cable and Phone
004 - LAN Room
005 - Storage
006 - Janitor Closet
007 - Mechanical Room
008 - Storage
009 - Duct Bank Room
010 - Admin. Storage
011 - Resident Storage
012 - Elevator Machine Room
013 - Seasonal Storage
014 - Seasonal Storage

C001 - Corridor
ELEV1 - Elevator Shaft
ST01 - Stair No. 1
ST03 - Stair No. 3

CCTV INDEX

CCTV NODE 004

CCTV KEY

- NVUS – GUI
- NVUS – CPU
- PTZ DOME CAMERA
- MULTI–SENSOR CAMERA
- FIXED CAMERA
- 360 CAMERA
- EQUIPMENT CABINET

Public Works
Government Services Canada
Architectural and Engineering Services
Ontario Region

Travaux publics
Services gouvernementaux Canada
Services d'architecture et de génie
Région de l'Ontario

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PLOT SCALE: 1:500

Correctional Service Canada
Technical Services Branch
Electronics Systems

Issue 1
February 28, 2018

STATEMENT
OF
TECHNICAL REQUIREMENTS

UPGRADE

of

CCTV SYSTEMS

at

BEAVER CREEK INSTITUTION

Appendix I

Standards & Specifications

This Statement of Technical Requirements is approved by the Correctional Service of Canada for the upgrade of the existing Hybrid CCTV System at Beaver Creek Institution.

Applicable Statements of Work, Specifications and Standards

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/SOW-0110 Electronics Engineering Statement of Work – Structured Cable Systems for Electronic Security Systems

D. ES/SPEC-0006 Electronics Engineering Specification - Conduit, Space and Power Requirements for Security Systems for use in Federal Correctional Institutions

E. ES/STD-0205 Electronics Engineering Standard, Fixed Outdoor Camera Enclosure, Closed Circuit Television

F. ES/STD-0221 Electronics Engineering Standard, Fixed Network Colour Camera for Enclosure, Closed Circuit Television

G. ES/STD-0223 Electronics Engineering Standard, Outdoor Network Colour Dome Camera, with Pan/Tilt/Zoom, Closed Circuit Television

H. ES/STD-0227 Electronics Engineering Standard, LCD Colour Computer Monitor, Closed Circuit Television

I. ES/STD-0228 Electronics Engineering Standard, Network Video User Station, Closed Circuit Television

J. ES/STD-0229 Electronics Engineering Standard, Network Video Recorder, Closed Circuit Television

K. ES/STD-0232 Electronics Engineering Standard, Indoor Network Colour Dome Camera, Closed Circuit Television

L. ES/STD-0233 Electronics Engineering Standard, Indoor Network Colour and Black/White No Grip Corner Mount Camera, Closed Circuit Television

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 contact 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;

l. 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 manners 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 iInstallation activities have been completed.

6.1 Acceptance Test Plans (ATPs)

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

6.2 System Testing

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

6.3 Deficiency Lists (DL)

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

a. Visual/Mechanical,

b. Operational, and

c. Technical/Functional.

6.4 Technical Acceptance

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

7.0 QUALITY ASSURANCE (QA)

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

7.1 Quality Control Program

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

7.2 System Test Program

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

7.2.1 System Test Plan.

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

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

7.2.2 Test Procedures. These procedures shall ensure that:

a. all equipment supplied meets the performance specification;

b. each subsystem meets the applicable performance requirements; and

c. the overall system meets the performance requirements.

d. test procedure contains the step sequence for each test to be conducted, and the expected results.

7.2.3 **Contractor Testing.**

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

7.2.4 **Test Reports.**

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

a. a summary description of the tests;

b. test results consisting of completed test procedures verified by a CSC representative;

c. incident reports, including analysis and corrective action; and

d. results of any retest.

8.0 TRAINING

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

8.1 Classroom Training

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

8.2 Training Documentation

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

a. training plans for CSC operations trainers and technical personnel;

b. manuals for each student to add notes;

c. training aids; and

d. student materials.

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

9.0 MAINTENANCE and SPARES

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

9.1 Maintenance Plan

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

9.2 Spares Plan

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

9.3 Spares List

The spares list shall identify the following:

a. the spare parts and the subassemblies with the recommended quantities;

b. the cross-reference listings between the vendors and the original manufacturer's codes;

c. the unit and extended prices for stocking; and

d. the expected life or the annual consumption of each part.

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

9.4 Test Equipment

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

10.0 DOCUMENTATION

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

10.1 Manuals and Drawings

The following items make up the final documentation requirements:

a. Operator Manual,

b. Maintenance Manual,

c. Installation As-built Drawings,

d. Equipment As-built Drawings, and

e. Equipment Operating Software.

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

10.2 List of Equipment

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

10.3 Baseline Measurements

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

10.4 Documentation Format

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

- One (1) hard-copy version of all documentation.

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

- One (1) electronic version of all documentation in a full 'read-write' format to serve as a master of the documents and drawings.

- all software requirements to access the electronic versions of the documentation.

- One (1) CD containing the equipment operating software.

10.5 **Operator Manuals**

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

a. title page;

b. revision notice page, lined, with columns for revision numbers, dates and initials;

c. table of contents;

d. warnings and cautions;

e. introduction - general information including a description of equipment or system and summary of capabilities;

f. theory of operation including an explanation of all major system components;

g. detailed description and use of all user accessible computer screens; and

h. block diagrams.

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

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

10.6 **Maintenance Manuals**

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

a. title page;

b. warranty page - explaining the warranty period and expiry dates;

c. revision notice page, lined, with columns for revision numbers, dates and initials;

d. table of contents;

e. introduction - general information including a full description of equipment or system, technical summary, specifications and detailed block diagrams;

f. theory of operation including a detailed explanation of all circuits and parts;

g. alignment and test procedures;

h. repair procedures including step by step fault finding or fault localizing;

I. block diagrams;

j. circuit schematics (clear, easy to read, foldout type);

k. complete parts list;

l. mechanical drawings, chassis layout illustrations and wiring data lists; and

m. drawings including as-built and as-installed drawings.

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

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

11.0 PROJECT PROVISIONS

11.1 Monthly Progress Reports

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

Monthly reports shall contain the following:

a. summary of the month's activities;

b. scheduled shortfalls and rescheduled dates;

c. problem areas and proposed solutions;

d. review of next month's activities;

e. summary of meetings held during the month; and

f. cash flow forecast.

11.2 Monthly Review Meetings

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

11.3 Maintenance Support

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

11.4 **Shipment and Delivery**

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

12.0 SYSTEM AVAILABILITY

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

12.1 Common Facilities

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

12.2 Single Point of Failure

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

12.3 Availability Model

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

a. summation of failure rates of the individual components; or

b. the bidder's documented experience with the same equipment operating in a similar physical environment.

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

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

12.4 Availability

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

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

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

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

The repair time divided by the number of failures.

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

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

12.5 **Expected Life Duration**

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

13.0 INTERFERENCE

13.1 Interference to the System

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

13.1.1 CB transceivers at 1 metre or more;

13.1.2 VHF and UHF transceivers at 1 metre or more;

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

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

13.2 Interference by the System

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

14.0 LIGHTNING PROTECTION

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

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

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/SOW-0102
Revision 6
1 May, 2008

ELECTRONICS ENGINEERING STATEMENT OF WORK

QUALITY CONTROL FOR PROCUREMENT AND INSTALLATIONS OF ELECTRONIC SECURITY SYSTEMS

AUTHORITY

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

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

Prepared by:

Manager,
Electronics Systems Research

Approved by:

Director,
Engineering Services
18 Aug 08

RECORD OF REVISIONS

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

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 -

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/SOW-0110
Revision 1
24 June, 2008

ELECTRONICS ENGINEERING STATEMENT OF WORK

STRUCTURED CABLE SYSTEMS FOR ELECTRONIC SECURITY INSTALLATIONS

AUTHORITY

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

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

Prepared by:

Manager,
Electronics Systems Research

Approved by:

Director,
Engineering Services
23 July 08

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	Original	Original
1	4.3.1 - Cable	Cable upgraded to meet OM3 standards
	Multiple	Copper cable upgraded to CAT 6

TABLE OF CONTENTS

TABLE OF CONTENTS 3

ABBREVIATIONS 4

DEFINITIONS 5

APPLICABLE DOCUMENTS 6

1.0 INTRODUCTION 7
1.1 General 7
1.2 Scope 7
1.3 Off-The-Shelf Equipment 7
1.4 Manufactured Equipment 7
1.5 Commonality of Equipment 7

2.0 MATERIAL AND EQUIPMENT REQUIREMENTS 8
2.1 Environmental Conditions 8

3.0 TELCOMMUNICATIONS OVERVIEW 9
3.1 Structured Cabling System 9

4.0 DESCRIPTION OF WORK 10
4.1 General System Requirements 10
4.1.1 Outline 10
4.2 Qualification Testing 10
4.2.1 Outline 10
4.2.2 User termination 11
4.2.3 Closet Termination 13
4.2.4 Cable Protection 13
4.2.5 Line Cords 13
4.2.6 Testing 14
4.2.7 Labelling 14
4.2.8 Documentation 14
4.3 Fibre Optic Backbone Cable 14
4.3.1 Cable 14
4.3.2 Terminations 15
4.3.3 Testing 15
4.3.4 Labelling 16
4.4 Cross Connect 16
4.4.1 Data Cross Connect 16

ABBREVIATIONS

The following abbreviations are used in this specification:

BICSI	Building Industry Consultant Service International
CER	Common Equipment Room
CET	Certified Electronic Technologist
COTS	Commercial -of-the-Shelf
CSC	Correctional Service Canada
CSA	Canadian Standards Association
CSV	Certified System Vendor
DVO	Data/Voice Outlet
EIA	Electronic Industries Association
EMT	Electrical Metallic Tubing
LOF	Laser Optimized Fiber
IDF	Intermediate Distribution Frame
OTDR	Optical Time Domain Reflectometer
RCDD	Registered Communications Distribution Designer
TC	Telecomm Closet
TIA	Telecommunications Industry Association
UTP	Unshielded Twisted Pair

DEFINITIONS

The following definitions are used in this specification:

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

APPLICABLE DOCUMENTS

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

a. EIA/TIA Standard EIA/TIA-568 Commercial Building Telecommunications Wiring Standard

b. EIA/TIA Technical Systems Bulletin TSB-36 Additional Cable Specifications for Unshielded Twisted Pair Cables

c. EIA/TIA Technical Systems Bulletin TSB-40 Additional Transmission Specifications for Unshielded Twisted Pair Connecting Hardware.

d. International standard ISO/IEC 11801-2nd Edition: Information technology — Generic cabling for customer premises.

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

1.0 INTRODUCTION

1.1 General

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

1.2 Scope

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

1.3 Off-The-Shelf Equipment

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

1.4 Manufactured Equipment

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

1.5 Commonality of Equipment

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

2.0 MATERIAL AND EQUIPMENT REQUIREMENTS

2.1 Environmental Conditions

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

a. **Indoor Equipment**

Temperature: 0° C to 40° C; and

Humidity: 20% to 95% non-condensing.

b. **Outdoor Equipment**

Temperature: -40° C to +50° C; and

Humidity: 0 to 100%, condensing.

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

Complete assemblies of indoor equipment shall be resistant to liquid spills, airborne contaminants, shock and vibration.

3.0 TELECOMMUNICATIONS OVERVIEW

3.1 Structured Cabling System

The design objective is a flexible network that is easy to re-configure, easy to manage and capable of incremental growth. The network is based on a structured cabling system conforming to Electric Industry Association/Telecommunications Industry Association Specification 568 (EIA/TIA-568) and Canadian Standards Association 529 (CSA 529) and using a star wired topology for the horizontal distribution with Category 6 Unshielded Twisted Pair (UTP) and 50/125 Micron Laser Optimized Fibre. The design will support Ethernet, Fast Ethernet, and network management.

4.0 DESCRIPTION OF WORK

4.1 General System Requirements

4.1.1. Outline

This section defines the minimum requirements for a structured cabling system to be provided on an engineered, furnished, installed, tested, and commissioned basis. Products and installation practices shall conform with the EIA/TIA documents identified in the **APPLICABLE DOCUMENTS** section of this Statement of Work.

The structured cabling system includes the following basic elements arranged into backbone feeders and horizontal distribution subsystems that are cross connected or patched together in Telecom Closets or Common Equipment Rooms on Intermediate Distribution Frames (IDFs).

a. Unshielded Twisted Pair (Horizontal)
b. 8-pin modular Telecom outlets
c. Insulation displacement connector type terminal blocks
d. LOF optic cable (Backbone)
e. Fibre optic (duplex) interconnect patch panels
f. Patch cords for patch panels
g. Line cords for workstation data equipment (Office Cables)

Notes:
1) 3 metre length is standard for Office Cables
2) All cables provided for a project shall have a **GREEN** jacket.

4.2 Horizontal Data Cable

4.2.1 Cable

Each cable shall consist of 8 each of 24 AWG thermoplastic insulated solid copper conductors formed into four individually twisted pairs and enclosed by a jacket with the appropriate protection rating determined by Provincial codes.

The cable shall fully conform with EIA/TIA-568 design requirements for 100 ohm UTP cable and fully conform with EIA/TIA-568 TSB-36 transmission requirements for Category 6 cable.
Cables shall bear evidence of verified Level 6 or Category 6 and also bear evidence of certification by a recognized standard or testing body. (eg: Bearing NORDX Brand name and have length clearly marked on cable sheath)

The cable bundles will be fed to locations in either a supplied cable tray or conduit system. Outlet cables will then be fed to the user locations via either pac poles or fished down hard wall offices. A pull string will remain in the conduit/cable tray for future installations.

The cable run length from the IDC to the workstation location shall NOT exceed 90 metres. The combined length for patch cords for data network horizontal distribution connections shall not exceed 10 metres for an overall length from data network hub equipment to workstation equipment not exceeding 100 metres.

4.2.2 **User Termination**

Termination at the user end will be made onto a certified Category 6 RJ45 module for data. These modules will then be housed in a certified faceplate. The faceplate to house the modules will have the capability to equip up to six each 8 pin modular jacks. Other configurations to be used will vary with locations: A duplex flush mount faceplate for drywall applications, a duplex surface mount kit for PAC pole applications and duplex single gang outlets mounted into custom furniture with adapter plates. Surface mount kits will not exceed a 6.5 cm. protrusion from the wall. For custom furniture it is assumed that the cable runs will be fed to the outlet via raceways in the legs of furniture. For security reasons, jacks are NOT be installed in exterior walls or walls not totally part of CSC space. All cables must either terminate on a patch panel or on a faceplate, loose or unterminated cables are not acceptable.

The 8 pin modular jack connectors shall comply for termination of 4 wire pairs with 24 AAWG solid copper conductors: minimum contact force of 100g and conductors separated by jack comb.

Each modular outlet will be wired per EIA/TIA-568 polarization sequence, designation T568A (reference CAN/CSA T529 Clause 11.2 Figure 11-1 and Table 10-1).

This illustration is a front view of the connector

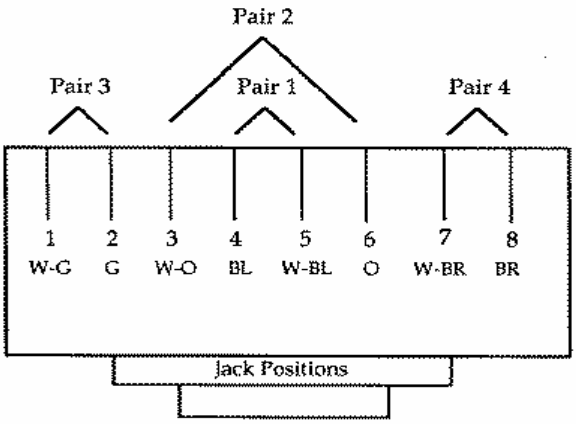

Figure 11-1
Eight-Postion Jack Pin/Pair Assignments
(T568A Type)

Figure 11-1 and Table 10-1 outlines the sequencing required to construct line, office, and patch cables.

Each modular outlet will conform with EIA/TIA TSB 40 transmission requirements for Category 6 and will also be compatible with existing standard electrical outlet boxes.

Table 10-2 outlines the correct punch down positioning when using Northern Telecom T568A BIX DVOs' , T568A ISDN QCBIX36DI and T568A ISDN QCBIX46DI Modular Jack Connectors, and T568A QPBIX Modular Patch Panels.

Table 10-1

Colour Codes for patch, line, and office cables

Colour Identification	Colour Code	Abbreviation
Pair 1	White-Blue	(W-BL)
	Blue	(BL)
Pair 2	White-Orange	(W-O)
	Orange	(O)
Pair 3	White-Green	(W-G)
	Green	(G)
Pair 4	White-Brown	(W-BR)
	Brown	(BR)

Table 10-2

Colour Codes for punch down and modular outlets

Position	Colour Code	Abbreviation
1	White-Blue	(W-BL)
2	Blue	(BL)
3	White-Orange	(W-O)
4	Orange	(O)
5	White-Green	(W-G)
6	Green	(G)
7	White-Brown	(W-BR)
8	Brown	(BR)

4.2.3 Closet Termination

Supply and installation of RJ45 Category 6 hardware for system connection in communications closet using 24 NT certified patch panels rack mounted with cable organizer panels installed for each patch panel.

Active components will be connected to equipment by 8 conductor patch cords manufactured to CAT 6 compliance. Patch cords shall be stranded conductor and have a “no-snag” boot over the RJ45 connector.

Multi-Level building installations will require individual patch panels be installed for each level of the building. Patch panel(s) for each level of a multi-level building must have at least 15% unused ports. The same holds true for single story, multi ICC buildings.

4.2.4 Cable Protection

All ceiling distribution cabling shall be enclosed and protected by 3/4” and 1” rigid conduit from communications closet(s) room(s) and cabinets to all user outlets located in inmate accessible areas. In areas that CSC designated as non inmate accessible, EMT zone conduit will be allowed. Conduits must have end bushings installed to protect the cable from sharp edges.

Conduit containing Copper backbone cable must be designated “CAUTION SECURITY SYSTEM CABLE”

Conduit containing Fibre Optic backbone cable must be designated “CAUTION FIBRE OPTIC SECURITY SYSTEM CABLE”

4.2.5 Line Cords

The cabling company will supply RJ45, 8 pin modular line cords to connect owner provided data equipment to the horizontal distribution outlets at the workstation. They must be consistent with CAT 6 specification and provide end-to-end CAT 6 connectivity. Line cords shall be stranded conductor and have a “no-snag” boot over the RJ45 connector.

4.2.6 **Testing**

All cables/pairs will be scanned with a MicroTest Penta cable scanner or equivalent at 100 Mbs to determine DC loop resistance, near end cross talk and attenuation to meet or exceed the performance stated in EIA/TIA TSB-36 and TSB-40, noise, pair mapping and ranking. These tests must be conducted as originating from both the punch down location and modular outlet location of each cable segment.

4.2.7 **Labeling**

All jacks must be identified by means of labels with unique numbers These markings will be made with printed labels. The Correctional Service of Canada expects that all drops at the user end will be sequential and not out of order.

The closet terminations must be identified with these same numbers marked on BIX labels adhered to BIX 20A designation strips and patch panels. The CAN/CSA 568 colour code will apply.

Labels will also be placed on the horizontal wire, 6-9” from termination points. This would include closets, main cabinet, and jacks.

4.2.8 **Documentation**

Customer to supply CAD or Visio Version 5 floor plans when available. If CAD documents are not available, contractor will be responsible to scan hard copy of plans.

Contractor to supply site plans, individual runs, risers, wire #’s, jack #’s, patch panel #’s in both hard and soft copy.

All test results shall be machine printed, hand written test result sheets are NOT acceptable.

4.3 **Fibre Optic Backbone Cable**

4.3.1 **Cable**

The cable to be supplied and installed for backbone purposes shall consist of 12 strands (6 pairs) of Laser Optimized Fibre with nominal 50/125 um core/cladding diameter formed into a single cable.

Optical cable shall physically conform with ANSI/ICEA S-83-596 mechanical and environmental specifications for outdoor fibre optic cable.
Fibre optic cable shall conform with the requirements of OM3 as per the ISO 11801-2nd Edition standards

4.3.2 **Terminations**

Fibre optic cables shall be terminated to SC Physical contact Connectors shall be able to sustain a minimum of 200 mating cycles per EIA/TIA-455-21 without violating specifications. These connectors will terminate within interconnect sleeves to facilitate patching in patch panels. The maximum optical attenuation per pair of mated connectors shall not exceed 0.75 db.

All fibre strands, whether used in the project or not, shall be terminated with SC type connectors and installed into a fibre patch panel: generally one duplex patch per cable (i.e. 12 connectors per panel for 12 strand fibre cable). Please note that these cables shall be SC to ST unless otherwise noted.

The patch panel proposed shall provide strain relief for each fibre as an integral part of the panel design. This standard type and size of panel should be uniformly used throughout the project.

Installed fibre panels shall be completed with all guides, brackets and other accessories to facilitate cable cross connect to active components for administration and management, including provisions for labeling that are consistent with EIA/TIA-568.

4.3.3. **Testing**

All terminated fibre media and related connecting hardware shall be tested with a power meter and certified at the conclusion of the initial installation with an OTDR, in both directions. Testing will include end-to-end attenuation testing that shall measure each fibre in one direction and compare with the calculated loss based on the manufacturers specifications and known length of cable using 850 nanometres and 1300 nanometres wavelengths. The difference in value between any two mated fibre shall not exceed 0.5 db.

The power levels of the terminated fibres shall be documented to allow the equipment vendor to select the correct strapping options for their equipment. This will prevent the receivers from being overloaded.

If the attenuation measurements are not within the required specifications, an Optical Time Domain Reflectometer shall be used to find the cause and location of the power loss. Any failure will be rectified.

All test results to be machine printed, and documented in duplicate and delivered complete with As-Built drawings to Corrections Canada Regional Office.

The fibre optic cable testing will also include a basic light test:

- on each of the fibres before installation to ensure that no damage had occurred during shipping;
- on each of the fibres before termination to ensure that no damage had occurred during installation.

4.3.4 **Labeling**

All fibre optic cables will be identified by means of Warning Labels located on all related conduit, pullboxes and backboards.

Both ends of all fibre cables will be labeled indicating destination and number of strands.

All ports on each Fibre optic patch panel will be labeled to identify the backbone destinations. Both ends will be labeled with this same numbering scheme.

4.4 **Cross Connect**

4.4.1 **Data Cross-connect**

Cross connection of the UTP horizontal cables to the tie field will be completed after testing of installed cables has taken place.

Jumper wire shall be provided, if requested, and will conform with EIA/TIA TSB-40 transmission requirements for Category 6.

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/SPEC-0006
Revision 2
14 January, 2002

ELECTRONICS ENGINEERING

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

AUTHORITY

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

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

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TABLE OF CONTENTS

TABLE OF CONTENTS 2

ABBREVIATIONS 5

DEFINITIONS 6

1.0 INTRODUCTION 7
- 1.1 General 7
- 1.2 Scope 7
- 1.3 Off-The-Shelf Equipment 7
- 1.4 Equipment Procurement 7

2.0 APPLICABLE DOCUMENTS 8

3.0 REQUIREMENTS 9
- 3.1 General 9
- 3.2 Environmental Conditions 9
- 3.3 Conduits, Cable Troughs and Raceways 10
  - 3.3.1 Conduits 10
  - 3.3.2 Cable Troughs and Raceways 10

4.0 SYSTEM REQUIREMENTS 12
- 4.1 Perimeter Intrusion Detection Systems 12
  - 4.1.1 Motion Detection System 12
    - 4.1.1.1 Conduit Requirements 12
    - 4.1.1.2 Space Requirements 12
    - 4.1.1.3 Power Requirements 12
  - 4.1.2 Fence Disturbance Detection System 12
    - 4.1.2.1 Conduit Requirements 13
    - 4.1.2.2 Space Requirements 13
    - 4.1.2.3 Power Requirements 13
  - 4.1.3 PIDS Microwave 13
    - 4.1.3.1 Conduit Requirements 13
    - 4.1.3.2 Space Requirements 13
    - 4.1.3.3 Power Requirements 13
  - 4.1.4 PIDS Closed Circuit Television 14
    - 4.1.4.1 Conduit Requirements 14
    - 4.1.4.2 Space Requirements 14
    - 4.1.4.3 Power Requirements 14

4.1.5 MCCP Console 15
4.1.5.1 Conduit Requirements 15
4.1.5.2 Space Requirements 15
4.1.5.3 Power Requirements 15
4.2 Facility Alarm Systems 16
4.2.1 Inmate Cell Call System 16
4.2.1.1 Conduit Requirements 16
4.2.1.2 Space Requirements 16
4.2.1.3 Power Requirements 16
4.2.2 Fixed Point Security Alarm System 16
4.2.2.1 Conduit Requirements 17
4.2.2.2 Space Requirements 17
4.2.2.3 Power Requirements 17
4.2.3 Personal Portable Alarm System 17
4.2.3.1 Conduit Requirements 17
4.2.3.2 Space Requirements 17
4.2.3.3 Power Requirements 17
4.2.4 Portable Alarm Location System 18
4.2.4.1 Conduit Requirements 18
4.2.4.2 Space Requirements 18
4.2.4.3 Power Requirement 18
4.3 Access Control & Supplementary Systems 18
4.3.1 Door Control & Corridor Monitoring System 18
4.3.1.1 Conduit Requirements 18
4.3.1.2 Space Requirements 18
4.3.1.3 Power Requirements 19
4.3.2 Closed Circuit Television System 19
4.3.2.1 Conduit Requirements 19
4.3.2.2 Space Requirements 19
4.3.2.3 Power Requirements 19
4.3.3 Supplementary Intrusion Detection System 19
4.3.3.1 Conduit Requirements 19
4.3.3.2 Space Requirements 19
4.3.3.3 Power Requirements 20
4.3.4 Voice Recording Equipment 20
4.3.4.1 Space Requirements 20
4.3.4.2 Power Requirements 20
4.3.5 Video Recording Equipment 20
4.3.5.1 Space Requirements 20
4.3.5.2 Power Requirements 20
4.4 Communications Systems 21
4.4.1 Two Way Communications Radio 21
4.4.1.1 Conduit Requirements 21
4.4.1.2 Space Requirements 21
4.4.1.3 Power Requirements 21
4.4.2 Public Address System 21

4.4.2.1 Conduit Requirements 22
4.4.2.2 Space Requirements 22
4.4.2.3 Power Requirements 22
4.43 Limited Call Intercom System (LCIS) 22
4.4.3.1 Conduit Requirements 22
4.4.3.2 Space and Power Requirements 22
4.4.4 Restricted Visit Intercom System 22
4.4.4.1 Conduit Requirements 23
4.4.4.2 Space Requirements 23
4.4.4.3 Power Requirements 23
4.4.5 Entertainment Cable Television 23
4.4.5.1 Conduit Requirements 23
4.4.5.2 Space Requirements 23
4.4.5.3 Power Requirements 23
4.5 Control Posts (CP) and Terminal Equipment Spaces (TES) 24
4.5.1 Conduit Requirements 24
4.5.2 Space Requirements 24
4.5.3 Power Requirements 24
4.6 Installation Requirements 24
4.7 Documentation Requirements 24

5.0 QUALITY ASSURANCE 25
5.1 General 25

6.0 DELIVERY 25

APPENDIX A SUMMARY OF SYSTEM CONDUIT REQUIREMENTS 26

APPENDIX B SUMMARY OF SYSTEM SPACE REQUIREMENTS 28

APPENDIX C SUMMARY OF SYSTEM POWER REQUIREMENTS 31

ABBREVIATIONS

The following abbreviations are used in this specification:

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

DEFINITIONS

The following definitions are used in this specification:

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

1.0 INTRODUCTION

1.1 General

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

1.2 Scope

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

1.3 Off-The-Shelf Equipment

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

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

1.4 Equipment Procurement

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

2.0 APPLICABLE DOCUMENTS

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

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

3.0 REQUIREMENTS

3.1 General

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

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

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

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

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

3.2 Environmental Conditions

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

a. **Indoor Equipment**

Temperature: 0° C to 50° C; and

Humidity: 20% to 95% non-condensing.

b. **Outdoor Equipment**

Temperature: -40° C to +55° C; and

Humidity: up to 100% condensing.

3.3 Conduits, Cable Troughs and Raceways

3.3.1 Conduits

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

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

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

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

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

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

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

a. CSA Standard C22.2 - Rigid Metal Conduit

b. CSA Standard C22.2 - Flexible Metal Conduit

3.3.2 Cable Troughs and Raceways

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

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

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

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

a. CSA Standard C22.2 - Cable Troughs and Fittings.

b. CSA Standard C22.2 - Raceways and Fittings.

c. CSA Standard C22.2 - Surface Raceways and Fittings.

4.0 SYSTEM REQUIREMENTS

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

4.1 Perimeter Intrusion Detection Systems

4.1.1 Motion Detection System

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

4.1.1.1 Conduit Requirements

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

4.1.1.2 Space Requirements

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

4.1.1.3 Power Requirements

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

4.1.2 Fence Disturbance Detection System

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

4.1.2.1 **Conduit Requirements**

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

4.1.2.2 **Space Requirements**

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

4.1.2.3 **Power Requirements**

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

4.1.3 **PIDS Microwave**

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

4.1.3.1 **Conduit Requirements**

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

4.1.3.2 **Space Requirements**

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

4.1.3.3 **Power Requirements**

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

4.1.4 PIDS Closed Circuit Television

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

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

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

4.1.4.1 Conduit Requirements

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

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

4.1.4.2 Space Requirements

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

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

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

4.1.4.3 Power Requirements

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

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

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

4.1.5 MCCP Console

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

4.1.5.1 Conduit Requirements

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

4.1.5.2 Space Requirements

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

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

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

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

4.1.5.3 Power Requirements

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

4.2 Facility Alarm Systems

4.2.1 Inmate Cell Call System

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

4.2.1.1 Conduit Requirements

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

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

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

4.2.1.2 Space Requirements

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

4.2.1.3 Power Requirements

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

4.2.2 Fixed Point Security Alarm System

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

4.2.2.1 **Conduit Requirements**

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

4.2.2.2 **Space Requirements**

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

4.2.2.3 **Power Requirements**

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

4.2.3 **Personal Portable Alarm System**

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

4.2.3.1 **Conduit Requirements**

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

4.2.3.2 **Space Requirements**

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

4.2.3.3 **Power Requirements**

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

4.2.4 **Portable Alarm Location System**

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

4.2.4.1 **Conduit Requirements**

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

4.2.4.2 **Space Requirements**

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

4.2.4.3 **Power Requirement**

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

4.3 **Access Control & Supplementary Systems**

4.3.1 **Door Control & Corridor Monitoring System**

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

4.3.1.1 **Conduit Requirements**

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

4.3.1.2 **Space Requirements**

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

4.3.1.3 **Power Requirements**

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

4.3.2 **Closed Circuit Television System**

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

4.3.2.1 **Conduit Requirements**

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

4.3.2.2 **Space Requirements**

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

4.3.2.3 **Power Requirements**

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

4.3.3 **Supplementary Intrusion Detection System**

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

4.3.3.1 **Conduit Requirements**

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

4.3.3.2 **Space Requirements**

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

4.3.3.3 **Power Requirements**

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

4.3.4 **Voice Recording Equipment**

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

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

4.3.4.1 **Space Requirements**

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

4.3.4.2 **Power Requirements**

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

4.3.5 **Video Recording Equipment**

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

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

4.3.5.1 **Space Requirements**

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

4.3.5.2 **Power Requirements**

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

4.4 Communications Systems

4.4.1 Two Way Communications Radio

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

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

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

4.4.1.1 Conduit Requirements

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

4.4.1.2 Space Requirements

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

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

4.4.1.3 Power Requirements

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

4.4.2 Public Address System

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

4.4.2.1 **Conduit Requirements**

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

4.4.2.2 **Space Requirements**

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

4.4.2.3 **Power Requirements**

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

4.43 **Limited Call Intercom System (LCIS)**

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

4.4.3.1 **Conduit Requirements**

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

4.4.3.2 **Space and Power Requirements**

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

4.4.4 **Restricted Visit Intercom System**

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

4.4.4.1 **Conduit Requirements**

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

4.4.4.2 **Space Requirements**

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

4.4.4.3 **Power Requirements**

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

4.4.5 **Entertainment Cable Television**

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

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

4.4.5.1 **Conduit Requirements**

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

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

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

4.4.5.2 **Space Requirements**

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

4.4.5.3 **Power Requirements**

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

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

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

4.5.1 Conduit Requirements

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

4.5.2 Space Requirements

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

4.5.3 Power Requirements

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

4.6 Installation Requirements

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

4.7 Documentation Requirements

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

5.0 QUALITY ASSURANCE

5.1 General

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

6.0 DELIVERY

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

APPENDIX A

SUMMARY OF SYSTEM CONDUIT REQUIREMENTS

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

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

APPENDIX B

SUMMARY OF SYSTEM SPACE REQUIREMENTS

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

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

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

APPENDIX C

SUMMARY OF SYSTEM POWER REQUIREMENTS

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

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

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0205
Revision 2
2014 February 18

ELECTRONIC ENGINEERING STANDARD

FIXED OUTDOOR CAMERA ENCLOSURE

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

This Standard is approved by the Correctional Service Canada for the procurement and installation of this item 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 Engineer
Electronics Security Systems

Approved by:

Director,
Electronics Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0		Original issue
1	3.2	Condensing humidity from 95% to 100%
	7.1	Maximum maintained internal temperature from 40 to 50°C
2	All	Reformat and rationalization

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
TABLE OF DEFINITIONS 5
1 INTRODUCTION 6
1.1 Overview 6
1.2 Purpose 6
2 REFERENCES 7
2.1 Specifications, Standards, and Statements of Work 7
3 PHYSICAL 8
3.1 Dimensions 8
3.2 Environment 8
3.3 Interference 8
3.4 Reliability 8
3.5 Safety 8
4 OPERATIONAL 9
4.1 Enclosure 9
4.2 Wiper 9
5 INTERFACE 10
5.1 Ports 10
5.2 Power 10

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
CSC	Correctional Service Canada
FoV	Field of View
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers

TABLE OF DEFINITIONS

Term	Definition
Design Authority	Director, Electronics Security Systems

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for an outdoor fixed camera enclosure for use at federal correctional institutions.

1.2 Purpose

.1 These enclosures are for deployment in outdoor fixed camera locations such as:

.1 facility perimeter; and
.2 outdoor walkways.

.2 These enclosures are for Fixed Network Colour Cameras for Enclosures (ES/STD-0221).

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

Number	Title
IEC EN60529	International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
IEC EN60950-1	International Electrotechnical Commission Information technology equipment – Safety
IEC EN62262	International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
IEEE 802.3at	IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
IEEE 802.3u	IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T
ES/STD-0221	Electronics Engineering Standards Fixed Network Colour Camera for Enclosures

3 PHYSICAL

3.1 Dimensions

.1 The enclosure must:

.1 measure less than 300mm high;
.2 measure less than 300mm wide;
.3 measure less than 800mm long;

.2 The enclosure window opening must:

.1 pass the camera's complete Field of View (FoV);
.2 include a wiper;
.3 include a sun shield (include in the enclosure measurements);

.3 The enclosure camera mount must:

.1 include an adjustable camera mount;
.2 have ¼-20 threaded mounting holes;
.3 include elevation blocks for large lens/low optical centre-line cameras;

3.2 Environment

.1 The enclosure must:

.1 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.2 have a permanently affixed label on the interior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.3 operate for external temperatures between -40°C to 50°C;
.4 meet or exceed IEC EN60529 IP66 dust and water resistance when mounted;

3.3 Interference

.1 The enclosure must operate correctly in the presence of:

.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 400-450 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;

3.4 Reliability

.1 The enclosure must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The enclosure must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Enclosure

.1 The enclosure must:

.1 be capable of continuous operation;
.2 maintain an internal temperature between 5°C to 50°C for defined operational temperature range;
.3 start and operate from 0 to 100% condensing humidity;
.4 prevent ice, snow, and condensation on the enclosure window;

4.2 Wiper

.1 The enclosure wiper must be remotely controllable;

5 INTERFACE

5.1 Ports

.1 The enclosure does not require an output for camera power.

5.2 Power

.1 The enclosure must use less than 150W excluding any camera power.

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0221
Revision 3
2014 February 18

ELECTRONIC ENGINEERING STANDARD

FIXED NETWORK COLOUR CAMERA FOR ENCLOSURE

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

This Standard is approved by the Correctional Service Canada for the procurement and installation of this item in Canadian federal correctional institutions.

Acquisition of a camera for the identified purposes that is not in compliance with this standard must be approved by the Design Authority.

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 Engineer
Electronics Security Systems

Approved by:

Director,
Electronics Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0		Original issue
1	7.1	Imager changed to ¼ inch or larger
	7.9	Remove numeric quantity on AGC, just yes
	7.12	Added iris requirement
	7.12 – 7.17	Renumber paragraphs
2	6.1	Added CMOS imager
3	All	Reorganized and cleaned to new format

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
TABLE OF DEFINITIONS 5
1 INTRODUCTION 6
1.1 Overview 6
1.2 Purpose 6
2 REFERENCES 7
2.1 Specifications, Standards, and Statements of Work 7
3 PHYSICAL 8
3.1 Dimensions 8
3.2 Environment 8
3.3 Interference 8
3.4 Reliability 8
3.5 Safety 8
4 OPERATIONAL 9
4.1 Camera 9
4.2 Lens 9
4.3 Video 9
5 INTERFACE 10
5.1 Ports 10
5.2 Power 10
5.3 Recording Compatibility 10

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
AGC	Automatic Gain Control
CB	Citizen's Band
CSC	Correctional Service Canada
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
MJPEG	Motion Joint Photographic Experts Group
MTBF	Mean Time Between Failures
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
TCP/IP	Transmission Control Protocol/Internet Protocol
UHF	Ultra High Frequency
VHF	Very High Frequency

TABLE OF DEFINITIONS

Term	Definition
Design Authority	Director, Electronics Security Systems

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for a fixed focus, network capable camera to be mounted in an enclosure for use at federal correctional institutions. The camera is for deployment in either existing indoor enclosures or Fixed Outdoor Camera Enclosures (ES/STD-0205).

1.2 Purpose

.1 The cameras are deployed for both observation and evidentiary use.

.2 These cameras are for deployment in outdoor fixed enclosures such as:

- .1 facility perimeter; and
- .2 outdoor walkways.

.3 These cameras are for deployment in existing indoor fixed enclosures such as:

- .1 indoor hallways;
- .2 gymnasiums;
- .3 weight rooms;
- .4 passage doors/barriers; and
- .5 explosive environments.

.4 The camera is used indoors where enclosures already exist and are being reused. New indoor installations must use Fixed Network Colour Dome Cameras (ES/STD-0232) except for new installations in explosive environments.

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

Number	Title
IEC EN60529	International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
IEC EN60950-1	International Electrotechnical Commission Information technology equipment – Safety
IEC EN62262	International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
IEEE 802.3at	IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
IEEE 802.3u	IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T
ES/STD-0205	Electronics Engineering Standards Fixed Outdoor Camera Enclosure
ES/STD-0232	Electronics Engineering Standards Fixed Network Colour Dome Camera

3 PHYSICAL

3.1 Dimensions

.1 The camera with lens must:

.1 measure less than 75mm high;
.2 measure less than 100mm wide;
.3 measure less than 250mm long;

3.2 Environment

.1 For use either in indoors enclosures or in outdoor heated enclosures.
.2 The camera must:

.1 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.2 be capable of continuous operation;
.3 start and operate from 0°C to 50°C;
.4 start and operate from 0 to 85% non-condensing humidity;

3.3 Interference

.1 The camera must operate correctly in the presence of:

.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 400-450 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;

3.4 Reliability

.1 The camera must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The camera must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Camera

.1 The camera must retain its configuration over a power cycle.

.2 The image sensor must:

- .1 include automatic or remote back focus;
- .2 have a minimum of 480,000 pixels (horizontal x vertical);
- .3 have day (colour) and night (black and white) modes;
- .4 automatic removable infrared cut filter for day/night transition;
- .5 have 0.5 lux or less minimum required illumination for day mode;
- .6 have 0.1 lux or less minimum required illumination for night mode;
- .7 include Automatic Gain Control (AGC);
- .8 include extended dynamic range processing;

4.2 Lens

.1 The camera lens must:

- .1 have a 35° to 80° or greater horizontal angular view vari-focal lens
- .2 be approved by the manufacturer of the camera for that camera;

4.3 Video

.1 The video encoding must:

- .1 support H.264 configurable I-frame frequency of at least 3 per second;
- .2 support H.264 constant bit rate transmission mode;
- .3 support H.264 frame rate transmission mode;
- .4 support at least 3 levels of H.264 image quality;
- .5 support at least 3 levels of MJPEG image quality;

.2 The video output must:

- .1 include an on-screen, programmable character generation overlay capability with a minimum of 8 visible characters;
- .2 support at least two simultaneous H.264 video streams at 30 frames per second with at least 480,000 pixel resolution;
- .3 support at least two simultaneous video streams, one H.264 and one MJPEG at 15 frames per second with at least 480,000 pixel resolution;

5 INTERFACE

5.1 Ports

.1 The camera must:

.1 interface over IPV4 TCP/IP;
.2 be able to operate on 100Base-TX (IEEE 802.3u);
.3 connect using an RJ-45 connector;
.4 be ONVIF compliant;

5.2 Power

.1 The camera must be a Type 1 powered device operating solely from Power over Ethernet (PoE) compliant with IEEE 802.3at Class 0, 1, 2, or 3.

5.3 Video Management System Compatibility

.1 The camera model must be identified as “Certified” or “Supported by Design” in the current Genetec Omnicast Supported Hardware camera list.

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0223
Revision 2
2014 February 18

ELECTRONIC ENGINEERING STANDARD

PAN/TILT/ZOOM NETWORK COLOUR DOME CAMERA

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

Acquisition of a camera for the identified purposes that is not in compliance with this standard must be approved by the Design Authority.

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 Engineer,
Electronic Security Systems

Approved by:

Director,
Electronic Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original
1	Paragraph 7.12 Paragraph 7.21	Optical zoom increased to 30x Added electronic image stabilization
2	All	Reformat and indoor/outdoor standard merge

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
TABLE OF DEFINITIONS 5
1 INTRODUCTION 6
1.1 Overview 6
1.2 Purpose 6
2 REFERENCES 7
2.1 Specifications, Standards, and Statements of Work 7
3 PHYSICAL 8
3.1 Dimensions 8
3.2 Environment 8
3.3 Interference 8
3.4 Reliability 8
3.5 Safety 8
4 OPERATIONAL 9
4.1 Camera 9
4.2 Lens 9
4.3 Video 9
5 INTERFACE 9
5.1 Ports 10
5.2 Power 10
5.3 Recording Compatibility 10

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
AGC	Automatic Gain Control
CB	Citizen's Band
CSC	Correctional Service Canada
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
MJPEG	Motion Joint Photographic Experts Group
MTBF	Mean Time Between Failures
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
PTZ	Pan Tilt Zoom
TCP/IP	Transmission Control Protocol/Internet Protocol
UHF	Ultra High Frequency
VHF	Very High Frequency

TABLE OF DEFINITIONS

Term	Definition
Design Authority	Director, Electronic Security Systems

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for a pan, tilt, zoom (PTZ), network capable, dome camera for use at federal correctional institutions. PTZ cameras are deployed to allow detailed examination of areas typically covered by fixed cameras or areas without regular evidentiary coverage.

1.2 Purpose

.1 The cameras are deployed primarily for observation use. Given they may be pointed anywhere, they are not assumed to be evidentiary coverage.

.2 These cameras are for deployment for all outdoor PTZ camera locations.

.3 These cameras are for deployment for all indoor PTZ camera locations.

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

Number	Title
IEC EN60529	International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
IEC EN60950-1	International Electrotechnical Commission Information technology equipment – Safety
IEC EN62262	International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
IEEE 802.3at	IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
IEEE 802.3u	IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T

3 PHYSICAL

3.1 Dimensions

.1 The camera case and dome must:

.1 measure a base diameter less than 250mm;
.2 measure from base to top of dome of less than 400mm excluding any mount;
.3 weigh less than 5kg excluding mounting hardware;

3.2 Environment

.1 The camera case and dome must:

.1 meet or exceed IEC EN60529 IP66 dust and water resistance when mounted;
.2 if deployed within 5 metres of inmates, meet or exceed IEC EN62262 IK10 impact resistance;
.3 if surface mount, have threaded openings for conduits;
.4 if pendant mount, have all cables enter through the attachment pipe;
.5 if pendant mount, have no other openings in the enclosure excluding the dome assembly;
.6 have a threaded plug to seal all unused openings;
.7 have set-screws to secure all conduit and plugs from inside the dome;
.8 have tamper resistant heads on all externally accessible screws;
.9 have a permanently affixed label on the interior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.10 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.11 have a smoked dome with a light attenuation factor of 1 f-stop;

.2 The camera must:

.1 be capable of continuous operation;
.2 start and operate from -40°C to 50°C;
.3 start and operate from 0 to 100% condensing humidity;

3.3 Interference

.1 The camera must operate correctly in the presence of:

.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 400-450 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;

3.4 Reliability

.1 The camera must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The camera must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Camera

.1 The camera must retain its configuration over a power cycle.

.2 The image sensor must:

.1 include automatic or remote back focus;
.2 have a minimum of 480,000 pixels (horizontal x vertical);
.3 have day (colour) and night (black and white) modes;
.4 automatic removable infrared cut filter for day/night transition;
.5 1.0 lux or less minimum illumination for day mode;
.6 0.1 lux or less minimum illumination for night mode;
.7 include Automatic Gain Control (AGC);
.8 include extended dynamic range processing;

4.2 Lens

.1 The camera lens must:

.1 have a horizontal field of view optical zoom range including 3.5° to 50°;
.2 be integral to the camera assembly;

4.3 PTZ

.1 The PTZ must:

.1 have a pan range of 360° continuous (endless);
.2 have a minimum tilt range of 180°;
.3 include automatic image inversion at 90° tilt;
.4 have a minimum pan and tilt speed of 0.1°/sec or slower;
.5 have a maximum pan and tilt speed of 100°/sec or faster;

4.4 Video

.1 The video encoding must:

.1 support H.264 configurable I-frame frequency of at least 3 per second;
.2 support H.264 constant bit rate transmission mode;
.3 support H.264 frame rate transmission mode;
.4 support at least 3 levels of H.264 image quality;
.5 support at least 3 levels of MJPEG image quality;

.2 The video output must:

.1 include an on-screen, programmable character generation overlay capability with a minimum of 8 visible characters;
.2 support at least two simultaneous H.264 video streams at 30 frames per second with at least 480,000 pixel resolution;
.3 support at least two simultaneous video streams, one H.264 and one MJPEG at 15 frames per second with at least 480,000 pixel resolution;

5 INTERFACE

5.1 Ports

.1 The camera must:

.1 interface over IPV4 TCP/IP;
.2 be able to operate on 100Base-TX (IEEE 802.3u);
.3 connect using an RJ-45 connector;
.4 be ONVIF compliant;

5.2 Power

.1 The camera must be a Type 1 or Type 2 powered device operating solely from Power over Ethernet (PoE) compliant with IEEE 802.3at Class 0, 1, 2, 3, or 4.

5.3 Video Management System Compatibility

.1 The camera model must be identified as “Certified” or “Supported by Design” in the Genetec Omnicast Supported Hardware camera list.

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/STD-0227
Revision 0
12 April, 2004

ELECTRONICS ENGINEERING STANDARDS

LCD COLOUR COMPUTER MONITOR CLOSED CIRCUIT TELEVISION

Prepared by:

Manager,
Electronics Systems Research

Approved by:

Director,
Engineering Services

22Apr04

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue.

1.0 SCOPE

This standard defines the requirements of Correctional Service of Canada (CSC) for Closed Circuit Television (CCTV) Liquid Crystal Display (LCD) computer monitors at federal correctional institutions.

2.0 GENERAL

The LCD colour computer monitor is used in indoor and outdoor security surveillance and assessment systems. It is mounted in standard EIA 19 inch racks, attached to walls and ceilings by brackets, and/or is located on desks and shelves.

3.0 ENVIRONMENTAL REQUIREMENTS

The LCD colour computer monitor shall meet all operational requirements over the following operating ranges:

3.1 Temperature: 5° C to +40° C; and

3.2 Humidity: up to 95% non-condensing.

4.0 POWER REQUIREMENTS

The monitor shall use standard single phase commercial VAC power within the following limits:

4.1 Voltage: 120 VAC ±10%;

4.2 Frequency: 60 Hz ±1.5%;

4.3 Transients: up to five times nominal voltage for up to 100 msec durations. Changes in the input power or any fluctuations within the above limits shall not cause damage to the unit; and

4.4 Power: power consumption up to 45 watts.

5.0 MECHANICAL REQUIREMENTS

5.1 Free standing monitor cabinets shall be metal or metal with plastic front.

5.2 Rack mounted units shall be metal, and come complete with all hardware required to install in standard EIA 19" racks.

5.3 External dimensions, weight, diagonal effective viewing area and mounting configuration of the monitors are application dependent. These requirements shall be specified in the functional specification for the specific application.

5.4 All controls and test points used during calibration and testing shall be easily accessible and permanently labelled.

6.0 DESIGN REQUIREMENTS

6.1 All controls for the operation of the monitor shall be on the front of the unit and shall be easy accessible to the operator.

6.2 There must be clear permanent labelling of and easy access to all controls and test points used for calibration and testing by maintenance staff.

6.3 Where applicable, the monitor must be modular with plug-in circuit cards and assembles. A standard extender board must be included with the equipment if applicable.

6.4 The monitor must be designed and built to high quality standards and have a Mean Time Between Failure (MTBF) of at least five years.

6.5 Labels must be permanently affixed to the exterior of the monitor which identify the manufacturer, model number, serial number and the power requirements.

7.0 TECHNICAL REQUIREMENTS

The colour computer monitor shall meet the following minimum requirements:

7.1	Native Resolution:	≥1024 x 768;
7.2	Brightness:	≥ 200 cd/m^2;
7.3	Contrast Ratio:	≥ 300:1;
7.3	Aspect Ratio:	4 to 3;
7.4	Viewing Angle:	minimum 120º Horizontal; minimum 100º Vertical;

7.5 Display : Thin Film Transfer, active matrix, LCD; and

7.6 Video Input: VGA/SVGA/XGA;

8.0 FUNCTIONAL REQUIREMENTS

8.1 The monitor shall provide a visual indication of power on/off.

8.2 Front panel controls shall be easy accessible to the operator and include the following functions: Power on/off; Contrast; Brightness; Tint; and Colour.

9.0 INTERFERENCE

Performance of the monitor and video quality shall not be affected by the presence and use of standard electronic equipment used at the institution. Distance limits of standard electronic equipment are as follows:

9.1 CB transceivers at 1 metre or more;

9.2 VHF and UHF transceivers at 1 metre or more;

9.3 Other radio frequency transmitting, receiving and distribution equipment at 5 metres or more;

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

10.0 SAFETY

10.1 The colour monitor must be CSA, UL, ULC or CE approved, as required by law.

- END OF TEXT -

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/STD-0228
Revision 0
13 October, 2004

ELECTRONICS ENGINEERING STANDARDS

NETWORK VIDEO USER STATION CLOSED CIRCUIT TELEVISION

Prepared by:

Manager,
Electronics Systems Research

Approved by:

Director,
Engineering Services
7 Oct 04

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue.

1.0 SCOPE

This standard defines the requirements of a Network Video User Station (NVUS) in Closed Circuit Television (CCTV) systems used by Correctional Service of Canada (CSC).

2.0 GENERAL

NVUSs are used in security surveillance and assessment applications in institutions. The NVUS provides control and monitoring of CCTV equipment in a client-to-server configuration. The system shall use common off-the-shelf operating systems and computers. The system shall require user login and passwords to view recorded and live video. User video access and priorities are defined in the system configuration. The system shall be capable of having a minimum of 32 NVUS stations logged into the system.

3.0 ENVIRONMENTAL CONDITIONS

The system shall meet all operational requirements over the following operating range:

3.1 Temperature: 5° C to 40° C; and

3.2 Humidity: 20 to 80% relative, non-condensing.

4.0 POWER REQUIREMENTS

The equipment shall use standard commercial VAC power within the following range:

4.1 Voltage: 120 VAC ±10%;

4.2 Frequency: 60 Hz ±1.5%; and

4.3 Power: power consumption shall not exceed 400 watts.

5.0 MECHANICAL REQUIREMENTS

The dimensions and weight shall not exceed the following:

5.1 Width: 450 mm;

5.2 Height: 200 mm;

5.3 Depth: 450 mm; and

5.4 Weight: 30 kg.

6.0 DESIGN REQUIREMENTS

6.1 The unit must be self contained and the NVUS computer must fit in a standard 19" rack.

6.2 The control functions must be usable with either a mouse or LCD touch screen.

6.3 Memory Backup shall protect timer settings in the event of power failure.

6.4 All test points on the NVMS computer shall be clearly labelled and easily accessible for calibration and maintenance.

6.5 All equipment shall be modular with plug-in circuit cards and assemblies.

6.6 The design Mean Time Between Failure (MTBF) shall be at least 10,000 hours.

6.7 Emergency repair or parts and labour for detective NVMSs shall be available within 24 hours after notification of equipment unserviceability to any authorized dealer service centres across Canada.

7.0 TECHNICAL REQUIREMENTS

The NVUS shall meet the following requirements:

7.1	Video Format:	NTSC (colour and black/white);
7.2	Video Frame Rate:	30 frames/second/channel (max);
7.3	Video Freeze:	yes
7.4	Video Output:	SVGA;
7.5	Audio:	Synchronized with video input;
7.6	Interface:	100Base-T/10Base-T (auto fallback); and
7.7	Protocol:	Internet Interface Protocol.

8.0 FUNCTIONAL REQUIREMENTS

The NVUS shall interface to the network and provide access and control of all CCTV surveillance and assessment systems as follows:

8.1 General

a. User login shall be through password protection that limits the user to specific cameras, both live and recorded.

b. The Graphic User Interface (GUI) shall provide mapping functions to display camera locations. Cameras can be selected by camera number, or by dragging and dropping to a display.

c. Alarms shall be able to be displayed on the map or through a text message.

d. The system shall log all user operations.

8.2 Viewing

a. Ability to have live and recorded viewing of a minimum of 16 cameras.

b. Full control of all Pan/Tilt/Zoom (P/T/Z) cameras through user login of access rights to predefined cameras. Minimum of 16 priority levels to access cameras.

c. Ability to set up guard tour and multiple camera sequences.

d. Ability to display video in single, quad or step format.

e. Full duplex audio capability. The GUI application provides the ability to control talk paths and listen to audio inputs at camera locations.

f. Any live or recorded camera in the system shall be accessible through the single GUI interface without the need to change screens or applications.

8.3 Recording

a. Ability to set record mode to automatically start recording on any appropriate alarm input, for example, a signal from the Fence Detection System.

b. Ability to set record mode to stop when it receives any reset signal (one input per video input);

c. Ability to manual initiate record mode.

d. Ability to initiate record mode on motion.

e. Ability to initiate record mode based on time.

f. Ability to be configured to stop recording when the hard drive is full, or configured to overwrite the oldest files.

g. Provide an open or closed contact when the NVUS stops recording for any reason.

8.4 **Playback**

a. Ability to control playback speed.

b. Ability to have multiple view playback.

c. Ability to export single images and video sequences.

d. Ability to search for motion in continuous recordings.

e. Ability to search video sequences based on either date, time or motion.

8.5 **System**

a. Capable of triplex operation: record, search and playback simultaneously.

b. Placing the unit into either the Search or Playback mode shall not interrupt any recording in process.

c. Searching and viewing of stored images, and reconfiguration of system parameters shall be available via a TCP/IP connection through a LAN. Any remote access software required shall be provided for installation on a standard Windows based computer; and

d. Transfer viewing software automatically to the CD when downloading audio and video for archive purposes. It should be possible to review the archived audio and video from any CSC PC with Windows XP without additional software.

e. Should indicate Power on/off; Hard Drive Full Alarm; Time/Date; and Recording; on the operator console;

f. Should have controls for Power on/off; Record; Play/Stop; Forward/Reverse Field Advance; Time, Date and Recording Mode on the operator console;

g. Control signals available on the back of the NVUS shall include Automatic Alarm Input; and Manual Alarm Input;

h. System messages must be contained in a log file available for downloading or printing.

i. Multiple users shall be able to share common resources, with individual users being assigned different system access capability with password protection.

9.0 INTERFERENCE

The NVUS performance and video quality shall not be affected by the presence or use of standard CSC electronic equipment. The units shall work at the following distance limits:

9.1 CB transceivers at 1 metre or more;

9.2 VHF or UHF transceivers (25W) at 1 metre or more;

9.3 Other radio frequency transmitting, receiving and distribution equipment at 5 metres or more; and

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

The NVUS shall not interfere with any standard electronic equipment used at the institutions.

10.0 SAFETY

10.1 The NVUS must be CSA, UL, ULC or CE approved, as required by law.

- END OF TEXT -

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/STD-0229
Revision 3
19 April, 2010

ELECTRONICS ENGINEERING STANDARDS

NETWORK VIDEO RECORDER CLOSED CIRCUIT TELEVISION

Prepared by:

Manager,
Electronics Systems Research

Approved by:

Director,
Engineering Services

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue.
1	6.4 Design Requirements	Delete requirement for local control
	6.14 Design Requirements	Delete requirement for directly attached computer
	7.4 Recording Frame Rate	Delete “minimum compression”
	7.5 Frame Storage Option	Delete
	7.6 Selectable Compression	Delete
	7.8 Primary Storage	“Hot Swappable” Hard Drives
	7.14 Failure Indication	Change to message to the FAAS on failure
	7.15 Disk Full	Delete
2	7.13	Added requirement for Fail-Over Archiving
	7.14	Added requirement for Fail-Over Directory
3	4.3 Power	Increase to 600 watts maximum
	5.3 Depth	Increase to 600 mm
	7.1 Video Format	Determined by cameras
	7.4 Recording Frame Rate	Increase to 20 maximum simultaneous inputs
	7.7 RAID 5	Added 4TB minimum
	7.15	Added requirement for RAID 1 OS solid state drives

1.0 SCOPE

This standard defines the requirements of a Network Video Recorder (NVR) in Closed Circuit Television (CCTV) systems used by Correctional Service of Canada (CSC).

2.0 GENERAL

NVRs are used in security surveillance and assessment applications in institutions. The NVR records real time video and audio streams transmitted from network video cameras or NTSC-IP Video Converters.

3.0 ENVIRONMENTAL CONDITIONS

The system shall meet all operational requirements over the following operating range:

3.1 Temperature: 5° C to 40° C; and

3.2 Humidity: 20 – 80% non-condensing.

4.0 POWER REQUIREMENTS

The equipment shall use standard commercial VAC power within the following range:

4.1 Voltage: 120 VAC ±10%;

4.2 Frequency: 60 Hz ±1.5%; and

4.3 Power: power consumption shall not exceed 600 watts.

5.0 MECHANICAL REQUIREMENTS

The dimensions and weight shall not exceed the following:

5.1 Width: to fit standard 19” rack mount;

5.2 Height: maximum 6RU (Rack Units);

5.3 Depth: 600 mm; and

5.4 Weight: 30 kg.

6.0 DESIGN REQUIREMENTS

6.1 The unit must be self contained.

6.2 The unit must fit in a standard 19" rack.

6.3 The NVR shall be based on common off-the-shelf computers and operating systems.

6.4 All function controls for NVR configuration and operation shall be available through remote access software.

6.5 Power Failure Recovery shall enable the NVR to resume functioning in the same state that it was in at the time of the power failure.

6.6 Memory Backup shall protect timer settings in the event of power failure.

6.7 All test points on the NVR shall be clearly labelled and easily accessible for calibration and maintenance.

6.8 All equipment shall be modular with plug-in circuit cards and assemblies.

6.9 The design Mean Time Between Failure (MTBF) shall be at least 10,000 hours.

6.10 The unit shall provided remote diagnostics to indicate recording failure or video loss from an IP camera or IP encoder.

6.11 The recorder shall utilize user login, password and rights management such as to limit users' access to specific cameras, both live and recorded.

6.12 The recorder system shall provided user rights and priorities to control of P/T/Z cameras.

7.0 TECHNICAL REQUIREMENTS

The NVR shall meet the following requirements:

7.1 Video Format: Determined by camera;

7.2 Audio: Synchronized with video input (when equipped);

7.3	System Recording Rate:	up to 120 Mbits/sec;
7.4	Recording Frame Rate:	maximum 20 simultaneous inputs @ 640 x 480 pixels, 30 frames per second per input;
7.5	Recording Capacity:	Shall have the ability to connect to external local RAID storage drives to a minimum of 4 external RAID chassis. Limited only by hard drive capacity;
7.6	Primary Storage:	Hot Swappable Hard Drives (capacity as per STR);
7.7	RAID 5:	Internal storage shall be 4TB RAID 5 as a minimum (depending on storage requirement);
7.8	Watermark:	The video must contain some form of watermark or fingerprint so that any attempt to tamper with the recorded digital image may be detected.
7.9	Interface:	100Base-T/10Base-T (auto fallback);
7.10	Protocol:	Internet Interface Protocol; and
7.11	User Display:	HTML-based GUI.
7.12	Failure Indication:	Message to the FAAS when NVR stops recording for any reason
7.13	Fail-Over Archiving	To be provided (The RAID 5 feature of the NVR is NOT considered redundant archiving. Additional archiver(s) that will automatically take over recording of the cameras assigned to an NVR that has completely or partially failed, in excess of a single RAID Drive, must be provided.)
7.14	Fail-Over Directory	To be provided (The Fail-Over Directory may reside on the Fail-Over Archiver)
7.15	Operating System	The operating system for the unit shall be contained on two (2) solid state drives configured as RAID 1 storage. The OS shall NOT be installed on the RAID 5 video array.

8.0 **INTERFERENCE**

The NVR performance and video quality shall not be affected by the presence or use of standard CSC electronic equipment. The units shall work at the following distance limits:

8.1 CB transceivers at 1 metre or more;

8.2 VHF or UHF transceivers (25W) at 1 metre or more;

8.3 Other radio frequency transmitting, receiving and distribution equipment at 5 metres or more; and

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

The NVR shall not interfere with any standard electronic equipment used at the institutions.

9.0 **SAFETY**

9.1 The NVR must be CSA, UL, ULC or CE approved, as required by law.

- END OF TEXT -

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0232
Revision 1
2014 February 18

ELECTRONIC ENGINEERING STANDARD

FIXED NETWORK COLOUR DOME CAMERA

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

Acquisition of a camera for the identified purposes that is not in compliance with this standard must be approved by the Design Authority.

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 Engineer,
Electronics Security Systems

Approved by:

Director,
Electronic Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original
1	All	New structure and change to merge indoor and outdoor.

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
TABLE OF DEFINITIONS 5
1 INTRODUCTION 6
1.1 Overview 6
1.2 Purpose 6
2 REFERENCES 7
2.1 Specifications, Standards, and Statements of Work 7
3 PHYSICAL 8
3.1 Dimensions 8
3.2 Environment 8
3.3 Interference 8
3.4 Reliability 8
3.5 Safety 8
4 OPERATIONAL 9
4.1 Camera 9
4.2 Lens 9
4.3 Video 9
5 INTERFACE 9
5.1 Ports 10
5.2 Power 10
5.3 Recording Compatibility 10

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
AGC	Automatic Gain Control
CB	Citizen's Band
CSC	Correctional Service Canada
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
MJPEG	Motion Joint Photographic Experts Group
MTBF	Mean Time Between Failures
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
TCP/IP	Transmission Control Protocol/Internet Protocol
UHF	Ultra High Frequency
VHF	Very High Frequency

TABLE OF DEFINITIONS

Term	Definition
Design Authority	Director, Electronic Security Systems

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for a fixed focus, network capable, dome camera for use at federal correctional institutions.

1.2 Purpose

.1 The cameras are deployed for both observation and evidentiary use.

.2 These cameras are for deployment for all outdoor fixed camera locations **except**:

.1 facility perimeter;

.3 These cameras are for deployment for all indoor fixed camera locations **except**:

.1 observation cells;

.2 principal entrance panoramic;

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

Number	Title
IEC EN60529	International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
IEC EN60950-1	International Electrotechnical Commission Information technology equipment – Safety
IEC EN62262	International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
IEEE 802.3at	IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
IEEE 802.3u	IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T

3 PHYSICAL

3.1 Dimensions

.1 The camera case and dome must:

.1 measure a base diameter less than 200mm;
.2 measure from base to top of dome of less than 175mm excluding any mount;
.3 weigh less than 2.5kg;

3.2 Environment

.1 The camera case and dome must:

.1 meet or exceed IEC EN60529 IP66 dust and water resistance when mounted;
.2 meet or exceed IEC EN62262 IK10 impact resistance;
.3 have threaded openings for conduits;
.4 have a threaded plug to seal all unused openings;
.5 have set-screws to secure all conduit and plugs from inside the dome;
.6 have tamper resistant heads on all externally accessible screws;
.7 have a permanently affixed label on the interior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.8 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;

.2 The camera must:

.1 be capable of continuous operation;
.2 start and operate from -40°C to 50°C;
.3 start and operate from 0 to 100% condensing humidity;

3.3 Interference

.1 The camera must operate correctly in the presence of:

.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 400-450 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;

3.4 Reliability

.1 The camera must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The camera must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Camera

.1 The camera must retain its configuration over a power cycle.

.2 The image sensor must:

- .1 include automatic or remote back focus;
- .2 have a minimum of 480,000 pixels (horizontal x vertical);
- .3 have day (colour) and night (black and white) modes;
- .4 automatic removable infrared cut filter for day/night transition;
- .5 have 0.5 lux or less minimum illumination for day mode;
- .6 have 0.1 lux or less minimum illumination for night mode;
- .7 include Automatic Gain Control (AGC);
- .8 include extended dynamic range processing;

4.2 Lens

.1 The camera lens must:

- .1 have a 35° to 80° or greater horizontal angular view varifocal lens
- .2 be approved by the manufacturer of the camera for that camera;

4.3 Video

.1 The video encoding must:

- .1 support H.264 configurable I-frame frequency of at least 3 per second;
- .2 support H.264 constant bit rate transmission mode;
- .3 support H.264 frame rate transmission mode;
- .4 support at least 3 levels of H.264 image quality;
- .5 support at least 3 levels of MJPEG image quality;

.2 The video output must:

- .1 include an on-screen, programmable character generation overlay capability with a minimum of 8 visible characters;
- .2 support at least two simultaneous H.264 video streams at 30 frames per second with at least 480,000 pixel resolution;
- .3 support at least two simultaneous video streams, one H.264 and one MJPEG at 15 frames per second with at least 480,000 pixel resolution;

5 INTERFACE

5.1 Ports

.1 The camera must:

.1 interface over IPV4 TCP/IP;
.2 be able to operate on 100Base-TX (IEEE 802.3u);
.3 connect using an RJ-45 connector;
.4 be ONVIF compliant;

5.2 Power

.1 The camera must be a Type 1 powered device operating solely from Power over Ethernet (PoE) compliant with IEEE 802.3at Class 0, 1, 2, or 3.

5.3 Video Management System Compatibility

.1 The camera model must be identified as “Certified” or “Supported by Design” in the Genetec Omnicast Supported Hardware camera list.

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0233
Revision 1
2014 February 18

ELECTRONIC ENGINEERING STANDARD

INDOOR NO-GRIP CORNER MOUNT NETWORK COLOUR CAMERA

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

This Standard is approved by the Correctional Service Canada for the procurement and installation of this item in Canadian federal correctional institutions.

Acquisition of a camera for the identified purposes that is not in compliance with this standard must be approved by the Design Authority.

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 Engineer,
Electronic Security Systems

Approved by:
Director,
Electronic Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original
1	All	New document structure and addition of TCP/IP and PoE interfaces.

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
TABLE OF DEFINITIONS 5
1 INTRODUCTION 6
1.1 Overview 6
1.2 Purpose 6
2 REFERENCES 7
2.1 Specifications, Standards, and Statements of Work 7
3 PHYSICAL 8
3.1 Dimensions 8
3.2 Environment 8
3.3 Interference 8
3.4 Reliability 8
3.5 Safety 8
4 OPERATIONAL 9
4.1 Camera 9
4.2 Lens 9
4.3 Camera Case 9
4.4 Video 9
5 INTERFACE 10
5.1 Ports 10
5.2 Power 10
5.3 Video Management System Compatibility 10

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
AGC	Automatic Gain Control
CB	Citizen's Band
CSC	Correctional Service Canada
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
MJPEG	Motion Joint Photographic Experts Group
MTBF	Mean Time Between Failures
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
TCP/IP	Transmission Control Protocol/Internet Protocol
UHF	Ultra High Frequency
VHF	Very High Frequency

TABLE OF DEFINITIONS

Term	Definition
Design Authority	Director, Electronics Security Systems

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for an indoor, fixed focus, network capable, corner mounted, no-grip camera for use at federal correctional institutions.

1.2 Purpose

.1 The cameras are deployed for both observation and evidentiary use.

.2 These cameras are for deployment only in:

.1 observation cells;

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

Number	Title
IEC EN60529	International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
IEC EN60950-1	International Electrotechnical Commission Information technology equipment – Safety
IEC EN62262	International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
IEEE 802.3at	IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
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3 PHYSICAL

3.1 Dimensions

.1 The camera case must:

.1 measure less than 300mm in all dimensions;
.2 weigh less than 2.5kg;

3.2 Environment

.1 The camera case must:

.1 meet or exceed IEC EN60529 IP65 dust and water resistance when mounted;
.2 meet or exceed IEC EN62262 IK10 impact resistance;
.3 have tamper resistant heads on all externally accessible screws;
.4 be grip-less and anchor-free;
.5 have a permanently affixed label on the interior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.6 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;

.2 The camera must:

.1 be capable of continuous operation;
.2 start and operate from 0°C to 50°C;
.3 start and operate from 0 to 85% non-condensing humidity;

3.3 Interference

.1 The camera must operate correctly in the presence of:

.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 400-450 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;

3.4 Reliability

.1 The camera must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The camera must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Camera

.1 The camera must retain its configuration over a power cycle.

.2 The image sensor must:

- .1 include automatic or remote back focus;
- .2 have a minimum of 480,000 pixels (horizontal x vertical);
- .3 have day (colour) and night (black and white) modes;
- .4 automatic removable infrared cut filter for day/night transition;
- .5 have 0.5 lux or less minimum illumination for day mode;
- .6 have 0 lux minimum illumination for night mode;
- .7 if required for night mode, use invisible illumination (typically infra-red LEDs);
- .8 include Automatic Gain Control (AGC);

4.2 Lens

.1 The camera lens must:

- .1 provide a view of the entire floor and all four walls of a room at least 3.5m x 3.5m including the walls to which it is attached from the mounting height to the floor;
- .2 be approved by the manufacturer of the camera for that camera;

4.3 Camera Case

.1 The camera case must:

- .1 have a programmatically controlled visible LED indicator to show when the video feed is being observed;

4.4 Video

.1 The video encoding must:

- .1 support H.264 configurable I-frame frequency of at least 3 per second;
- .2 support H.264 constant bit rate transmission mode;
- .3 support H.264 frame rate transmission mode;
- .4 support at least 3 levels of H.264 image quality;
- .5 support at least 3 levels of MJPEG image quality;

.2 The video output must:

- .1 include an on-screen, programmable character generation overlay capability with a minimum of 8 visible characters;
- .2 support at least two simultaneous H.264 video streams at 30 frames per second with at least 480,000 pixel resolution;
- .3 support at least two simultaneous video streams, one H.264 and one MJPEG at 15 frames per second with at least 480,000 pixel resolution;

5 INTERFACE

5.1 Ports

.1 The camera must:

.1 interface over IPV4 TCP/IP;
.2 be able to operate on 100Base-TX (IEEE 802.3u);
.3 connect using an RJ-45 connector;
.4 be ONVIF compliant;

5.2 Power

.1 The camera must be a Type 1 powered device operating solely from Power over Ethernet (PoE) compliant with IEEE 802.3at Class 0, 1, 2, or 3.

5.3 Video Management System Compatibility

.1 The camera model must be identified as “Certified” or “Supported by Design” in the Genetec Omnicast Supported Hardware camera list.

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 contact 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;

l. 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 manners 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 iInstallation activities have been completed.

6.1 Acceptance Test Plans (ATPs)

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

6.2 System Testing

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

6.3 Deficiency Lists (DL)

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

a. Visual/Mechanical,

b. Operational, and

c. Technical/Functional.

6.4 Technical Acceptance

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

7.0 QUALITY ASSURANCE (QA)

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

7.1 Quality Control Program

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

7.2 System Test Program

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

7.2.1 System Test Plan.

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

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

7.2.2 Test Procedures. These procedures shall ensure that:

a. all equipment supplied meets the performance specification;

b. each subsystem meets the applicable performance requirements; and

c. the overall system meets the performance requirements.

d. test procedure contains the step sequence for each test to be conducted, and the expected results.

7.2.3 **Contractor Testing.**

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

7.2.4 **Test Reports.**

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

a. a summary description of the tests;

b. test results consisting of completed test procedures verified by a CSC representative;

c. incident reports, including analysis and corrective action; and

d. results of any retest.

8.0 TRAINING

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

8.1 Classroom Training

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

8.2 Training Documentation

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

a. training plans for CSC operations trainers and technical personnel;

b. manuals for each student to add notes;

c. training aids; and

d. student materials.

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

9.0 MAINTENANCE and SPARES

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

9.1 Maintenance Plan

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

9.2 Spares Plan

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

9.3 Spares List

The spares list shall identify the following:

a. the spare parts and the subassemblies with the recommended quantities;

b. the cross-reference listings between the vendors and the original manufacturer's codes;

c. the unit and extended prices for stocking; and

d. the expected life or the annual consumption of each part.

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

9.4 Test Equipment

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

10.0 DOCUMENTATION

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

10.1 Manuals and Drawings

The following items make up the final documentation requirements:

a. Operator Manual,

b. Maintenance Manual,

c. Installation As-built Drawings,

d. Equipment As-built Drawings, and

e. Equipment Operating Software.

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

10.2 List of Equipment

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

10.3 Baseline Measurements

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

10.4 Documentation Format

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

- One (1) hard-copy version of all documentation.

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

- One (1) electronic version of all documentation in a full 'read-write' format to serve as a master of the documents and drawings.

- all software requirements to access the electronic versions of the documentation.

- One (1) CD containing the equipment operating software.

10.5 **Operator Manuals**

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

a. title page;

b. revision notice page, lined, with columns for revision numbers, dates and initials;

c. table of contents;

d. warnings and cautions;

e. introduction - general information including a description of equipment or system and summary of capabilities;

f. theory of operation including an explanation of all major system components;

g. detailed description and use of all user accessible computer screens; and

h. block diagrams.

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

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

10.6 **Maintenance Manuals**

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

a. title page;

b. warranty page - explaining the warranty period and expiry dates;

c. revision notice page, lined, with columns for revision numbers, dates and initials;

d. table of contents;

e. introduction - general information including a full description of equipment or system, technical summary, specifications and detailed block diagrams;

f. theory of operation including a detailed explanation of all circuits and parts;

g. alignment and test procedures;

h. repair procedures including step by step fault finding or fault localizing;

I. block diagrams;

j. circuit schematics (clear, easy to read, foldout type);

k. complete parts list;

l. mechanical drawings, chassis layout illustrations and wiring data lists; and

m. drawings including as-built and as-installed drawings.

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

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

11.0 PROJECT PROVISIONS

11.1 Monthly Progress Reports

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

Monthly reports shall contain the following:

a. summary of the month's activities;

b. scheduled shortfalls and rescheduled dates;

c. problem areas and proposed solutions;

d. review of next month's activities;

e. summary of meetings held during the month; and

f. cash flow forecast.

11.2 Monthly Review Meetings

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

11.3 Maintenance Support

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

11.4 **Shipment and Delivery**

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

12.0 SYSTEM AVAILABILITY

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

12.1 Common Facilities

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

12.2 Single Point of Failure

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

12.3 Availability Model

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

a. summation of failure rates of the individual components; or

b. the bidder's documented experience with the same equipment operating in a similar physical environment.

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

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

12.4 Availability

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

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

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

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

The repair time divided by the number of failures.

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

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

12.5 **Expected Life Duration**

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

13.0 INTERFERENCE

13.1 Interference to the System

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

13.1.1 CB transceivers at 1 metre or more;

13.1.2 VHF and UHF transceivers at 1 metre or more;

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

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

13.2 Interference by the System

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

14.0 LIGHTNING PROTECTION

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

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

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/SOW-0102
Revision 6
1 May, 2008

ELECTRONICS ENGINEERING STATEMENT OF WORK

QUALITY CONTROL FOR PROCUREMENT AND INSTALLATIONS OF ELECTRONIC SECURITY SYSTEMS

AUTHORITY

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

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

Prepared by:

Manager,
Electronics Systems Research

Approved by:

Director,
Engineering Services
18 Aug 08

RECORD OF REVISIONS

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

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 -

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/SOW-0110
Revision 1
24 June, 2008

ELECTRONICS ENGINEERING STATEMENT OF WORK

STRUCTURED CABLE SYSTEMS FOR ELECTRONIC SECURITY INSTALLATIONS

AUTHORITY

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

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

Prepared by:

Manager,
Electronics Systems Research

Approved by:

Director,
Engineering Services
23 July 08

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	Original	Original
1	4.3.1 - Cable	Cable upgraded to meet OM3 standards
	Multiple	Copper cable upgraded to CAT 6

TABLE OF CONTENTS

TABLE OF CONTENTS 3

ABBREVIATIONS 4

DEFINITIONS 5

APPLICABLE DOCUMENTS 6

1.0 INTRODUCTION 7
1.1 General 7
1.2 Scope 7
1.3 Off-The-Shelf Equipment 7
1.4 Manufactured Equipment 7
1.5 Commonality of Equipment 7

2.0 MATERIAL AND EQUIPMENT REQUIREMENTS 8
2.1 Environmental Conditions 8

3.0 TELCOMMUNICATIONS OVERVIEW 9
3.1 Structured Cabling System 9

4.0 DESCRIPTION OF WORK 10
4.1 General System Requirements 10
4.1.1 Outline 10
4.2 Qualification Testing 10
4.2.1 Outline 10
4.2.2 User termination 11
4.2.3 Closet Termination 13
4.2.4 Cable Protection 13
4.2.5 Line Cords 13
4.2.6 Testing 14
4.2.7 Labelling 14
4.2.8 Documentation 14
4.3 Fibre Optic Backbone Cable 14
4.3.1 Cable 14
4.3.2 Terminations 15
4.3.3 Testing 15
4.3.4 Labelling 16
4.4 Cross Connect 16
4.4.1 Data Cross Connect 16

ABBREVIATIONS

The following abbreviations are used in this specification:

BICSI	Building Industry Consultant Service International
CER	Common Equipment Room
CET	Certified Electronic Technologist
COTS	Commercial -of-the-Shelf
CSC	Correctional Service Canada
CSA	Canadian Standards Association
CSV	Certified System Vendor
DVO	Data/Voice Outlet
EIA	Electronic Industries Association
EMT	Electrical Metallic Tubing
LOF	Laser Optimized Fiber
IDF	Intermediate Distribution Frame
OTDR	Optical Time Domain Reflectometer
RCDD	Registered Communications Distribution Designer
TC	Telecomm Closet
TIA	Telecommunications Industry Association
UTP	Unshielded Twisted Pair

DEFINITIONS

The following definitions are used in this specification:

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

APPLICABLE DOCUMENTS

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

a. EIA/TIA Standard EIA/TIA-568 Commercial Building Telecommunications Wiring Standard

b. EIA/TIA Technical Systems Bulletin TSB-36 Additional Cable Specifications for Unshielded Twisted Pair Cables

c. EIA/TIA Technical Systems Bulletin TSB-40 Additional Transmission Specifications for Unshielded Twisted Pair Connecting Hardware.

d. International standard ISO/IEC 11801-2nd Edition: Information technology — Generic cabling for customer premises.

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

1.0 INTRODUCTION

1.1 General

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

1.2 Scope

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

1.3 Off-The-Shelf Equipment

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

1.4 Manufactured Equipment

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

1.5 Commonality of Equipment

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

2.0 MATERIAL AND EQUIPMENT REQUIREMENTS

2.1 Environmental Conditions

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

a. **Indoor Equipment**

Temperature: 0° C to 40° C; and

Humidity: 20% to 95% non-condensing.

b. **Outdoor Equipment**

Temperature: -40° C to +50° C; and

Humidity: 0 to 100%, condensing.

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

Complete assemblies of indoor equipment shall be resistant to liquid spills, airborne contaminants, shock and vibration.

3.0 TELECOMMUNICATIONS OVERVIEW

3.1 Structured Cabling System

The design objective is a flexible network that is easy to re-configure, easy to manage and capable of incremental growth. The network is based on a structured cabling system conforming to Electric Industry Association/Telecommunications Industry Association Specification 568 (EIA/TIA-568) and Canadian Standards Association 529 (CSA 529) and using a star wired topology for the horizontal distribution with Category 6 Unshielded Twisted Pair (UTP) and 50/125 Micron Laser Optimized Fibre. The design will support Ethernet, Fast Ethernet, and network management.

4.0 DESCRIPTION OF WORK

4.1 General System Requirements

4.1.1. Outline

This section defines the minimum requirements for a structured cabling system to be provided on an engineered, furnished, installed, tested, and commissioned basis. Products and installation practices shall conform with the EIA/TIA documents identified in the **APPLICABLE DOCUMENTS** section of this Statement of Work.

The structured cabling system includes the following basic elements arranged into backbone feeders and horizontal distribution subsystems that are cross connected or patched together in Telecom Closets or Common Equipment Rooms on Intermediate Distribution Frames (IDFs).

a. Unshielded Twisted Pair (Horizontal)
b. 8-pin modular Telecom outlets
c. Insulation displacement connector type terminal blocks
d. LOF optic cable (Backbone)
e. Fibre optic (duplex) interconnect patch panels
f. Patch cords for patch panels
g. Line cords for workstation data equipment (Office Cables)

Notes:
1) 3 metre length is standard for Office Cables
2) All cables provided for a project shall have a **GREEN** jacket.

4.2 Horizontal Data Cable

4.2.1 Cable

Each cable shall consist of 8 each of 24 AWG thermoplastic insulated solid copper conductors formed into four individually twisted pairs and enclosed by a jacket with the appropriate protection rating determined by Provincial codes.

The cable shall fully conform with EIA/TIA-568 design requirements for 100 ohm UTP cable and fully conform with EIA/TIA-568 TSB-36 transmission requirements for Category 6 cable.
Cables shall bear evidence of verified Level 6 or Category 6 and also bear evidence of certification by a recognized standard or testing body. (eg: Bearing NORDX Brand name and have length clearly marked on cable sheath)

The cable bundles will be fed to locations in either a supplied cable tray or conduit system. Outlet cables will then be fed to the user locations via either pac poles or fished down hard wall offices. A pull string will remain in the conduit/cable tray for future installations.

The cable run length from the IDC to the workstation location shall NOT exceed 90 metres. The combined length for patch cords for data network horizontal distribution connections shall not exceed 10 metres for an overall length from data network hub equipment to workstation equipment not exceeding 100 metres.

4.2.2 **User Termination**

Termination at the user end will be made onto a certified Category 6 RJ45 module for data. These modules will then be housed in a certified faceplate. The faceplate to house the modules will have the capability to equip up to six each 8 pin modular jacks. Other configurations to be used will vary with locations: A duplex flush mount faceplate for drywall applications, a duplex surface mount kit for PAC pole applications and duplex single gang outlets mounted into custom furniture with adapter plates. Surface mount kits will not exceed a 6.5 cm. protrusion from the wall. For custom furniture it is assumed that the cable runs will be fed to the outlet via raceways in the legs of furniture. For security reasons, jacks are NOT be installed in exterior walls or walls not totally part of CSC space. All cables must either terminate on a patch panel or on a faceplate, loose or unterminated cables are not acceptable.

The 8 pin modular jack connectors shall comply for termination of 4 wire pairs with 24 AAWG solid copper conductors: minimum contact force of 100g and conductors separated by jack comb.

Each modular outlet will be wired per EIA/TIA-568 polarization sequence, designation T568A (reference CAN/CSA T529 Clause 11.2 Figure 11-1 and Table 10-1).

This illustration is a front view of the connector

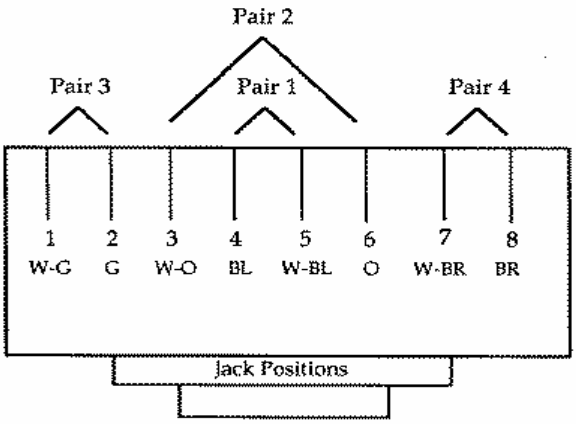

Figure 11-1
Eight-Postion Jack Pin/Pair Assignments
(T568A Type)

Figure 11-1 and Table 10-1 outlines the sequencing required to construct line, office, and patch cables.

Each modular outlet will conform with EIA/TIA TSB 40 transmission requirements for Category 6 and will also be compatible with existing standard electrical outlet boxes.

Table 10-2 outlines the correct punch down positioning when using Northern Telecom T568A BIX DVOs' , T568A ISDN QCBIX36DI and T568A ISDN QCBIX46DI Modular Jack Connectors, and T568A QPBIX Modular Patch Panels.

Table 10-1

Colour Codes for patch, line, and office cables

Colour Identification	Colour Code	Abbreviation
Pair 1	White-Blue	(W-BL)
	Blue	(BL)
Pair 2	White-Orange	(W-O)
	Orange	(O)
Pair 3	White-Green	(W-G)
	Green	(G)
Pair 4	White-Brown	(W-BR)
	Brown	(BR)

Table 10-2

Colour Codes for punch down and modular outlets

Position	Colour Code	Abbreviation
1	White-Blue	(W-BL)
2	Blue	(BL)
3	White-Orange	(W-O)
4	Orange	(O)
5	White-Green	(W-G)
6	Green	(G)
7	White-Brown	(W-BR)
8	Brown	(BR)

4.2.3 Closet Termination

Supply and installation of RJ45 Category 6 hardware for system connection in communications closet using 24 NT certified patch panels rack mounted with cable organizer panels installed for each patch panel.

Active components will be connected to equipment by 8 conductor patch cords manufactured to CAT 6 compliance. Patch cords shall be stranded conductor and have a “no-snag” boot over the RJ45 connector.

Multi-Level building installations will require individual patch panels be installed for each level of the building. Patch panel(s) for each level of a multi-level building must have at least 15% unused ports. The same holds true for single story, multi ICC buildings.

4.2.4 Cable Protection

All ceiling distribution cabling shall be enclosed and protected by 3/4” and 1” rigid conduit from communications closet(s) room(s) and cabinets to all user outlets located in inmate accessible areas. In areas that CSC designated as non inmate accessible, EMT zone conduit will be allowed. Conduits must have end bushings installed to protect the cable from sharp edges.

Conduit containing Copper backbone cable must be designated “CAUTION SECURITY SYSTEM CABLE”

Conduit containing Fibre Optic backbone cable must be designated “CAUTION FIBRE OPTIC SECURITY SYSTEM CABLE”

4.2.5 Line Cords

The cabling company will supply RJ45, 8 pin modular line cords to connect owner provided data equipment to the horizontal distribution outlets at the workstation. They must be consistent with CAT 6 specification and provide end-to-end CAT 6 connectivity. Line cords shall be stranded conductor and have a “no-snag” boot over the RJ45 connector.

4.2.6 **Testing**

All cables/pairs will be scanned with a MicroTest Penta cable scanner or equivalent at 100 Mbs to determine DC loop resistance, near end cross talk and attenuation to meet or exceed the performance stated in EIA/TIA TSB-36 and TSB-40, noise, pair mapping and ranking. These tests must be conducted as originating from both the punch down location and modular outlet location of each cable segment.

4.2.7 **Labeling**

All jacks must be identified by means of labels with unique numbers These markings will be made with printed labels. The Correctional Service of Canada expects that all drops at the user end will be sequential and not out of order.

The closet terminations must be identified with these same numbers marked on BIX labels adhered to BIX 20A designation strips and patch panels. The CAN/CSA 568 colour code will apply.

Labels will also be placed on the horizontal wire, 6-9” from termination points. This would include closets, main cabinet, and jacks.

4.2.8 **Documentation**

Customer to supply CAD or Visio Version 5 floor plans when available. If CAD documents are not available, contractor will be responsible to scan hard copy of plans.

Contractor to supply site plans, individual runs, risers, wire #’s, jack #’s, patch panel #’s in both hard and soft copy.

All test results shall be machine printed, hand written test result sheets are NOT acceptable.

4.3 **Fibre Optic Backbone Cable**

4.3.1 **Cable**

The cable to be supplied and installed for backbone purposes shall consist of 12 strands (6 pairs) of Laser Optimized Fibre with nominal 50/125 um core/cladding diameter formed into a single cable.

Optical cable shall physically conform with ANSI/ICEA S-83-596 mechanical and environmental specifications for outdoor fibre optic cable.
Fibre optic cable shall conform with the requirements of OM3 as per the ISO 11801-2nd Edition standards

4.3.2 **Terminations**

Fibre optic cables shall be terminated to SC Physical contact Connectors shall be able to sustain a minimum of 200 mating cycles per EIA/TIA-455-21 without violating specifications. These connectors will terminate within interconnect sleeves to facilitate patching in patch panels. The maximum optical attenuation per pair of mated connectors shall not exceed 0.75 db.

All fibre strands, whether used in the project or not, shall be terminated with SC type connectors and installed into a fibre patch panel: generally one duplex patch per cable (i.e. 12 connectors per panel for 12 strand fibre cable). Please note that these cables shall be SC to ST unless otherwise noted.

The patch panel proposed shall provide strain relief for each fibre as an integral part of the panel design. This standard type and size of panel should be uniformly used throughout the project.

Installed fibre panels shall be completed with all guides, brackets and other accessories to facilitate cable cross connect to active components for administration and management, including provisions for labeling that are consistent with EIA/TIA-568.

4.3.3. **Testing**

All terminated fibre media and related connecting hardware shall be tested with a power meter and certified at the conclusion of the initial installation with an OTDR, in both directions. Testing will include end-to-end attenuation testing that shall measure each fibre in one direction and compare with the calculated loss based on the manufacturers specifications and known length of cable using 850 nanometres and 1300 nanometres wavelengths. The difference in value between any two mated fibre shall not exceed 0.5 db.

The power levels of the terminated fibres shall be documented to allow the equipment vendor to select the correct strapping options for their equipment. This will prevent the receivers from being overloaded.

If the attenuation measurements are not within the required specifications, an Optical Time Domain Reflectometer shall be used to find the cause and location of the power loss. Any failure will be rectified.

All test results to be machine printed, and documented in duplicate and delivered complete with As-Built drawings to Corrections Canada Regional Office.

The fibre optic cable testing will also include a basic light test:

- on each of the fibres before installation to ensure that no damage had occurred during shipping;
- on each of the fibres before termination to ensure that no damage had occurred during installation.

4.3.4 **Labeling**

All fibre optic cables will be identified by means of Warning Labels located on all related conduit, pullboxes and backboards.

Both ends of all fibre cables will be labeled indicating destination and number of strands.

All ports on each Fibre optic patch panel will be labeled to identify the backbone destinations. Both ends will be labeled with this same numbering scheme.

4.4 **Cross Connect**

4.4.1 **Data Cross-connect**

Cross connection of the UTP horizontal cables to the tie field will be completed after testing of installed cables has taken place.

Jumper wire shall be provided, if requested, and will conform with EIA/TIA TSB-40 transmission requirements for Category 6.

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/SPEC-0006
Revision 2
14 January, 2002

ELECTRONICS ENGINEERING

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

AUTHORITY

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

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

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TABLE OF CONTENTS

TABLE OF CONTENTS 2

ABBREVIATIONS 5

DEFINITIONS 6

1.0 INTRODUCTION 7
- 1.1 General 7
- 1.2 Scope 7
- 1.3 Off-The-Shelf Equipment 7
- 1.4 Equipment Procurement 7

2.0 APPLICABLE DOCUMENTS 8

3.0 REQUIREMENTS 9
- 3.1 General 9
- 3.2 Environmental Conditions 9
- 3.3 Conduits, Cable Troughs and Raceways 10
  - 3.3.1 Conduits 10
  - 3.3.2 Cable Troughs and Raceways 10

4.0 SYSTEM REQUIREMENTS 12
- 4.1 Perimeter Intrusion Detection Systems 12
  - 4.1.1 Motion Detection System 12
    - 4.1.1.1 Conduit Requirements 12
    - 4.1.1.2 Space Requirements 12
    - 4.1.1.3 Power Requirements 12
  - 4.1.2 Fence Disturbance Detection System 12
    - 4.1.2.1 Conduit Requirements 13
    - 4.1.2.2 Space Requirements 13
    - 4.1.2.3 Power Requirements 13
  - 4.1.3 PIDS Microwave 13
    - 4.1.3.1 Conduit Requirements 13
    - 4.1.3.2 Space Requirements 13
    - 4.1.3.3 Power Requirements 13
  - 4.1.4 PIDS Closed Circuit Television 14
    - 4.1.4.1 Conduit Requirements 14
    - 4.1.4.2 Space Requirements 14
    - 4.1.4.3 Power Requirements 14

4.1.5 MCCP Console 15
4.1.5.1 Conduit Requirements 15
4.1.5.2 Space Requirements 15
4.1.5.3 Power Requirements 15
4.2 Facility Alarm Systems 16
4.2.1 Inmate Cell Call System 16
4.2.1.1 Conduit Requirements 16
4.2.1.2 Space Requirements 16
4.2.1.3 Power Requirements 16
4.2.2 Fixed Point Security Alarm System 16
4.2.2.1 Conduit Requirements 17
4.2.2.2 Space Requirements 17
4.2.2.3 Power Requirements 17
4.2.3 Personal Portable Alarm System 17
4.2.3.1 Conduit Requirements 17
4.2.3.2 Space Requirements 17
4.2.3.3 Power Requirements 17
4.2.4 Portable Alarm Location System 18
4.2.4.1 Conduit Requirements 18
4.2.4.2 Space Requirements 18
4.2.4.3 Power Requirement 18
4.3 Access Control & Supplementary Systems 18
4.3.1 Door Control & Corridor Monitoring System 18
4.3.1.1 Conduit Requirements 18
4.3.1.2 Space Requirements 18
4.3.1.3 Power Requirements 19
4.3.2 Closed Circuit Television System 19
4.3.2.1 Conduit Requirements 19
4.3.2.2 Space Requirements 19
4.3.2.3 Power Requirements 19
4.3.3 Supplementary Intrusion Detection System 19
4.3.3.1 Conduit Requirements 19
4.3.3.2 Space Requirements 19
4.3.3.3 Power Requirements 20
4.3.4 Voice Recording Equipment 20
4.3.4.1 Space Requirements 20
4.3.4.2 Power Requirements 20
4.3.5 Video Recording Equipment 20
4.3.5.1 Space Requirements 20
4.3.5.2 Power Requirements 20
4.4 Communications Systems 21
4.4.1 Two Way Communications Radio 21
4.4.1.1 Conduit Requirements 21
4.4.1.2 Space Requirements 21
4.4.1.3 Power Requirements 21
4.4.2 Public Address System 21

4.4.2.1 Conduit Requirements 22
4.4.2.2 Space Requirements 22
4.4.2.3 Power Requirements 22
4.43 Limited Call Intercom System (LCIS) 22
4.4.3.1 Conduit Requirements 22
4.4.3.2 Space and Power Requirements 22
4.4.4 Restricted Visit Intercom System 22
4.4.4.1 Conduit Requirements 23
4.4.4.2 Space Requirements 23
4.4.4.3 Power Requirements 23
4.4.5 Entertainment Cable Television 23
4.4.5.1 Conduit Requirements 23
4.4.5.2 Space Requirements 23
4.4.5.3 Power Requirements 23
4.5 Control Posts (CP) and Terminal Equipment Spaces (TES) 24
4.5.1 Conduit Requirements 24
4.5.2 Space Requirements 24
4.5.3 Power Requirements 24
4.6 Installation Requirements 24
4.7 Documentation Requirements 24

5.0 QUALITY ASSURANCE 25
5.1 General 25

6.0 DELIVERY 25

APPENDIX A SUMMARY OF SYSTEM CONDUIT REQUIREMENTS 26

APPENDIX B SUMMARY OF SYSTEM SPACE REQUIREMENTS 28

APPENDIX C SUMMARY OF SYSTEM POWER REQUIREMENTS 31

ABBREVIATIONS

The following abbreviations are used in this specification:

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

DEFINITIONS

The following definitions are used in this specification:

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

1.0 INTRODUCTION

1.1 General

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

1.2 Scope

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

1.3 Off-The-Shelf Equipment

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

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

1.4 Equipment Procurement

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

2.0 APPLICABLE DOCUMENTS

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

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

3.0 REQUIREMENTS

3.1 General

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

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

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

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

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

3.2 Environmental Conditions

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

a. **Indoor Equipment**

Temperature: 0° C to 50° C; and

Humidity: 20% to 95% non-condensing.

b. **Outdoor Equipment**

Temperature: -40° C to +55° C; and

Humidity: up to 100% condensing.

3.3 Conduits, Cable Troughs and Raceways

3.3.1 Conduits

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

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

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

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

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

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

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

a. CSA Standard C22.2 - Rigid Metal Conduit

b. CSA Standard C22.2 - Flexible Metal Conduit

3.3.2 Cable Troughs and Raceways

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

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

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

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

a. CSA Standard C22.2 - Cable Troughs and Fittings.

b. CSA Standard C22.2 - Raceways and Fittings.

c. CSA Standard C22.2 - Surface Raceways and Fittings.

4.0 SYSTEM REQUIREMENTS

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

4.1 Perimeter Intrusion Detection Systems

4.1.1 Motion Detection System

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

4.1.1.1 Conduit Requirements

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

4.1.1.2 Space Requirements

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

4.1.1.3 Power Requirements

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

4.1.2 Fence Disturbance Detection System

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

4.1.2.1 **Conduit Requirements**

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

4.1.2.2 **Space Requirements**

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

4.1.2.3 **Power Requirements**

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

4.1.3 **PIDS Microwave**

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

4.1.3.1 **Conduit Requirements**

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

4.1.3.2 **Space Requirements**

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

4.1.3.3 **Power Requirements**

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

4.1.4 PIDS Closed Circuit Television

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

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

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

4.1.4.1 Conduit Requirements

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

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

4.1.4.2 Space Requirements

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

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

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

4.1.4.3 Power Requirements

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

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

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

4.1.5 MCCP Console

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

4.1.5.1 Conduit Requirements

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

4.1.5.2 Space Requirements

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

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

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

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

4.1.5.3 Power Requirements

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

4.2 Facility Alarm Systems

4.2.1 Inmate Cell Call System

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

4.2.1.1 Conduit Requirements

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

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

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

4.2.1.2 Space Requirements

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

4.2.1.3 Power Requirements

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

4.2.2 Fixed Point Security Alarm System

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

4.2.2.1 **Conduit Requirements**

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

4.2.2.2 **Space Requirements**

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

4.2.2.3 **Power Requirements**

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

4.2.3 **Personal Portable Alarm System**

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

4.2.3.1 **Conduit Requirements**

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

4.2.3.2 **Space Requirements**

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

4.2.3.3 **Power Requirements**

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

4.2.4 **Portable Alarm Location System**

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

4.2.4.1 **Conduit Requirements**

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

4.2.4.2 **Space Requirements**

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

4.2.4.3 **Power Requirement**

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

4.3 **Access Control & Supplementary Systems**

4.3.1 **Door Control & Corridor Monitoring System**

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

4.3.1.1 **Conduit Requirements**

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

4.3.1.2 **Space Requirements**

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

4.3.1.3 **Power Requirements**

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

4.3.2 **Closed Circuit Television System**

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

4.3.2.1 **Conduit Requirements**

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

4.3.2.2 **Space Requirements**

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

4.3.2.3 **Power Requirements**

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

4.3.3 **Supplementary Intrusion Detection System**

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

4.3.3.1 **Conduit Requirements**

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

4.3.3.2 **Space Requirements**

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

4.3.3.3 **Power Requirements**

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

4.3.4 **Voice Recording Equipment**

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

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

4.3.4.1 **Space Requirements**

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

4.3.4.2 **Power Requirements**

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

4.3.5 **Video Recording Equipment**

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

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

4.3.5.1 **Space Requirements**

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

4.3.5.2 **Power Requirements**

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

4.4 Communications Systems

4.4.1 Two Way Communications Radio

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

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

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

4.4.1.1 Conduit Requirements

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

4.4.1.2 Space Requirements

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

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

4.4.1.3 Power Requirements

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

4.4.2 Public Address System

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

4.4.2.1 **Conduit Requirements**

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

4.4.2.2 **Space Requirements**

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

4.4.2.3 **Power Requirements**

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

4.43 **Limited Call Intercom System (LCIS)**

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

4.4.3.1 **Conduit Requirements**

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

4.4.3.2 **Space and Power Requirements**

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

4.4.4 **Restricted Visit Intercom System**

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

4.4.4.1 **Conduit Requirements**

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

4.4.4.2 **Space Requirements**

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

4.4.4.3 **Power Requirements**

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

4.4.5 **Entertainment Cable Television**

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

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

4.4.5.1 **Conduit Requirements**

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

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

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

4.4.5.2 **Space Requirements**

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

4.4.5.3 **Power Requirements**

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

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

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

4.5.1 Conduit Requirements

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

4.5.2 Space Requirements

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

4.5.3 Power Requirements

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

4.6 Installation Requirements

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

4.7 Documentation Requirements

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

5.0 QUALITY ASSURANCE

5.1 General

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

6.0 DELIVERY

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

APPENDIX A

SUMMARY OF SYSTEM CONDUIT REQUIREMENTS

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

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

APPENDIX B

SUMMARY OF SYSTEM SPACE REQUIREMENTS

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

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

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

APPENDIX C

SUMMARY OF SYSTEM POWER REQUIREMENTS

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

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

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0205
Revision 3
February 2015

ELECTRONIC ENGINEERING STANDARD

FIXED OUTDOOR CAMERA ENCLOSURE

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

This Standard is approved by the Correctional Service Canada for the procurement and installation of this item 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
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Approved by:

Director,
Electronics Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0		Original issue
1	3.2	Condensing humidity from 95% to 100%
	7.1	Maximum maintained internal temperature from 40 to 50°C
2	All	Reformat and rationalization
3	Table of Definitions	Removed
	2.1	Added reference IEC EN 61000-4-3, Radiated RF immunity
	3.3.1	Interference now uses IEC EN 61000-4-3, Radiated RF immunity
	4.1.3	Changed humidity to non-condensing 20%-90%

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
1 INTRODUCTION 5
1.1 Overview 5
1.2 Purpose 5
2 REFERENCES 6
2.1 Specifications, Standards, and Statements of Work 6
3 PHYSICAL 7
3.1 Dimensions 7
3.2 Environment 7
3.3 Interference 7
3.4 Reliability 7
3.5 Safety 7
4 OPERATIONAL 8
4.1 Enclosure 8
4.2 Wiper 8
5 INTERFACE 9
5.1 Ports 9
5.2 Power 9

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
CSC	Correctional Service Canada
FoV	Field of View
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for an outdoor fixed camera enclosure for use at federal correctional institutions.

1.2 Purpose

.1 These enclosures are for deployment in outdoor fixed camera locations such as:

.1 facility perimeter; and
.2 outdoor walkways.

.2 These enclosures are for Fixed Network Colour Cameras for Enclosures (ES/STD-0221).

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

- IEC EN60529 – International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
- IEC EN60950-1 – International Electrotechnical Commission Information technology equipment – Safety
- IEC EN61000-4-3 – International Electrotechnical Commission Electromagnetic Compatibility Part 4-3
- IEC EN62262 – International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
- IEEE 802.3at – IEEE Standard for Information Technology Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
- IEEE 802.3u – IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T
- ES/STD-0221 – Electronics Engineering Standards Fixed Network Colour Camera for Enclosures

3 PHYSICAL

3.1 Dimensions

.1 The enclosure must:

.1 measure less than 300mm high;
.2 measure less than 300mm wide;
.3 measure less than 800mm long;

.2 The enclosure window opening must:

.1 pass the camera's complete Field of View (FoV);
.2 include a wiper;
.3 include a sun shield (include in the enclosure measurements);

.3 The enclosure camera mount must:

.1 include an adjustable camera mount;
.2 have ¼-20 threaded mounting holes;
.3 include elevation blocks for large lens/low optical centre-line cameras;

3.2 Environment

.1 The enclosure must:

.1 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.2 have a permanently affixed label on the interior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.3 operate for external temperatures between -40°C to 50°C;
.4 meet or exceed IEC EN60529 IP66 dust and water resistance when mounted;

3.3 Interference

.1 The enclosure must be certified compliant to IEC EN 61000-4-3, Radiated RF immunity.

3.4 Reliability

.1 The enclosure must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The enclosure must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Enclosure

.1 The enclosure must:

.1 be capable of continuous operation;
.2 maintain an internal temperature between 5°C to 50°C for defined operational temperature range;
.3 start and operate from 20% to 90% non-condensing humidity;
.4 prevent ice, snow, and condensation on the enclosure window;

4.2 Wiper

.1 The enclosure wiper must be remotely controllable;

5 INTERFACE

5.1 Ports

.1 The enclosure does not require an output for camera power.

5.2 Power

.1 The enclosure must use less than 150W excluding any camera power.

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0221
Revision 4
February 2014

ELECTRONIC ENGINEERING STANDARD

FIXED NETWORK COLOUR CAMERA FOR ENCLOSURE

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

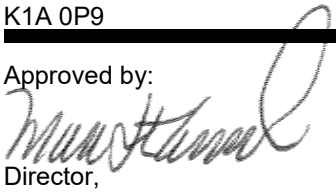
This Standard is approved by the Correctional Service Canada for the procurement and installation of this item in Canadian federal correctional institutions.

Acquisition of a camera for the identified purposes that is not in compliance with this standard must be approved by the Design Authority.

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

Approved by:



Director,
Electronics Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0		Original issue
1	7.1	Imager changed to ¼ inch or larger
	7.9	Remove numeric quantity on AGC, just yes
	7.12	Added iris requirement
	7.12 – 7.17	Renumber paragraphs
2	6.1	Added CMOS imager
3	All	Reorganized and cleaned to new format
4	Definitions	Removed
	2.1	Added reference IEC EN 61000-4-3, Radiated RF immunity
	3.2.2.4	Changed humidity to non-condensing 20%-90%
	3.3.1	Interference now uses IEC EN 61000-4-3, Radiated RF immunity

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
1 INTRODUCTION 5
1.1 Overview 5
1.2 Purpose 5
2 REFERENCES 6
2.1 Specifications, Standards, and Statements of Work 6
3 PHYSICAL 7
3.1 Dimensions 7
3.2 Environment 7
3.3 Interference 7
3.4 Reliability 7
3.5 Safety 7
4 OPERATIONAL 8
4.1 Camera 8
4.2 Lens 8
4.3 Video 8
5 INTERFACE 9
5.1 Ports 9
5.2 Power 9
5.3 Video Management System Compatibility 9

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
AGC	Automatic Gain Control
CSC	Correctional Service Canada
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
MJPEG	Motion Joint Photographic Experts Group
MTBF	Mean Time Between Failures
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
TCP/IP	Transmission Control Protocol/Internet Protocol

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for a fixed focus, network capable camera to be mounted in an enclosure for use at federal correctional institutions. The camera is for deployment in either existing indoor enclosures or Fixed Outdoor Camera Enclosures (ES/STD-0205).

1.2 Purpose

.1 The cameras are deployed for both observation and evidentiary use.

.2 These cameras are for deployment in outdoor fixed enclosures such as:

- .1 facility perimeter; and
- .2 outdoor walkways.

.3 These cameras are for deployment in existing indoor fixed enclosures such as:

- .1 indoor hallways;
- .2 gymnasiums;
- .3 weight rooms;
- .4 passage doors/barriers; and
- .5 explosive environments.

.4 The camera is used indoors where enclosures already exist and are being reused. New indoor installations must use Fixed Network Colour Dome Cameras (ES/STD-0232) except for new installations in explosive environments.

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

- IEC EN60529 – International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
- IEC EN60950-1 – International Electrotechnical Commission Information technology equipment – Safety
- IEC EN61000-4-3 – Electromagnetic compatibility Part 4-3
- IEC EN62262 – International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
- IEEE 802.3at – IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
- IEEE 802.3u – IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T
- ES/STD-0205 – Electronics Engineering Standards Fixed Outdoor Camera Enclosure
- ES/STD-0232 – Electronics Engineering Standards Fixed Network Colour Dome Camera

3 PHYSICAL

3.1 Dimensions

.1 The camera with lens must:

.1 measure less than 75mm high;
.2 measure less than 100mm wide;
.3 measure less than 250mm long;

3.2 Environment

.1 For use either in indoors enclosures or in outdoor heated enclosures.
.2 The camera must:

.1 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.2 be capable of continuous operation;
.3 start and operate from 0°C to 50°C;
.4 start and operate from 20% to 90% non-condensing humidity;

3.3 Interference

.1 The camera must be certified compliant to IEC EN 61000-4-3, Radiated RF immunity.

3.4 Reliability

.1 The camera must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The camera must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Camera

.1 The camera must retain its configuration over a power cycle.

.2 The image sensor must:

.1 include automatic or remote back focus;
.2 have a minimum of 480,000 pixels (horizontal x vertical);
.3 have day (colour) and night (black and white) modes;
.4 automatic removable infrared cut filter for day/night transition;
.5 have 0.5 lux or less minimum required illumination for day mode;
.6 have 0.1 lux or less minimum required illumination for night mode;
.7 include Automatic Gain Control (AGC);
.8 include extended dynamic range processing;

4.2 Lens

.1 The camera lens must:

.1 have a 35° to 80° or greater horizontal angular view vari-focal lens
.2 be approved by the manufacturer of the camera for that camera;

4.3 Video

.1 The video encoding must:

.1 support H.264 configurable I-frame frequency of at least 3 per second;
.2 support H.264 constant bit rate transmission mode;
.3 support H.264 frame rate transmission mode;
.4 support at least 3 levels of H.264 image quality;
.5 support at least 3 levels of MJPEG image quality;

.2 The video output must:

.1 include an on-screen, programmable character generation overlay capability with a minimum of 8 visible characters;
.2 support at least two simultaneous H.264 video streams at 30 frames per second with at least 480,000 pixel resolution;
.3 support at least two simultaneous video streams, one H.264 and one MJPEG at 15 frames per second with at least 480,000 pixel resolution;

5 INTERFACE

5.1 Ports

.1 The camera must:

.1 interface over IPV4 TCP/IP;
.2 be able to operate on 100Base-TX (IEEE 802.3u);
.3 connect using an RJ-45 connector;
.4 be ONVIF compliant;

5.2 Power

.1 The camera must be a Type 1 powered device operating solely from Power over Ethernet (PoE) compliant with IEEE 802.3at Class 0, 1, 2, or 3.

5.3 Video Management System Compatibility

.1 The camera model must be identified as “Certified” or “Supported by Design” in the current Genetec Omnicast Supported Hardware camera list.

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0223
Revision 4
July 2015

ELECTRONIC ENGINEERING STANDARD

PAN/TILT/ZOOM NETWORK COLOUR DOME CAMERA

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

Acquisition of a camera for the identified purposes that is not in compliance with this standard must be approved by the Design Authority.

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

Approved by:

Director,
Electronic Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original
1	Paragraph 7.12 Paragraph 7.21	Optical zoom increased to 30x Added electronic image stabilization
2	All	Reformat and indoor/outdoor standard merge
3	Definitions	Removed
	2.1	Added reference IEC EN 61000-4-3, Radiated RF immunity
	3.2.2.3	Changed humidity to non-condensing 20%-90%
	3.3.1	Interference now uses IEC EN 61000-4-3, Radiated RF immunity
4	2.1/3.3.1	Change IEC EN 61000-4-3, Radiated RF immunity to IEC EN 55024, Immunity characteristics
	3.2.1.11	Removed smoked dome
	5.2.1	Added operate from external 24VAC power source

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
1 INTRODUCTION 5
1.1 Overview 5
1.2 Purpose 5
2 REFERENCES 6
2.1 Specifications, Standards, and Statements of Work 6
3 PHYSICAL 7
3.1 Dimensions 7
3.2 Environment 7
3.3 Interference 7
3.4 Reliability 7
3.5 Safety 7
4 OPERATIONAL 8
4.1 Camera 8
4.2 Lens 8
4.3 PTZ 8
4.4 Video 8
5 INTERFACE 9
5.1 Ports 9
5.2 Power 9
5.3 Video Management System Compatibility 9

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
AGC	Automatic Gain Control
CSC	Correctional Service Canada
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
MJPEG	Motion Joint Photographic Experts Group
MTBF	Mean Time Between Failures
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
PTZ	Pan Tilt Zoom
TCP/IP	Transmission Control Protocol/Internet Protocol

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for a pan, tilt, zoom (PTZ), network capable, dome camera for use at federal correctional institutions. PTZ cameras are deployed to allow detailed examination of areas typically covered by fixed cameras or areas without regular evidentiary coverage.

1.2 Purpose

.1 The cameras are deployed primarily for observation use. Given they may be pointed anywhere, they are not assumed to be evidentiary coverage.

.2 These cameras are for deployment for all outdoor PTZ camera locations.

.3 These cameras are for deployment for all indoor PTZ camera locations.

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

- IEC EN55024 – International Electrotechnical Commission Information technology equipment – Immunity characteristics – Limits and methods of measurement
- IEC EN60529 – International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
- IEC EN60950-1 – International Electrotechnical Commission Information technology equipment – Safety
- IEC EN62262 – International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
- IEEE 802.3at – IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
- IEEE 802.3u – IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T

3 PHYSICAL

3.1 Dimensions

.1 The camera case and dome must:

.1 measure a base diameter less than 250mm;
.2 measure from base to top of dome of less than 400mm excluding any mount;
.3 weigh less than 5kg excluding mounting hardware;

3.2 Environment

.1 The camera case and dome must:

.1 meet or exceed IEC EN60529 IP66 dust and water resistance when mounted;
.2 if deployed within 5 metres of inmates, meet or exceed IEC EN62262 IK10 impact resistance;
.3 if surface mount, have threaded openings for conduits;
.4 if pendant mount, have all cables enter through the attachment pipe;
.5 if pendant mount, have no other openings in the enclosure excluding the dome assembly;
.6 have a threaded plug to seal all unused openings;
.7 have set-screws to secure all conduit and plugs from inside the dome;
.8 have tamper resistant heads on all externally accessible screws;
.9 have a permanently affixed label on the interior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.10 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;

.2 The camera must:

.1 be capable of continuous operation;
.2 start and operate from -40°C to 50°C;
.3 start and operate from 20% to 90% non-condensing humidity;

3.3 Interference

.1 The camera must be certified compliant to IEC EN 55024, Immunity characteristics.

3.4 Reliability

.1 The camera must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The camera must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Camera

.1 The camera must retain its configuration over a power cycle.

.2 The image sensor must:

- .1 include automatic or remote back focus;
- .2 have a minimum of 480,000 pixels (horizontal x vertical);
- .3 have day (colour) and night (black and white) modes;
- .4 automatic removable infrared cut filter for day/night transition;
- .5 1.0 lux or less minimum illumination for day mode;
- .6 0.1 lux or less minimum illumination for night mode;
- .7 include Automatic Gain Control (AGC);
- .8 include extended dynamic range processing;

4.2 Lens

.1 The camera lens must:

- .1 have a horizontal field of view optical zoom range including 3.5° to 50°;
- .2 be integral to the camera assembly;

4.3 PTZ

.1 The PTZ must:

- .1 have a pan range of 360° continuous (endless);
- .2 have a minimum tilt range of 180°;
- .3 include automatic image inversion at 90° tilt;
- .4 have a minimum pan and tilt speed of 0.1°/sec or slower;
- .5 have a maximum pan and tilt speed of 100°/sec or faster;

4.4 Video

.1 The video encoding must:

- .1 support H.264 configurable I-frame frequency of at least 3 per second;
- .2 support H.264 constant bit rate transmission mode;
- .3 support H.264 frame rate transmission mode;
- .4 support at least 3 levels of H.264 image quality;
- .5 support at least 3 levels of MJPEG image quality;

.2 The video output must:

- .1 include an on-screen, programmable character generation overlay capability with a minimum of 8 visible characters;
- .2 support at least two simultaneous H.264 video streams at 30 frames per second with at least 480,000 pixel resolution;
- .3 support at least two simultaneous video streams, one H.264 and one MJPEG at 15 frames per second with at least 480,000 pixel resolution;

5 INTERFACE

5.1 Ports

.1 The camera must:

.1 interface over IPV4 TCP/IP;
.2 be able to operate on 100Base-TX (IEEE 802.3u);
.3 connect using an RJ-45 connector;
.4 be ONVIF compliant;

5.2 Power

.1 The camera must be a Type 1 or Type 2 powered device operating from Power over Ethernet (PoE) compliant with IEEE 802.3at Class 0, 1, 2, 3, or 4, or operating from an external 24VAC power source.

5.3 Video Management System Compatibility

.1 The camera model must be identified as “Certified” or “Supported by Design” in the Genetec Omnicast Supported Hardware camera list.

CORRECTIONAL SERVICES CANADA
FACILITIES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0227
Revision 1
2015 July

ELECTRONIC ENGINEERING STANDARD

COLOUR MONITOR

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

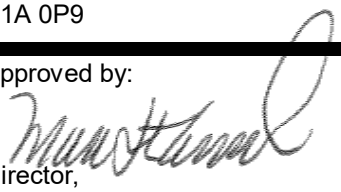
AUTHORITY

This Standard is approved by the Correctional Service Canada for the procurement and installation of this item in Canadian federal correctional institutions.

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

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

Approved by:



Director,
Electronics Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0		Original issue
1	All	Reorganized and cleaned to new format with connector , resolution, contrast, mounting, and angle of view added

TABLE OF CONTENTS

TABLE OF REVISIONS **2**
TABLE OF CONTENTS **3**
TABLE OF ABBREVIATIONS **4**
TABLE OF DEFINITIONS ..... ERROR! BOOKMARK NOT DEFINED.
1 INTRODUCTION **5**
1.1 Overview **5**
1.2 Purpose **5**
2 REFERENCES **5**
2.1 Specifications and Standards **5**
3 PHYSICAL **5**
3.1 Dimensions **5**
3.2 Environment **5**
3.3 Interference **5**
3.4 Reliability **5**
3.5 Safety **5**
4 OPERATIONAL **6**
4.1 Monitor **6**
5 INTERFACE **6**
5.1 Ports **6**
5.2 Power **6**

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
HDMI	High Definition Multimedia Interface
IEC	International Electrotechnical Commission
VESA	Video Electronics Standard Association

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada for a colour monitor to be used as part of systems at federal correctional institutions. This standard deals only with display monitors and does not apply to any touch screen monitors.

1.2 Purpose

.1 The most frequent use of the monitor is for the display of Closed Circuit Television video streams. The monitors are typically deployed as parts of control and observation systems located in:

.1 Main Control and Communications Post;
.2 Movement Control Posts;
.3 Living Unit Control Posts; and
.4 Visits and Correspondence Offices.

2 REFERENCES

2.1 Specifications and Standards

- IEC EN60950-1 – Information Technology Equipment Safety
- IEC EN55024:2010 – Information technology equipment – Immunity characteristics – Limits and methods of measurement
- VESA FDMI – Video Electronics Standards Association Flat Display Mounting Interface Standard
- HDMI v1.0 – High Definition Multimedia Interface
- DVI rev. 1.0 – Digital Video Interface

3 PHYSICAL

3.1 Dimensions

.1 The monitor visible screen diagonal measurement will be specified in the Request for Proposal.
.2 The monitor must have VESA FDMI compatible threaded inserts.
.3 The monitor must have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;

3.2 Environment

.1 The monitor must:

.1 be capable of continuous operation;
.2 start and operate from 5°C to 40°C;
.3 start and operate from 20% to 80% non-condensing humidity;

3.3 Interference

.1 The monitor must be certified compliant to IEC EN55024, Immunity characteristics;

3.4 Reliability

.1 The monitor must have a Mean Time Between Failures of at least 25,000 hours.

3.5 Safety

.1 The monitor must meet IEC EN60950-1 or the Canadian Standards Association equivalent.

4 OPERATIONAL

4.1 Monitor

.1 The monitor must:

.1 retain its configuration over a power cycle;
.2 have a minimum horizontal resolution of 1920 pixels;
.3 have a minimum vertical resolution of 1080 pixels;
.4 have an aspect ratio of 16:9 or 16:10;
.5 have a maximum black to white response time of 5ms;
.6 have a minimum static contrast ratio of 3000:1;
.7 have a minimum horizontal viewing angle of 178°;
.8 have a minimum vertical viewing angle of 178°; and
.9 use light emitting diode backlighting;

5 INTERFACE

5.1 Ports

.1 The monitor must:

.1 have a female DE-15 D-SUB video input receptacle (VGA connector); and
.2 have a Type A High Definition Multimedia Interface video input receptacle (HDMI connector) compatible with HDMI v1.0 or later;
.3 have a Digital Video Interface – Digital video input receptacle (DVI-D) compatible with DVI rev. 1.0 or later;

5.2 Power

.1 The monitor must be powered from 110 VAC nominal.

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/STD-0228
Revision 0
13 October, 2004

ELECTRONICS ENGINEERING STANDARDS

NETWORK VIDEO USER STATION CLOSED CIRCUIT TELEVISION

Prepared by:

Manager,
Electronics Systems Research

Approved by:

Director,
Engineering Services
7 Oct 04

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue.

1.0 SCOPE

This standard defines the requirements of a Network Video User Station (NVUS) in Closed Circuit Television (CCTV) systems used by Correctional Service of Canada (CSC).

2.0 GENERAL

NVUSs are used in security surveillance and assessment applications in institutions. The NVUS provides control and monitoring of CCTV equipment in a client-to-server configuration. The system shall use common off-the-shelf operating systems and computers. The system shall require user login and passwords to view recorded and live video. User video access and priorities are defined in the system configuration. The system shall be capable of having a minimum of 32 NVUS stations logged into the system.

3.0 ENVIRONMENTAL CONDITIONS

The system shall meet all operational requirements over the following operating range:

3.1 Temperature: 5° C to 40° C; and

3.2 Humidity: 20 to 80% relative, non-condensing.

4.0 POWER REQUIREMENTS

The equipment shall use standard commercial VAC power within the following range:

4.1 Voltage: 120 VAC ±10%;

4.2 Frequency: 60 Hz ±1.5%; and

4.3 Power: power consumption shall not exceed 400 watts.

5.0 MECHANICAL REQUIREMENTS

The dimensions and weight shall not exceed the following:

5.1 Width: 450 mm;

5.2 Height: 200 mm;

5.3 Depth: 450 mm; and

5.4 Weight: 30 kg.

6.0 DESIGN REQUIREMENTS

6.1 The unit must be self contained and the NVUS computer must fit in a standard 19" rack.

6.2 The control functions must be usable with either a mouse or LCD touch screen.

6.3 Memory Backup shall protect timer settings in the event of power failure.

6.4 All test points on the NVMS computer shall be clearly labelled and easily accessible for calibration and maintenance.

6.5 All equipment shall be modular with plug-in circuit cards and assemblies.

6.6 The design Mean Time Between Failure (MTBF) shall be at least 10,000 hours.

6.7 Emergency repair or parts and labour for detective NVMSs shall be available within 24 hours after notification of equipment unserviceability to any authorized dealer service centres across Canada.

7.0 TECHNICAL REQUIREMENTS

The NVUS shall meet the following requirements:

7.1	Video Format:	NTSC (colour and black/white);
7.2	Video Frame Rate:	30 frames/second/channel (max);
7.3	Video Freeze:	yes
7.4	Video Output:	SVGA;
7.5	Audio:	Synchronized with video input;
7.6	Interface:	100Base-T/10Base-T (auto fallback); and
7.7	Protocol:	Internet Interface Protocol.

8.0 FUNCTIONAL REQUIREMENTS

The NVUS shall interface to the network and provide access and control of all CCTV surveillance and assessment systems as follows:

8.1 General

a. User login shall be through password protection that limits the user to specific cameras, both live and recorded.

b. The Graphic User Interface (GUI) shall provide mapping functions to display camera locations. Cameras can be selected by camera number, or by dragging and dropping to a display.

c. Alarms shall be able to be displayed on the map or through a text message.

d. The system shall log all user operations.

8.2 Viewing

a. Ability to have live and recorded viewing of a minimum of 16 cameras.

b. Full control of all Pan/Tilt/Zoom (P/T/Z) cameras through user login of access rights to predefined cameras. Minimum of 16 priority levels to access cameras.

c. Ability to set up guard tour and multiple camera sequences.

d. Ability to display video in single, quad or step format.

e. Full duplex audio capability. The GUI application provides the ability to control talk paths and listen to audio inputs at camera locations.

f. Any live or recorded camera in the system shall be accessible through the single GUI interface without the need to change screens or applications.

8.3 Recording

a. Ability to set record mode to automatically start recording on any appropriate alarm input, for example, a signal from the Fence Detection System.

b. Ability to set record mode to stop when it receives any reset signal (one input per video input);

c. Ability to manual initiate record mode.

d. Ability to initiate record mode on motion.

e. Ability to initiate record mode based on time.

f. Ability to be configured to stop recording when the hard drive is full, or configured to overwrite the oldest files.

g. Provide an open or closed contact when the NVUS stops recording for any reason.

8.4 **Playback**

a. Ability to control playback speed.

b. Ability to have multiple view playback.

c. Ability to export single images and video sequences.

d. Ability to search for motion in continuous recordings.

e. Ability to search video sequences based on either date, time or motion.

8.5 **System**

a. Capable of triplex operation: record, search and playback simultaneously.

b. Placing the unit into either the Search or Playback mode shall not interrupt any recording in process.

c. Searching and viewing of stored images, and reconfiguration of system parameters shall be available via a TCP/IP connection through a LAN. Any remote access software required shall be provided for installation on a standard Windows based computer; and

d. Transfer viewing software automatically to the CD when downloading audio and video for archive purposes. It should be possible to review the archived audio and video from any CSC PC with Windows XP without additional software.

e. Should indicate Power on/off; Hard Drive Full Alarm; Time/Date; and Recording; on the operator console;

f. Should have controls for Power on/off; Record; Play/Stop; Forward/Reverse Field Advance; Time, Date and Recording Mode on the operator console;

g. Control signals available on the back of the NVUS shall include Automatic Alarm Input; and Manual Alarm Input;

h. System messages must be contained in a log file available for downloading or printing.

i. Multiple users shall be able to share common resources, with individual users being assigned different system access capability with password protection.

9.0 INTERFERENCE

The NVUS performance and video quality shall not be affected by the presence or use of standard CSC electronic equipment. The units shall work at the following distance limits:

9.1 CB transceivers at 1 metre or more;

9.2 VHF or UHF transceivers (25W) at 1 metre or more;

9.3 Other radio frequency transmitting, receiving and distribution equipment at 5 metres or more; and

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

The NVUS shall not interfere with any standard electronic equipment used at the institutions.

10.0 SAFETY

10.1 The NVUS must be CSA, UL, ULC or CE approved, as required by law.

- END OF TEXT -

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/STD-0229
Revision 3
19 April, 2010

ELECTRONICS ENGINEERING STANDARDS

NETWORK VIDEO RECORDER CLOSED CIRCUIT TELEVISION

Prepared by:

Manager,
Electronics Systems Research

Approved by:

Director,
Engineering Services

RECORD OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue.
1	6.4 Design Requirements	Delete requirement for local control
	6.14 Design Requirements	Delete requirement for directly attached computer
	7.4 Recording Frame Rate	Delete “minimum compression”
	7.5 Frame Storage Option	Delete
	7.6 Selectable Compression	Delete
	7.8 Primary Storage	“Hot Swappable” Hard Drives
	7.14 Failure Indication	Change to message to the FAAS on failure
	7.15 Disk Full	Delete
2	7.13	Added requirement for Fail-Over Archiving
	7.14	Added requirement for Fail-Over Directory
3	4.3 Power	Increase to 600 watts maximum
	5.3 Depth	Increase to 600 mm
	7.1 Video Format	Determined by cameras
	7.4 Recording Frame Rate	Increase to 20 maximum simultaneous inputs
	7.7 RAID 5	Added 4TB minimum
	7.15	Added requirement for RAID 1 OS solid state drives

1.0 SCOPE

This standard defines the requirements of a Network Video Recorder (NVR) in Closed Circuit Television (CCTV) systems used by Correctional Service of Canada (CSC).

2.0 GENERAL

NVRs are used in security surveillance and assessment applications in institutions. The NVR records real time video and audio streams transmitted from network video cameras or NTSC-IP Video Converters.

3.0 ENVIRONMENTAL CONDITIONS

The system shall meet all operational requirements over the following operating range:

3.1 Temperature: 5° C to 40° C; and

3.2 Humidity: 20 – 80% non-condensing.

4.0 POWER REQUIREMENTS

The equipment shall use standard commercial VAC power within the following range:

4.1 Voltage: 120 VAC ±10%;

4.2 Frequency: 60 Hz ±1.5%; and

4.3 Power: power consumption shall not exceed 600 watts.

5.0 MECHANICAL REQUIREMENTS

The dimensions and weight shall not exceed the following:

5.1 Width: to fit standard 19” rack mount;

5.2 Height: maximum 6RU (Rack Units);

5.3 Depth: 600 mm; and

5.4 Weight: 30 kg.

6.0 DESIGN REQUIREMENTS

6.1 The unit must be self contained.

6.2 The unit must fit in a standard 19" rack.

6.3 The NVR shall be based on common off-the-shelf computers and operating systems.

6.4 All function controls for NVR configuration and operation shall be available through remote access software.

6.5 Power Failure Recovery shall enable the NVR to resume functioning in the same state that it was in at the time of the power failure.

6.6 Memory Backup shall protect timer settings in the event of power failure.

6.7 All test points on the NVR shall be clearly labelled and easily accessible for calibration and maintenance.

6.8 All equipment shall be modular with plug-in circuit cards and assemblies.

6.9 The design Mean Time Between Failure (MTBF) shall be at least 10,000 hours.

6.10 The unit shall provided remote diagnostics to indicate recording failure or video loss from an IP camera or IP encoder.

6.11 The recorder shall utilize user login, password and rights management such as to limit users' access to specific cameras, both live and recorded.

6.12 The recorder system shall provided user rights and priorities to control of P/T/Z cameras.

7.0 TECHNICAL REQUIREMENTS

The NVR shall meet the following requirements:

7.1 Video Format: Determined by camera;

7.2 Audio: Synchronized with video input (when equipped);

7.3	System Recording Rate:	up to 120 Mbits/sec;
7.4	Recording Frame Rate:	maximum 20 simultaneous inputs @ 640 x 480 pixels, 30 frames per second per input;
7.5	Recording Capacity:	Shall have the ability to connect to external local RAID storage drives to a minimum of 4 external RAID chassis. Limited only by hard drive capacity;
7.6	Primary Storage:	Hot Swappable Hard Drives (capacity as per STR);
7.7	RAID 5:	Internal storage shall be 4TB RAID 5 as a minimum (depending on storage requirement);
7.8	Watermark:	The video must contain some form of watermark or fingerprint so that any attempt to tamper with the recorded digital image may be detected.
7.9	Interface:	100Base-T/10Base-T (auto fallback);
7.10	Protocol:	Internet Interface Protocol; and
7.11	User Display:	HTML-based GUI.
7.12	Failure Indication:	Message to the FAAS when NVR stops recording for any reason
7.13	Fail-Over Archiving	To be provided (The RAID 5 feature of the NVR is NOT considered redundant archiving. Additional archiver(s) that will automatically take over recording of the cameras assigned to an NVR that has completely or partially failed, in excess of a single RAID Drive, must be provided.)
7.14	Fail-Over Directory	To be provided (The Fail-Over Directory may reside on the Fail-Over Archiver)
7.15	Operating System	The operating system for the unit shall be contained on two (2) solid state drives configured as RAID 1 storage. The OS shall NOT be installed on the RAID 5 video array.

8.0 **INTERFERENCE**

The NVR performance and video quality shall not be affected by the presence or use of standard CSC electronic equipment. The units shall work at the following distance limits:

8.1 CB transceivers at 1 metre or more;

8.2 VHF or UHF transceivers (25W) at 1 metre or more;

8.3 Other radio frequency transmitting, receiving and distribution equipment at 5 metres or more; and

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

The NVR shall not interfere with any standard electronic equipment used at the institutions.

9.0 **SAFETY**

9.1 The NVR must be CSA, UL, ULC or CE approved, as required by law.

- END OF TEXT -

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0232
Revision 2
February 2014

ELECTRONIC ENGINEERING STANDARD

FIXED NETWORK COLOUR DOME CAMERA

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

Acquisition of a camera for the identified purposes that is not in compliance with this standard must be approved by the Design Authority.

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

Approved by:

Director,
Electronic Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original
1	All	New structure and change to merge indoor and outdoor.
2	Definitions	Removed
	2.1	Added reference IEC EN 61000-4-3, Radiated RF immunity
	3.2.2.3	Changed humidity to non-condensing 20%-90%
	3.3.1	Interference now uses IEC EN 61000-4-3, Radiated RF immunity

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
1 INTRODUCTION 5
1.1 Overview 5
1.2 Purpose 5
2 REFERENCES 6
2.1 Specifications, Standards, and Statements of Work 6
3 PHYSICAL 7
3.1 Dimensions 7
3.2 Environment 7
3.3 Interference 7
3.4 Reliability 7
3.5 Safety 7
4 OPERATIONAL 8
4.1 Camera 8
4.2 Lens 8
4.3 Video 8
5 INTERFACE 9
5.1 Ports 9
5.2 Power 9
5.3 Video Management System Compatibility 9

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
AGC	Automatic Gain Control
CSC	Correctional Service Canada
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
MJPEG	Motion Joint Photographic Experts Group
MTBF	Mean Time Between Failures
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
TCP/IP	Transmission Control Protocol/Internet Protocol

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for a fixed focus, network capable, dome camera for use at federal correctional institutions.

1.2 Purpose

.1 The cameras are deployed for both observation and evidentiary use.

.2 These cameras are for deployment for all outdoor fixed camera locations **except**:

.1 facility perimeter;

.3 These cameras are for deployment for all indoor fixed camera locations **except**:

.1 observation cells;

.2 principal entrance panoramic;

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

- IEC EN60529 – International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
- IEC EN60950-1 – International Electrotechnical Commission Information technology equipment – Safety
- IEC EN 61000-4-3 – International Electrotechnical Commission Radiated RF immunity
- IEC EN62262 – International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
- IEEE 802.3at – IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
- IEEE 802.3u – IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T

3 PHYSICAL

3.1 Dimensions

.1 The camera case and dome must:

.1 measure a base diameter less than 200mm;
.2 measure from base to top of dome of less than 175mm excluding any mount;
.3 weigh less than 2.5kg;

3.2 Environment

.1 The camera case and dome must:

.1 meet or exceed IEC EN60529 IP66 dust and water resistance when mounted;
.2 meet or exceed IEC EN62262 IK10 impact resistance;
.3 have threaded openings for conduits;
.4 have a threaded plug to seal all unused openings;
.5 have set-screws to secure all conduit and plugs from inside the dome;
.6 have tamper resistant heads on all externally accessible screws;
.7 have a permanently affixed label on the interior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.8 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;

.2 The camera must:

.1 be capable of continuous operation;
.2 start and operate from -40°C to 50°C;
.3 start and operate from 20% to 90% non-condensing humidity;

3.3 Interference

.1 The camera must be certified compliant to IEC EN 61000-4-3, Radiated RF immunity

3.4 Reliability

.1 The camera must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The camera must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Camera

.1 The camera must retain its configuration over a power cycle.

.2 The image sensor must:

- .1 include automatic or remote back focus;
- .2 have a minimum of 480,000 pixels (horizontal x vertical);
- .3 have day (colour) and night (black and white) modes;
- .4 automatic removable infrared cut filter for day/night transition;
- .5 have 0.5 lux or less minimum illumination for day mode;
- .6 have 0.1 lux or less minimum illumination for night mode;
- .7 include Automatic Gain Control (AGC);
- .8 include extended dynamic range processing;

4.2 Lens

.1 The camera lens must:

- .1 have a 35° to 80° or greater horizontal angular view varifocal lens
- .2 be approved by the manufacturer of the camera for that camera;

4.3 Video

.1 The video encoding must:

- .1 support H.264 configurable I-frame frequency of at least 3 per second;
- .2 support H.264 constant bit rate transmission mode;
- .3 support H.264 frame rate transmission mode;
- .4 support at least 3 levels of H.264 image quality;
- .5 support at least 3 levels of MJPEG image quality;

.2 The video output must:

- .1 include an on-screen, programmable character generation overlay capability with a minimum of 8 visible characters;
- .2 support at least two simultaneous H.264 video streams at 30 frames per second with at least 480,000 pixel resolution;
- .3 support at least two simultaneous video streams, one H.264 and one MJPEG at 15 frames per second with at least 480,000 pixel resolution;

5 INTERFACE

5.1 Ports

.1 The camera must:

.1 interface over IPV4 TCP/IP;
.2 be able to operate on 100Base-TX (IEEE 802.3u);
.3 connect using an RJ-45 connector;
.4 be ONVIF compliant;

5.2 Power

.1 The camera must be a Type 1 powered device operating solely from Power over Ethernet (PoE) compliant with IEEE 802.3at Class 0, 1, 2, or 3.

5.3 Video Management System Compatibility

.1 The camera model must be identified as “Certified” or “Supported by Design” in the Genetec Omnicast Supported Hardware camera list.

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0233
Revision 2
February 2014

ELECTRONIC ENGINEERING STANDARD

INDOOR NO-GRIP CORNER MOUNT NETWORK COLOUR CAMERA

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

This Standard is approved by the Correctional Service Canada for the procurement and installation of this item in Canadian federal correctional institutions.

Acquisition of a camera for the identified purposes that is not in compliance with this standard must be approved by the Design Authority.

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

Approved by:

Director,
Electronic Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original
1	All	New document structure and addition of TCP/IP and PoE interfaces.
2	Definitions	Removed
	2.1	Added reference IEC EN 61000-4-3, Radiated RF immunity
	3.2.2.3	Changed humidity to non-condensing 20%-90%
	3.3.1	Interference now uses IEC EN 61000-4-3, Radiated RF immunity

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
1 INTRODUCTION 5
1.1 Overview 5
1.2 Purpose 5
2 REFERENCES 6
2.1 Specifications, Standards, and Statements of Work 6
3 PHYSICAL 7
3.1 Dimensions 7
3.2 Environment 7
3.3 Interference 7
3.4 Reliability 7
3.5 Safety 7
4 OPERATIONAL 8
4.1 Camera 8
4.2 Lens 8
4.3 Camera Case 8
4.4 Video 8
5 INTERFACE 9
5.1 Ports 9
5.2 Power 9
5.3 Video Management System Compatibility 9

TABLE OF ABBREVIATIONS

Abbreviation	Expansion
AGC	Automatic Gain Control
CSC	Correctional Service Canada
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
MJPEG	Motion Joint Photographic Experts Group
MTBF	Mean Time Between Failures
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
TCP/IP	Transmission Control Protocol/Internet Protocol

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for an indoor, fixed focus, network capable, corner mounted, no-grip camera for use at federal correctional institutions.

1.2 Purpose

.1 The cameras are deployed for both observation and evidentiary use.

.2 These cameras are for deployment only in:

.1 observation cells;

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

- IEC EN60529*International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
- IEC EN60950-1*International Electrotechnical Commission Information technology equipment – Safety
- IEC EN 61000-4-3 – International Electrotechnical Commission Radiated RF immunity
- IEC EN62262*International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
- IEEE 802.3at*IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
- IEEE 802.3u*IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T

3 PHYSICAL

3.1 Dimensions

.1 The camera case must:

.1 measure less than 300mm in all dimensions;
.2 weigh less than 2.5kg;

3.2 Environment

.1 The camera case must:

.1 meet or exceed IEC EN60529 IP65 dust and water resistance when mounted;
.2 meet or exceed IEC EN62262 IK10 impact resistance;
.3 have tamper resistant heads on all externally accessible screws;
.4 be grip-less and anchor-free;
.5 have a permanently affixed label on the interior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.6 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;

.2 The camera must:

.1 be capable of continuous operation;
.2 start and operate from 0°C to 50°C;
.3 start and operate from 20% to 90% non-condensing humidity;

3.3 Interference

.1 The camera must be certified compliant to IEC EN 61000-4-3, Radiated RF immunity

3.4 Reliability

.1 The camera must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The camera must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Camera

.1 The camera must retain its configuration over a power cycle.

.2 The image sensor must:

- .1 include automatic or remote back focus;
- .2 have a minimum of 480,000 pixels (horizontal x vertical);
- .3 have day (colour) and night (black and white) modes;
- .4 automatic removable infrared cut filter for day/night transition;
- .5 have 0.5 lux or less minimum illumination for day mode;
- .6 have 0 lux minimum illumination for night mode;
- .7 if required for night mode, use invisible illumination (typically infra-red LEDs);
- .8 include Automatic Gain Control (AGC);

4.2 Lens

.1 The camera lens must:

- .1 provide a view of the entire floor and all four walls of a room at least 3.5m x 3.5m including the walls to which it is attached from the mounting height to the floor;
- .2 be approved by the manufacturer of the camera for that camera;

4.3 Camera Case

.1 The camera case must:

- .1 have a programmatically controlled visible LED indicator to show when the video feed is being observed;

4.4 Video

.1 The video encoding must:

- .1 support H.264 configurable I-frame frequency of at least 3 per second;
- .2 support H.264 constant bit rate transmission mode;
- .3 support H.264 frame rate transmission mode;
- .4 support at least 3 levels of H.264 image quality;
- .5 support at least 3 levels of MJPEG image quality;

.2 The video output must:

- .1 include an on-screen, programmable character generation overlay capability with a minimum of 8 visible characters;
- .2 support at least two simultaneous H.264 video streams at 30 frames per second with at least 480,000 pixel resolution;
- .3 support at least two simultaneous video streams, one H.264 and one MJPEG at 15 frames per second with at least 480,000 pixel resolution;

5 INTERFACE

5.1 Ports

.1 The camera must:

.1 interface over IPV4 TCP/IP;
.2 be able to operate on 100Base-TX (IEEE 802.3u);
.3 connect using an RJ-45 connector;
.4 be ONVIF compliant;

5.2 Power

.1 The camera must be a Type 1 powered device operating solely from Power over Ethernet (PoE) compliant with IEEE 802.3at Class 0, 1, 2, or 3.

5.3 Video Management System Compatibility

.1 The camera model must be identified as “Certified” or “Supported by Design” in the Genetec Omnicast Supported Hardware camera list.

CORRECTIONAL SERVICES CANADA
TECHNICAL SERVICES BRANCH
ELECTRONIC SECURITY SYSTEMS

ES/STD-0235
Revision 3
February 2014

ELECTRONIC ENGINEERING STANDARD

INDOOR PANORAMIC NETWORK COLOUR CAMERA

FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

Acquisition of a camera for the identified purposes that is not in compliance with this standard must be approved by the Design Authority.

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

Approved by:

Director,
Electronic Security Systems

TABLE OF REVISIONS

Revision	Paragraph	Comment
0	N/A	Original issue
1	7.4	Frame rate increase
2	All	New format and change to cover indoor and outdoor
3	Definitions	Removed
	2.1	Added reference IEC EN 61000-4-3, Radiated RF immunity
	3.2.2.3	Changed humidity to non-condensing 20%-90%
	3.3.1	Interference now uses IEC EN 61000-4-3, Radiated RF immunity

TABLE OF CONTENTS

TABLE OF REVISIONS 2
TABLE OF CONTENTS 3
TABLE OF ABBREVIATIONS 4
1 INTRODUCTION 5
1.1 Overview 5
1.2 Purpose 5
2 REFERENCES 6
2.1 Specifications, Standards, and Statements of Work 6
3 PHYSICAL 7
3.1 Dimensions 7
3.2 Environment 7
3.3 Interference 7
3.4 Reliability 7
3.5 Safety 7
4 OPERATIONAL 8
4.1 Camera 8
4.2 Lens 8
4.3 Video 8
5 INTERFACE 9
5.1 Ports 9
5.2 Power 9
5.3 Video Management System Compatibility 9

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MJPEG	Motion Joint Photographic Experts Group
MTBF	Mean Time Between Failures
ONVIF	Open Network Video Interface Forum
PoE	Power over Ethernet
TCP/IP	Transmission Control Protocol/Internet Protocol

1 INTRODUCTION

1.1 Overview

.1 This standard defines the requirements of Correctional Service Canada (CSC) for a panoramic, network capable, camera for use at federal correctional institutions.

1.2 Purpose

.1 The cameras are deployed for both observation and evidentiary use.

.2 These cameras are for deployment at:

.1 principal entrance;

2 REFERENCES

2.1 Specifications, Standards, and Statements of Work

.1 Access to non-government specifications is the responsibility of the contractor.

- IEC EN60529 – International Electrotechnical Commission Degrees of protection provided by enclosures (IP Code)
- IEC EN60950-1 – International Electrotechnical Commission Information technology equipment – Safety
- IEC EN 61000-4-3 – International Electrotechnical Commission Radiated RF immunity
- IEC EN62262 – International Electrotechnical Commission Degrees of protection provided by enclosures for electrical equipment against external mechanical impacts
- IEEE 802.3at – IEEE Standard for Information technology – Telecommunications and information exchange between systems – Local and metropolitan area networks – Specific requirements Part 3: Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Amendment 3: Data Terminal Equipment (DTE) Power via the Media Dependent Interface (MDI) Enhancements
- IEEE 802.3u – IEEE Standards for Local and Metropolitan Area Networks: Supplement to Carrier Sense Multiple Access with Collision Detection (CSMA/CD) Access Method and Physical Layer Specifications Media Access Control (MAC) Parameters, Physical Layer, Medium Attachment Units, and Repeater for 100 Mb/s Operation, Type 100BASE-T

3 PHYSICAL

3.1 Dimensions

.1 The camera case and dome must:

.1 measure a base diameter less than 200mm;
.2 measure from base to top of dome of less than 250mm excluding any mount;
.3 weigh less than 2.5kg;

3.2 Environment

.1 The camera case and dome must:

.1 meet or exceed IEC EN60529 IP65 dust and water resistance when mounted;
.2 meet or exceed IEC EN62262 IK10 impact resistance;
.3 have threaded openings for conduits;
.4 have a threaded plug to seal all unused openings;
.5 have set-screws to secure all conduit and plugs from inside the dome;
.6 have tamper resistant heads on all externally accessible screws;
.7 have a permanently affixed label on the interior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;
.8 have a permanently affixed label on the exterior of the unit which identifies the manufacturer, the model or assembly number, the serial number and the power requirement;

.2 The camera must:

.1 be capable of continuous operation;
.2 start and operate from 0°C to 50°C;
.3 start and operate from 20% to 90% non-condensing humidity;

3.3 Interference

.1 The camera must be certified compliant to IEC EN 61000-4-3, Radiated RF immunity

3.4 Reliability

.1 The camera must have an MTBF of at least 25,000 hours.

3.5 Safety

.1 The camera must meet IEC 60950-1 or the CSA equivalent.

4 OPERATIONAL

4.1 Camera

.1 The camera may use a single lens or a multi-lens/multi-camera configuration.
.2 The camera must retain its configuration over a power cycle.
.3 The image sensor must:

.1 include automatic or remote back focus;
.2 have a minimum of 1,000,000 pixels (horizontal x vertical, sum for multi-lens units);
.3 have day (colour) and night (black and white) modes;
.4 automatic removable infrared cut filter for day/night transition;
.5 have 0.5 lux or less minimum illumination for day mode;
.6 have 0.1 lux or less minimum illumination for night mode;
.7 include Automatic Gain Control (AGC);

4.2 Lens

.1 The camera lens must:

.1 minimum angle of view 180°x160° (multi-lens combined);
.2 be approved by the manufacturer of the camera for that camera;

4.3 Video

.1 The video encoding must:

.1 support H.264 configurable key frame frequency of at least 3 per second;
.2 support H.264 constant bit rate transmission mode;
.3 support H.264 frame rate transmission mode;
.4 support at least 3 levels of H.264 image quality;
.5 support at least 3 levels of MJPEG image quality;

.2 The video output must:

.1 include an on-screen, programmable character generation overlay capability with a minimum of 8 visible characters;
.2 support at least two simultaneous H.264 video streams at 30 frames per second with at least 1,000,000 pixel resolution;
.3 support at least two simultaneous video streams, one H.264 and one MJPEG at 15 frames per second with at least 1,000,000 pixel resolution;
.4 support virtual pan/tilt/zoom;

5 INTERFACE

5.1 Ports

.1 The camera must:

.1 interface over IPV4 TCP/IP;
.2 be able to operate on 100Base-TX (IEEE 802.3u);
.3 connect using an RJ-45 connector;
.4 be ONVIF compliant;

5.2 Power

.1 The camera must be a Type 1 powered device operating solely from Power over Ethernet (PoE) compliant with IEEE 802.3at Class 0, 1, 2, or 3.

5.3 Video Management System Compatibility

.1 The camera model must be identified as “Certified” or “Supported by Design” in the Genetec Omnicast Supported Hardware camera list.