Correctional Service Canada
Technical Services Branch
Electronics Systems

ES/SPEC-0800
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ELECTRONICS ENGINEERING SPECIFICATION

COMMUNICATIONS AND CONTROL SYSTEMS CONSOLE FOR FEDERAL CORRECTIONAL INSTITUTIONS

AUTHORITY

This Specification is approved by Correctional Service Canada for the procurement and Installation of Closed Circuit Television (CCTV) systems in Canadian federal correctional institutions.

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

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ABBREVIATIONS

The following abbreviations are used in this specification:

COTS	Commercial-Off-The-Shelf
CP	Control Post
CSA	Canadian Standards Association
CSC	Correctional Service Canada
DES	Director Engineering Services
EIA	Electronic Industries Association
GFE	Government Furnished Equipment
PVC	Polyvinyl Chloride
PW&GSC	Public Works & Government Services Canada
QA	Quality Assurance
RFP	Request for Proposal
SPEC	Specification
SOW	Statement of Work
UPS	Uninterruptable Power Supply

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 Communications and Control Consoles for federal correctional institutions.

1.2 Purpose

The primary purpose of the Communications and Control Console is to house various display and control panels for electronic security systems whose functions are centralized in a Control Post.

1.3 Commercial-Off-The-Self Equipment

The Communications and Control Console shall be commercial off-the-shelf (COTS) equipment with proven designs to the maximum extent possible. All new equipment shall meet the specified lifespan requirements.

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 Communications and Control Console design 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 Communications and Control Console.

1.6 Quantity of Equipment

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

2.0 APPLICABLE DOCUMENTS

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

ES/SOW-0101	Statement of Work for Electronic Systems for Correctional Service Canada Institutions.
ES/SOW-0102	Statement of Work for Quality Control for installation of Electronic Systems in Federal Correctional Institutions.
ES/STD-0801	Standard for Control Consoles
ES/STD-0802	Standard for Display and Control Panels
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 Communications and Control Console shall be designed in accordance with ES/STD-0801 Standard.

3.1.1 Period of Operation

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

3.2 Console Layout

The layout of the console is subject to the approval of the Design Authority. The contractor shall propose a layout taking into account the following human engineering considerations:

a. centralizing frequently used controls;

b. grouping common controls;

c. visibility; and

d. accessibility.

3.3 Mechanical Requirements

The construction of the Console shall be in accordance with the ES/STD-0801 Standard.

3.3.1 Accessibility

Each unit shall be modular and mounted so as to provide easy access from the rear of the console. It shall not be necessary to remove parts of other units in order to access a section for maintenance or minor adjustments.

3.3.2 Ventilation

Forced ventilation systems shall be used to control temperatures within the console. All air intakes shall be equipped with filters which are easily removed without disassembling equipment.

Motors used for ventilation and cooling system shall be of the totally enclosed type and shall be designed for continuous and unattended operation. Motor impellers and fans shall be enclosed or guarded to eliminate personnel hazards.

Ventilation motors shall not cause the console to vibrate.

The ventilation system shall not generate audible noise which exceeds the limits stated below when measured at the point of highest noise pressure level at a distance of three feet from the exterior of the console. Noise pressure limits are expressed in dB with a reference pressure of .00002 PA ($20MN/N^2$)

CENTRE FREQUENCY OF OCTAVE BANDS (Hz)								
63	125	250	500	1000	2000	4000	8000	16000
MAX. ALLOWABLE NOISE LEVEL (dB)								
79	65	55	48	43	37	36	34	30

3.4 Electrical Requirements

The electrical requirements shall be in accordance with the ES/STD-0801, Standard. Stranded copper wire for cabling shall be used for wiring which is normally flexed in use or servicing of the equipment. All other wire shall be solid copper. All jacketing shall be polyvinyl chloride (PVC).

3.4.1 Wiring Techniques

Conductors shall be combined into cables wherever possible and securely held by means of lacing tapes. Long rigid conductors or cable flexible conductors shall be securely anchored with cable clamps. All wiring techniques shall conform to the ES/SOW-0102, Statement of Work.

3.4.2 Wires, Cables, Conduits, Ducts

The contractor shall supply all necessary terminations, cross connection cabinets, conduits, wire and cabling and any other items that may be required for the satisfactory completion of the specified Communications and Control Console. All installation workmanship shall be performed in accordance with ES/SOW-0102, Statement of Work and all applicable national, provincial, and local electrical codes.

A wiring diagram shall be supplied in the Installation section of the Maintenance Manual to detail where module connections terminate and how wires are routed and terminated.

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

Connectors provided on the ends of any cable must mate with the corresponding connector on the equipment. Adapters from one type of connector to another are not acceptable.

3.5 Design Requirements

3.5.1 General

To the maximum practical extent, off-the-shelf equipment should be selected for use in the Communications and Control Console. 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.

3.5.2 Sabotage, Tampering and Survivability

The Communications and Control Console shall have high resistance to damage, destruction. All interconnecting service must be secure against tampering.

3.5.3 Human Factors

The Communications and Control Console which are used directly by staff (i.e., control panels, annunciators, etc.) shall conform with accepted principles of good human factors design.

3.5.4 Annunciation and Control Panels

Mounting space within control posts is usually limited and the problem of determining a suitable equipment mounting location is minimized if the control panels are small. Therefore, the designer should make maximum possible use of annunciation and control devices which combine two or more functions into a single unit (e.g., a lighted push-button instead of a separate light and an unlit push-button).

The Communications and Control Console may use Electronic Industries Association (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.

3.6 Environmental Requirements

The Communications and Control Console shall operate over the following indoor environmental conditions:

3.6.1 Temperature: 0° C to +50° C; and

3.6.2 Humidity: 0 to 90% relative, non-condensing.

3.7 **Power Requirements**

The Communications and Control Console shall use VAC power within the following limits:

3.7.1 Voltage: 120 VAC ±10%;

3.7.2 Frequency: 60 Hz ±1.5%;

3.7.3 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

3.7.4 Power: power consumption shall not exceed 100 watts.

3.8 **Installation Requirements**

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

3.9 **Documentation Requirements**

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

3.10 **Support Requirements**

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

3.11 **Training Requirements**

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

4.0 QUALITY ASSURANCE

4.1 General

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

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

5.0 DELIVERY

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

Delivery requirements of the Communications and Control Console equipment shall be in accordance with the ES/SOW-0102, Statement of Work.

6.0 INTERFERENCE

Performance of the Communications and Control Console shall not be affected by the use of standard electronic equipment used at the institution. Distance limits of standard electronic equipment shall be in accordance with the ES/SOW-0101, Statement of Work.

7.0 SAFETY

The Communications and Control Console shall meet the applicable Canadian Safety Association (CSA) standards.

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