Public Works and Government Services Canada

Requisition No. EZ899-161281

DRAWINGS & SPECIFICATIONS
for

CSC Pacific Region Perimeter Fence Upgrades

Project No.: R.071529.001

APPROVED BY:

Regional Manager, AES — Date: 2015-07-20

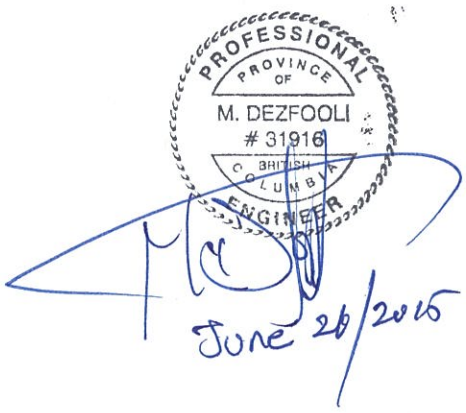
Construction Safety Coordinator — Date: 6/SEP/15

TENDER:

Project Manager — Date: July 20, 2015

Real Property Services Branch, Professional and Technical Services, Pacific Region
Room 219 - 800 Burrard Street, Vancouver, B.C. V6Z 0B9

CONSULTANTS – SEAL & SIGNATURE

Discipline	Seal / Signature / Date
Architectural (Prime)	
Electrical	 July 14, 2015  June 26/2015

END OF SECTION

List of Drawings (Bound Separately):

Architectural

A1 - KT - Kent Institution - Site Plan
A2 - KT - Kent Institution - Details
A3 - KT - Kent Institution - Details
A4 - KT - Kent Institution - Details
A1 - MO - Mountain Institution - Site Plan
A2 - MO - Mountain Institution - Details
A3 - MO - Mountain Institution - Details
A4 - MO - Mountain Institution - Details
A1 - MI - Mission Medium Institution - Site Plan
A2 - MI - Mission Medium Institution - Details
A3 - MI - Mission Medium Institution - Details
A4 - MI - Mission Medium Institution - Details
A1 - PA - Pacific Institution - Site Plan
A2 - PA - Pacific Institution - Details
A3 - PA - Pacific Institution - Details
A1 - FV - Fraser Valley Institution - Site Plan
A2 - FV - Fraser Valley Institution - Details
A1 - MA - Matsqui Institution - Site Plan
A2 - MA - Matsqui Institution - Details
A3 - MA - Matsqui Institution - Details
A4 - MA - Matsqui Institution - Details

Structural

S - 1 - Typical Structural Details

Electrical

E1 - KT - Kent Institution - Site Plan
E2 - KT - Kent Institution - Fence Elevations
E3 - KT - Kent Institution - Fence Elevations
E1 - MO - Mountain Institution - Site Plan
E2 - MO - Mountain Institution - Fence Elevations
E3 - MO - Mountain Institution - Secondary Sallyport Plans and New Gate Elevations
E1 - MI - Mission Medium Institution - Site Plan
E2 - MI - Mission Medium Institution - Outer Perimeter Fence Elevations
E3 - MI - Mission Medium Institution - Inner Perimeter Fence Elevations
E1 - MA - Matsqui Institution - Site Plan
E2 - MA - Matsqui Institution - Fence Elevations
E1 - FV - Fraser Valley Institution - Site Plan
E2 - FV - Fraser Valley Institution - Fence Elevations
E3 - FV - Fraser Valley Institution - Sallyport Plan and Elevations
E1 - PA - Pacific Institution - Site Plan
E2 - PA - Pacific Institution - North Sallyport Plan and Elevations

END OF SECTION

PART 1 GENERAL

1.1 SUMMARY OF WORK

.1 Work covered by Contract Documents:

.1 This Contract covers the following work at the:

.1 Kent Institution - Agassiz, B.C.

.2 Mountain Institution - Agassiz, B.C.

.3 Mission Medium Institution - Misson, B.C.

.4 Pacific Institution - Abbotsford, B.C.

.5 Fraser Valley Institution - Abbotsford, B.C.

.6 Matsqui Institution - Abbotsford, BC

.2 Pacific Region Perimeter Fence Upgrades

.2 Work to be performed under this Contract includes, but not limited to, the following items covered further in the Contract documents:

.1 Provide a detailed work plan including a project schedule and phasing. This detailed work plan shall be submitted to the Departmental Representative for review to verify that there will be no interruption of service.

.2 Do not start work until all essential equipment is delivered to the site and the work can proceed without delays.

.3 Provide as-built drawings and closeout submittals.

.3 Contractor's Use of Premises:

.1 Contractor has limited use of site for work of this contract until Substantial Completion:

.1 Contractor use of premises for storage and access, as approved by the Departmental representative.

.2 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

.2 Vehicular access through the Sally Port will be restricted during the inmate "count" at breakfast, lunch and dinner hours. Confirm times with Departmental Representative. Delays may occur when entering and exiting the Institution with vehicles due to security situations and heavy traffic.

1.2 WORK RESTRICTIONS

.1 Notify Departmental Representative of intended interruption of power, communication and water services and provide schedule of interruption times.

.2 Where Work involves breaking into or connecting to existing services, give departmental Representative 48 hours of notice for necessary interruption of services throughout course of work. Keep duration of interruptions to a minimum. Coordinate interruptions with local authority having jurisdiction and local residences and businesses affected by the disruption.

.3 Provide for access by pedestrian and vehicular traffic on and around site where work is in progress.

.4 Construct barriers in accordance with Section Temporary Barriers and Enclosures.

.5 Security Requirements: refer to Section 01 14 10 - Security Requirements.

.6 Hours of work:

.1 Perform work during normal working hours of the Institution 0730 to 1600, Monday through Friday except holidays.

.2 When it is necessary, arrange in advance with Departmental Representative to work outside of normal working hours.

.7 .1 Only one FDS Sector can be non-functional at any given time, for up to maximum of 2 consecutive days. This includes overnight between the 2 working days.

.2 Notwithstanding Item .1 there shall be no openings left in the Inner or outer Outer Perimeter Fences outside of normal working hours. When the work for the day is completed on either the Inner or Outer Perimeter Fence, Fence Fabric shall be installed securely on the fence posts at the end of each working day.

,3 Outer Perimeter fence gates to be completed before work on the inner perimeter gates can begin.

.4 Concrete footings to be done while maintaining the integrity and operations of existing fence.

.5 While work is being carried out on gates on Outer Perimeter Fence, all FDS sectors are to be fully functional.

.6 Kent Institution:

a. Installation of new conduits, splice boxes and rerouting of the existing FDS Processor Cable and PIDS P/A Cable shall be completed prior to construction of the new gate on the inner Perimeter Fence.
b. Installation of the new gate on Outer Perimeter Fence shall be completed prior work beginning on new gate on Inner Perimeter fence.

.7 Mountain Institution [Old Sally Port] to be phased as follows:

a. New gates and fencing shall be installed on the Inner Perimeter fence line.
b. All work on FDS on new Inner Perimeter Fencing and gates to be completed
c. New gates and fencing shall be installed on the Outer Perimeter Fence Line.
d. Remove existing fencing and gates as indicated.

.8 Mission Medium Institution:

a. New underground conduits to be installed and re-routing of the existing CCTV Fibre Optic Cables, Data cable and voice to be completed prior to work commencing on Outer Perimeter Fence.

.9 Submit Photographs of each gate location prior to commencing work. Photographs to document the condition of the fence fabric, razor wire, ground/landscaping conditions prior to work commencing

.10 All new gates are to be pre-manufactured and brought to site for installation prior to removal of existing fence fabric.

1.3 CONSTRUCTION WORK PLAN AND SCHEDULE

.1 Commence work immediately upon official notification of acceptance of offer and complete the work within 19 weeks from the date of such notification.

.2 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Substantial Certificate and Final Certificate as defined times of completion are of essence of this contract.

.3 SAMPLE GATE FOR REVIEW - Modify one Matsqui Institution gate complete , Detail 8, Drawing A4-MA, for review prior to proceeding with any other gates at all Institutions. Make adjustments required if any identified in the review. This will be used as a standard for all other new or modified gates.

.4 Submittal:

.1 Submit to Departmental Representative within 10 working days of Award of Contract, a Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of construction progress.

.2 Identify each trade or operation.

.3 Show dates for delivery of items requiring long lead time.

.4 Departmental Representative will review schedule and return one copy.

.5 Re-submit two (2) copies of finalized schedule to Departmental Representative within five (5) working days after return of reviewed preliminary copy.

.6 Submit work plans with details of work to be carried out each day, downtime and restoration of FDS System and completion of each gate location.

.7 Provide an overall schedule, a schedule with the next weeks activities and a daily update.

.8 The daily update includes:
- .1 Use gate locations as reference points.
- .2 Include start and finish times.
- .3 Include which FDS and PIDS P/A sectors will not be functioning.

.9 Include details on start and finish points for the removal and installation of:
- .1 Fence fabric
- .2 Posts
- .3 Concrete
- .4 Gates
- .5 Razor wire
- .6 FDS Sector Cable and FDS Processor Cable
- .7 PIDS P/A
- .8 Other significant items

.10 Institutions require detailed work plans in advance to enable them to make security changes to accommodate the increased risk for specific areas.

.5 Project Scheduling Reporting:

.1 Update Project Schedule on bi-weekly basis reflecting activity changes and completions, as well as activities in progress.

.2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.

.6 Project Meetings:

.1 Discuss Project Schedule at bi-weekly site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

.2 Weather related delays with their remedial measures will be discussed and negotiated.

.3 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. After approval by Departmental Representative cost breakdown will be used as basis for progress payments. Only PWGSC paper work is acceptable.

1.4 SUBMITTAL PROCEDURES

.1 Administrative:

.1 Submit to Departmental Representative submittal listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Work affected by submittal shall not proceed until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittal prior to submission to Departmental Representative . This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittal not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.

.6 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are coordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative review of submittal.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

10 Keep one reviewed copy of each submission on site.

.2 Shop Drawings:

.1 Drawings to be originals prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate sections.

.3 Product Data:

.1 Certain specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams, schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop drawings, provided that the product concerned is clearly identified. Submit in sets, not as individual submissions.

.4 Samples:

.1 Submit samples in sizes and quantities specified.

.2 Where colour is criterion, submit full range of colours.

.3 Submit all samples as soon as possible after the contract is awarded, to facilitate production of complete colour scheme by the Departmental Representative.

.5 Mock-ups:

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.

.2 Construct in location as specified in specific Section.

.3 Prepare mock-ups for Departmental Representative' review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

.6 Progress Photographs:

.1 Provide construction photographs in accordance with procedures and submission requirements specified in this clause.

.2 Progress Photographs:

.1 Provide digital photographs with images of minimum 3.1 mega pixel resolution and stored in Jpeg format with minimal compression.

.2 Number of viewpoints: four (4), locations of viewpoints directed by Departmental Representative.

.3 Frequency: monthly, submitted on disk with monthly progress statement, sent via e-mail or as directed by Departmental Representative.

.4 Identify photos by location, date and sequential numbering system.

.3 Final Photographs:

.1 Provide digital photographs with images of minimum 3.1 mega pixel resolution and stored in Jpeg format with minimal compression. Where photos are e-mailed compression can be increased.

.2 Number of viewpoints:

.1 Each side of building for a total of 4.

.2 Interior of rooms and finishes for a total of 8.

.3 Locations of viewpoints determined by Departmental Representative.

.3 Submit final photographs in digital format on CD, before final acceptance of building.

.4 Label disks and identify with name and project number of project. Indicate exposure dates and viewpoints of each photo and photo number.

.7 Submission Requirements:

.1 Schedule submissions at least ten days before dates reviewed submissions will be needed.

.2 Submit number of copies of product data, shop drawings which Contractor requires for distribution plus four (4) copies which will be retained by Departmental Representative.

.3 Accompany submissions with transmittal letter in duplicate.

.4 Submit bond copies (hard copy) as directed by Departmental Representative.

.8 Coordination of Submissions:

.1 Review shop drawings, product data and samples prior to submission.

.2 Coordinate with field construction criteria.

.3 Verify catalogue numbers and similar data.

.4 Coordinate each submittal with requirements of the work of all trades and contract documents.

.5 Responsibility for errors and omissions in submittal is not relieved by Departmental Representative's review of submittal.

.6 Responsibility for deviations in submittal from requirements of Contract documents is not relieved by Departmental Representative's review of submittal, unless Departmental Representative gives written acceptance of specified deviations.

.7 Notify Departmental Representative, in writing at time of submission, of deviations in submittal from requirements of Contract documents.

.8 Make any changes in submissions which Departmental Representative may require consistent with Contract Documents and re-submit as directed by Departmental Representative.

.9 After Departmental Representative's review, distribute copies.

.10 Shop Drawings Review:

.1 Review of shop drawings by Public Works and Government Services Canada (PWGSC) is for the sole purpose of ascertaining conformance with the general concept.

.2 The Departmental Representative's review does not mean that PWGSC approves the detail design inherent in the shop drawings, responsibility remains with the contractor submitting same, and such review will not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and contract documents.

.3 Without restricting the generality of the foregoing, the Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for co-ordination of the work of all subtrades.

1.5 HEALTH AND SAFETY

.1 Specified in Section 01 35 33.

1.6 ENVIRONMENTAL PROCEDURES

.1 Fires and burning of rubbish on site not permitted.

.2 Do not bury rubbish and waste materials on site unless approved by Departmental Representative.

.3 Do not dispose of waste or volatile materials such as oil, paint thinner or mineral spirits into waterways, storm or sanitary systems.

.4 Provide temporary drainage and pumping as necessary to keep excavations and site free from water during excavation and grading activities.

.5 Control disposal of run-off of water containing suspended materials or other harmful substances in accordance with local authority requirements. Construct settlement ponds and silt fences as required by the Provincial Environmental authority.

.6 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

.7 Under no circumstances dispose of rubbish or waste materials on adjoining property.

1.7 REGULATORY REQUIREMENTS

.1 References and Codes:

.1 Perform Work in accordance with National Building Code of Canada (NBCC2010) and where applicable British Columbia Building Code (BCBC2012) including all amendments up to bid closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.

.2 Meet or exceed requirements of:

.1 Contract documents.

.2 Specified standards, codes and referenced documents

1.8 QUALITY CONTROL

.1 Inspection:

.1 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.2 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.3 Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

.2 Procedures:

.1 Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

.3 Rejected Work:

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.4 Reports:

.1 Submit (4) four copies of inspection and test reports to Departmental Representative.

.5 Tests and Mix Designs:

.1 Furnish test results and mix designs as may be requested.

.6 Mock-ups:

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.

.2 Construct in locations acceptable to Departmental Representative and as specified in specific Section.

.3 Prepare mock-ups for Departmental Representative review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.

.4 Failure to prepare mock-ups in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.5 If requested, Departmental Representative will assist in preparing a schedule fixing dates for preparation.

.6 Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

.7 Mill Tests:

.1 Submit mill test certificates as requested and as required of specification Sections.

.8 Equipment and Systems:

.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

.2 Refer to specific Section for definitive requirements.

1.9 TEMPORARY UTILITIES

.1 Installation and Removal:

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

.2 Dewatering:

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

.3 Water Supply:

.1 Arrange, pay for and maintain temporary water supply in accordance with local authority, governing regulations and ordinances.

.2 Permanent water supply system installed under this contract may be used for construction requirements provided that guarantees are not affected thereby. Replace damaged components.

.4 Temporary Power and Light:

.1 Arrange, pay for and maintain temporary electric power supply in accordance with local power authority governing regulations and ordinances.

.2 Electrical power and lighting installed under this contract may be used for construction purposes at no extra cost, provided that guarantees are not affected thereby and electrical components used for temporary power are replaced when damaged.

.3 Replace lighting bulbs/tubes and clean reflectors and lenses used for more than three months.

.5 Temporary Communication Facilities:

.1 Provide and pay for temporary telephone and fax hook up, line(s) necessary for own use.

.6 Fire Protection:

.1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.

1.10 CONSTRUCTION FACILITIES

.1 Installation and Removal:

.1 Provide construction facilities in order to execute work expeditiously.

.2 Remove from site all such work after use.

.2 Scaffolding:

.1 Design, construct and maintain scaffolding in rigid, secure and safe manner, in accordance with WorkSafeBC regulations and Section 01 35 33.

.2 Erect scaffolding independent of walls. Remove promptly when no longer required.

.3 Hoisting:

.1 Provide, operate and maintain hoists required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.

.2 Hoists to be operated by qualified operator.

.4 Site Storage/Loading:

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

.5 Construction Parking:

.1 Make good damage to existing roads used for access to project site.

.2 Build and maintain temporary access where required and provide snow removal during period of Work.

.3 Park vehicles outside perimeter fence in designated parking areas.

.6 Contractor's Site Office and enclosure:

.1 Provide office of size to accommodate site meetings and Contractor's operations.

.2 Provide a clearly marked and fully stocked first-aid case in a readily available location.

.3 Provide temporary fenced area to enclose site and operations.

.7 Equipment, Tools and Material Storage:

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

.8 Sanitary Facilities:

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 When permanent water and drain connections are completed, provide temporary water closets and urinals complete with temporary enclosures. Permanent facilities may be used on approval of Departmental Representative.

1.11 TEMPORARY BARRIERS AND ENCLOSURES

.1 Hoarding:

.1 Erect temporary site enclosure using new 1.8 m high temporary construction fencing. Provide lockable truck gate. Maintain fence in good repair.

.2 Enclosure of Structure:

.1 Provide temporary weathertight enclosures and protection for exterior openings until permanently enclosed. Design enclosures to withstand wind pressure. Provide lockable entry as required for moving personnel equipment and materials.

.2 Provide temporary enclosures to secure building from entry of unauthorized personnel during construction period.

.3 Guardrails and Excavations:

.1 Provide secure, rigid guard rails and barricades around deep excavations, open edges of floors and roofs etc.

.2 Provide as required by governing authorities.

.4 Access to Site:

.1 Maintain immediate local access roads in clean condition used during work of this contract.

.5 Protection for Off-Site and CSC Property:

.1 Protect surrounding CSC property from damage during performance of Work.

.2 Be responsible for damage incurred.

.6 Protection of Building Finishes:

.1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.

.2 Provide necessary screens, covers, and hoardings.

.3 Confirm with Departmental Representative locations and installation schedule 3 days prior to installation.

.4 Be responsible for damage incurred due to lack of or improper protection.

1.12 COMMON PRODUCT REQUIREMENTS

.1 Reference Standards:

.1 If there is question as to whether any product or system is in conformance with applicable standards, Departmental Representative reserves right to have such products or systems tested to prove or disprove conformance.

.2 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

.3 Conform to latest date of issue of referenced standards in effect on date of submission of Bids, except where specific date or issue is specifically noted.

.2 Quality:

.1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Departmental Representative based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

.3 Storage, Handling and Protection:

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative .

.9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

.4 Transportation:

.1 Pay costs of transportation of products required in performance of Work.

.2 Transportation cost of products supplied by Departmental Representative will be paid for by Departmental Representative. Unload, handle and store such products.

.5 Manufacturer's Instructions:

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative may establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

.6 Quality of Work:

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Departmental Representative if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Departmental Representative, whose decision is final.

.7 Co-ordination:

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

8 Concealment:

.1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation, inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

.9 Remedial Work:

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner neither to damage nor to put at risk any portion of Work.

.10 Location of Fixtures:

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Departmental Representative of conflicting installation. Install as directed.

.3 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

.11 Fastenings:

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

.12 Fastenings - Equipment:

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

.13 Protection of Work in Progress:

.1 Prevent overloading of any part of building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

.14 Existing Utilities:

.1 Where work involves breaking into or connecting to existing services, carry out work at times directed by governing authorities, with minimum of disturbance to pedestrian and vehicular traffic.

.2 Before commencing work, establish location and extent of service lines in areas of work and notify Departmental Representative of findings.

.3 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility. Adhere to approved schedule and provide notice to affected parties.

.4 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.5 Record locations of maintained, capped and re-routed services lines.

.15 Contractors Options for Selection of Products:

.1 Products specified by **"Prescriptive" specifications**: select any product meeting or exceeding specifications.

.2 Products specified under **"Acceptable Products"** (used for complex Mechanical or Electrical Systems): select any one of the indicated manufacturers, or any other manufacturer meeting or exceeding the Prescriptive specifications and indicated Products.

.3 Products specified by performance and referenced standard: select any product meeting or exceeding the referenced standard.

.4 Products specified to meet particular design requirements or to match existing materials: use only material specified Approved Product. Alternative products may be considered provided full technical data is received in writing by Departmental Representative in accordance with "Instructions to Bidders".

.5 When products are specified by a referenced standard or by Performance specifications, upon request of Departmental Representative, obtain from manufacturer an independent laboratory report showing that the product meets or exceeds the specified requirements.

.16 Substitution after award of Contract:

.1 No substitutions are permitted without prior written approval of the Departmental Representative.

.2 Proposals for substitution may only be submitted after Contract award. Such request must include statements of respective costs of items originally specified and the proposed substitution.

.3 Proposals will be considered by the Departmental Representative if:

.1 products selected by tenderer from those specified are not available;

.2 delivery date of products selected from those specified would unduly delay completion of Contract, or

.3 alternative product to that specified, which is brought to the attention of and considered by Departmental Representative as equivalent to the product specified, and will result in a credit to the Contract amount.

.4 Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as result of substitution.

.5 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative, and the Contract price will be reduced accordingly.

1.13 EXAMINATION AND PREPARATION

.1 Existing Services:

.1 Before commencing work, establish location and extent of service lines in area of Work and notify Departmental Representative of findings.

.2 Remove abandoned service lines within 2 m of structures. Cap or otherwise seal lines at cut-off points as directed by Departmental Representative.

.2 Location of Equipment and Fixtures:

.1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.

.3 Inform Departmental Representative of impending installation and obtain approval for actual location.

.4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.14 EXECUTION REQUIREMENTS

.1 Preparation:

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

.2 Execution:

.1 Execute cutting, fitting, and patching including excavation and fill, to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.7 Employ original installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.

.8 Cut rigid materials using purpose made saw or core drill. Pneumatic or impact tools not allowed on brittle materials without prior approval.

.9 Restore work with new products in accordance with requirements of Contract Documents.

.10 Fit Work airtight to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.11 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.

.12 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

.13 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

1.15 CLEANING

.1 Project Cleanliness:

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris.

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.

.3 Clear snow and ice from access to building.

.4 Provide on-site containers for collection of waste materials and debris.

.5 Provide and use clearly marked separate bins for recycling. Refer to-Construction/Demolition Waste Management And Disposal.

.6 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.

.7 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.8 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.9 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.10 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

.2 Final Cleaning:

.1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Prior to final review, remove surplus products, tools, construction machinery and equipment.

.4 Remove waste products and clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.5 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.

.6 Clean lighting reflectors, lenses, and other lighting surfaces.

.7 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.8 Wax, seal, vacuum clean, shampoo or prepare floor finishes, as recommended by manufacturer.

.9 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.10 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.11 Remove dirt and other disfiguration from exterior surfaces.

.12 Sweep and wash clean paved areas.

.13 Clean equipment and fixtures to a sanitary condition; clean or replace filters of mechanical equipment.

.14 Clean roofs, downspouts, and drainage systems.

.15 Remove snow and ice from access to building.

1.16 CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

.1 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and/or recyclable materials and waste.

.1 Separate non-salvageable materials from salvaged items.

.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

.3 Transport and deliver non-salvageable items to licensed disposal facility.

.2 Provide containers to deposit reusable and/or recyclable materials. Locate containers in locations, to facilitate deposit of materials without hindering daily operations. Provide containers to deposit reusable and/or recyclable materials.

.3 Collect, handle, store on-site and transport off-site, salvaged materials in separate condition. Transport to approved and authorized recycling facility and/or users of material for recycling.

.4 Locate waste and salvage bins on site as directed by Departmental Representative.

1.17 CLOSEOUT PROCEDURES

.1 Inspection and Declaration:

.1 Contractor's Inspection: Conduct an inspection of Work with all subcontractors, identify deficiencies and defects, and repair as required to conform to Contract Documents.

.2 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.

.3 Request Departmental Representative's Inspection.

.2 Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.

.3 Substantial Completion: submit written certificate that following have been performed:

.1 Work has been completed and inspected for compliance with Contract Documents.

.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.

.4 Fire alarm verification report per CAN/ULC-S537, confirmation of proper installation of fire alarm panel to CAN/ULC-S527 signed off by the fire alarm technician and confirmation of fire alarm emergency power capacity. 24-hour battery test as described in CAN/ULC-S537, signed off by fire alarm technician.

.5 Confirmation of emergency power lighting, operating on emergency power for the required amount of time as dictated by NBCC, signed off by technician.

.6 Certificates required by Authority Having Jurisdictions for fire protection systems.

.7 Certificates required by Authority Having Jurisdictions for seismic restraints.

.8 Operation of systems have been demonstrated to Departments personnel.

.9 Work is complete and ready for Final Inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

1.18 CLOSEOUT SUBMITTAL

.1 Record Drawings:

.1 As work progresses, maintain accurate records to show all deviations from the Contract Drawings. Note on as-built drawings as changes occur. At completion supply:

.1 Four (4) sets of CD's in AutoCad file format (version: 2007) with all as-built information on the diskettes.

.2 Four (4) sets of as-built plotted reproducible drawings.

.3 Four (4) sets of printed as-built drawings.

.4 Submit one copy of check plots to Departmental Representative prior to final printing of as-built drawings.

.5 Departmental Representative will supply copies of the original AutoCad files.

.6 Retain original logo and title block on the as-built drawings. Contractor may place on the upper right-hand title block area a small company logo, the text "AS-BUILT" and the date.

.2 Costs for transferring as-built information from marked up working set of drawings to electronic format using ACAD and plotting service is included in the Contract.

.2 Maintenance manual:

.1 On completion of project submit to Departmental Representative four (4) CD R/ disk copies and four (4) paper copies (in loose leaf type binder) of Operations and Maintenance Manual, made up as follows:

.1 Provide maintenance manual on CDs using pdf, or other approved format for descriptive writing, page size images and page size drawings. Organize manuals into industry standard maintenance manual tabs with links in index to each descriptive section describing the component or maintenance procedure etc.

.2 Organize files into CSI Masterformat numbering system or other approved descriptive titles.

.3 Label disk "Operation and Maintenance Data", project name, date, names of Contractor, subcontractors, consultants and subconsultants.

.4 Include scanned guarantees, diagrams and drawings.

.5 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labeled tabs (navigational buttons).

.6 Drawings, diagrams and manufacturer's literature must be legible.

.7 Refer to Mechanical and Electrical Divisions for specific details for Mechanical and Electrical data.

.3 Maintenance Materials, Special Tools and Spare Parts:

.1 Specific requirements for maintenance materials, tools and spare parts are specified in individual sections.

.2 Deliver maintenance materials, special tools and spare parts to Departmental Representative and store in designated area as directed by Departmental Representative.

.3 Prepare lists of maintenance materials, special tools and spare parts for inclusion in Manual specified in Clause 18.2.

.4 Maintenance materials:

.1 Deliver wrapped, identify on carton or package, colour, room number, system or area as applicable where item is used.

.5 Special tools:

.1 Assemble as specified;

.2 Include identifications and instructions on intended use of tools.

.6 Spare parts:

.1 Assemble parts as specified;

.2 Include part number, identification of equipment or system for which parts are applicable;

.3 Installation instructions;

.4 Name and address of nearest supplier.

.4 Warranties and Bonds:

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing in maintenance manual.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.

.4 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until the Date of Interim Completion is determined.

.5 Verify that documents are in proper form, contain full information, and are notarized.

.6 Retain warranties and bonds until time specified for submittal.

1.19 DEMONSTRATION AND TRAINING

.1 Demonstration and Training:

.1 Demonstrate operation and maintenance of equipment and systems to maintenance personnel following interim Completion and prior to date of final certificate of completion

.2 Departmental Representative will provide list of personnel to receive instructions, and will coordinate their attendance at agreed-upon times.

1.20 GENERAL COMMISSIONING

.1 Commission installed systems prior to Demonstration and Training.

END OF SECTION

PART 1 GENERAL

1.1 PURPOSE

.1 To ensure that both the construction project and the institutional operations may proceed without undue disruption or hindrance and that the security of the Institution is maintained at all times.

1.2 DEFINITIONS

.1 "Contraband" means:

.1 an intoxicant, including alcoholic beverages, drugs and narcotics

.2 a weapon or a component thereof, ammunition for a weapon, and anything that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling a person, when possessed without prior authorization,

.3 an explosive or a bomb or a component thereof,

.4 currency over any applicable prescribed limit, $25.00, and

.5 any item not described in paragraphs (a) to (d) that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization.

.2 Unauthorized smoking and related Items@ means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing tobacco, cigarette making machines, matches and lighters.

.3 "Commercial Vehicle" means any motor vehicle used for the shipment of material, equipment and tools required for the construction project.

.4 "CSC" means Correctional Service Canada.

.5 "Director" means Director or Warden of the Institution as applicable or their representative.

.6 "Construction employees" means persons working for the general contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies.

.7 "Departmental Representative" means the Public Works and Government Services Canada representative defined in General Conditions.

.8 "Perimeter" means the fenced or walled area of the institution that restrains the movement of the inmates.

.9 "Construction zone" means the area, as indicated in the contract documents, that the contractor will be allowed to work". This area may or may not be isolated from the security area of the institution. Limits to be confirmed at construction start-up meeting.

1.3 PRELIMINARY PROCEEDINGS

.1 At construction start-up meeting:

.1 Discuss the nature and extent of all activities involved in the Project.

.2 Establish mutually acceptable security procedures in accordance with this instruction and the institution's particular requirements.

.2 The Contractors' responsibilities:

.1 Ensure that all construction employees are aware of the CSC security requirements.

.2 Ensure that a copy of the CSC security requirements is always prominently on display at the job site.

.3 Co-operate with institutional personnel in ensuring that security requirements are observed by all construction employees.

1.4 CONSTRUCTION EMPLOYEES

.1 Submit CPIC form and scanned copy of government issued ID for each employee to the Departmental Representative.

.2 Allow 10 working days for processing of security clearances. Employees will not be admitted to the Institution without a valid security clearance in place and a recent picture identification such as a provincial driver's license. Security clearances obtained from other CSC institutions are not valid at this institution except as approved otherwise.

.3 The Director may require that facial photographs may be taken of construction employees and these photographs may be displayed at appropriate locations in the institution or in an electronic database for identification purposes. The Director may require that Photo ID cards be provided for all construction workers. ID cards will then be left at the designated entrance to be picked upon arrival at the institution and shall be displayed prominently on the construction employees clothing at all time while employees are at the institution.

.4 Entry to Institutional Property will be refused to any person there may be reason to believe may be a security risk.

.5 Any person employed on the construction site will be subject to immediate removal from Institutional Property if they:

.1 appear to be under the influence of alcohol, drugs or narcotics.

.2 behave in an unusual or disorderly manner.

.3 are in possession of contraband.

1.5 VEHICLES

.1 All unattended vehicles on CSC property must have windows closed; fuel caps locked, doors and trunks locked and keys removed. The keys must be securely in the possession of the owner or an employee of the company that owns the vehicle.

.2 The director may limit at any time the number and type of vehicles allowed within the Institution.

.3 Drivers of delivery vehicles for material required by the project will require security clearances and must remain with their vehicle the entire time that the vehicle is in the Institution. The director may require that these vehicles be escorted by Institutional staff or PWGSC Construction Escorts while in the Institution.

.4 If the Director permits trailers to be left inside the secure perimeter of the Institution, the trailer doors must be locked at all times. All windows must be securely locked bars when left unoccupied. Cover all windows with expanded metal mesh. When not in use lock all storage trailers located inside and outside the perimeter. All storage trailers inside and outside the perimeter must be locked when not in use.

1.6 PARKING

.1 The parking area(s) to be used by construction employees will be designated by the Director. Parking in other locations will be prohibited and vehicles may be subject to removal.

1.7 SHIPMENTS

.1 To avoid confusion with the institution's own shipments, address all shipments of project material, equipment and tools in the Contractor's name and have a representative on site to receive any deliveries or shipments. CSC or PWGSC staff will **NOT** accept receipt of deliveries or shipments of any material equipment or tools for the contractor.

1.8 TELEPHONES

.1 The installation of telephones, facsimile machines and computers with Internet connections is not permitted within the Institution perimeter unless prior approved by the Director.

.2 The Director will ensure that approved telephones, facsimile machine and computers with Internet connections are located where they are not accessible to inmates. All computers will have an approved password protection that will stop an Internet connection to unauthorized personnel.

.3 Wireless cellular and digital telephones, including but not limited to devices for telephone messaging, pagers, Blackberries, PDAs, telephone used as 2-way radios are not permitted within the Institution unless approved by the Director. If wireless cellular telephones are permitted, the user will not permit their use by any inmate.

.4 The Director may approve but limit the use of 2-way radios.

1.9 WORK HOURS

.1 Work hours within the Institution are: conform to Division.

.2 Work is not permitted during weekends and statutory holidays without the permission of the Director. A minimum of seven days advance notice will be required to obtain the required permission. In case of emergencies or other special circumstances, this advance notice may be waved by the Director.

1.10 OVERTIME WORK

.1 Conform to Division 1.

.2 Provide 48 hours advance notice to Director for all work to be performed after normal working hours of the Institution. Notify Director immediately if emergency work is required, such as to complete a concrete pour or make the construction site safe and secure.

1.11 TOOLS AND EQUIPMENT

.1 Maintain a complete list of all tools and equipment to be used during the construction project. Make this inventory available for inspection when required by the Institution.

.2 Throughout the construction project maintain up-to-date the list of tools and equipment specified above.

.3 Keep all tools and equipment under constant supervision, particularly power-driven and cartridge-driven tools, cartridges, files, saw blades, rod saws, wire, rope, ladders and any sort of jacking device.

.4 Store all tools and equipment in approved secure locations.

.5 Lock all tool boxes when not in use. Keys to remain in the possession of the employees of the contractor. Secure and lock scaffolding when not erected and when erected Secure in a manner agreed upon with the Institution designate.

.6 Report all missing or lost tools or equipment immediately to the Departmental Representative/Director.

.7 The Director will ensure that the security staff members carry out checks of the Contractor's tools and equipment against the list provided by the Contractor. These checks may be carried out at the following intervals:

.1 At the beginning and conclusion of every work day or shift upon entering and exiting the Institution.

.2 At any time when contractor is on Institution property.

.8 Certain tools/equipment such as cartridges and hacksaw blades are highly controlled items. The contractor will be given at the beginning of the day, a quantity that will permit one day's work. Used blades/cartridges will be returned to the Director's representative at the end of each day. Maintain up to date inventory of all used blades/cartridges.

.9 If propane or natural gas is used for heating the construction, the institution will require that the contractor supervise the construction site during non-working hours.

1.12 KEYS

.1 Security Hardware Keys.

.1 Arrange with the security hardware supplier/installer to have the keys for the security hardware to be delivered directly to Institution, specifically the Security Maintenance Officer (SMO).

.2 The SMO will provide a receipt to the Contractor for security hardware keys.

.3 Provide a copy of the receipt to the Departmental Representative.

.2 Other Keys

.1 Use standard construction cylinders for locks for his use during the construction period.

.2 Issue instructions to employees and sub-trades, as necessary, to ensure safe custody of the construction set of keys.

.3 Upon completion of each phase of the construction, the CSC representative will, in conjunction with the lock manufacturer:

.1 Prepare an operational keying schedule

.2 Accept the operational keys and cylinders directly from the lock manufacturer.

.3 Arrange for removal and return of the construction cores and install the operational core in all locks.

.4 Upon putting operational security keys into use, the PWGSC construction escort will obtain these keys as they are required from the SMO and open doors as required by the Contractor. The Contractor shall issue instructions to his employees advising them that all security keys shall always remain with the PWGSC construction escort.

1.13 SECURITY HARDWARE

.1 Turn over all removed security hardware to the Director of the Institution for disposal or for safekeeping until required for re-installation.

1.14 PRESCRIPTION DRUGS

.1 Employees of the contractor who are required to take prescription drugs during the workday shall obtain approval of the Director to bring a one day supply only into the Institution.

1.15 SMOKING RESTRICTIONS

.1 Smoking is not permitted inside correctional facilities or outdoors within the perimeter of a correctional facility and persons must not possess unauthorized smoking items within the perimeter of a correctional facility.

.2 Persons in violation of this policy will be requested to immediately cease smoking or dispose of any unauthorized smoking items and, if they persist will be directed to leave the Institution.

.3 Smoking is permitted outside the perimeter of a correctional facility in an area designated by the Director.

1.16 CONTRABAND

.1 Weapons, ammunition, explosives, alcoholic beverages, drugs and narcotics are prohibited on institutional property.

.2 The discovery of contraband on the construction site and the identification of the person(s) responsible for the contraband shall be reported immediately to the Director.

.3 Contractors should be vigilant with both their staff and the staff of their sub-contractors and suppliers that the discovery of contraband may result in cancellation of the security clearance of the affected employee. Serious infractions may result in the removal of the company from the Institution for the duration of the construction.

.4 Presence of arms and ammunition in vehicles of contractors, sub-contractors and suppliers or employees of these will result in the immediate cancellation of security clearances for the driver of the vehicle.

1.17 SEARCHES

.1 All vehicles and persons entering institutional property may be subject to search.

.2 When the Director suspects, on reasonable grounds, that an employee of the Contractor is in possession of contraband, he may order that person to be searched.

.3 All employees entering the Institution may be subject to screening of personal effects for traces of contraband drug residue.

1.18 ACCESS AND REMOVAL FROM INSTITUTION PROPERTY

.1 Construction personnel and commercial vehicles will not be admitted to the institution after normal working hours, unless approved by the Director.

1.19 MOVEMENT VEHICLES

.1 Construction vehicles are not to leave the Institution until an inmate count is completed. Escorted commercial vehicles will be allowed to enter or leave the institution through the vehicle access gate during the following hours:

.1 AM: 0745 hrs. to 1100 hrs.

.2 PM: 1300hrs. to 1530 hrs.

.2 The contractor will advise the Director twenty four (24) hours in advance to the arrival on the site of heavy equipment such as concrete trucks, cranes, etc.

.3 Vehicles being loaded with soil or other debris, or any vehicle considered impossible to search, must be under continuous supervision by CSC staff or PWGSC construction escorts working under the authority of the Director.

.4 Commercial vehicles will only be allowed access to institutional property when their contents are certified by the Contractor or his representative as being strictly necessary to the execution of the construction project.

.5 Vehicles will be refused access to institutional property if, in the opinion of the Director, they contain any article which may jeopardize the security of the institution. Arrange with Director for parking of contractor=s vehicles at minimum security Institutions.

.6 Private vehicles of construction employees will not be allowed within the security wall or fence of medium or maximum security institutions without the authorization of the Director.

.7 With the approval of the Director, certain equipment may be permitted to remain on the construction site overnight or over the weekend. This equipment must be securely locked, with the battery removed. The Director may require that the equipment be secured with a chain and padlock to another solid object.

1.20 MOVEMENT OF CONSTRUCTION EMPLOYEES ON INSTITUTIONAL PROPERTY

.1 Subject to the requirements of good security, the Director will permit the Contractor and his employees as much freedom of action and movement as is possible.

.2 However, notwithstanding paragraph above, the Director may:

.1 Prohibit or restrict access to any part of the institution.

.2 Require that in certain areas of the institution, either during the entire construction project or at certain intervals, construction employees only be allowed access when accompanied by a member of the CSC security staff or PWGSC Construction Escort Officer.

.3 During the lunch and coffee/health breaks, all construction employees will remain within the construction site. Construction employees are not permitted to eat in the Institution cafeteria and dining room.

1.21 SURVEILLANCE AND INSPECTION

.1 Construction activities and all related movement of personnel and vehicles will be subject to surveillance and inspection by CSC security staff members to ensure that established security requirements are met.

.2 CSC staff members will ensure that an understanding of the need to carry out surveillance and inspections, as specified above, is established among construction employees and maintained throughout the construction project.

1.22 STOPPAGE OF WORK

.1 The director may request at any time that the contractor, his employees, sub-contractors and their employees not enter or leave the work site immediately due to a security situation occurring within the Institution. The contractor's site supervisor will note the name of the staff member giving the instruction, the time of the request and obey the order as quickly as possible.

.2 The contractor shall advise the Departmental Representative of this interruption of the work within 24 hours.

1.23 CONTACT WITH INMATES

.1 Unless specifically authorized, it is forbidden to come into contact with inmates, to talk with them, to receive objects from them or to give them objects. Any employee doing any of the above will be removed from the site and his security clearance revoked.

.2 Digital cameras (or any other type) are not allowed on CSC property.

.3 Notwithstanding the above paragraph, if the director approves of the use of cameras, it is strictly forbidden to take pictures of inmates, of CSC staff members or of any part of the Institution other than those required as part of this contract.

1.24 COMPLETION OF CONSTRUCTION PROJECT

.1 Upon completion of the construction project or, when applicable, the takeover of a facility, the Contractor shall remove all remaining construction material, tools and equipment that are not specified to remain in the Institution as part of the construction contract.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Government of Canada.

.1 Canada Labour Code - Part II

.2 Canada Occupational Health and Safety Regulations.

.2 National Building Code of Canada (NBC):

.1 Part 8, Safety Measures at Construction and Demolition Sites.

.3 Canadian Standards Association (CSA) as amended:

.1 CSA Z797-2009 Code of Practice for Access Scaffold

.2 CSA S269.1-1975 (R2003) Falsework for Construction Purposes

.3 CSA S350-M1980 (R2003) Code of Practice for Safety in Demolition of Structures

.4 Fire Protection Engineering Services, HRSDC:

.1 FCC No. 301, Standard for Construction Operations.

.2 FCC No. 302, Standard for Welding and Cutting.

.5 National Building Code of Canada (NBCC 2005):

.1 Part 8, Safety Measures at Construction and Demolition Sites

.6 American National Standards Institute (ANSI):

.1 ANSI A10.3, Operations – Safety Requirements for Powder-Actuated Fastening Systems.

.7 Province of British Columbia::

.1 Workers Compensation Act Part 3-Occupational Health and Safety.

.2 Occupational Health and Safety Regulation

1.2 RELATED SECTIONS

.1 Refer to the following current NMS sections as required:

.1 Section 01 01 50 General Requirements

1.3 WORKERS' COMPENSATION BOARD COVERAGE

.1 Comply fully with the Workers' Compensation Act, regulations and orders made pursuant thereto, and any amendments up to the completion of the work.

.2 Maintain Workers' Compensation Board coverage during the term of the Contract, until and including the date that the Certificate of Final Completion is issued.

1.4 COMPLIANCE WITH REGULATIONS

.1 PWGSC may terminate the Contract without liability to PWGSC where the Contractor, in the opinion of PWGSC, refuses to comply with a requirement of the Workers' Compensation Act or the Occupational Health and Safety Regulations.

.2 It is the Contractor's responsibility to ensure that all workers are qualified, competent and certified to perform the work as required by the Workers' Compensation Act or the Occupational Health and Safety Regulations.

1.5 SUBMITTALS

.1 Submit to Departmental Representative submittals listed for review in accordance with Section 01 01 50.

.2 Work effected by submittal shall not proceed until review is complete.

.3 Submit the following:

.1 Health and Safety Plan.

.2 Copies of reports or directions issued by Federal and Provincial health and safety inspectors.

.3 Copies of incident and accident reports.

.4 Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.

.5 Emergency Procedures.

.4 The Departmental Representative will review the Contractor's site-specific project Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 10 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative.

.5 Medical surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of work, and submit additional certifications for any new site personnel to Departmental Representative.

.6 Submission of the Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:

.1 Be construed to imply approval by the Departmental Representative.

.2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.

.3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

1.6 RESPONSIBILITY

.1 Assume responsibility as the Prime Contractor for work under this contract.

.2 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.

.3 Comply with and enforce compliance by employees with safety requirements of Contract documents, applicable Federal, Provincial, Territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.7 HEALTH AND SAFETY COORDINATOR

.1 The Health and Safety Coordinator (Registered Occupational Hygienist, Certified Industrial Specified Hygienist) must:

.1 Be responsible for completing all health and safety training, and ensuring that personnel that do not successfully complete the required training are not permitted to enter the site to perform work.

.2 Be responsible for implementing, daily enforcing, and monitoring the site specific Health and Safety Plan.

.3 Be on site during execution of work.

1.8 GENERAL CONDITIONS

.1 Provide safety barricades and lights around work site as required to provide a safe working environment for workers and protection for pedestrian and vehicular traffic.

.2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.

.1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.

.2 Secure site at night time or provide security guard as deemed necessary to protect site against entry.

1.9 REGULATORY REQUIREMENTS

.1 Comply with specified codes, acts, bylaws, standards and regulations to ensure safe operations at site.

.2 In event of conflict between any provision of the above authorities, the most stringent provision will apply. Should a dispute arise in determining the most stringent requirement, the Departmental Representative will advise on the course of action to be followed.

1.10 WORK PERMITS

.1 Obtain specialty permit related to project before start of work.

1.11 FILING OF NOTICE

.1 The General Contractor is to complete and submit a Notice of Project as required by Provincial authorities.

.2 Provide copies of all notices to the Departmental Representative.

1.12 HEALTH AND SAFETY PLAN

.1 Conduct a site-specific hazard assessment based on review of Contract documents, required work, and project site. Identify any known and potential health risks and safety hazards.

.2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:

.1 Primary requirements:

.1 Contractor's safety policy.

.2 Identification of applicable compliance obligations.

.3 Definition of responsibilities for project safety/organization chart for project.

.4 General safety rules for project.

.5 Job-specific safe work, procedures.

.6 Inspection policy and procedures.

.7 Incident reporting and investigation policy and procedures.

.8 Occupational Health and Safety Committee/Representative procedures.

.9 Occupational Health and Safety meetings.

.10 Occupational Health and Safety communications and record keeping procedures.

.2 Summary of health risks and safety hazards resulting from analysis of hazard assessment, with respect to site tasks and operations which must be performed as part of the work.

.3 List hazardous materials to be brought on site as required by work.

.4 Indicate Engineering and administrative control measures to be implemented at the site for managing identified risks and hazards.

.5 Identify personal protective equipment (PPE) to be used by workers.

.6 Identify personnel and alternates responsible for site safety and health.

.7 Identify personnel training requirements and training plan, including site orientation for new workers.

.3 Develop the plan in collaboration with all subcontractors. Ensure that work/activities of subcontractors are included in the hazard assessment and are reflected in the plan.

.4 Revise and update Health and Safety Plan as required, and re-submit to the Departmental Representative.

.5 Departmental Representative's review: the review of Health and Safety Plan by Public Works and Government Services Canada (PWGSC) shall not relieve the Contractor of responsibility for errors or omissions in final Health and Safety Plan or of responsibility for meeting all requirements of construction and Contract documents.

1.13 EMERGENCY PROCEDURES

.1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:

.1 Designated personnel from own company.

.2 Regulatory agencies applicable to work and as per legislated regulations.

.3 Local emergency resources.

.4 Departmental Representative.

.2 Include the following provisions in the emergency procedures:

.1 Notify workers and the first-aid attendant, of the nature and location of the emergency.

.2 Evacuate all workers safely.

.3 Check and confirm the safe evacuation of all workers.

.4 Notify the fire department or other emergency responders.

.5 Notify adjacent workplaces or residences which may be affected if the risk extends beyond the workplace.

.6 Notify Departmental Representative.

.3 Provide written rescue/evacuation procedures as required for, but not limited to:

.1 Work at high angles.

.2 Work in confined spaces or where there is a risk of entrapment.

.3 Work with hazardous substances.

.4 Underground work.

.5 Work on, over, under and adjacent to water.

.6 Workplaces where there are persons who require physical assistance to be moved.

.4 Design and mark emergency exit routes to provide quick and unimpeded exit.

.5 Revise and update emergency procedures as required, and re-submit to the Departmental Representative.

1.14 HAZARDOUS PRODUCTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage and disposal of hazardous materials, and regarding labeling and provision of Material Safety Data Sheets (MSDS) acceptable to the Departmental Representative and in accordance with the Canada Labour Code.

.2 Where use of hazardous and toxic products cannot be avoided:

.1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents as per Section 01 01 50.

.2 In conjunction with Departmental Representative, schedule to carry out work during "off hours" when tenants have left the building.

1.15 ELECTRICAL SAFETY REQUIREMENTS

.1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.

.1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.

.2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

1.16 ELECTRICAL LOCKOUT

.1 Develop, implement and enforce use of established procedures to provide electrical lockout and to ensure the health and safety of workers for every event where work must be done on any electrical circuit or facility.

.2 Prepare the lockout procedures in writing, listing step-by-step processes to be followed by workers, including how to prepare and issue the request/authorization form. Have procedures available for review upon request by the Departmental Representative.

.3 Keep the documents and lockout tags at the site and list in a log book for the full duration of the Contract. Upon request, make such data available for viewing by Departmental Representative or by any authorized safety representative.

1.17 OVERLOADING

.1 Ensure no part of work is subjected to a load which will endanger its safety or will cause permanent deformation.

1.18 FALSEWORK

.1 Design and construct falsework in accordance with CSA S269.1.

1.19 SCAFFOLDING

.1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797-2009 Code of Practice for Access Scaffold and BC Occupational Health and Safety Regulations.

1.20 CONFINED SPACES

.1 Carry out work in confined spaces in compliance with Provincial regulations.

1.21 POWER-ACTUATED DEVICES

.1 Use powder-actuated devices in accordance with ANSI A10.3 only after receipt of written permission from the Departmental Representative.

1.22 FIRE SAFETY AND HOT WORK

.1 Obtain Departmental Representative's authorization before any welding, cutting or any other hot work operations can be carried out on site.

.2 Hot work includes cutting/melting with use of torch, flame heating roofing kettles, or other open flame devices and grinding with equipment which produces sparks.

1.23 FIRE SAFETY REQUIREMENTS

.1 Store oily/paint-soaked rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.24 FIRE PROTECTION AND ALARM SYSTEM

.1 Do not obstruct, shut-off or leave inactive at the end of a working day or shift, the fire protection and alarm systems.

.2 Do not use fire hydrants, standpipes and hose systems for purposes other than firefighting.

.3 Be responsible/liable for costs incurred from the fire department, the building owner and the tenants, resulting from false alarms.

1.25 UNFORESEEN HAZARDS

.1 Should any unforeseen or peculiar safety-related factor, hazard or condition become evident during performance of the work, immediately stop work and advise the Departmental Representative verbally and in writing.

1.26 POSTED DOCUMENTS

.1 Post legible versions of the following documents on site:

.1 Health and Safety Plan.

.2 Sequence of work.

.3 Emergency procedures.

.4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.

.5 Notice of Project.

.6 Floor plans or site plans. Must be posted in a non-inmate access are and locked up when not being used.

.7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.

.8 Workplace Hazardous Materials Information System (WHMIS) documents.

.9 Material Safety Data Sheets (MSDS).

.10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.

.2 Post all Material Safety Data Sheets (MSDS) on site, in a common area, visible to all workers and in locations accessible to tenants when work of this Contract includes construction activities adjacent to occupied areas.

.3 Postings should be protected from the weather, and visible from the street or the exterior of the principal construction site shelter provided for workers and equipment, or as approved by the Departmental Representative.

1.27 MEETINGS

.1 Attend health and safety pre-construction meeting and all subsequent meetings called by the Departmental Representative.

1.28 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by the Departmental Representative.

.2 Provide Departmental Representative with written report of action taken to correct non-compliance with health and safety issues identified.

.3 The Departmental Representative may issue a "stop work order" if non-compliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

END OF SECTION

PART 1 GENERAL

1.1 DESCRIPTION OF WORK

.1 Includes general requirements for commissioning facilities and facility systems.

.2 Refer to specificaton sections of Electrical and Fencing and Gates disciplines.

1.2 DEFINITIONS

.1 Acronyms:

AFD - Alternate Forms of Delivery, service provider.

BMM - Building Management Manual.

Cx - Commissioning.

EMCS - Energy Monitoring and Control Systems.

O&M - Operation and Maintenance.

PI - Product Information.

PV - Performance Verification.

TAB - Testing, Adjusting and Balancing.

.2 Cx - a required program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved.

1.3 QUALITY ASSURANCE

.1 Testing organization: current member in good standing of AABC certified to perform specified services.

.2 Comply with applicable procedures and standards of the certification sponsoring association.

.3 Perform services under direction of supervisor qualified under certification requirements of sponsoring association.

1.4 SUBMITTALS

.1 Prior to start of Work, submit name of organization proposed to perform services. Designate who has managerial responsibilities for coordination of entire testing, adjusting and balancing.

.1 Submit documentation to confirm organization compliance with quality assurance provision.

.2 Submit 3 preliminary specimen copies of each of report forms proposed for use.

.3 Ten (10) days prior to Substantial Performance, submit 3 copies of final reports on applicable forms.

.4 Submit reports of testing, adjusting and balancing postponed due to seasonal, climatic, occupancy, or other reasons beyond Contractor's control, promptly after execution of those services.

1.5 PROCEDURES

.1 Comply with procedural standards of certifying association under whose standard services will be performed.

.2 Notify Departmental Representative 3 days prior to beginning of operations.

.3 Accurately record data for each step.

.4 Report to Departmental Representative any deficiencies or defects noted during performance of services.

1.6 CONTRACTOR'S RESPONSIBILITIES

.1 Prepare each system for testing.

.2 Cooperate with testing organization and provide access to equipment and systems.

.3 Provide personnel and operate systems at designated times, and under conditions required for proper testing, adjusting, and balancing.

.4 Notify testing organization 7 days prior to time project will be ready for testing, adjusting, and balancing.

.5 Commission cost to be borne by Contractor.

1.7 PREPARATION

.1 Provide instruments required for testing and adjusting.

.2 Make instruments available to Departmental Representative to facilitate spot checks during testing.

.3 Retain possession of instruments and remove at completion of services.

.4 Verify systems installation is complete and in continuous operation..

1.8 FINAL REPORTS

.1 Organization having managerial responsibility shall make reports.

.2 Ensure each form bears signature of recorder, and that of supervisor of reporting organization.

.3 Identify each instrument used, and latest date of calibration of each.

1.9 COMPLETION OF COMMISSIONING

.1 Upon completion of Cx leave systems in normal operating mode.

.2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.

.3 Cx deliverables have been submitted and accepted by Departmental Representative.

END OF SECTION

Part 1 General

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA S350-M1980(R1998), Code of Practice for Safety in Demolition of Structures.

1.2 SUBMITTALS

.1 Prior to beginning of Work on site submit detailed Waste Reduction Workplan in accordance with Sections 01 01 50 – General Instructions and and indicate:

.1 Descriptions of and anticipated quantities in percentages of materials to be salvaged reused, recycled and landfilled.

.2 Schedule of selective demolition.

.3 Number and location of dumpsters.

.4 Anticipated frequency of tippage.

.5 Name and address of waste facilities.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 01 50 - General Instructions.

1.4 SITE CONDITIONS

.1 Review "Designated Substance Report" and take precautions to protect environment.

.2 Notify Departmental representative before disrupting building access or services.

Part 2 Products

2.1 NOT USED

.1 Not used.

Part 3 Execution

3.1 PREPARATION

.1 Inspect site with Departmental representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.3 Notify and obtain approval of utility companies before starting demolition.

.4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.

.1 Immediately notify Departmental representative and utility company concerned in case of damage to any utility or service, designated to remain in place.

.2 Immediately notify the Departmental Representative should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.2 PROTECTION

.1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features to remain in place. Provide bracing and shoring required.

.2 Keep noise, dust, and inconvenience to occupants to minimum.

.3 Protect building systems, services and equipment.

.4 Provide temporary dust screens, covers, railings, supports and other protection as required.

.5 Do Work in accordance with Section 01 35 33 - Health and Safety Requirements.

3.3 SALVAGE

.1 Refer to demolition drawings and specifications for items to be salvaged for reuse.

.2 Remove items to be reused, store as directed by Departmental Representative and re-install under appropriate section of specification.

3.4 SITE REMOVALS

.1 Remove items as indicated.

.2 Removal of Pavements, Curbs and Gutters:

.1 Square up adjacent surfaces to remain in place by saw cutting or other method approved by Departmental Representative.

.2 Protect adjacent joints and load transfer devices.

.3 Protect underlying and adjacent granular materials.

3.5 DEMOLITION

.1 Remove parts of existing security fencing to permit new construction. Sort materials into appropriate piles for reuse and recycling.

3.6 DISPOSAL

.1 Dispose of removed materials, to appropriate recycling facilities except where specified otherwise, in accordance with authority having jurisdiction.

END OF SECTION

1.1 GENERAL

.1 The General Conditions, Supplements and Amendments shall govern this Section (read in conjunction with Instructions to Tenders/Bidders). This Section covers items common to Sections of Division 26, 27, and 28. This section supplements requirements of Division 01.

.2 Reference to "Electrical Division" shall mean all related Electrical Sections and components including Division 26.

.3 The word "Provide" shall mean "Supply & Install" the product and services specified. "As Indicated" means that the item(s) specified are shown on the drawings.

.4 Provide materials, equipment and devices of specified design, performance, intent and quality; and, current models with published certified ratings for which replacement parts are readily available. Provide project management and on-site supervision to undertake administration, meet schedule, ensure timely performance, ensure co-ordination and establish orderly completion and the delivery of a fully commissioned installation.

.5 The most stringent requirements of this section, other electrical sections and drawings shall govern.

.6 All work shall be in accordance with the PROJECT Drawings and Specifications and their intents, complete with all necessary components, including those not normally shown or specified but required for a complete installation.

1.2 CODES AND STANDARDS

.1 Do complete installation in accordance with Canadian Electrical Code, CSA C22.1-2012.

.2 Comply with CSA Certification Standards and Electrical Bulletins in force at time of tender at time of tender submission.

.3 Perform work in accordance with CSA Z462 - Workplace Electrical Safety and Worksafe BC.

1.3 DEFINITIONS

.1 Electrical and Electronic terms: unless otherwise specified or indicated, terms used in these specifications and on drawings are those defined by IEEE SP1122.

1.4 PERMITS, FEES

.1 Submit to Electrical Inspection Department necessary number of drawings and specifications for examination and approval prior to commencement of work.

.2 Pay associated fees.

.3 Obtain and pay for an electrical permit to cover all electrical, and Telecommunications work.

.4 Submit a copy of electrical permit to the Departmental Representative prior to commencement of work on site.

.5 Departmental Representative will provide drawings and specifications required by Electrical Inspection Department at no cost.

.6 Notify Departmental Representative of changes required by Electrical Inspection Department prior to making changes.

.7 Furnish Certificates of Acceptance from Electrical Inspection Department on completion of work to Departmental Representative.

1.5 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES

.1 Submit shop drawings, product data and samples in accordance with Section 01 01 50 – General Instructions.

.2 Indicate details of construction, dimensions, capacities, weights and electrical performance characteristics of equipment or material.

.3 Where applicable, include wiring, single line and schematic diagrams.

.4 Include wiring drawings or diagrams showing interconnection with work of other Sections.

1.6 MAINTENANCE MATERIALS

.1 Provide maintenance materials in accordance with Section 01 01 50 – General Instructions.

.2 Additional maintenance material requirements are included under various other Sections.

1.7 OPERATION AND MAINTENANCE DATA

.1 Provide operation and maintenance data for incorporation into operation and maintenance manual specified in Section 01 01 50 – General Instructions.

.2 Include in operations and maintenance data:

.1 Details of design elements, construction features, component function and maintenance requirements, to permit effective start-up, operation, maintenance, repair, modification, extension and expansion of any portion or feature of installation.

.2 Technical data, product data, supplemented by bulletins, component illustrations, exploded views, technical descriptions of items, and parts lists. Advertising or sales literature not acceptable.
.3 Wiring and schematic diagrams and performance curves.
.4 Names and addresses of local suppliers for items included in maintenance manuals.
.5 Copy of reviewed shop drawings.

1.8 CARE, OPERATION AND START-UP

.1 Instruct departmental representative and operating personnel in the operation, care and maintenance of equipment.

.2 Provide these services for such period, and for as many visits as necessary to put equipment in operation, and ensure that operating personnel are conversant with all aspects of its care and operation.

1.9 VOLTAGE RATINGS

.1 Operating voltages: to CAN3-C235-83 (R1996).

.2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard. Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

1.10 MATERIALS AND EQUIPMENT

.1 Equipment and material to be new and CSA certified, and manufactured to standard quoted.

.2 Where there is no alternative to supplying equipment which is not CSA certified, obtain special approval from Inspection Department.

1.11 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates as follows:
.1 Lamicoid 3 mm thick plastic engraving sheet, white face and black core, self adhesive unless specified otherwise.

NAMEPLATE SIZES

Size 1 10 x 50 mm 1 line 3 mm high letters
Size 2 12 x 70 mm 1 line 5 mm high letters
Size 3 12 x 70 mm 2 lines 3 mm high letters
Size 4 20 x 90 mm 1 line 8 mm high letters
Size 5 20 x 90 mm 2 lines 5 mm high letters
Size 6 25 x 100 mm 1 line 12 mm high letters

Size 7 25 x 100 mm 2 lines 6 mm high letters

.2 Wording on nameplates and labels to be approved by departmental representative prior to manufacture.

.3 Allow for average of twenty-five (25) letters per nameplate.

.4 Identification to be English.

.5 Nameplates for junction boxes to indicate system and/or voltage characteristics.

.6 Nameplates for pull boxes to indicate system and type of cable.

1.12 WIRING IDENTIFICATION

.1 Identify wiring with permanent indelible identifying markings, numbered plastic tapes, on both ends of phase conductors of feeders and branch circuit wiring.

.2 Maintain phase sequence and colour coding for 347/600 V, and 120/208V wiring throughout.

1.13 WIRING TERMINATIONS

.1 Lugs, terminals, screws used for termination of wiring to be suitable for either copper or aluminum conductors.

1.14 MANUFACTURERS AND CSA LABELS

.1 Visible and legible after equipment is installed.

1.15 WARNING SIGNS

.1 As specified and to meet requirements of Electrical Inspection Department and Departmental Representative.

.2 Use decal signs, minimum 175 x 250 mm size.

1.16 CONDUIT AND CABLE INSTALLATION

.1 Refer to drawings for type of conduit and cable to be used.

1.17 POWER INTERRUPTIONS

.1 Contractor shall work closely with Institutional personnel to arrange all interruptions of any portion of the existing electrical distribution systems.

.2 Contractor shall submit request for any power shutdown 10 working days prior to such power shutdown. Request shall indicate start time of interruption and duration of interruption. Indicate in request exactly what buildings and/or systems will be effected by the requested power shutdown.

.3 No interruptions to power shall be carried out without the approval of the Departmental Representative.

1.18 CLEANING

.1 Do final cleaning in accordance with Section 01 01 50 – General Instructions.

1.19 RECORD DRAWINGS

.1 Refer to Section 01 01 50 – General Instructions.

.2 Indicate conduit and cable runs, junction boxes and circuit numbers.

1.20 ENVIRONMENTAL PROTECTION AND WASTE MANAGEMENT

.1 Refer to Section 01 01 50 – General Instructions.

.2 Refer to Section 01 01 50 – General Instructions.

END OF SECTION

1 General

1.1 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data in accordance with Section 01 01 50 – General Instructions.

1.2 WASTE MANAGEMENT AND DISPOSAL

.1 Refer to Section 01 01 50 – General Instructions.

1.3 ENVIRONMENTAL PROTECTION

.1 Refer to Section 01 01 50 – General Instructions.

2 Products

2.1 BUILDING WIRES

.1 Conductors: stranded for 10 AWG and larger, minimum size 12 AWG.

.2 Copper conductors with 600 V insulation of chemically cross-linked thermosetting polyethylene material rated RW90.

3 Execution

3.1 INSTALLATION OF BUILDING WIRES

.1 Install wiring as follows:

.1 In conduit systems in accordance with Section 26 05 34 – Conduits, Fastenings and andFittings.

.2 In underground ductbank systems in accordance with Section 26 05 44 – Installation of Cables in Ducts.

.2 Provide a green insulated bond conductor in all conduits sized in accordance with CSA C22.1-2012, Canadian Electrical Code, Part 1.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 26 05 00 - Common Work Results - Electrical

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 Submit shop drawings and product data in accordance with Section 01 01 50 – General Instructions.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Refer to Section 01 01 50 – General Instructions.

1.4 ENVIRONMENTAL PROTECTION

.1 Refer to Section 01 01 50 – General Instructions.

2 Products

2.1 JUNCTION AND PULL BOXES

.1 Welded steel construction with screw-on flat covers for surface mounting.

.2 Covers with 25 mm minimum extension all around, for flush-mounted pull and junction boxes.

.3 Minimum size: 104 mm square.

2.2 RPVC BOXES

.1 RPVC, watertight, grey.

.2 Dimensions as indicated.

.3 Front Cover: Gasketted, watertight.

3 Execution

3.1 JUNCTION AND PULL BOX INSTALLATION

.1 Install pull boxes in inconspicuous but accessible locations.

.2 Install pull boxes so as not to exceed 30 m of conduit run between pull boxes.

3.2 IDENTIFICATION

.1 Provide equipment identification in accordance with Section 26 05 00 - Common Work Results - Electrical.

.2 Install size 2 identification lamicoids indicating system name on pull boxes and junction boxes.

.3 Install size 6 identification lamicoid.

END OF SECTION

1 General

1.1 LOCATION OF CONDUIT

.1 Drawings do not show all conduits. Those shown are in diagrammatic form only.

1.2 CONDUIT SIZES

.1 Note that conduit sizes referenced in the 2012, Canadian Electrical Code are used.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Refer to Section 01 01 50 - Waste Management.

1.4 ENVIRONMENTAL PROTECTION

.1 Refer to Section 01 01 50 – General Instructions.

2 Products

2.1 CONDUITS

.1 Underground ducts: rigid PVC, size as indicated.

.2 Rigid steel conduit: to CSA C22.2 No. 45, galvanized steel, threaded.

2.2 CONDUIT FASTENINGS

.1 One hole steel straps to secure surface conduits 50 mm and smaller.
.1 Two hole steel straps for conduits larger than 50 mm.

.2 Channel type supports for two or more conduits at 1.5 m on centre.

.3 Threaded rods, 6 mm diameter, to support suspended channels.

2.3 CONDUIT FITTINGS

.1 Fittings: manufactured for use with conduit specified. Coating: same as conduit.

.2 Threaded steel couplings and connectors for Rigid Steel Conduits.

2.4 FISH CORD

.1 Polypropylene.

3 Execution

3.1 INSTALLATION

.1 Install wiring in underground RPVC Conduit where indicated on drawings.

.2 Install wiring in threaded Rigid Steel Conduit where indicated on drawings.

.3 Install conduits to conserve headroom in exposed locations and cause minimum interference in spaces through which they pass.

.4 Where conduits become blocked, remove and replace blocked section. Do not use liquids to clean out conduits.

.5 Bend conduit cold. Replace conduit if kinked or flattened more than 1/10th of its original diameter.

.6 Mechanically bend steel conduit over 21 mm diameter.

.7 Dry conduits out before installing wire.

.8 Install fish cord in empty conduits.

3.2 SURFACE CONDUITS

.1 Run parallel or perpendicular to building lines.

END OF SECTION

1 General

1.1 REFERENCES

.1 CSA C22.1-2012 Canadian Electrical Code, Part 1.

1.2 RELATED WORK

.1 Section 01 01 50 – General Instructions.

.2 Section 26 05 00 – Common Work Results – Electrical.

.3 Section 26 05 21 – Wire and Cables 0 – 1000 V.

.4 Section 26 05 34 – Conduits, Fastenings and Fittings.

1.3 ENVIRONMENTAL PROTECTION

.1 Refer to Section 01 01 50 – General Instructions.

1.4 ENVIRONMENTAL PROTECTION

.1 Refer to Section 01 01 50 – General Instructions.

2 Products

2.1 NOT USED

.1 Not used.

3 Execution

3.1 INSTALLATION

.1 Install cables as indicated in ducts.

.2 Do not pull spliced cables in ducts.

.3 Install multiple cables in ducts simultaneously.

.4 Use CSA approved lubricants of type compatible with cable jacket to reduce pulling tension.

.5 Use specified rope to pull cables into ducts.

.6 Before pull cables into ducts and until cables are properly terminate, seal end of cables with moisture seal tape.

.7 After installation of cables, seal duct ends with duct seal compound.

.8 Provide pull string in all ducts for future use.

3.2 FIELD QUALITY CONTROL

.1 Perform tests of each type of cable and system as indicated.

.2 Remove and replace entire length of cable if cable fails to meet any test criteria.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 26 05 00 – Common Work Results – Electrical.

.2 Section 26 05 31 – Junction and Pull Boxes.

.3 Section 26 05 34 – Conduits, Fastenings and Fittings.

1.2 STANDARDS AND CODES

.1 Comply with latest issues and all addendums of the following standards:
.1 TIA/EIA, 568-B series standards – Commercial Building Telecommunications Standards.
.2 J-STD, 607-A – Commercial Building Ground and Bonding Requirements for Telecommunications.
.3 NECA/BICSI 568-2001 – Standard for Installing Commercial Building Telecommunications Cabling.
.4 Canadian Electrical Code including all BC amendments and bulletins.
.5 National Building Code.

1.3 SHOP DRAWINGS

.1 Submit shop drawings and product data in accordance with Section 01 01 50 – General Instructions.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Refer to Section 01 01 50 – General Instructions.

1.5 ENVIRONMENTAL PROTECTION

.1 Refer to Section 01 01 50 – General Instructions.

1 Products

2.1 CATEGORY 5 UTP HORIZONTAL CABLE

.1 Four (4) pair, unshielded, twisted, solid copper core, 100 ohm, 24 AWG, Category 5, FT4 rated.

.2 Category 5 cable for voice horizontal cabling. White color.

.3 Transmission requirements shall conform to or exceed all applicable sections of the TIA/EIA 568-B current specifications and addendums for Category 5 cable and components.

Execution

3.1 CATEGORY 5 UTP HORIZONTAL CABLE INSTALLATION

.1 Install each cable in one continuous run in new underground conduit and cable tray.

END OF SECTION

1 General

1.1 RELATED REQUIREMENTS

.1 Section 32 31 13 – Fences and Gates.

1.2 REFERENCES

.1 Perform work in accordance with the following references:

.1 Senstar Corporation
.1 Intelli-FLEX Product Guide (multiplex version)

.2 Correctional Service Canada
.1 ES/SPEC-0402 Electronics Engineering Specification, PIDS Public Address System for use in Federal Correctional Institutions
.2 ES/SPEC-0405 Electronics Engineering Specification, Fence Disturbance Detection System for use in Federal Correctional Institutions
.3 ES/STD-0405 Electronics Engineering Standards, Perimeter Intrusion Detection System, Performance Testing

1.3 QUALIFICATIONS FOR FDS & PIDS PA WORK

.1 Trained and certified by Senstar Corporation to install Intelli-FLEX FDS systems.

.2 Experience in the installation of Senstar FDS systems.

.3 Persons not trained or certified by Senstar Corporation are not permitted to install or remove FDS or PIDS PA components. One exception is that persons not trained or certified by Senstar Corporation may remove existing FDS sensor cable and non-sensitive feed-in cable when fence fabric is being removed, but are not permitted to disconnect cables from FDS processors or remove the processors from the fence.

.4 Submit qualifications to Departmental Representative for approval.

1.4 SPECIALIZED SERVICES

.1 Include coordination, provision of materials, services and all costs for Senstar Corporation to provide the following as specified:
.1 overall technical advice
.2 components
.3 Installation, termination, & testing of FDS System and PIDS P/A Components
.4 training and all testing work
.5 commissioning

.6 reprogramming of PIDS System as required

1.5 ABBREVIATIONS AND DEFINITIONS

.1 FDS - Fence Disturbance Detection System: This is a fence-mounted system which detects the location (sector) if inmates attempt to climb a perimeter fence. The cables are fastened to the inner perimeter fence.

.2 PIDS P/A - Perimeter Intrusion Detection System – Public Address System

.3 CSC – Correctional Service Canada

.4 FDS Sector – A portion of the fence length that is annunciated as a single FDS alarm point. A sector may also be referenced as a zone. The FDS Sector boundaries are shown on the site plans. The FDS Sector boundaries are defined by:
- .1 Overlapping of FDS cables from adjacent FDS sectors and;
- .2 Locations of FDS Processors

.5 MCCP – Main Communication and Control Post – This is the location where FDS alarms are annunciated and where PIDS P/A announcements are made.

.6 Cross Fence – An interior fence installed at an angle to the inner perimeter fence. A short section of the cross fence abutting the inner perimeter fence is protected with FDS cable.

.7 MDS – Motion Detection System: This is a buried cable system which detects the location (sector) if inmates attempt to cross the area between the two perimeter fences.

.8 PIDS - Perimeter Intrusion Detection System – Integrated security system including the FDS, MDS, PIDS CCTV and PIDS P/A systems.

1.6 SUBMITTALS

.1 Submit in accordance with Section 01 01 50 – General Instructions and ES/SOW-0101.

.2 Submit detailed work plan clearly stating sequence of work elements, schedule and time required for each element of work. Break down work plan into each gate location.

.3 Include Work Plan within the Preliminary and Final Design Reports as specified in ES/SOW-0101.

.4 Include Work Plan, testing, verification and commissioning within the Preliminary and Final Design Reports specified in ES/SOW-0101.

.5 Obtain approval of the Work Plan from the Departmental Representative prior to commencement of work.

.6 Provide Acceptance Test Plans (ATP) as specified in ES/SOW-0101.

.7 Provide sign-off sheets for verification of initial and final testing/commissioning.

1.7 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: submit maintenance data for incorporation into manual specified in Section 01 01 50 – General Instructions.
  .1 Include: Marked up record drawings showing all changes.

1.8 MOCK-UP/SAMPLE GATE INSTALLATION

.1 Contractor shall remove and install one complete Vehicle Access gate including all work related to FDS System, PIDS P/A System and CCTV Fibre Optic System, for review and approval by PWGSC and CSC prior to proceeding with the removal, construction and installation of the remaining gates.

.2 For the purposes of pricing, the Mock-up/Sample Gate Installation shall be the South-East Gate on the Outer Perimeter Fence at Matsqui Institution.

2 Products

2.1 FDS MATERIALS

.1 Senstar Corporation Intelli-FLEX components, acceptable products:
  .1 Sensor cable:
    .1 Mission Medium Institution - Mark 1.
    .2 Kent Institution – Mark 1.
    .3 Mountain Institution – Mark 2.
    .4 Matsqui Institution – Mark 2.
    .5 Fraser Valley Institution – Mark 2.
    .6 Pacific Institution – Mark 2.
  .2 Non-sensitive feed-in cable, part number C6CA0400
  .3 Composite power/data cable, part number G5SP0300
  .4 UV resistant cable ties, black, for all fence-mounted cables including PIDS P/A cables, part number GH0916
  .5 Cable splice and terminator kit, part number C6KT2600
  .6 Self-test terminator kit, part number C6KT0301

.2 PIDS P/A cables, to match existing.

2.2 DIN RAIL MOUNTED TERMINAL BLOCKS

.1 DIN Rails:
  .1 35 mm, Type 3 DIN mounting rails.
  .2 Compatable with terminal blocks.
  .3 Length suitable for mounting in Security Cabinet mounting rails.

.2 Terminal Blocks:
  .1 Push-in, compression clamp.
  .2 Switchable lever disconnect.

.3 DIN 3 Type, rail mounting.
.4 10 mm block, wire size; 24 – 12 AWG stranded or solid.
.5 Rating: 300 V, 10 A.
.6 Numbered plastic inserts of same manufacture of terminal blocks.
.7 End stops on each end of each group of blocks as required.
.8 CSA Approved.

2.3 FDS PROCESSOR AND PIDS P/A SPLICE BOX

.1 RPVC, watertight, grey.

.2 Dimensions as indicated.

.3 Front Cover: Gasketted, watertight.

.4 Lexan mounting plate (two per splice box) to isolate splice box from fence.

Execution

3.1 GENERAL INSTALLATION INSTRUCTIONS

.1 The existing FDS cabling is configured as a "double-pass" (two cable) system due to the height of the fence.

.2 Install the FDS in compliance with the Senstar Intelli-FLEX Product Guide and the referenced standards.

.3 Provide temporary support for all cables, conduits and boxes to ensure no damage to systems.

.4 Perform all adjustments to ensure the FDS system is functioning in accordance with the referenced documents.

.5 Perform all work in accordance with ES/SOW-0102.

.6 If required the Departmental Representative will loan a Fence Test Module for testing purposes.

.7 Replace all cables damaged by activities of this contract.

.8 Any down time of FDS sectors and PDS P/A system affected by this contract must be minimized.

.9 Install self-test terminators.

.10 Modify the existing PIDS-FDS maps to include all changes to the inner and outer perimeter fences including all new gates, gates removed and all gate position switches removed within this contract.

3.2 PIDS P/A SYSTEM

.1 The PIDS P/A will be affected by work under this Contract because the cables will be re-routed along and/or spliced to accommodate the new gates. Remove, splice, re-install and install new cable as indicated. Test PIDS P/A cabling as required.

.2 Cutting, re-routing and splicing PIDS P/A cable must be started, completed, and tested within the same working day. The entire PIDS P/A system must be fully operational at the end of that day.

.3 Provide new shielded PIDS P/A cable to match existing where indicated.

3.3 FDS PROCESSOR CABLING

.1 The entire FDS system will be affected by work under this Contract because the FDS Processor cables will be re-routed and/or spliced to accommodate the new gates. Remove, splice, re-install and install new cable as indicated. Test Processor cabling as required.

.2 Cutting, re-routing and splicing FDS Processor cable must be started, completed, and tested within the same working day. The entire FDS system must be fully operational at the end of that day.

.3 Provide new FDS Processor cable to match existing where indicated.

3.4 PIDS MAPS

.1 Modify all PIDS maps to indicate all modifications to gates on inner and outer perimeter fences, including all gates removed and added, and all gate position switches removed.

3.5 EXISTING GATE POSITION SWITCHES

.1 Disconnect existing gate position switch wiring from associated FDS Processor and modify connections within Processor as required.

.2 Modify existing PIDS data base as required to eliminate the gate position switch alarms from the PIDS system and PIDS Maps.

3.6 WORK STAGES

.1 The physical fence barrier, FDS and PIDS P/A are critical to the security of the institution. Proceed in sequential planned stages to ensure minimum downtime of the fence fabric, FDS and PIDS P/A.

.2 Test, verify and obtain sign-offs for each FDS sector as soon as all FDS, PIDS P/A and fence/gate work has been completed for each gate modification location. This stage is separate from the Final Commissioning.

3.7 WORK PLAN & SCHEDULE

.1 Submit work plans with details of work in conjunction with other trades.

.2 Provide an overall schedule, a schedule with the next week's activities and a daily update.

.3 The daily update includes:
- .1 Use gate locations as reference points.
- .2 Include start and finish times.
- .3 Include which FDS and PIDS P/A sectors will not be functioning.
- .4 Include details on start and finish points for the removal and installation of
  - .1 fence fabric
  - .2 posts
  - .3 concrete
  - .4 FDS Sector Cable, and FDS Processor Cable
  - .5 PIDS P/A
  - .6 other significant items

.4 Institutions require detailed work plans in advance to enable them to make security changes to accommodate the increased risk for specific areas.

3.8 SECURITY CONDITIONS

.1 Only one FDS Sector can be non-functional at any given time, for up to maximum of 2 consecutive work days. This includes over night between the 2 working days.

.2 Minimize the number of FDS sectors that are non-functioning at any time. Except for the times that the FDS Processor cabling is being spliced, only the FDS sector where work on gate modifications is being carried out may be non-functioning at any time. Non-functioning is defined as the state when the FDS cables are removed from the fence and/or not detecting escape attempts. Non-functioning does not include the state when the FDS sector is fully operational and masked.

.3 All portions of the inner and outer perimeter fence fabric shall be installed securely on the fence posts at the end of each working day, preventing inmates from escaping outside normal working hours. The fence fabric is not required to be tensioned to the specified tension to meet the requirements of this paragraph.

.4 Additional Work Restrictions – Refer to Section 01 01 50 – Work Restrictions.

3.9 TESTING OF THE EXISTING FDS & PIDS PA

.1 The FDS & PIDS P/A are essential components of the institution's security systems.

.2 The existing systems are tested daily by the institution to ensure correct operation.

.3 If any problems are found with the existing installation, inform the Departmental Representative immediately in writing.

3.10 INITIAL FENCE TEST SECTION

.1 Prior to commencement of work on the fence fabric and the FDS & PIDS P/A at each gate location, a test of the affected FDS Sectors and PIDS P/A is required to be completed.

.2 Provide the on-site services of Senstar Corporation designated staff to assist with the FDS and PIDS P/A tests.

.3 Cooperate with the Departmental Representative to understand acceptable fence tension testing procedures, testing, verification, commissioning and sign-off protocols, sequence of construction, communications channels and other security expectations. Once the Departmental Representative is satisfied all of the above criteria have been understood, work may commence on the balance of the work at the institution.

3.11 FENCE TENSION TESTING AND ADJUSTMENT

.1 Fence tension testing and adjustment specified in Section 32 31 13 – Fences and Gates.

.2 Install FDS cables on fence fabric after fence fabric has been adjusted to specified tension.

3.12 FENCE INSTALLATION AND FDS PERFORMANCE

.1 Loose fence components will affect the performance of the FDS.

.2 Inform other Divisions of the importance of ensuring the fence does not create nuisance FDS alarms.

.3 Inspect fence work of other Divisions, document FDS-related fence deficiencies and ensure the deficiencies are corrected.

3.13 MDS CABLES

.1 A Senstar OmniTrax MDS security system is installed.

.2 The MDS includes two cables run parallel to the inner perimeter fence and buried below grade in the area between the inner and outer perimeter fences.

.3 The cables are buried approximately 230mm below grade.

.4 The cables are centered between the inner and outer perimeter fences.

.5 Depending on the soil conditions, the two cables are spaced approximately 200mm to 600mm apart.

.6 Obtain buried cable depth and spacing information from the Departmental Representative.

.7 Take care when disturbing soil conditions in the area between the inner and outer perimeter fences, ensuring no damage is done to the MDS cables.

3.14 FDS SECTOR TESTING, VERIFICATION AND SETUP

.1 Once the gate installation, fence fabric installation, FDS and PIDS P/A systems have been completely installed at each location, complete the following:

.1 Visually inspect each fence panel for loose connections or improper installation. Vigorously shake each fence panel to ensure there are no rattles, bangs or squeaks. Fence fabric tension and connections should be sufficiently tight to produce no noise when shaken. Make all adjustments as required.

.2 Re-verify the fence fabric deflection.

.3 Test the PIDS P/A pathway by both initiating a PIDS alarm and using manual switching. In both cases, test for intelligibility. Perform the test procedures as listed in ES/SPEC-0402.

.4 Test the FDS in accordance with ES/STD-0405 and Senstar's recommended practice with tap tests on each fence panel and two equally-spaced climb tests on different fence panels. Ensure the FDS Sector is appropriately annunciated in the MCCP. Adjust the sensitivity of the FDS Sector to ensure positive detection of fence disturbance events. Note that existing sensitivity on some sectors has been adjusted to compensate for existing loose fence fabric conditions.

.5 Document all test results on sign-off sheets.

.6 Departmental Representative and designates to witness tests and to verify correct operation of the systems.

.7 At the time of the test, obtain signatures of Departmental Representative and designates on sign-off sheets. Hand over completed sign-off sheets to Departmental Representative.

3.15 FINAL COMMISSIONING

.1 Once all work on all FDS Sectors have been completed at an institution, provide on-site services of Senstar Corporation staff to perform the Final Commissioning of the FDS. Senstar Corporation staff are required to be on-site for the Final Commissioning.

.2 Perform Final Commissioning in accordance with Senstar Corporation's Intelli-FLEX Product Guide and the referenced standards.

.3 Include all FDS adjustments including cable changes as required. Include any adjustments of the FDS cables to the fence fabric.

.4 Include a final commissioning of the PIDS P/A.

.5 Use the Acceptance Test Plan (ATP) as the basis for the Final Commissioning process.

.6 Document all test results on sign-off sheets.

.7 Departmental Representative and designates to witness tests and verify correct operation.

.8 Obtain signatures of Departmental Representative and designates on sign-off sheets, at the time of the test. Hand over completed sign-off sheets to Departmental Representative.

3.16 CLEANING

.1 Leave work area clean at end of each day.

.2 Final Cleaning: upon completion remove every trace of debris including small pieces of cable, tie-wraps, tape, paper, etc.

.3 Dispose of all removed components and debris off site.

3.17 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by FDS & PIDS P/A installation.

END OF SECTION

1 General

1.1 RELATED SECTIONS

.1 Section 01 01 50 – General Instructions.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

.1 ASTM C 117, Standard Test Method for Material Finer Than 0.075 mm (No.200) Sieve in Mineral Aggregates by Washing.

.2 ASTM C 136, Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.3 ASTM D 698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft ^{3}) (600 kNm/ m ^{3}).

.4 ASTM D 1557, Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft ^{3}) (2,700 kNm/ m ^{3}).

.5 ASTM D995-95B, Standard Specification for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.

.2 Canadian Standards Association (CSA Internalational)

.1 CSA-A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction.

.2 CSA/CGSB-16.1-M89, Cutback Asphalts for Road Purposes.

.3 CAN/CGSB-16.2-M90, Asphalt Cements for Road Purposes.

1.3 DEFINITIONS

.1 Unclassified excavation: excavation of deposits of whatever character encountered in Work.

.2 Topsoil: material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping and seeding.

.3 Waste material: excavated material unsuitable for use in Work or surplus to requirements.

.4 Borrow material: material obtained from locations outside area to be graded, and required for construction of fill areas or for other portions of Work.

1.4 SUBMITTALS

.1 Samples:

.1 Submit samples in accordance with Section 01 01 50 - Submittal Procedures.

.2 Inform Departmental Representative at least 4 weeks prior to commencing Work, of proposed source of fill materials and provide access for sampling.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 01 50 - Construction/Demolition Waste Management And Disposal.

.2 Collect and separate plastic, paper packaging and corrugated cardboard in accordance with Waste Management Plan.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Ensure emptied containers are sealed and stored safely.

1.6 PROTECTION OF EXISTING FEATURES

.1 Existing buried utilities and structures:

.1 Prior to commencing excavation Work, notify applicable Departmental Representative or authorities having jurisdiction, establish location and state of use of buried utilities and structures. Department Representative or authorities having jurisdiction to clearly mark such locations to prevent disturbance during Work.

.2 Confirm locations of buried utilities by careful test excavations.

.3 Maintain and protect from damage, water, sewer, gas, electric, telephone and other utilities and structures encountered as indicated.

.4 Where utility lines or structures exist in area of excavation, obtain direction of Departmental Representative before re-routing.

.5 Record location of maintained, re-routed and abandoned underground lines.

.2 Existing buildings and surface features:

.1 Conduct, with Department Representative, condition survey of existing underground services, lawns, fencing, service poles, wires, rail tracks,

pavement, survey bench marks and monuments which may be affected by Work.

.2 Protect existing buildings and surface features from damage while Work is in progress. In event of damage, immediately make repair to approval of Department Representative.

.3 Where required for excavation, coordinate the schedule with the Departmental Representative.

2 Products

2.1 MATERIALS

.1 Type 1 fill: clean, hard, durable crushed gravel or stone, free from shale clay, friable materials, organic material and other deleterious substances and graded within the following limits when tested to ASTM C136 and ASTM C117 and giving a smooth curve without sharp breaks when plotted on a semi-log grading chart:

ASTM Sieve Designation	% Passing
20 mm	100
12.5 mm	64 – 100
5 mm	35 – 72
1.25 mm	12 – 42
0.3	4 – 22
0.075	3 – 8

.2 Type 2 fill: clean, hard, durable sand, free from shale clay, friable materials, organic material and other deleterious substances when tested to ASTM C136 and ASTM C117 and giving a smooth curve without sharp breaks when plotted on a semi-log grading chart:

ASTM Sieve Designation	% Passing
80 mm	100
25 mm	60 - 100
12.5 mm	40 - 90
5 mm	20 - 65
1.25 mm	9 - 35
0.3	3 - 15
0.075	0 - 5

.3 Type 3 fill: selected material from excavation or other sources, approved by Department Representative for use intended, unfrozen and free from rocks larger than 75 mm, construction materials, cinders, ashes, wood-wate and organic matter, sods, refuse or other deleterious materials. Remove rocks large than 75 mm in fill used as common backfill in non-structural areas.

.4 Type 4 fill: clean coarse, washed sand, free from clay, shale and organic matter.

.5 Surface treatment: ¾ minus crushed limestone.

.6 Asphalt Paving Mix:

.1 Mix design to AI MS-2.

.2 Job mix formula to be approved by the Departmental Representative.

.3 Design of mix: by Marshall method to requirements below:

.1 Compaction blows on each face of test speciments: 75.

.2 Mix physical requirements:

Property	Upper Course
Marshall Stability at 60 degrees C, kN minimum	5.5
Flow Value, mm	2-4
Air Voids in Mixture, %	3-5
Voids in Mineral Aggregate, % minimum	14
Index of Retained Stability, % minimum	75

.4 Do not change job-mix without prior approval of the Departmental Representative. When change in material source proposed, new job-mix formula to be reviewed by Departmental Representative.

3 Execution

3.1 SITE PREPARATION

.1 Remove obstructions from surfaces to be excavated within limits indicated.

.2 Cut pavement or sidewalk neatly along limits of proposed excavation in order that surface may break evenly and cleanly.

3.2 EXCAVATION

.1 Try to excavate and backfill in the same day.

.2 For trench excavation, unless otherwise authorized by Department Representative in writing, do not excavate more than 30 m of trench in advance of installation operations and do not leave open more than 15 m at end of day's operation.

.3 Keep excavated and stockpilled materials a safe distance away from edge of trench as directed by Department Representative.

.4 Restrict vehicle operations directly adjacent to open trenches.

.5 Dispose of surplus and unsuitable excavated material off site.

.6 Do not obstruct flow of surface drainage or natural watercourses.

.7 Earth bottoms of excavations to be undisturbed soil, level, free from loose, soft or organic matter.

.8 Notify Department Representative when bottom of excavation is reached.

.9 Obtain Department Representative approval of completed excavation.

.10 Remove unsuitable material from trench bottom to extent and depth as directed by Department Representative.

3.3 BACKFILLING

.1 Do not proceed with backfilling operations until Department Representative has inspected and approved installations.

.2 Areas to be backfilled to be free from debris, snow, ice, water and frozen ground.

.3 Do not use backfill material which is frozen or contains ice, snow or debris.

.4 Place backfill material in uniform layers not exceeding 150 mm compacted thickness. Compact each layer before placing succeeding layer.

.5 Backfilling around installations.

.1 Place bedding and surround material as specified elsewhere.

.2 Place layers simultaneously on both sides of installed Work to equalize loading. Difference not to exceed 20 m.

.6 Place unshrinkable fill in areas as indicated.

.7 Consolidate and level unshrinkable fill with internal vibrators.

3.4 ASPHALT CONCRETE PAVING

.1 Obtain approval of base and tack coat from the Departmental Representative before placing asphalt mix.

.2 Place asphalt mix only when base is dry and air temperature is above 5 degrees C.

.3 Place asphalt concrete in compacted, single layers, 50 mm one lift to same depth as existing.

.4 Minimum 135 degrees C mix temperature required when spreading.

.5 Maximum 160 degrees C mix temperature permitted at any time.

.6 Compact with roller as soon as it can support roller weight without undue cracking or displacement.

.7 Compact asphalt concrete to density not less than 95 % of density obtained with Marshall specimens prepared in accordance with ASTM D1559 from samples of mix being used. Rol until roller marks are eliminated.

.8 Keep roller speed slow enough to avoid mix displacement and do not stop roller on fresh pavement.

.9 Moisten roller wheels with water to prevent pick up of material.

.10 Compact mix with hot tampers or other equipment in areas inaccessible to roller.

.11 Finish surface to be within 10 mm of design elevation and with no irregularities greater than 10 mm in 4.5 m.

.12 Repair areas showing checking, rippling or segregation.

.13 Paint contact surfaces of existing surfaces and structures such as manholes, curbs or gutters with bituminous material prior to placing adjacent pavement.

.14 For cold joints, cut back to full depth vertical face and tack face with hot asphalt.

3.5 RESTORATION

.1 Upon completion of Work, remove waste materials and debris in accordance to Section 01 01 50 - Construction/Demolition Waste Management and Disposal, trim slopes, and correct defects as directed by Department Representative.

.2 Replace damaged gravel as directed by Department Representative.

.3 Reinstate surfaces to elevation which existed before excavation.

.4 Reinstate pavements and sidewalks disturbed by excavation to thickness, structure and elevation which existed before excavation.

.5 Clean and reinstate areas affected by Work as directed by Department Representative.

.6 Use temporary plating to support traffic loads over unshrinkable fill for initial 24 hours.

3.6 REPAIR

.1 Contractor shall repair all existing infrastructure damaged during the construction.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 01 50 – General Instructions.

.2 Section 01 14 10 – Security requirements.

.3 Section 01 35 33 – Health and Safety Requirements.

.4 Section 01 91 00 – Commissioning.

.5 Section 02 41 99 – Demolition for Minor Works.

1.2 REFERENCES

.1 American Society for Testing and Materials (ASTM)

- .1 ASTM A53/A53M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- .2 ASTM A90/A90M-11, Standard Test Method for Weight of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
- .3 ASTM A121-13, Standard Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.
- .4 A653/A653M-13, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .5 ASTM A585-97, Specification for Aluminum-Coated Steel Barbed Wire.
- .6 ASTM F2611-11, Standard Guide for Design and Construction of Chain Link Security Fencing.

.2 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-138.1-96, Fabric for Chain Link Fence.
- .2 CAN/CGSB-138.2-96, Steel Framework for Chain Link Fence.
- .3 CAN/CGSB-138.3-96, Installation of Chain Link Fence.
- .4 CAN/CGSB-138.4-96, Gates for Chain Link Fence.
- .5 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.

.3 Canadian Standards Association (CSA)

- .1 CSA-A23.1/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
- .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
- .3 CAN/CSA-A3000-08, Cementitious Materials Compendium. Includes:
  - .1 CAN/CSA-A23.5-09, Supplementary Cementing Materials

1.3 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 01 50 – General Requirements.

.2 Drawings to indicate: Fence and gate layout, fence and gate cross-sections, construction materials, gate hardware and security systems.

.3 Engineer fence systems to resist local wind and snow conditions.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 01 50 – General Requirements and Section 02 41 99 – Demolition for Minor Works.

.2 Collect and separate for disposal demolition materials for recycling in accordance with Waste Management Plan.

.3 Place materials defined as hazardous or toxic in designated containers.

.4 Divert unused metal and wiring materials from landfill to metal recycling facility as approved by Engineer.

.5 Divert unused concrete materials from landfill to local facility as approved by Deparmental Representative.

.6 Unused paint or coating material must be disposed of at an official hazardous material collections site as approved by Departmental Representative.

.7 Do not dispose of unused paint material into sewer system, into streams, lakes, onto ground or in any other location where it will pose health or environmental hazard.

.8 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 Products

2.1 MATERIALS

.1 Concrete mixes and materials: in accordance with CSA-A23.1.

.1 Refer to Drawing S1 of 1.

.2 Chain-link fence fabric: to CAN/CGSB-138.1.

.1 6 gauge 50 mm diamond interwoven mesh with 0.148 galvanized core to ASTM A853 Grade AISI 1006. Minimum tensile strength 70,000 psi (485 MPa).

.2 Mesh fabricated from low carbon steel wire and electronically control welded.

.3 Height of fabric: as indicated, continuous from top to bottom.

.3 Posts, braces and rails: to CAN/CGSB-138.2, galvanized steel pipe. Dimensions as indicated.

.4 Tie wire fasteners: to CAN/CGSB-138.1, Table 2 (steel wire) single strand, 9 ga.

.5 Tension bar: to ASTM A653/A653M, 5 x 20 mm minimum galvanized steel.

.6 Vehicle Swing and Sliding Gates: to CAN/CGSB-138.4.

.1 Swing Gates Size: Pair of 2 m wide x 4.5 m high sections, unless indicated otherwise.

.2 Gate Framing: to ASTM A53/A53M, galvanized 73 mm O.D. steel pipe welded and drained.

.1 Weight: 8.6 kg/m.

.3 Chain link fabric matching fence fabric.

.4 Swing Gate Hinges: Three (3), standard quality.

.5 Locking: Southern Folger detention grade locks, 3860 Cremone Bolts, keyed 2 sides, 3 point locking.

.6 Any gap between ground, posts and top rail shall not exceed 125 mm.

.8 Pedestrian Gates: to CAN/CGSB-138.4.

.1 Size: Minimum 1.2 m wide x 2.1 m high clear opening.

.2 Gate Framing: to ASTM A53/A53M, galvanized 43 mm O.D. steel pipe welded and drained.

.1 Weight: 3.4 kg/m.

.3 Chain link fabric matching fence fabric.

.4 Locking: Southern Folger 3860, Cremone Bolts keyed 2 sides, 3 point locking.

.5 Any gap between ground, posts and top rail shall not exceed 125 mm.

.9 Crash Barriers used for Emergency Gates:

.1 Construction: Rectangular tubing on anti friction rollers.

.2 Upright supports for the tubing.

.3 As detailed on the Drawings.

.10 Security Perimeter Fence:

.1 Height: As indicated on Drawings.

.2 Fence fabric installed on institution side of fence posts.

.11 Fence Detection system (FDS):

.1 Balance fabric tension. Ensure vibration travel across posts while not causing excessive false alarms.

.2 Terminate fabric vibration at strain posts to allow zone separations for the PIDS.

.3 Where interior fences intersect Inner Perimeter Fence:

.1 Install FDS for 2.5 m, and connect fence fabric to a strain post to limit vibration beyond strain post.

.2 Install BTC on both sides of the fence.

.3 Limit maximum gap between posts or fabric to 125 mm.

.12 Barber Tape Concertina (BTC):

.1 Install to prevent passage of a person across the barbed coils.

.2 Galvanized tape 20 x 0.5 mm clenched around a 2.5 mm diameter spring steel galvanized core wire to form a concertina coil with a nominal exterior coil diameter of 710 mm. The coil, when installed, shall have a minimum diameter of 635 mm. The barbed concertina shall have 20 mm long blade type barbs measured form tip to tip of the blade, and barb clusters shall be spaced approximately 45 mm on centre. The concertina shall be formed by clipping adjacent loops od single helical coils together at a minimum of three (3) points on the circumference. Clips shall be galvanized. The resulting coil, when stretched, shall form a cylindrical pattern.

.13 Gate frames: to ASTM A53/A53M, galvanized steel pipe.

.1 Fabricate gates as indicated with electrically welded joints, and painted with zinc pigmented paint after welding.

.2 Furnish gates with galvanized malleable iron hinges.

.3 Secure fabric to gate frame to match fencing erection. Refer to 3.2.

.4 Tension bars 3 mm x 20 mm bands secured at 300 mm.

.14 Fittings and hardware: to CAN/CGSB-138.2, cast aluminum alloy, galvanized steel or malleable or ductile cast iron.

.1 Tension bar bands: 3 mm x 20 mm minimum galvanized steel.

.2 Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail. Overhang tops to provide waterproof fit, to hold top rails and an inward projection to hold barbed wire overhang. Provide projection with clips or recesses to hold 3 strands of barbed wire spaced 100 mm apart. Projection of approximately 300 mm long to project from fence at 45^0 above horizontal. Turnbuckles to be drop forged.

.7 Organic zinc rich coating: to CAN/CGSB-1.181.

.8 Barbed wire: to CAN/CGSB-138.2, 12 ga (2.3 mm) diameter galvanized steel wire to ASTM A121 4 point barbs 125 mm spacing.

2.2 FINISHES

.1 Galvanizing: average mass of zinc coating to be not less than 610 g/m2 of uncoated wire.

.1 For chain link fabric: to CAN/CGSB-138.1 Grade 2.
.2 For pipe: 550 g/m^2minimum to ASTM A90.
.3 For barbed wire: to CAN/CGSB-138.2.
.4 For other fittings: to CAN/CSA-G164.

.2 Aluminum coating:

.1 For barbed wire: to ASTM A585, Class 2.

Part 3 Execution

3.1 GRADING

.3 Remove debris and correct ground undulations along fence line to obtain smooth uniform gradient between posts. Provide clearance between bottom of fence and ground surface of 30 mm to 50 mm.

.4 Cut posts and other items to be removed at ground level. Fill voids with grout.

.5 Footings, slabs etc are not required to be removed. Patch any voids to match adjacent.

3.2 ERECTION OF FENCE

.6 Erect fence along lines as indicated and to CAN/CGSB-138.3.

.7 Excavate post holes to dimensions indicated by hand to expose and protect any service lines.

.8 Space line posts 2.5 m apart, or as indicated, measured parallel to ground surface.

.9 Install end posts at end of fence. Install gate posts on both sides of gate openings.

.10 Place concrete in post holes then embed posts into concrete to depths indicated. Extend concrete 50 mm above ground level and slope to drain away from posts. Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.

.11 Do not install fence fabric until concrete has concrete attained at least 75% of its minimum 28-day strength.

.12 Install overhang tops and caps.

.13 Install top rail and bottom rail between posts and fasten securely to posts and secure waterproof caps and overhang tops.

.14 Lay out fence fabric. Install fence fabric on the institution side of the fence posts. Stretch tightly to tension as follows:

- .1 Tension test one existing panel on each side of any affected panel shall be conducted prior to construction.
- .2 New and affected panels shall have that previous existing tension applied to them.
- .3 Tension testing of new and affected panels shall be performed after construction to verify.
- .4 Contractor to advise on any excessively loose panels.

.10 Fasten to end, corner, gate and straining posts with tension bar secured to post with tension bar 3 mm x 20 mm bands spaced at 300 mm intervals. Barbed edges top and bottom. Where fence infill indicated, weave new fabric into existing fabric.

.11 Fence fabric shall be pulled taut before fixing in place. Tautness when fixed in place is to be established by pull tests. The application of a 12 kg perpendicular pull at the midpoint of the mesh panel (midpoint of Posts/rails) shall show a displacement of no more than 30 mm from the fence at rest plane.

.12 Secure fabric to top rails, line posts and bottom rails with tie wires at 300 mm intervals. Give tie wires minimum two machine twists.

.13 Install barbed wire strands and clip securely to lugs of each projection.

.14 The barbed type concertina to be supported and tied at 230 mm spacing onto each of the barbed wire.

3.3 INSTALLATION OF GATES

.1 Install gates in locations as indicated.

.2 Level ground between gate posts and set gate bottom maximum 125 mm above ground.

.3 Determine position of centre gate bolt for double gate. Bolt receiver with drainage tube in concrete. Dome concrete above ground level to shed water.

.4 Swing gates:

- .1 Install swing gates plumb, level and secure for full opening without interference.
- .2 Install ground-set items in concrete for anchorage in accordance with the fence manufacturer's recommendations as approved by the Consultant.
- .3 Adjust the hardware for smooth operation and weld all hardware to prevent removal.
- .4 Test gate lock function.

3.4 COMMISSIONING

.1 Do a final commissioning of the fence fabric tension with the FDS system in place and make any adjustments required.

.2 Do a final commissioning of the gate hardware for proper function.

3.5 TOUCH UP

.1 Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of organic zinc-rich paint to damaged areas. Pre-treat damaged surfaces according to manufacturers' instructions for zinc-rich paint.

3.6 CLEANING

.1 Clean and trim areas disturbed by operations. Dispose of surplus material and replace damaged turf with sod and repair or replace other damaged materials to match existing as directed by Departmental Representative

END OF SECTION

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/SPEC-0402
Revision 2
8 March, 2002

ELECTRONICS ENGINEERING SPECIFICATION

PIDS PUBLIC ADDRESS SYSTEM FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

This Specification is approved by the Correctional Service of Canada for the procurement and Installation of Perimeter Intrusion Detection System (PIDS) Public Address (PA) systems in Canadian federal correctional institutions.

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

Prepared by :

Manager,
Electronic Systems Research

Approved by :

Director,
Engineering Services

8 Mar 02

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ABBREVIATIONS

The following abbreviations are used in this specification:

CER	Common Equipment Room
COTS	Commercial-Off-The- Shelf
CSA	Canadian Standards Association
CSC	Correctional Service Canada
DES	Director Engineering Services
EIA	Electronic Industries Association
GFE	Government Furnished Equipment
MCCP	Main Communications and Control Post
PA	Public Address
PIDS	Perimeter Intrusion Detection System
RFP	Request for Proposal
SOW	Statement of Work
STR	Statement of Technical Requirements

DEFINITIONS

The following definitions are used in this specification:

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

1.0 INTRODUCTION

1.1 General

This specification defines the essential technical and functional requirements of the Correctional Service Canada (CSC) for the procurement and installation of a Public Address (PA) system to be used in conjunction with the Perimeter Intrusion Detection System (PIDS) in federal correctional institutions.

1.2 Purpose

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

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

1.3 Commercial-Off-The-Shelf Equipment

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

1.4 Technical Acceptability

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

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

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

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

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

1.5 Equipment Procurement

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

1.6 Quantity of Equipment

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

2.0 APPLICABLE DOCUMENTS

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

ES/SOW-0101	Statement of Work for Electronic Systems for Correctional Service of Canada Institutions.
ES/SOW-0102	Statement of Work for Quality Control for installation of Electronic Systems in Federal Correctional Institutions.
ES/SPEC-0005	Specification for Main Communications and Control Post Integration Consoles
ES/SPEC-0401	Specification for Perimeter Intrusion Detection System Integration Units
EIA-310-C	Electronic Industry Association Standard for Racks, Panels and Associated Equipment

3.0 REQUIREMENTS

3.1 General

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

3.1.1 System Configuration

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

a. PIDS Public Address Switcher consisting of:

- a zone selector panel;
- a microphone; and
- test tone generator.

b. Loudspeaker assemblies, one or more per zone, consisting of:

- loudspeaker and matching transformer;
- horn; and
- mounting fixture.

c. Common equipment (amplifiers, power supply, etc.)

d. Interconnecting wire, cable, conduits, ducts, junction boxes, etc.

3.1.2 System Capacity

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

3.1.3 Period of Operation

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

3.2 System Requirements

3.2.1 Wires, Cables, Conduits, Ducts

The contractor shall supply all necessary terminations, cross connection cabinets, conduits, wire and cabling and any other items that may be required for the satisfactory completion of the specified system. All installation workmanship shall be performed in accordance with ES/SOW-0102, Statement of Work and all applicable national, provincial, and local electrical codes.

A wiring diagram shall be supplied in the Installation section of the Maintenance Manual to detail where module connections terminate and how wires are routed and terminated.

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

3.2.2 Control Equipment

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

3.2.3 Interface to Data Logger

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

3.3 Design Requirements

3.3.1 General

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

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

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

3.3.2 Wiring Supervision

Wiring shall be supervised in all system modes. An alarm shall occur if any system wiring is cut or shorted to other wires or if the system devices are tampered with by unauthorized people or environmental conditions.

3.3.3 Speaker Locations

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

3.3.4 Speaker Output

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

3.3.5 PA Switcher

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

The PIDS PA switcher shall meet the following requirements:

a. equipped with an adjustable test tone generator;

b. capacity for up to 15 perimeter zones;

c. installed in an Electronic Industries Association (EIA) standard 19" equipment rack;

d. equipped with connectorized inputs/outputs; and

e. system alarm outputs for power supply failure, loop continuity failure, and switching relay failure.

3.3.6 Microphone

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

3.3.7 Speaker Mounting

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

3.3.8 Matching Transformer

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

3.3.9 Interchangeability

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

3.3.10 Facilities

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

3.3.11 System Performance on Switch over

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

3.3.12 Sabotage, Tampering and Survivability

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

3.3.13 Power Failure

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

3.3.14 System Failure

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

3.3.15 Human Factors

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

3.3.16 Existing Equipment

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

3.3.17 Control Panels

Mounting space within control posts is usually limited and the problem of determining a suitable equipment mounting location is minimized if the control panels are small. Therefore, the designer should make maximum possible use of control devices which combine two or more functions into a single unit.

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

3.4 Functional Requirements

3.4.1 PA Control

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

3.4.2 PA Control Panel

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

3.5 Environmental Requirements

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

3.5.1 Indoor Equipment

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

3.5.2 Outdoor Equipment

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

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

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

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

3.6 **Power Requirements**

The system shall use VAC power within the following limits:

3.6.1 Voltage: 120 VAC ±10%;

3.6.2 Frequency: 60 Hz ±1.5%;

3.6.3 Transients: up to 5 times nominal voltage for up to 100 msec durations. Changes in the input power or any fluctuations within the above limits shall not cause damage to the unit; and

3.6.4 Power: power consumption shall not exceed 100 watts.

3.7 **Installation Requirements**

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

3.8 **Documentation Requirements**

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

3.9 **Support Requirements**

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

3.10 Training Requirements

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

4.0 QUALITY ASSURANCE

4.1 General

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

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

4.2 System Check Out

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

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

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

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

4.3 Final Acceptance Test Procedures

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

5.0 DELIVERY

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

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/SPEC-0405
Revision 2
8 March 2002

ELECTRONICS ENGINEERING SPECIFICATION

FENCE DISTURBANCE DETECTION SYSTEM FOR USE IN FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

This Specification is approved by the Correctional Service of Canada for the procurement and Installation of Fence Disturbance Detection Systems (FDS) in Canadian federal correctional institutions.

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

Prepared by :

Manager,
Electronic Systems Research

Approved by :

Director,
Engineering Services

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ABBREVIATIONS

The following abbreviations are used in this specification:

ATP	Acceptance Test Procedure
CER	Common Equipment Room
COTS	Commercial-Off-The- Shelf
CSA	Canadian Standards Association
CSC	Correctional Service Canada
DES	Director Engineering Services
EIA	Electronic Industries Association
FDS	Fence Disturbance Detection System
GFE	Government Furnished Equipment
MCCP	Main Communications and Control Post
MDS	Motion Detection System
PDR	Preliminary Design Review
RFP	Request for Proposal
SOW	Statement of Work
STR	Statement of Technical Requirements
TES	Terminal Equipment Space

DEFINITIONS

The following definitions are used in this specification:

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

1.0 INTRODUCTION

1.1 General

This specification defines the essential technical and functional requirements of the Correctional Service Canada (CSC) for the procurement and installation of a Fence Disturbance Detection System (FDS) for federal correctional institutions.

1.2 Purpose

The primary use of the system is to provide an intrusion detection capability at the perimeter fences.

Through the selection of certain options or alternatives, the system described herein would be applicable to new institutions to be constructed. It could also be retrofitted into existing institutions whenever it becomes necessary to add a perimeter motion detection capability or replace existing obsolete equipment.

1.3 Commercial-Off-The-Self Equipment

The FDS shall use commercial off-the-shelf (COTS) equipment and proven designs to the maximum extent possible. New equipment designs shall be restricted to unique interfaces and common control console.

1.4 Technical Acceptability

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

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

The technical acceptance process shall involve system and subsystem evaluation in accordance with the applicable CSC specifications in one of CSC facilities. CSC may when it deems necessary, request the supplier to arrange for a full site demonstration. CSC shall verify in depth any of the system technical specifications called up. 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 supplier. Any supplier can have access to the CSC specifications and standards. Any new development or products should be submitted to the CSC Engineering Services Division, Technical Authority in a suitable time frame prior to any tendering process to allow for an acceptable evaluation period. The evaluation period may take up to sixteen (16) months.

1.5 Equipment Procurement

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

1.6 Quantity of Equipment

The quantity and location of the FDS equipment required for CSC institutions are specified in the Statement of Technical Requirements (STR).

2.0 APPLICABLE DOCUMENTS

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

ES/SOW-0101	Statement of Work for Electronic Systems for Correctional Service of Canada Institutions
ES/SOW-0102	Statement of Work for Quality Control for installation of Electronic Systems in Federal Correctional Institutions
ES/SPEC-0005	Specification for Electronic Systems Integration into the Main Communications and Control Post in Federal Correctional Institutions
ES/SPEC-0400	Specification for Perimeter Intrusion Detection Systems
ES/STD-0401	Standard for Fence Sensors
ES/STD-0404	Standard for Proximity Sensors
ES/STD-0803	Standard for Video Display Units
EIA-310-C	Electronic Industry Association Standard for Racks, Panels and Associated Equipment

3.0 REQUIREMENTS

3.1 General

The contractor shall design, supply, install, test and provide documentation and training for an FDS in accordance with the Standards, Specifications and Statements of Work specified in Section 2.0.

3.1.1 System Capacity

The number of perimeter sectors or zones shall be as specified in the STR. The system shall be of a modular design and it shall be possible at a future date to add more sectors or zones and associated processing and control equipment to the basic installed complement without replacing existing hardware.

3.1.2 Period of Operation

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

3.2 System Requirements

3.2.1 Wires, Cables, Conduits, Ducts

The contractor shall supply all necessary terminations, cross connection cabinets, conduits, wire and cabling and any other items that may be required for the satisfactory completion of the specified system. All installation workmanship shall be performed in accordance with ES/SOW-0102, Statement of Work and all applicable national, provincial, and local electrical codes.

A wiring diagram shall be supplied in the Installation section of the Maintenance Manual to detail where connections terminate and how wires are routed and terminated.

Conduits, cables, ducts, trays, etc. may be either Government Furnished Equipment (GFE) or supplied and installed by the contractor depending on the particular institution.

Connectors provided on the ends of any cable must mate with the corresponding connector on the equipment. Adapters from one type of connector to another are not acceptable.

3.2.2 Control Equipment

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

3.2.3 Floor Space

The contractor shall state in the Preliminary Design Review (PDR) proposal the requirements for floor space to house the electronic control and processing equipment.

3.2.4 Equipment Racks

The contractor shall provide all necessary racks to mount the control and processing equipment.

3.2.5 Interface to Data Logger

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

3.3 Design Requirements

3.3.1 General

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

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

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

3.3.2 Wiring Supervision

Wiring shall be supervised in all system modes. An alarm shall occur if any system wiring is cut or shorted to other wires or if the system devices are tampered with by unauthorized people or environmental conditions.

3.3.3 Sabotage, Tampering and Survivability

Elements of the FDS shall have high resistance to damage and destruction. All interconnecting service must be secure against tampering or improper interference.

3.3.4 Power/Data Redundancy

The FDS shall be powered from two independent DC power supplies connected to the system at two distinct points. Failure of a single supply shall not cause the system to fail, i.e. either power supply can power the entire system.

The FDS shall communicate with the system controller at two distinct points. Failure of one data line will not cause the system to fail, i.e. the communications shall be fully redundant.

3.3.5 Power Failure

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

3.3.6 System Failure

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

3.3.7 Human Factors

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

3.3.8 Existing Equipment

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

3.3.9 Control Panels

Mounting space within control posts is usually limited and the problem of determining a suitable equipment mounting location is minimized if the control panels are small. Therefore, the designer should make maximum possible use of control devices which combine two or more functions into a single unit (e.g., a lighted push-button instead of a separate light and an unlit push-button).

The system may use EIA standard display and control panels or video display units. The design of either display and control method shall be in accordance with ES/STD-0802 or ES/STD-0803, Standards.

3.3.10 Back-Up Power

The contractor shall identify any built-in or optional power failure protection available with the equipment.

3.3.11 Perimeter Signal & Power Cables

Signal distribution cables for the FDS shall be mounted at the top of the inner perimeter fence. All cable runs from the top of the fence to sensors, pull boxes, etc. shall be carried in a steel conduit and buried where it leaves the fence. All cable runs from the perimeter to the equipment room and/or MCCP shall be carried in buried conduits. All conduits are to be rigid; rigid steel above ground, rigid PVC below ground.

If power is required on the perimeter for the FDS, the power cables shall be buried or run in rigid steel conduct along the outer perimeter fence.

All cables run from the perimeter to the common equipment room and/or Main Communication & Control Post (MCCP) shall be carried in buried conduits.

3.3.12 Sector Calibration Requirements

The FDS shall provide the capability to adjust the sensitivity thresholds remotely by sector. The contractor shall state the following requirements in the technical proposal:

a. number of personnel to complete the adjustments;

b. special calibration equipment (if required); and

c. length of time to adjust each sector's threshold.

3.3.13 Sector Alignment

A preferred sector may be made up of more than one FDS sector, however, the original boundaries must be maintained in order to coordinate with the MDS and CCTV subsystems. A preferred sector layout will be provided in the site specific documentation.

3.3.14 Alarm Display and Control

For each sector of the sensor system, the following functions shall be provided:

a. alarm annunciation (audible and visual);

b. alarm acknowledgement (common);

c. alarm cancellation;

d. sector mask;

e. sector secure;

f. sector test (enable and results displayed);

g. tamper annunciation (not necessarily sector related);

h. tamper acknowledge;

I. tamper cancel;

j. system failure annunciation (not necessarily sector related);

k. system failure acknowledge; and

l. system failure cancel.

A disable control shall be provided for the audible annunciator.

3.3.15 **Test**

The system shall incorporate a TEST capability activated from the remote control panel. The test function will permit the operator to verify correct operation of the complete system from the sensor to the annunciation panel. Any limitations on the test capabilities of the proposed system shall be clearly identified in the proposal.

3.3.16 **System Interface**

The sensor system shall be equipped with an interface providing for the complete status display and system control from a remote display and control panel.

It may not be necessary to provide a display and control panel if the interface requirements can be met via other terminal equipment.

3.3.17 **Interface Specification - Electrical**

The interface between the sensor processor and system controller shall be bidirectional. Each signal shall be available at the interface in either of the following forms:

a. Standard data link message following RS -232C specifications, or

b. Standard data link message following RS-485 specifications.

The interface between the system controller and the PIDS shall be bidirectional. Each Detection, Tamper or Jamming signal shall be available at the interface in one of the three following forms:

a. the equivalent of a dry relay closure for an output and be compatible with a dry relay contact closure for input,

b. Standard data link message following RS -232C specifications, or

c. Standard data link message following RS-485 specifications.

All RS232 or RS485 signals provided to, and received from, the PIDS must conform to either the Senstar-Stellar Sennet or StarCom protocols. Any driver required for another protocol will be the responsibility of the contractor.

3.3.18 **Interface Specification - Physical**

The interface shall be provided in one of two forms as follows:

a. barrier strip; or

b cable connector.

Where a cable connector is used, the contractor shall deliver both male and female components.

3.3.19 **Interface Specification - Functional**

The interface shall permit the remote control and display of the following functions:

a. Alarm annunciation;

b. Alarm acknowledgement;

c. Alarm cancel;

d. Sector mask;

e. Sector secure;

f. Sector test;

g. Sector tamper alarm annunciation;

h. Sector tamper acknowledge;

I. Sector tamper cancel; and

j. System fail annunciation.

Where additional annunciation and control functions are provided, these shall also be available at the interface.

3.4 Operational Requirements

3.4.1 General

The functional requirements of the FDS shall be in accordance with the ES/STD-0401, Standard.

3.4.2 Detection

The installed system shall detect an intruder with a mass of 45 kg or more using any of the following defeat methods employed around the inner perimeter fence.

Any swing or sliding gates forming part of the inner perimeter fence shall be provided permanent, continuous detection coverage.

3.4.2.1 Climbing Technique

The system shall detect any vigorous or careful climb by a climber having a mass of 45 Kg. or more which takes between zero and 7 seconds to get to the top of a minimum 3.60 metre high fence. Time is measured from the first point of contact with the fabric until the time when the top of the fence can be reached. Any attempt to breach the top of the fence must be detected.

3.4.2.2 Cutting Attempts

The system shall detect any cutting attempts using a minimum rate of one cut per 60 seconds.

3.4.2.3 Other Attempts

The system shall detect any valid target employing any method other than cutting which will damage or deform the inner perimeter fence.

3.4.3 Probability of Detection (P_d)

The FDS system shall provide continuous coverage of the specified detection zone using the identified detection criteria, and shall have, as a minimum, a statistical (P_d) as specified in Standard, ES/STD 0401.

3.4.4 Radiated Field / Proximity Detection

For systems which are mounted on the fence structure and which employ radiated field or proximity detection techniques to sense movement, the performance requirements shall be as defined in the Standard ES/STD-0404.

3.4.5 Dead Zones

Any point on the fence structure where reduced or non-detection can be repeated in two concurrent attempts shall be identified as a dead zone.

Any dead zone found in the system coverage during the 12-month period following system commissioning shall be corrected at the contractor's expense.

3.4.6 Nuisance Alarms

Nuisance Alarms are defined as those alarms which occur as a result of the detection of non-valid target within the specified environmental conditions. Nuisance Alarms may be caused by:

a. changes in atmospheric conditions;

b. Small animals (less than 45 kg);

c. Ground/air vibration;

d. Other observable causes (other than valid targets);

e. electrical or radio frequency interference;

f. Personnel, structures, or vehicles outside the detection zone; and

g. Alarms due to unknown causes but which cannot be classified as false alarms

Alarms caused by "Tests" are not classified as nuisance alarms.

Within the specified environmental conditions, the system's nuisance alarm rate shall not exceed:

a. 10 per 24 hour period;

b. monthly average of 0.60 alarms per day per sector; and

c. 7 alarms per sector in any one day.

The contractor shall state the expected nuisance alarm rate for this installation. This stated rate shall form part of any resulting contract. Persistent nuisance alarm rates in excess of the stated number during the 12-month period following commissioning shall necessitate corrective action by the contractor at his expense.

3.4.7 False Alarms

False Alarms are defined as those alarms which are caused by phenomena internal to the sensor. Such phenomena may include intermittent faults and transients due to changes in status of incoming power or may be related to the sensor's signal processing. The False Alarm Rate shall not exceed one per sector per year for the entire system.

3.4.8 Tamper/Fault Alarm

The sensor system shall be self-monitoring for short and open circuits, and shall generate an appropriate visual and audible sector alarm signal at the control panel whenever a transducer or associated interconnect circuit is shorted, cut, disconnected, or loss system power.

3.4.9 Masking

Each sector of the sensor system shall be capable of having its alarm indications rendered inoperative (masked) by a signal from the control panel, in order to permit maintenance or authorized traffic through the perimeter fence.

3.4.10 System Test

It must be possible to remotely test the operational status of the sensor system from the control panel by manually placing a sector or group of sectors in a "test" mode.

3.4.11 Fail-Safe

A power failure within the sensor, malfunction of processing or related circuitry, a short or open of any sensor cable or signal cable shall result in an output to the display and control system.

3.4.12 Sector Audio

The FDS must be able of providing an audio signal on a sector basis for testing and other maintenance purposes. A speaker and volume control shall also be included in the terminal equipment.

3.4.13 Perimeter Sectors

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

3.4.14 Sector Numbering

FDS sectors shall be numbered sequentially from one (1) to the sector total, beginning beside the main gate of the institution, and continuing in sequence clockwise around the perimeter.

3.5 Environmental Requirements

The FDS shall operate over the environmental conditions in accordance with the ES/STD-0401, Standard.

3.6 Power Requirements

The FDS shall use VAC power within the limits in accordance with the ES/STD-0401, Standard.

3.7 Installation Requirements

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

Depending on the configuration of the site or the sensor, the following installation methods shall be considered acceptable for the detection devices:

a. mounted directly on the inner perimeter fence;

b. mounted on a separate structure to be supplied by the contractor and installed on the existing fence; and

c. mounted on a freestanding structure, supplied by the contractor, which may or may not form a separate physical barrier in itself.

The sensor shall not reduce the effectiveness of existing perimeter facilities in deterring, impeding, detecting, or observing escape attempts.

Cables, pull boxes, distribution panels and all exposed equipment shall be secured against tamper and inmate attack. Steel enclosures shall be used throughout the installation; either locked or secured with a maximum of two (2) screws.

Cables, pull boxes, distribution panels and all exposed equipment shall be protected from damage due to lightning.

3.8 Documentation Requirements

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

3.9 Support Requirements

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

3.10 Training Requirements

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

4.0 QUALITY ASSURANCE

4.1 General

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

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

4.2 System Check Out

The FDS contractor shall provide, as a minimum, the following System Check Out Test results to the Design Authority prior to the scheduling of the on-site acceptance tests:

a. Sensitivity profile of each FDS sector, illustrating the sensor's normal status vs. the system's detection threshold level over a 24 hour period.

b. Climbs and simulated cutting attempts at two locations per fence panel around the entire perimeter.

c. Simulated wind test (for at least 30 seconds) for each FDS sector.

4.3 Acceptance Test Procedures

Based on a review of the System Check Out test results, the Design Authority will determine the appropriate number of locations to perform the official climb, cutting, and wind tests.

Special climbs may be attempted at Gate posts, mitred corners, and smaller-than-average fence panels to ensure 100% detection along the inner perimeter.

All climbs, cutting and wind tests must be successful before this section of the ATP is approved.

If any FDS sector requires the physical addition or relocation of sensor equipment or the adjustment of detection thresholds due to failed on-site tests, the System Check Out tests must be repeated for the failed sector(s).

5.0 DELIVERY

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

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

6.0 INTERFERENCE

Performance of the system shall not be affected by the use of standard electronic equipment used at the institution. Distance limits of standard electronic equipment shall be in accordance with ES/SOW-0101, Statement of Work.

7.0 SAFETY

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

Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/STD-0405
Revision 1
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ELECTRONICS ENGINEERING STANDARDS

PERIMETER INTRUSION DETECTION SYSTEM PERFORMANCE TESTING

Prepared by:

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1.0 INTRODUCTION

This standard describes tests to ensure that the Perimeter Intrusion Detection System (PIDS) sensors provide adequate system performance and detection capability. Sites use different fence detection systems (FDS) and motion detection systems (MDS) sensor installations which require specific methods of performance testing. This standard will provide the minimum testing required to ensure that the systems continue to perform as technically designed.

2.0 DAILY TESTS

Daily tests will verify that an alarm condition on the perimeter will cause an appropriate annunciation on the PIDS display unit.

2.1 Procedures

The following procedure should be completed on a daily basis, as a minimum. It is recommended that these procedures be carried out at the start of each new shift:

a. Activate the automatic TEST for each sector for both MDS and FDS sensors.

It is recommended that a "longitudinal walk" be done on a daily basis in addition to the automatic sector TEST, for those MDS systems which use buried cable technology.

A "longitudinal walk" is a walk by an average-built person at a steady pace midway between the two perimeter fences. With the MCCP operator monitoring the sectors, the walker starts at the first sector and walks the entire perimeter. The MCCP operator will note whether or not each sector goes into an alarm state as the walker progresses along the perimeter.

b. Verify that the visual indication and the audible alarm are activated as each system sector is tested. Verify that the maintenance data logger printout records the results.

c. ACKNOWLEDGE and CLEAR each alarm, if applicable.

d. Verify at the completion of the test that all FDS and MDS sectors are normal.

e. In the event of a fault, repeat the test for the affected sensor or sector. If the fault continues to occur, advise the appropriate staff and the maintenance personnel.

f. Record the date, time and the results of the test.

3.0 WEEKLY TESTS

Weekly tests will verify the detection capability of the PIDS subsystem. One person conducts physical tests in all sectors for each FDS and MDS sensor, while the MCCP operator verifies the occurrence of alarm indications.

3.1 Procedures

The following procedures should be completed weekly as a minimum and involves the MCCP operator and a person of average build used as the perimeter walker.

NOTE: Reliable radio contact is essential.

3.2 Test Preparation

A coloured plastic disc, approx.10 cm in diameter should be securely fastened at the centre of each of the outer fence panels. A four-colour sequence should be used and the colour sequence is maintained around the total perimeter. The colour sequence will repeat itself after every fourth panel.

The fence panels are eight feet wide. The perimeter will be tested every eight feet after the fourth week. The total perimeter will be tested at the completion an eight-week cycle.

The actual test locations should be predesignated to guarantee uniform and repeatable testing around the total perimeter. Assuming a colour sequence of "white, red, green and black," the testing locations will progress as follows:

Week	Location
1	At the first posts of all "WHITE" panels.
2	At the first posts of all "GREEN" panels.
3	At the first posts of all "RED" panels.
4	At the first posts of all "BLACK" panels.
5	At all "WHITE" markers.
6	At all "GREEN" markers.
7	At all "RED" markers.
8	At all "BLACK" markers.

3.3 Test Method

Testing of the MDS, FDS and CCTV systems on a weekly basis at each predesignated location should use the following procedure:

a. At the outer fence at the first predesignated test location for that week, the perimeter walker establishes communications with the MCCP operator.

b. When advised by the MCCP operator, the walker walks at a normal pace from one fence to the other in the most direct manner, normally at right angles to the fence.

c. At the inner fence panel, the walker conducts an FDS test using procedures which are recommended for that specific institution.

d. The MCCP operator verifies that an alarm is generated in the sector(s) where the MDS crossing or the FDS testing occurs. The operator also verifies whether the proper CCTV camera(s) is (are) switched to the monitors for assessment when the alarm is received.

e. The walker remains near the fence until advised by the MCCP operator to proceed along the inner or outer fence to the next location.

f. Repeat the above steps at all predesignated locations for that particular week until the full perimeter has been tested.

g. If no alarm has occurred during an MDS crossing or an FDS test, repeat the appropriate test at the same location and proceed to the next location.

h. Record the date and time of the weekly test in the alarm log for the PIDS system. Describe the weather conditions and list the results. Advise the appropriate staff and notify the maintenance personnel if any tests did not produce an alarm condition.

4.0 MONTHLY REVIEW AND TESTING

The monthly review includes technical and performance checks of the sensors or any sector(s) which have been exhibiting high False/Nuisance alarm rates' and/or a degradation in detection capabilities.

The performance of the sensors should be reviewed by the electronic maintenance staff as well as other staffs who have the responsibility of keeping the PIDS operating in an optimum condition. The review should include false alarms and nuisance alarm rates, daily and weekly test results, problems reported by the staff conducting these tests and any other performance reports which are available.

4.1 Test Procedures

The following procedures will verify the sensor's performance and identify problem areas.

Efficient performance of sensors requires certain site conditions for the detection zone. The following conditions apply to the PIDS sensors and which must be to be adhered to:

a. No vegetation growth within the detection zone and near the perimeter fences.

b. No puddles, streams or runoff across the detection zone.

c. No items likely to attract birds or animals (garbage, vegetation, puddles, trees, overhanging branches, rodents, etc.).

d. No hills, ditches, gullies, gravel pits, or other ground obstructions.

e. No snow accumulation greater than specified by the Technical Maintenance procedure for the sensor.

f. No wind blown objects such as weeds, paper, cardboard, boxes, bags, etc. between or around the perimeter barriers.

g. No flags, loose fencing, temporary structures and other loose junction boxes, wire, conduit or razor ribbon coil ends.

h. Vigorous shaking of the FDS fence should produce NO rattles, bangs or squeaks. Fabric tension should be sufficient to produce NO noise when shaken.

I. Site maintenance staff will perform regular visual inspections of the perimeter to verify whether or not the above guidelines are being followed. Any differences are to be reported to the Chief, Plant Maintenance for immediate action.

Note - Site maintenance must be completed before the remaining tests can be accomplished.

Electronic maintenance staff should always perform technical tests before physical tests are considered and after site maintenance has been completed. Refer to the applicable documentation (e.g., suppliers' manuals) for technical test procedures.

Physical tests are to verify the sensor's ability to detect valid targets in its detection field. It is unrealistic to attempt thorough testing of each sensor throughout the entire sector. Therefore, the number of tests and choice of locations will depend on the following guidelines:

a. A nominal three sets of tests should be conducted. Each set of tests shall include the appropriate styles described in following paragraphs as well as any other(s) which have been developed.

b. Areas which are known to be less sensitive due to sensor or site characteristics, or areas which are prone to attack due to site characteristics should be considered.

c. If there are no known areas which are more vulnerable than others, the locations of the tests shall be chosen at random.

4.3 Test Description

The following are descriptions of basic physical tests which may be employed to establish whether or not a sensor is operating correctly depending on the sensor type and the severity of the problem. Personnel involved in testing are encouraged to improvise; however, the basic tests should be employed.

MDS Test Styles

Crawl Test - Belly crawl slowly, as flat to the ground as possible at a rate of no less than three cm/sec (approx. 3.5 min fence to fence). Belly crawls may be with the body perpendicular or parallel to the sector centre line, whichever has been shown to be the most difficult for the sensor to detect. (This test is most appropriate for microwave detection systems).

Jump Test - This involves standing outside of the detection area and with a running start jumping as high as possible above and as far as possible over the detection area.

Running Test - This involves starting at the inner fence and running as fast as possible to the outer fence. The speed limit specified for most systems is 6m/sec (1 second fence to fence).

Walk Test - This involves walking at a normal pace from the inner fence to the outer fence.

Other Tests - Any test or procedures which have been established by CSC through DES or the manufacturers research and testing. Refer to applicable documentation.

FDS Test Styles

Climb Test - From a standing start near the fence, the tester must climb up the fence fabric until he can touch the upper rail of the fence. This climb should not take more than seven seconds to complete. It is essential to complete each climb even though an alarm may have been received prior to reaching the top since the position on the fence where the alarm is received will provide information to all observers, including inmates.

NOTE: Personnel involved in the climb tests should wear gloves and soft-soled shoes.

Cutting Test - Since cutting of the fence is impractical, the tapping test has been developed to simulate the cutting attack. The following procedure should be followed:

a. Tap the fence with a metal object four times at intervals of five sec. Wait 60 seconds before repeating the test at the next location.

b. For each test, record whether or not an alarm occurs and the number of taps required.

If an alarm does not occur, repeat the test using the Woven Wire Cut method described below. This test should be conducted with the same time intervals described above.

a. Weave a solid wire (eg. COAT HANGER) through the fabric in a firm manner, ensuring maximum contact between the fence fabric and the wire.

b. Cut the woven wire in a number of places as described above.

c. Note whether or not an alarm occurs.

d. Remove all pieces of wire from the fence after the test has been completed.

5.0 ATTACK SCENARIO TESTS

The attack scenario test procedure is an exhaustive check of the detection capability and sensor performance of all the components of the PIDS system. The intent is to provide site maintenance, technical and physical testing of the sensors on a seasonal basis. These tests should be scheduled to occur during average weather periods for each season and should be no more than four months or no less than two months apart.

The attack scenario should be preceded by a full monthly review and testing procedure outlined in the above paragraphs.

The procedures to be used during the attack scenario testing are free but should follow reasonable guidelines to duplicate methods which inmates might use during an actual escape. Items which are always under supervision or which are stored outside the institutional perimeter, or methods and tools which are normally not available to inmates should not be used in these tests.

It is recommended that the physical tests above be used as guidelines for the attack scenario tests.

- END OF TEXT -