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

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SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise indicated, all other terms and conditions of the Solicitation remain the same.

Ce document est par la présente révisé; sauf indication contraire, les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

Vendor/Firm Name and Address
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Issuing Office - Bureau de distribution
Electrical & Electronics Products Division
11 Laurier St./11, rue Laurier
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Gatineau, Québec K1A 0S5

Title - Sujet CCTV Equipment	
Solicitation No. - N° de l'invitation 21120-170532/A	**Amendment No. - N° modif.** 002
Client Reference No. - N° de référence du client 21120-170532	**Date** 2017-05-18
GETS Reference No. - N° de référence de SEAG PW-$$HN-465-72726	
File No. - N° de dossier hn465.21120-170532	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2017-06-07**	**Time Zone** **Fuseau horaire** Eastern Daylight Saving Time EDT
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☑ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Nadeau, Alexandra	**Buyer Id - Id de l'acheteur** hn465
Telephone No. - N° de téléphone (819) 420-2859 ( )	**FAX No. - N° de FAX** (819) 953-4944
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Canada

This amendment 002 is being raised:

- to provide updated maps for all sites;
- to revise the STR;
- to provide the requested pictures from the site visits;
- to provide Tunnels map at SMI, Perimeter conduit from Pe Sakastew and Bowden Block Diagram;
- to provide tilting pole specifications for tower installations;
- to correct the evaluation criteria.

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1) Please contact alexandra.nadeau@pwgsc.gc.ca for the updated maps for all sites and/or for the requested pictures from the bidder's at the WCHL Site Visit, SMI Tunnels map, Pe Sakastew perimeter conduit and Bowden block diagram. They have been sent directly to those who have attended the mandatory site visits.

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2) Please find attached to the amendment the revised STR and the specifications for the tilting poles for tower installations.

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3) Attachment 1 - Evaluation Criteria

Delete: In its entirety

Insert: Attachment 1 - Evaluation Criteria (pages 2-17 of this amendment)

ALL REMAINING TERMS AND CONDITIONS ARE UNCHANGED

ATTACHMENT 1

EVALUATION CRITERIA

1 Point Rated Technical Proposal Criteria

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

Point Rated Technical Proposal Criteria	Pts	Comments
1.1 Understanding of the Technical Requirements (a maximum of 45 points is available) Demonstrate understanding of the technical requirements of the system which must include sufficient detail such as preliminary drawings, diagrams, photographs and sketches showing system architecture, equipment configuration, and technical information / literature/brochure on products offered. The Bidder's Technical Proposal will be specifically reviewed to determine whether the proposed solution meets the requirements defined in the Statement of Technical Requirements (STR) and supporting documents. The Bidder should demonstrate that the requirements as identified in the STR and supporting documents have been met, by clearly describing how these will be achieved. (0 points) The proposal indicates that the Bidder does not understand the requirements identified in the STR and supporting documents. (35 points) The proposal indicates that the Bidder understands the main concept of what is required. The Bidder's solution meets the operability, environmental, reliability, maintainability, testing and validation requirements. (45 points) The proposal clearly indicates that the proposed solution exceeds the requirement in at least 2 instances that are specifically and uniquely identified in the Technical Proposal ***Minimum mandatory points required: 35**		

1.2 Quality Assurance and Acceptance Test Plans Description of the proposed quality assurance procedures/processes and acceptance test plan(s) to ensure quality requirements are met and how the Bidder intends to demonstrate to the Crown that the system functions correctly, both off site (Factory Acceptance Testing) and following on-site installation (Site Acceptance Testing). A detailed list of tests to be performed with pass/fail parameters should be provided. Maximum points are broken down as follows:		
1.2.1 Quality Assurance **(a maximum of 15 points is available)** How the Bidder intends to ensure quality requirements are met, a description of inspection, testing, and documentation procedures as well as quality metrics. (2 points per item) The Bidder will be awarded two points per element for clearly indicating how the proposal will meet each of the elements identified below to a limit of 15 points. The following is a list of elements pertaining to quality assurance. The proposal indicates: a) That the Bidder has quality assurance procedures and processes; b) That the results will be recorded/analyzed and conflicts will be resolved; c) When, how and by whom the quality requirements will be reviewed; d) How documents and data will be controlled; e) Relevant quality control processes for purchases; f) How the production, assembly and on-site installation processes will be controlled to ensure quality requirements are met; g) How measuring and test equipment is controlled and describes the format and test results to be provided; h) How non-conforming products are identified and controlled to prevent misuse until proper disposal. ***Minimum mandatory points required: 6**		
Sub-section Total		

1.2.2 Factory Acceptance Test Plan **(a maximum of 10 points is available)** How the Bidder intends to demonstrate to the Crown that the system functions correctly off site (Factory Acceptance Testing), a detailed list of tests to be performed with pass/fail parameters should be provided. (2 points per item) The Bidder will be awarded two points per item for clearly indicating how the proposal will meet each of the items identified below, to a limit of 10 points. The proposal indicates that the Bidder has: a) Confirmed the requirement for a test plan; b) Provided a test plan; c) Provided test sheets; d) Provided test sheets including pass/fail parameters; e) Provided test sheets, including specific parameters.		
Sub-section Total		
1.2.3 Site Acceptance Test Plan **(a maximum of 10 points is available)** How the Bidder intends to demonstrate to the Crown that the system functions correctly after installation (Site Acceptance Testing), a detailed list of tests to be performed with pass/fail parameters should be provided. (2 points per item) The Bidder will be awarded two points per item for clearly indicating how the proposal will meet each of the items identified above in a) through e) to a limit of 10 points. The proposal indicates that the Bidder has: a) Demonstrated the requirements for testing the system after installation (Site Acceptance Testing); b) Provided a test plan; c) Provided test sheets; d) Provided test sheets including pass/fail parameters; e) Provided test sheets, including specific parameters.		
Sub-Section Total		

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

2 Point Rated Project Management Proposal Criteria

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

Point Rated Project Management Proposal Criteria	Pts	Comments
2.1 Previous Project Management Experience Identification of the Bidder, project manager, project supervisor and technicians. Detailed description of the qualification and previous experience pertaining to similar projects in terms of size, tasks, clients, responsibilities etc. Maximum points are broken down as follows:		
2.1.1 Experience of the Bidder within the last four (4) years (a maximum of 10 points is available) Similar project(s) that have been successfully completed and have provided them with experience pertaining to the following elements. a) Similarity of project in terms of scope and/or clients; b) Dollar value over $100K; c) Installation; d) Training; e) Drawings; and f) Manuals. The proposal indicates that the Bidder has experience with: (0 points) - Three or less of the elements. (4 points) - Four of the elements. (8 points) - Five of the elements. (10 points) - All six elements.		
Sub-Section Total		

2.1.2 Range of experience within the last four (4) years in the design, supply, installation and integration of systems similar to those described in the Statement of Technical Requirements (STR). In instances where these items are not required the points will be adjusted accordingly (a maximum of 10 points is available) The proposal indicates that the Bidder has stated levels of experience in the design, supply, installation and integration of the systems similar to those described in the STR, as follows: (0 points) No stated experience. (4 points) Stated experience with private industry or Provincial Governments. (8 points) Stated experience with other Correctional Services or similar organizations. (10 points) Stated experience with Correctional Service Canada (CSC).		
Sub-Section Total		

2.1.3 Project Manager's (and Primary Back-up) Overall Experience (years, size of project & complexity) and Qualifications (a maximum of 12 points is available) The proposal should indicate that the designated Project Manager and Primary Back up Project Manager should both have: a) The stated levels of experience in the design, supply, installation and integration of systems similar to those described in the STR. b) Professional Certification(s) –at least one of PMP, PMI, MBA, P.Eng, or demonstrated equivalent certification. For each resource identified, the following documentation should be provided in the order described below: a) A detailed description, (including dates – Month and Year) the number of years of experience in the specified role for similar projects in terms of size, dollar value, complexity, tasks, clients, responsibilities etc. b) A copy of their certification, degree, diploma and /or demonstrated equivalent to demonstrate the criteria. (0 points) – Project Manager & Primary Back-Up Project Manager One or both lack experience with projects of similar size and complexity, regardless of professional certifications (4 points) – Project Manager & Primary Back-Up One or both have: i. Less than 4 years experience with projects of similar size and complexity; and ii. No professional certifications or demonstrated equivalents (6 points) – Project Manager & Primary Back-Up One or both have: i. Less than 4 years experience with projects of similar size and complexity; and ii. Professional certifications or demonstrated equivalents. (8 points) – Project Manager & Primary Back-Up Both have: i. Between 4 and 10 years experience with projects of similar size and complexity; and ii. Professional certifications or demonstrated equivalents. (12 points) – Project Manager & Primary Back-Up Both have i. Greater than 10 years experience with projects of similar size and complexity; and ii. Professional certifications or demonstrated equivalents. *Minimum mandatory points required: 4		
Sub-Section Total		

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

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

2.2 Project Management Structure and Procedures Project management structure and procedures describing the implementation of this project. Maximum points are broken down as follows:		
2.2.1 Project Management Organization and Responsibilities (a maximum of 10 points is available) This refers only to management personnel and the way that the Bidder plans to organize the project team for this contract. (0 points) The proposal indicates that the Bidder has: a) No project management organization in place, b) No plans identified to designate a separate project management team. (4 points) The proposal indicates that the Bidder has: a) No project management organization in place; b) A well-developed plan in place to set up a team of trained personnel. (8 points) The proposal indicates that the Bidder has: a) A project management organization/structure defined with 'matrix' personnel resources that can be made available to this project; b) Personnel are identified for the positions of Project Manager, the Project Supervisor, Technicians and Electricians. (10 points) The proposal indicates that the Bidder has: a) As above; plus b) A well-defined Project Management structure; c) Identified the Personnel that will be executing specific tasks; d) Clearly defined the responsibilities of these Personnel.		
Sub-Section Total		

2.2.2 Project Management Procedures **(a maximum of 12 points is available)** This criterion will rate the systems used by the Bidders to implement their project management approach. (0 points) The proposal indicates that Project Management (PM) implementation is not addressed. (4 points) The proposal indicates that PM implementation is addressed but the Bidder has not provided sufficient details to demonstrate that a fully functional PM system is in place. (8 points) The proposal indicates that PM implementation is addressed but the Bidder has not provided sufficient details to demonstrate that a fully functional PM system is in place. (12 points) - As above plus: a) Project management based on employment of Program Evaluation Review Technique (PERT) or Critical Path Method (CPM); b) Work breakdown structure is linked to project management; c) The PM system closely tracks status and progress of tasks.		.
Sub-Section Total		
2.3 Schedule, Milestones and Project Management Tools A project schedule of events for all deliverables with milestones and rationale of how realistic and achievable they are should be provided. Availability and usage of a Project Management specific tool and the capability and implementation of supporting a secure customer facing portal that provides real time access to project specific information, including schedules and all customer facing project drawings and documents. Maximum points are broken down as follows:		

2.3.1 Schedule/Milestones **(a maximum of 10 points is available)** A project schedule/schedule of events for all deliverables with milestones and rationale of how realistic and achievable they are including tools for addressing project slippage. a) Major milestones are identified. b) Logical sequence is proposed. c) Contingency time identified. d) Time estimates are realistic. (0 points) The proposal schedule only addresses 1 of the 4 areas identified above. (5 points) The proposal schedule only addresses 2 of the 4 areas identified above. (8 points) The proposal schedule addresses all of the 4 areas identified above. (10 points) a) The proposal schedule addresses all of the 4 areas identified above; and b) The proposed schedule contains milestones, significant contract events, projected delivery dates and production schedules.		
Sub-Section Total		
2.3.2 Project Management Tools **(a maximum of 10 points is available)** These criteria will rate the Bidder on their availability and usage of a Project Management (PM) specific tool and capability of supporting a secure customer facing portal provides real time access to project specific information, including schedules and all customer facing project drawings and documents. (0 points)The proposal indicates that the Bidder has not identified the PM specific software. (8 points)The proposal indicates that the Bidder has identified the specialized PM software but does not support a secure customer facing portal that provides real time access to project specific information. (10 points)The proposal indicates that the Bidder has identified the specialized PM software and supports a secure customer facing portal that provides real time access to project specific information including schedules, reports and meeting minutes.		
Sub-Section Total		

2.3.3 Project Risks Elements **(a maximum of 10 points is available)** A description of the project risks, excluding all technical risks previously identified, related to the proposed approach and processes for managing all project risk elements (such as resources, cost, schedule and all external elements) of the project detailing how well the Bidder understands the project risks and how they propose to mitigate them. (0 points) The proposal indicates that the Bidder has not clearly identified any: a) Non-technical risks associated with the project; and b) Non-technical risk mitigation plan. (4 points) The proposal indicates that the Bidder has clearly identified: a) The non-technical risks associated with the project, including impacts: i. Management ii. Schedule iii. Scope changes iv. Cost overruns v. Cash flow; and vi. Resource issues b) Their non-technical risk management process, c) That the Bidder has not provided a non-technical risk mitigation plan. (8 points) The proposal indicates that the Bidder has clearly identified: a) As above, plus, b) Their non-technical risk mitigation plan. (10 points) The proposal indicates that the Bidder has clearly identified: a) As above; plus b) The identified risks are appropriately associated with the Bidder, Subcontractor, Customer, Integration, or Equipment Performance; c) That the proposed non-technical mitigation approaches are closely aligned with the requirements of the project; d) The decision points are identified and aligned with the proposed risk mitigation approaches.		
Sub-Section Totals		
Total Project Management Proposal (maximum 100 points)		

3 Point Rated Support Proposal Criteria

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

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

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

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

CORRECTIONAL SERVICE CANADA | SERVICE CORRECTIONNEL CANADA

CHANGING LIVES. PROTECTING CANADIANS. | TRANSFORMONS DES VIES. PROTÉGEONS LES CANADIENS.

STATEMENT OF TECHNICAL REQUIREMENTS FOR THE CLOSED CIRCUIT TELEVISION RECORDING/ CAMERA UPGRADE BOWDEN ANNEX, OOHL / PE SAKASTEW / SASKATCHEWAN PENITENTIARY/ SMI / WCHL / DRUMHELLER MSU / OSKANA CCC / OSBORNE CCC

Prepared by: Jeff Mills
Regional Telecommunications
Electronics Officer - PRA

Reviewed by:
Manager,
Electronic Security Systems and Installation Engineer

Approved by:
Director,
Electronic Security Systems

TABLE OF CONTENTS

ABBREVIATIONS

The following abbreviations are used in this specification:

CER	Common Equipment Room
CSC	Correctional Service Canada
DA	Design Authority
RTEO	Regional Telecommunications and Electronics Officer
FDS	Fence Disturbance Detection System
PA	Public Address
CCTV	Close Circuit Television
ODTR	Optical Time Domain Reflectometer
IP	Internet Protocol
PIU	PIDS Integration Unit
PIDS	Perimeter Intrusion Detection System
SIDS	Supplementary Intrusion detection System
STR	Statement of Technical Requirements
MDS	Motion Detection System
FDS	Fence Detection System
MCCP	Main Communications and Control Post
ATP	Acceptance Test Plan
QTY	Quantity

DEFINITIONS

The following definitions are used throughout this specification:

Design Authority:	Director, Engineering Services, Correctional Service Canada (CSC)
Contract Authority:	Public Works & Government Services Canada
Contractor:	The Company selected as the successful bidder on the contract.

1.0 INTRODUCTION

1.1 General

CSC has a requirement for the installation and upgrade of the CCTV camera and recording infrastructure at Willow Cree Healing Lodge in Duck Lake, SK; Unit 8 (formerly Riverbend) in Prince Albert, SK; Okimaw Ohci Healing Lodge in Maple Creek, SK; Pe Sakastew in Hobbema, AB; Unit 7 (formerly Rockwood) in Stony Mountain, MB; Drumheller MSU in Drumheller, AB; Bowden Annex in Bowden, AB; Oskana CCC in Regina, SK; Osborne CCC in Winnipeg, MB. This STR will cover the technical requirements for the required work.

Work will have to be accomplished with minimum disruption to the daily operation and security of the institution.

1.2 Scope

The contractor will design, supply, install, integrate, test, and train operators/maintenance personnel on the installed equipment, as described in this STR. The contractor will provide acceptable documentation for the operation and the maintenance of this equipment.

1.3 Requirement

The purpose of this STR is to define the technical aspects for the removal of the existing redundant equipment, and the installation of new equipment.

This STR will indicate the extent to which both general and particular CSC specifications are applicable to the implementation of this requirement.

The primary purpose of the CCTV upgrade is to provide digital camera infrastructure and recording infrastructure to provide video archiving for a minimum of 7 days for all Minimum Security units and minimum 30 days for all CCC's.

1.4 Site Visits

The DA, or the authorized representative, shall coordinate a site visit, if requested by the contractor, and identify to the contractors the exact locations of equipment.

The visits may be useful to determine:

a. The space, power, spare cable pairs, etc. which are available at equipment mounting locations at these sites,

b. The conduit and cable requirements for power, video and control signals to the cameras and other equipment locations at these sites,

c. Condition of existing power, video and control cables, and,

d. General layout and operating environment at the site.

1.5 Technical Acceptability

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

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

2.0 APPLICABLE DOCUMENTS

2.1 Applicability

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

2.2 Applicable Standards and Specifications

a. ES/SOW-0101 Electronics Engineering Statement of Work - Procurement and Installation of Electronic Security Systems

b. ES/SOW-0102 Electronics Engineering Statement of Work - Quality Control for Procurement and Installation of Electronic Security Systems

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

d. ES/STD-0232 Electronics Engineering Standards – Outdoor Network Colour Dome Closed Circuit Television Camera

e. ES/SOW-0110 Electronics Engineering Statement of Work - Structured Cable Systems for Electronic Security Systems

f. ES/STD-0227 Electronics Engineering Standard – Colour Monitor

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

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

i. ES/STD-0804 Electronics Engineering Standard – Uninterruptable Power Supply Electronic Systems

2.3 Non-Applicable Specifications

a. ES/STD-0232 Environmental Requirements

2.4 Drawings

Site construction conceptual drawings **MAY** be available for review at a site visit.
The contractor shall be responsible for verifying the accuracy of the drawings and for recommending any changes to the DA. AutoCAD version may be provided on request.

2.5 Language

The language at all PRA region Institutions is English; all display and control information shall be in English. The operator, maintenance manuals and as-built drawings shall be provided in English. Training and documentation shall be provided as per Paragraphs 5.1 through 5.4.

3.0 OPERATIONAL CRITERIA

3.1 General

The operational parameters of the installed equipment shall meet the performance and operational requirements in accordance with the Specifications and Standards listed in paragraph 2.2.

4.0 TECHNICAL REQUIREMENTS

4.1 Concept of Operation

Video surveillance of designated areas is required to maintain a safe and secure environment for both staff and inmates. CCTV cameras will be installed / replaced at specified locations to provide the required video surveillance.
Video recording and archiving is required to maintain a safe and secure environment for both staff and inmates.

4.1.1 User Interfaces

All control functions such as selection and control of the Pan/Tilt/Zoom (PTZ) and spot monitor selection of a camera must be through the use of a mouse. Playback, recording, searching or

archiving of video to external media must be accomplished through the use of a mouse and keyboard on NVUS clients.

4.2 Existing Camera System

Willow Cree Healing Lodge has an existing analog/digital camera system consisting of 5 PTZ cameras (2 analog and 3 IP). 1 camera is located on a tower to the east of building B24; 1 camera is located on the SE corner of the main admin building B01; 1 camera is located on the SE corner of building B06; 1 camera is on a pole at the South end of the living units, this camera is new and utilizes IP protocol; 1 camera is on a pole at the NW corner of the new gymnasium building, this camera is new and utilizes IP protocol. All cameras are viewed at the Duty desk in the main Admin building and at the SIO office upstairs in the new Gymnasium building; there is currently a new, operational network video recording system at this site (in the new Gym building).

Unit 8 (Formerly Riverbend) has an existing analog camera system consisting of 4 PTZ cameras and 1 fixed camera, 1 PTZ on the North courtyard tower; 1 PTZ on the South courtyard tower; 1 PTZ in the V&C area; 1 PTZ on the NW corner of the main building; 1 fixed camera looking down stairs towards front entrance. Cameras are all viewed at the main control post in the main building on an LCD monitor. There is no recording system in use on this system and it should be noted that cameras will require integration with existing Pivot3 recording system in service at Saskatchewan Penitentiary as well as the MCCP in same.

Okimaw Ohci Healing Lodge has an existing analog/digital camera system consisting of 9 cameras: 1 PTZ camera viewing block two and three; 1 PTZ camera viewing the parking lot; 1 PTZ camera viewing block one and four; 1 PTZ camera at the front entrance; 1 PTZ camera at maintenance; 1 camera viewing the roadway gate; 3 fixed corner mount security cameras in B03; 2 monitors in front entrance control post; 1 monitor in B03; 1 monitor in SIO office room 158-B08. There is currently no network video recording system at this site

Pe Sakastew has an existing analog camera system consisting of 7 PTZ cameras: 1 camera viewing the courtyard on top of E building (exterior); 1 camera viewing the playground on W side of E building (V&C Exterior); 1 camera on Maintenance building W corner (exterior); 1 camera at front entrance by board room roof (exterior); 1 camera in V&C visiting area E building (interior); 1 camera on corner of Mechanical room SW corner E building (exterior); 1 camera PTZ in Back 40 on 35' pole. There is a 16 channel NVR installed at the main desk and one remote station connected to it in the SIO office.

Unit 7 (Formerly Rockwood) has an existing analog camera system consisting of 11 PTZ cameras: 2 cameras in the V&C area; 1 camera on the SW corner of the admin building; 1 camera on the SE corner of the admin building; 1 camera on the NW corner of the admin building; 1 camera on a tower by the ice rink; 1 camera by the parking lot of the admin building; 1

camera at the rear SW corner of the new 50 bed unit; 1 camera at the front NW corner of the new 50 bed unit; 1 camera at the front NE corner of the new 50 bed unit. All cameras attached to the 50 bed unit are newer IP based and all other cameras are analog. There are 5 small monitors at the duty desk on which 5 of the cameras can currently be viewed; all 7 cameras attached to the admin building can all be viewed in the back security office; None of the 4 cameras attached to the 50 bed unit are currently viewable at the security post (or anywhere else), there is a 50 micron fibre fed back to the security office in the admin building from the 50 bed unit that can be utilized to provide viewing of the 4 cameras on the 50 bed unit. There is currently no recording system in use at this unit; system requires integration to existing Pivot3 vSTAC equipment and MCCP within SMI.

Drumheller MSU has an existing analog camera system consisting of 4 PTZ cameras: 1 camera on a pole in front of the MSU main entrance; 1 camera on the rooftop of the MSU, 1 camera on a pole behind the multi-purpose building; 1 camera on the PWGSC building observing the ball diamond. There is no recording system in use at this building; system would require integration to Drumheller Pivot3 recording system as well as MCCP in same.

Oskana Community Correctional Center has an existing IP digital camera system consisting of 13 fixed and 1 PTZ camera: 1 camera by door U3-00; 1 camera on 2nd floor by door A-210; 1 camera on 2nd floor by door A-208; 1 camera at end of hall on 2nd floor; 1 camera in basement by door A-009; 1 camera in basement by door P-002; 1 camera in basement by door P-001; 1 camera in basement by door S3-0; 1 camera on main floor at front entrance; 1 camera on main floor in front entry vestibule; 1 camera on main floor by door A-106; 1 camera in the stairwell between 1st and 2nd floor; 1 camera outside viewing the back parking lot; 1 PTZ camera on back corner of building by parking lot. This site has already had its recording system upgraded to a Pivot3 vSTAC system.

Osborne Community Correctional Center has an existing IP digital camera system consisting of 9 fixed and 4 PTZ cameras: 1 PTZ camera outside on North of building; 1 PTZ camera outside on South of building; 1 PTZ camera outside by parking lot; 1 PTZ camera in the basement; 1 fixed camera at the basement stairs; 1 fixed camera in basement West rec area; 1 fixed camera in basement East; 1 fixed camera on main floor at main security area; 1 fixed camera on main floor East; 1 fixed camera on Main floor West; 1 fixed camera on Main floor South; 1 fixed camera on 2nd floor East; 1 fixed camera on 2nd floor West. The main entry Kiosk has a viewing station with a quad view; there is a maintenance viewing station in the basement server room. This site has already had a recording system upgraded to a Pivot3 vSTAC system.

4.2.1 Testing of Operating Equipment Characteristics

The contractor must test the operational characteristics of all existing equipment and systems, whose equipment is in proximity to where work will be carried out or which must be reused, prior to removal or installation of any equipment and provide a written record of those tests for the Design Authority.

The contractor must identify any operational deficiency of equipment or else risk being held accountable for system deficiencies during the commissioning period

4.2.2 Testing of Fibre Optic Cable

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

- Origin and destination of cable
- Light loss in dB over cable – pass/fail – dB
- Length of Cable in meters
- Pass/Fail

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

- Wire map – Pass/fail
- Propagation delay – Pass/fail
- Cable length – pass/fail – length
- Insertion loss – pass/fail- dB
- Return loss – pass/fail
- NEXT – pass/fail
- ELFEXT – pass/fail & a scoped picture of each termination

4.3 New System Installation

The contractor shall install a new Network video recording system equal to or exceeding CSC Electronics Engineering Standard ES/STD-0229 to accommodate 7 days (minimum) continuous recording time. At sites with existing Pivot3 network video recording systems do not require replacement, however may require expansion of existing capacity to accommodate recording requirements. (7 days minimum for minimum security and healing lodges, 30 days minimum for CCC's)

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

The existing CCTV system shall remain operational throughout the installation of the new equipment. All integration shall be coordinated with the institution's operational management in accordance to an Integration Plan which requires prior approval by the Technical Authority.

The contractor shall avoid, as much as possible, the use of conduit in inmate accessible areas. The contractor shall utilize existing pipe chases, existing conduit in the walls, etc., where possible. New lengths of conduit shall be of the minimum necessary length. The contractor shall

install rigid conduit in all ranges. All newly installed conduits carrying video for this project shall be identified, except in inmate accessible areas, by prominent labels with **BRIGHT GREEN** wording. These labels shall be located at each end of the conduit run, on both sides of any penetration of a wall, and at 3.5 meter points along its length. Patching and painting shall be done around new conduit installations, however painting the conduit is not required.

All data cables and data jumper cables (minimum 23 gauge), jacks and connector boots installed as part of this project, whether CAT 6 or fibre optic, shall be BRIGHT GREEN in colour. All cables shall be FT4 rated. All patch cables shall be labeled at each end with **mechanically produced labels** designed specifically for cable labeling. All fibre optic strands shall be terminated with connectors.

All patch cables are to be stranded cable with RJ45 connectors. All installed runs of CAT6 cable are to be solid conductor cable and terminated into patch panels in equipment racks. Cameras shall be connected directly to installed cable either terminated with a TIA compliant CAT6 RJ45 solid conductor connector or a TIA compliant factory assembled stranded CAT6 pigtail with RJ45 connector on the end of the installed cable. Faceplates and patch cables for camera connections shall not be acceptable.

An installed cable is any cable that is run through a conduit, run from one area in a building to another area or any cable that travels farther than the adjacent equipment cabinet in a series of cabinets. Note: Equipment cabinets must be abutting and without side panels to be considered adjacent.

Rigid conduit shall be used in all inmate accessible areas e.g. walkways, low ceilings, and gymnasiums.

Media converters for long run outdoor connections may be either temperature hardened or installed in heated enclosures.

All CAT6 premises wiring solutions shall come with a minimum 10 year warranty on the connectivity between terminations on all premises cabling solutions deployed.

Willow Cree Healing Lodge: 2 exterior cameras to be replaced with New PTZ; 1 new 360 cameras to be installed in principal entry building B01; 1 new PTZ to be installed in visiting area building B01; 2 new monitors and NVUS to be supplied and installed at the main duty desk; 3 existing PTZ to remain as is. All cameras to be viewed at the main duty desk and at the SIO office upstairs in the new gymnasium building. This site will require some new Fibre installation. All cameras to be integrated to existing network video recording system. Existing network cabling in new gym building may be reused. Supply and install Software and sufficient licenses to view 360 camera in full PTZ mode. Ensure subsequent recording capacity is minimum 7 days.

Unit 8 (Formerly Riverbend): Building F25 - 1 interior PTZ camera in visiting area to be replaced with New PTZ; 1 interior fixed camera in front entrance to be replaced with New fixed CCTV. Exterior Grounds - 2 exterior tower cameras to be replaced with New PTZ; 1 exterior building mount camera on F25 to be replaced with New PTZ; 1 new installation PTZ to be installed o back

of building F72; 25' tilting pole tower to be installed in SE corner of field area with new PTZ low light capable camera. All cameras to be viewed at the main control post in Unit 8 and MCCP at the main Institution. The main control post in building F25 will require new replacement monitors and NVUS; a new (minimum) 19" monitor and NVUS to be installed in Correctional Supervisors office, Building F25. There is no recording system in use on this unit and it should be noted that cameras will require integration with existing Pivot3 recording system in service at Saskatchewan Penitentiary as well as MCCP in the same with viewing capability added to MCCP as well. If required the existing Pivot3 is to be expanded to maintain minimum 7 day recording time when taking into account the addition of new cameras. This site will require new Fibre installation. There is existing spare fibre in the new link from Unit 8 to the main institution.
Saskatchewan Penitentiary Main Institution Additions:

- supply and install 8 new fixed cameras in kitchen area of building B11
- Supply and install 1 new PTZ in kitchen area of building B11
- Supply and install 1 new monitor/NVUS station in kitchen supervisor's office
- integrate kitchen CCTV to fibre rack in room 1277 of kitchen (B11)
- Supply and install new Fixed corner mount observation cell camera in room 656 of Healthcare building B12
- Integrate new healthcare camera to fibre rack in room 642 of building B12

Okimaw Ohci Healing Lodge: Building B08 – 2 New Fixed CCTV to be installed in room 142; 1 new PTZ to be installed outside door 127; 1 new fixed CCTV to be installed in laundry room 006; 1 new 360 to be installed in Front entrance area; 1 new 360 to be installed in kitchen Rm 144; 1 new 360 to be installed in basement hallway 012
Exterior Grounds - 5 exterior PTZ cameras to be replaced with new PTZ cameras; 1 new fixed IR / Low-light fixed CCTV to be installed viewing front gate area
Living Lodge B03 - 3 corner mount observation cameras to be replaced in Building B03 room 103, 105 and living area; 2 new monitors and NVUS to be installed in office room 106 to view these 3 cameras only.
Building B09 – 6 fixed CCTV to be installed (3 per floor – all new installation)
All cameras to be viewed at the main control post utilizing two new (minimum) 19" LED monitors configured in Quad view with a new NVUS. 2 observation cameras to be viewed in main control post and block 1 office only. The SIO office will require a new monitor and NVUS and capability to review recorded video.
Supply and install software to view 360 cameras in PTZ mode.
New Network Video recording system required to be supplied, installed and integrated. This site may have spare fibre available, however new fibre will need to be installed

Pe Sakastew:

- Supply and replace 3 exterior cameras with new PTZ: Lodge E: outside E140, outside E120. Maintenance Building M: Outside M122;
- Supply and install 1 new 360 cameras in principal entry of Lodge E ;
- Supply and install new PTZ in visiting area E140, Lodge E;
- Remove three cameras as indicated on site plan;
- Supply and install 3 new PTZ: 1 on NW light standard, 1 on top of ceremonial lodge C, 1 on fence wall on E corner of building Lodge E
- Supply and install new fixed camera in area P101 of building P

- Supply and install 2 new LED monitors and NVUS for main control post in building Lodge E
- Supply and install new LED monitor and NVUS in SIO office, room E129
- Supply and install new fibre
- Supply, install and integrate new digital network video Recording system
- All cameras to be viewed and controlled at the main duty desk and the CM office

Unit 7 (Formerly Rockwood):

- Supply and replace 2 exterior tower PTZ cameras, existing analog direct burial coax to SE tower not required to be removed, however a new path will need to be resolved to this install.
- Supply and replace 3 exterior PTZ cameras on top of Building F34 (1 removal/relocate, 2 replacement)
- Supply and install 5 new PTZ on outside of building H26 Lowering front entrance camera to clear overhang (1 camera remove/relocate, 2 new installations, 2 replacements)
- Integrate building H26 CCTV back to F34 for viewing (Existing fibre link available)
- Supply and install new 360 camera (new install) in front entrance area F34
- Supply and replace 2 visit area cameras with new PTZ
- Supply and install 4 new LED monitors and NVUS in control post of F34 (all new cameras viewable) and rack room 226 (2 per location)
- Supply and install new LED monitor and NVUS in Room 238 (SIO), building F34 (all new cameras viewable/download)
- Supply and install new fibre
- Integrate CCTV system to SMI Main institution Interconnected to existing Pivot3 network recording system in basement of building A1.
- All new cameras to be viewable at MCCP (main)

<u>Stony Mountain Main Institution:</u>

- Supply and install 6 new fixed cameras in lifers lounge area of B6 (1 at top of stairwell, 5 in lifers lounge area) and Integrate to fibre rack in attic of B6 (all cameras viewable in MCCP)

Drumheller MSU:

- Supply and replace 4 exterior PTZ cameras
- Supply and replace 1 exterior PTZ IR illuminated camera on back of PWGSC building A-01
- Supply and install 1 new PTZ on outside of building A42
- Supply and install New IR Illuminated PTZ on a 25' pole at NE side of building A42 (pole specs provided)
- Supply and install 1 new PTZ on a pole at NE side of building A42
- Supply and install new PTZ camera in building A23, room 100
- Supply and install New LED monitor and NVUS in building A23, room 118 (all new cameras viewable)
- Supply and install new LED monitor and NVUS in SIO office for MSU (all new cameras viewable and downloadable)
- Supply and install new fibre link from building A42 to building A23 room 109 rack location (fibre link to main goes from here)
- Integrate CCTV system to Drumheller Main institution Interconnected to existing Pivot3 vSTAC in building B03, room 128
- All new cameras to be viewable at MCCP (main)

Oskana Community Correctional Center: Main Floor – 1 interior stairwell camera to be replaced with new Fixed; 1 interior camera to be moved in Visitor area and replaced with new 360; 1 external fixed to be moved from front entrance to vestibule area; 1 exterior front entry fixed to be replaced with 360 camera; 1 exterior PTZ at rear to be replaced with new PTZ; 1 exterior fixed at rear to be replaced with new 360; 1 new 360 to be installed on south side exterior wall (side entrance)
2nd Floor – 4 interior cameras to replaced with new Fixed.
Basement – 4 interior cameras to be replaced with new Fixed. Front Entrance control post will require 2 new (minimum) 19" LED monitors and associated NVUS. This site has an existing Pivot3 vSTAC video recording system which will require expansion to maintain minimum 30 days recording capacity for all cameras.
Supply, install and configure Software and required licenses to view 360 cameras in PTZ mode.
Existing CAT6is assumed serviceable and can be reused.

Osborne Community Correctional Center:

- Supply and replace 4 interior cameras on main floor with new fixed CCTV on main floor
- Supply and replace 3 new external PTZ cameras on outside of main building
- Supply and install 1 new fixed camera observing back stairwell 2nd floor
- Supply and install 2 new LED monitors and NVUS at front reception desk
- Supply and install 1 new LED monitor and NVUS in Supervisor's office (full playback and download capability)
- Supply and replace 2 new fixed cameras on 2nd floor
- Supply and install 1 new fixed camera on 2nd floor rear stairwell
- Supply and replace 3 new fixed cameras in basement level
- Supply and replace 1 new PTZ camera in basement level
- Integrate all cameras to existing Pivot3 vSTAC network recording system
- All cameras to be viewed at reception post and supervisors office
- Supply and install new fibre as required
- Supply and install 2 new fixed CCTV on main floor stairwell
- Supply and install new 360 camera in 2nd floor open area
- Supply and install new fixed camera for 2nd floor stairwell observing landing for door 201 and main entrance
- This site has an existing Pivot3 vSTAC video recording system.
- Supply, install and configure Software and required licenses to view 360 cameras in PTZ mode
- This site may require some new fibre installation, existing CAT6 is assumed serviceable and can be reused

4.4 Removal of Equipment and Cables

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

4.4.1 Disposition

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

4.4.2 Inventory List

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

4.5 Equipment Racks

The contractor must supply new, lockable, equipment cabinets for the Network Video Recorders in all locations where required. The contractor is responsible for all costs associated to include sufficient cooling for all CCTV hardware. The contractor must provide a solution which includes venting through the exterior wall of the room

4.6 Cameras

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Each type of camera provided must meet or exceed all operating specifications listed associated Electronics Engineering Standards unless specifically otherwise stated in this statement of technical requirement.

The environmental, power, mechanical and technical requirements for the fixed dome cameras are specified in ES/STD-0232 in addition all fixed domes are to be equipped with an automatically removable infrared-cut filter.

Types:
New 360: new digital 360 degree continuous viewing, vandal resistant outdoor dome cameras with minimum 9 megapixels @ 15fps and H.264 Quad stream capability.

New Fixed: Fixed Full HD, vandal resistant dome network camera with multiple H264 streaming and minimum 1080p resolution @ 60fps; high low light sensitivity allowing color video at less than .01 lux

New PTZ: Weather resistant PTZ dome with H264 streaming and minimum 720p HD resolution @ 30fps.

New Corner Mount: No grip, anchor free, vandal resistant housing with integrated IR illumination

Analogue cameras are NOT acceptable for any new installation.

All new cameras shall include a current Genetec Omnicast camera license and a current Genetec Omnicast failover license.

All new 360 cameras must be viewable in full PTZ mode with software and required licenses.

4.7 Camera Power Supplies

All new CCTV cameras must be powered via PoE over the interconnecting Ethernet cable, outdoor PTZ cameras may be powered by separate rack mount PoE, PoE+ or PoE++ injecting power supplies located at the closest NODE or electronics equipment cabinet to the camera. It is preferred all cameras are powered via PoE directly from the supporting network switch. Where separate PoE, PoE+ and PoE++ injectors are necessary they must be securely rack mounted, if more than 4 PoE injectors are necessary in a cabinet, they must be mounted into a manufacturer designed chassis designed specifically to host the injectors and reduce cabinet density. All exceptions must receive approval by the Technical Authority.

Where exceptions are approved by the Design Authority, the contractor must supply and install camera power supplies that must provide the required voltage and amperage to power the cameras. The power supplies must be installed in the electronic equipment rooms or in a secure location identified by the Technical Authority.

4.8 Expandability

It shall be possible to expand the system beyond the originally installed capacity through the installation of additional hardware. The system expandability shall not be limited in this regard. It shall be possible to use the digital backbone for other applications in the future, such as Voice Paging, Voice Intercom, Access Control, Door Control, etc. These systems may be installed by a different manufacturer than installed the original IP video system. A minimum of 50% spare capacity is required for expandability on the new distribution.

4.9 Network Architecture

4.9.1 General

CSC proposes to deploy an upgraded network infrastructure capable of providing integrated support for multiple Electronic Security System (ESS) sub systems. For this deployment, this network infrastructure must support the deployment of CCTV cameras and associated client computers. The system must be expandable to scale to support additions to this CCTV net work infrastructure and/or addition of further ESS sub-systems within the institution as required in the future. This network infrastructure will provide an integrated, end-to-end

"virtualized" architecture for the systems connected to it, using state of the art techniques for the network operation and configuration as described in sections below

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

4.9.2 Network Traffic

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

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

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

4.9.3 Inter-switch Traffic

The network infrastructure must provide an open system, multi-vendor capable, communication environment utilizing IEEE 802.1aq Shortest Path Bridging (SPB) to forward and control traffic between switches

4.9.4 Switch Configuration

4.9.4.1 Capacity

The network infrastructure must consist of a Core network infrastructure in the main Communications equipment room and Edge switches to be built primarily from stackable 24 or 48-port switch devices as range capacities demand

4.9.4.2 Optimal Configuration for Sparing

The contractor is responsible for taking all steps to minimize the number of network equipment devices to minimize sparing requirements

4.9.4.3 Quality of Service

All switches must include QoS (Quality of Service) and security management capabilities. Each switch must have the ability to classify, mark and prioritize traffic

into priority queues, and/or weighted round robin queues on every port, and maintain QoS across the virtual / stack backplane. Classification controls and ACL (Access Control List) strategies must include the ability to sort traffic based on: MAC Address, 802.1Q VLAN Identification (VID), IP address, TCP/UDP Ports, CoS (Class of Service), ToS (Type of Service), and DSCP (Differentiated Services Code Point).

4.9.4.4 **Traffic Segregation**

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

4.9.4.5 **Network Topology**

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

4.9.4.6 **Switch Mounting Configuration**

All network switches within the network infrastructure must be mountable in 19" mounting rail racks, and the switches must not exceed the depth of communication racks and cabinets.

4.9.5 **Network Access Control and Security**

For network access control and security, the network system must provide software for automatic edge device authentication to ensure edge devices are compatible devices for installation, manage device permissions and monitor the health of connected devices. All network switches must be capable of network access control (NAC) via device authentication and IEE802.1x Port - based NAC, and include a management GUI interface for maintenance equipment. Where deployment of the NAC authentication mechanism requires the installation of a server for its functionality this MUST be provided by the contractor.

Each switch must support end-to-end (system-wide) network infrastructure support for a flexible and robust, optimally high availability and reliable (Best in class mean time between failure) network (that is always on), with high throughput (1Gbp) and providing a lossless environment with lowest latency (<4ms) for an evolving, high performance CSC institution data center environment.

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

Technical Requirements:

- 350 W, 120 V power supply; POE switches must be able to concurrently deliver up to POE+ port
- Must support up to 50 Ethernet ports (48 port version)
- Must provide software support for IPv4 and IPv6

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

4.9.6 Core Network

The core network must consist of a switch cluster, with a minimum of two L2/ L3 switches acting as one logical switch, providing active-active switch operation and linkage capability to be located in the main Communications Equipment Room. This switch cluster must provide high availability connectivity and performance utilizing active-active links to each connected Switching Node, and provide overall management of the SPB network. Thus, if one core switch becomes inoperable (maintenance update, equipment failure) bandwidth is dropped by a factor of 50%, but the second unit maintains 100% of the connectivity requirement and maintains uninterrupted operation of the overall network.

Core Switches must include clustering capabilities, whereby the physical core switches can be logically combined to appear as a single L2 switch, from the perspective of any edge switch or switch stack, and from any multi-NIC equipped server or appliance. These 'virtual' links between the edge and the core cluster must be Active-Active (i.e. spanning tree, and other loop avoidance or hot-standby methods must be disabled), load sharing, and capable of scaling up to a 8 physical interfaces, spread across a stack (or separate module slots in the event of a chassis based core switch), bound into a single virtual trunk. It is imperative that service outages normally associated with network disruption, such as the restart, module alteration, power outage, or software/firmware reload of a single core switch does not disrupt the flow of traffic through the entire virtual / clustered core.

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

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

Each of the core-switch cluster switches must support a minimum of 1 Gbps wire speed, (with migration option for 10Gb future uplinks), and must provide hot-swappable power supplies with redundant fans.

4.9.7 Edge Network

The edge switches must be stackable 48 (or where appropriate 24) port network switches utilizing 802.1aq SPB allowing for ease of future expansion of the network infrastructure and the capability for multiple connections into different switches in the stack utilizing load balanced network paths to provide an extra level of resiliency within the network in case of any switch failure. This provides flexible scalability for connectivity of future subsystems and equipment.

Each stacked switch must be hot swappable such that any failed unit within the associated stacked switches can be replaced without impact to the rest of the network operation and when replaced the system must provide automated self-configuration such that the replaced switch assumes its prior configuration and operation without need for manual operator configuration.

The edge switches must provide:

a) Minimum of L2+ switching
b) 10/100/1000 Mbps switching
c) 1 Gbs SFP+ uplinks (with migration option for 10Gb future uplinks) resilient, always on connectivity.
d) Wire speed performance and non-blocking throughput to support a variety of applications including requirements for low latency, high bandwidth, reliable video surveillance.
e) Field replaceable redundant power supplies for increased resilience.
f) Maximum POE wattage to support CCTV surveillance cameras deployed with capacity for further additions.
g) Flexible support for IEE 802.3af POE and IEEE 802.3at POE+ devices per port, optimized for video surveillance (including PTZ devices, HD)
h) Provide one-touch edge provisioning for edge devices with any move, add or change communicated automatically throughout the network infrastructure.
i) Capability (via stackable functionality) to add further network capacity as required without impacting current operational switching.
j) Support IEEE 802.1aq SPB
k) Advanced QoS and prioritization
l) Support for both IPv4 and IPv6 management addresses

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

4.10 Network Video Recorder System

4.10.1 General

The term "NVRS" refer to a "Network Video Recording System" consisting of a video directory, video archivers and video storage. RAID redundancy may be used in the directories, archivers

or for virtualization of both directories and archivers over redundant appliances. Video storage is detailed below. The provided NVR must be a Genetec certified storage solution.
(See cooling requirements, Section 4.16, for identified Room/rack locations)

4.10.2 Directory Servers

The provided NVR must be controlled by contractor provided, installed and integrated dual redundant directory servers operating the Genetec Omnicast 4.8 VMS. Each directory must mirror the sister directory and in the event of a directory failure, the mate directory must seamlessly continue to manage all video from the CCTV network to the video archivers. Each directory must be equipped with as a minimum:

1. Dual redundant power supplies, each supply to be hot swappable
2. Minimum Intel Core i7 3770 4 core processor or better
3. Minimum 16Gb DD3 RAM
4. Minimum 2 x 256Gb SATA3 SSD configured in RAID1
5. Minimum 2 x 1Gb Ethernet NICs
6. Minimum 1 x 16x DVD +/- RW drive

4.10.3 Failover Mode

The provided NVR must use the Genetec failover feature. A failover array must be provided at a ratio of 2:10 (2 failover arrays for every 10 active arrays). If an array experiences a failure or if more than 33% of the drives in an array experience failures, or more than 33% of the drives are removed or switch to off-line status, the entire array must automatically switch to off-line status and all cameras being recorded on the array must seamlessly switch to a failover array with no loss of video recording.

4.10.4 Storage Capacity and Compression Format

The compression method must be H.264 Compression with sufficient capacity to provide minimum 7 days archive for all cameras (except 30 days for all CCC installations)

4.10.5 Required Server and SAN Storage Functionality

The hardware platform must have the ability to run video management applications concurrently with shared storage on a common hardware platform using the VMware vSphere Hypervisor whereby;

a) Separate physical VMS servers are not required.
b) Separate physical failover VMS servers are not required.
c) Power and cooling for both server and storage functionality is contained within a common 2U platform.
d) Rack and floor space for both server and storage functionality is contained within a common 2U platform.

e) Applications running on each integrated platform must have access to the combined capacity of the storage in all platforms that are clustered together.
f) Applications running on each integrated platform must have access to the combined bandwidth of the storage in all platforms that are clustered together.
g) The integrated Server/SAN platform must support automated application recovery to reduce downtime.
h) Both storage and server operations must be resilient to an appliance failure.
i) Failover of the server application must be automatic in the case of an appliance failure
j) The integrated Server/SAN platform must support Windows Server and Linux operating system environments.
k) The platform must support Microsoft Storage Server for optional NAS share access.
l) The platform must support Linux running SAMBA for optional NAS share access.

4.10.6 Basic Storage Configuration

a) Storage must be addressable by up to 128 external servers or hosts.
b) Storage must be IP attached via Gigabit Ethernet using commonly available networking configurations and equipment.
c) Storage must conform throughout to the iSCSI standard.
d) Storage must be SATA-based for cost effectiveness.
e) System must support SLC solid-state cache for database performance.
f) Storage system must be UL and CE certified.
g) Storage system must conform to and be deployable in industry standard 19" rack configurations.
h) Storage system must support at least 24TB raw storage per 2U (3.5") of vertical rack space.

4.10.7 Availability

a) Storage system must support high availability with no single point of failure causing loss of data or interrupting access to data.
b) Storage must protect data for up to five simultaneous disk failures with no loss of data or loss of access to data.
c) Storage must protect against loss of a storage appliance or controller with no loss of data or loss of access to data.
d) Storage must protect against loss of a networking path between servers and storage, including network interface card, cables and switches, with the ability Storage must support dynamic replacement of hardware components without interrupting access to data.
e) Storage must support the ability to replace disk drives without the need to interrupt data access.
f) Storage must support the ability to replace power supplies without the need to interrupt data access.
g) Storage must support the ability to replace fan modules without the need to

interrupt data access.

h) Storage must support the ability to replace entire appliances without the need to interrupt data access.
i) Storage must support the ability to replace network switches without the need to interrupt data access.
j) Storage must support dynamic management features to ensure continuous data access.
k) Storage must be expandable by the addition of disk capacity without the need to interrupt data access.
l) Storage must be expandable by the addition of network bandwidth without the need to interrupt data access.
m) Storage must support the ability to dynamically alter data protection options (RAID level) without the need to interrupt data access to the affected data.
n) Storage must provide flexible, selectable data protection options.
o) Storage must provide enhanced RAID 6 data protection for critical data protection environments.
p) Storage must provide enhanced RAID 5 data protection for storage-efficient protection.
q) Storage must provide enhanced RAID 1 data protection for higher 10 performance data protection.
r) Data protection options must be selectable and configurable on a volume-by• volume basis.
s) Storage system must provide advanced data recovery methods to maximize data availability.
t) Storage systems must include dynamic sparing capability to allow immediate rebuilding of failed drives
u) System must conduct background disk data verification to ensure maximum data availability
v) System must have the ability to prioritize data recovery versus data access and to have that priority dynamically alterable before or during data recovery
w) System must have the ability to prioritize recovery tasks by volume
x) System must provide predictive sparing to identify poor performing drives in advance of failure

4.10.8 **Scalability and Performance**

a) Storage system must be scalable in capacity, supporting a single volume growth to 288TB;
b) Capacity must be added to the system in modular increments of 12 or 24TB.
c) Capacity scaling must be non-disruptive allowing new capacity to be dynamically added to the system without interrupting access to data.
d) Physical capacity added to the system must be configurable into new volumes or added to existing defined volumes without the need to interrupt data access

e) Storage 1/0 performance must be scalable
f) Support up to 12 controllers; complete Active/Active.
g) System must support a minimum throughput of 2 Gigabits per second and 30,000 IOs per second.
h) System must allow additional bandwidth and 10 processing to be configured scaling to at least 24 Gigabits per second throughput and 360, 000 IOs per second.
i) System must allow scaling of solid-state write cache to 600GB
j) Addition of 110 performance capability must be non-disruptive and not require data access to be interrupted
k) Storage system must support multiple storage hosts without the requirement for additional host software license charges
l) Storage system must support future capacity expansion with newer technology
m) System must provide a solid-state write-c ache that scales across appliances. The system write-cache must protect in-flight data against loss of a complete appliance

4.10.9 **Management**

a) The system must provide an easy-to-use graphical management capability
b) The system must self-discover its hardware configuration
c) The system must provide capacity and performance usage statistics
d) The system must allow dynamic configuration of volumes
e) The system must allow volume attributes including RAID type and volume size to be dynamically alterable without interruption of data access
f) The system must have the ability to prioritize data migration versus data access and to have that priority dynamically alterable before and during data migration
g) The system must provide administrator security controls
h) The system must include a scriptable Command Line Interface
i) The system must include advanced maintenance and manageability features.
j) The system must log configuration changes and system events.
k) The system must detect drive failures and graphically (via GUI) and physically (via lights) identify the failing drive.
l) The system must provide an audible al arm option.
m) The system must detect controller failures and graphically identify the failing controller.
n) The system must perform predictive failure assessment of disk drives to proactively manage low performing disk drives
o) Simple Network Management Protocol (SNMP) traps have been increased thus providing more remote notification alarms to the PIDS and FAAS Display Units in the MCCP

4.10.10 **Directory Servers**

The provided NV R must be controlled by contractor provided, installed and integrated dual redundant directory servers operating the Genetec Omnicast VMS. Each directory must mirror the sister directory and in the event of a directory failure, the m ate directory must seamlessly continue to manage all video from the CCTV network to the video archivers. Each directory server must be deployed on a server equipped with as a minimum:

a) Dual redundant power supplies, each supply to be hot swappable.
b) Minimum Intel Core i7 3770 4 core processor or better
c) Minimum 16GB DD3 RAM
d) Minimum 2 x 256GB SATA 3 SSD configured in a RAID 1 array for redundancy
e) Minimum 2 x 1Gb Ethernet NICs
f) Minimum 1x 16x DVD+/- RW drive

4.11 Uninterruptible Power Supply

All components of this system shall be supported by UPSs meeting or exceeding ES/STD-0804, including cameras, switches, media converters, video converters, NVRs, and NVUSs, except NVUS monitors. UPS must provide a minimum of 30 minutes run time to attached equipment under load. Existing spare UPS capacity may be used if available. All new UPS equipment will be installed in the same racks.

All UPS units provided to support NVUS (clients) must be connected with the UPS client software to allow the UPS to command a controlled shutdown of the client when the UPS has reached a state in which only 10% of rated capacity is left.

4.12 Network Video User Station

The Network Video User Stations (NVUS) shall be located in the areas identified in rack locations on the drawings. NVUS will be rack mounted wherever possible with monitors, keyboards, mice, and joysticks remote connected to the user area. A NVUS will present no more than 9 images and will support no more than 2 monitors. KVM extenders may be either fibre or copper. Where NVUS must be placed in an office or user area the NVUS noise levels shall not exceed 50db at 3ft from the computer. NVUS video viewing streams shall be the same size, frame rate and bandwidth as the recording streams. Existing NVUS stations at each drop will be relocated from the small racks to the newer large racks (approximately 20 feet away at each drop). Each command post location will require the ability to control video monitor screens available for display viewing. Existing NVUS stations must be replaced with new stations. SIO installations must have the ability to retrieve and retain evidentiary data.

4.13 Monitors

The contractor will supply (minimum) 19" LED narrow bezel monitors in each identified monitoring location. The supplied monitors will comply with Electronic Engineering Standard – Color Monitor, ES/STD-0227. Existing monitors will be removed.

The NVUS monitors are not required to be connected to a UPS, but shall be connected to the institution's emergency power supply.

4.13.1 Configuration

Monitors provided must meet the following criteria:

- Have a minimum resolution of: 1920x1080
- Aspect Ratio: 16:9
- Response Time: 5ms or better
- Contrast Ratio: 3000:1 and incorporate automatic pixel shift technology to prevent static image burn-in
- Input Connectors: D-Sub & HDMI
- 178° / 178° Viewing Angle (Horizontal / Vertical) VESA compliant mount

4.14 Computers

All computers must be equipped with at a minimum;

Intel Core i7 2600 @ 3.4 GHz
16 GB of RAM DDR3
500 GB SA TA II hard drive for OS and Security Center applications1
1 GB PCI-Express x16 dual-head video adapter
100/1000 Ethernet Network Interface
Card 16x DVD+/- RW Drive
3 Year Hardware Warranty

4.15 Fibre Requirement

All new Fibre installations will comply with ES/SOW-0110. All new fibres will be tested in both directions with an OTDR with all signal strength values documented and provided at Acceptance Testing. The contractor shall replace and/or repair any fibre, cable, power, conduit and junction boxes used to complete this project in accordance to the electrical code.

4.16 Cooling Requirement

The contractor must provide a sufficient cooling solution for all CCTV hardware which includes venting through the exterior wall of the rooms where equipment and racks are installed.
Split air cooling requirement to be identified and installed where necessary in the following rooms:

WCHL:
Unit 8 (formerly Riverbend):
OOHL:
Pe Sakastew:
Unit 7 (Formerly Rockwood):
Drumheller MSU:
Oskana:
Osborne:

4.17 Finishing

Where walls are cut, opened or damaged the contractor must repair the wall to its original

appearance; including taping, sanding and colour matching existing paint. Where the contractor must use wire mould or expose conduit in office areas or other work areas, the contractor must paint the exposed conduit to colour match the office where it is installed.

5.0 ADDITIONAL REQUIREMENTS

5.1 Support

The contractor must meet the following support requirements:

5.1.1 National Distribution

a) Contractor to have the ability to provide national distribution and local parts and service outlets

5.1.2 Escalation Plan

a) Upon contract award, the Contractor must provide the name and credentials of qualified service technician(s) or manager(s) who must be responsible for ensuring that all inquiries or service issues related to the system are addressed satisfactorily and in a timely fashion.
b) This/these individual(s) must have the authority, resources, and responsibility to address technical issues, dispatch a service representative to the site if required, escalate any issue that cannot be resolved within the expected time frame, and keep CSC informed at regular intervals until issues are resolved.
c) Provide company's definitions for problem types with expected response resolution times, and company's procedures for escalating service issues that are not resolved within expected time frames

5.1.3 System Support

a) The Contractor must provide full support for all elements of the system through completion and acceptance by CS C and for three full years after acceptance.
b) This support must include system upgrades (as they become available), troubleshooting, the correction of any system bugs or deficiencies, and the resolution of any operating problems.

5.2 Operator Training

The contractor shall prepare and present a one-day training course, in English, to Operator/Trainers identified by each site, responsible for the operation of the equipment in accordance with the specification ES/SOW-0101 Statement of Work. The course must concentrate on the features and proper operation of the installed system. The course must be presented on the site within two weeks of the successful acceptance testing of the system. The contractor must also meet the following training requirements:

a) Log all operators' names who receive the informal training.
b) Provide one session of formal operator's training for each living unit.
c) Provide an interactive Power-Point Presentation as a training aid for the operator's training that is suitable for use during formal training and for later use by CSC for refresher training.
d) The training plan must be included with the proposal.

5.3 Maintenance Training

The contractor shall prepare and present a two-day training course at each site, in English, to individuals responsible for the maintenance of the equipment in accordance with the specification ES/SOW-0101 Statement of Work. The course must concentrate heavily on the material contained in the technical manual and site manual. The course must be presented on the site within two weeks of the successful acceptance testing of the system.

The contractor is responsible to ensure that CSC maintenance technicians receive training to be able to provide 1st level monitoring equipment, the Contractor must also meet the following training requirements:

a) Provide an in-depth maintenance course for the electronic maintenance technicians (ADGA).
b) Log all the names of all technicians who receive the training.
c) Provide one session of formal operator's training for each site.
d) Provide an interactive Power-Point Presentation as a training aid for the operator's training that is suitable for use during formal training and for later use by CSC for refresher training.
e) All manuals and as-built drawings must be available for the training sessions.
f) The maintenance training plan must be included with the proposal.

5.4 Equipment Failure

In the event of any failure of equipment under this STR, including the network switching infrastructure, the contractor is responsible for immediate resolution for resumption of full system operation. This must include provision of a support for three years from system acceptance; including a response time to a service call of within 4 hours.

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

5.5 Manuals and Drawings

The contractor must provide at least four sets of complete documentation including 4 CD's or DVD's, which must include operation manuals, service manuals, and as-built

documentation for the system in English; including drawings in AutoCAD 2013 and PDF format. This documentation must be provided be in accordance with CSC document ES/SOW-0101 unless superseded by this STR.

In addition to the requirements defined in the above documents, the documentation must also meet these requirements:

a) Operator's manuals must include both a complete binder with all detailed information, and a single laminated sheet with Condensed instructions.
b) Condensed Instructions must be laminated for durability.
c) Provide at least 10 operator's manuals including the Condensed Instructions.
d) Maintenance Manual: Upon completion of the project submit to CSC three (3) electronic copies (DVD disk) containing PDF files and three (3) paper copies (in loose leaf binder) of operation and maintenance manual. Include all operational and maintenance documents. Manual must include but not limited to:

    I. Contractor/Suppliers list

    II. System Description and Operation Data clearly explaining all system features and functions.
    III. Detailed System Parts Specifications and Information.
    IV. All as-built drawings c/w detailed block and wiring diagrams and schematics.
    V. Testing and Commissioning (T & C) Reports.

e) All manuals must be delivered to the RTEO at Regional Headquarters Prairies, 3427 Faithfull Avenue, PO Box 9223, Saskatoon, SK S7K3X5
f) Electronic manuals must be structured based on a database framework with direct links to the appropriate PDF files. Document retrieval and viewing must be executed through a menu driven approach. All PDF files must be enhanced with appropriate bookmarks to facilitate searching of information within the document or linked to other relevant documents for reference.
g) Provide a handover report which includes details of the equipment, dates of warranties, contractor contact information and other project information. A copy of this document is provided as Annex A.

5.6 Software Documentation

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

5.7 Acceptance Testing Procedures

5.7.1 The contractor must provide a detailed ATP to the DA, or his designated

representative, by fax or email, for approval at least two weeks prior to the start of installation of the CCTV equipment and system

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

5.7.3 The contractor must provide a *fully completed and signed copy* of the ATP to the DA, or his designated representative, by fax or email, at least two working days prior to the start of the final ATP testing. This copy of the ATP must include all of the results of the tests carried out in Section 5.6.1.2

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

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

5.7.6 The DA may repeat all of the ATP tests done by the contractor or a percentage of them. During the ATP, if an unacceptable level of failed tests is encountered, the ATP testing must be halted until the contractor has corrected the failures.

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

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

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

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

5.7.11 Any deficiencies noted by CSC during this two (2) week operational testing period must be communicated to the Contractor, who will then be required to correct the deficiencies. The two (2) week operational testing period will begin

again after all deficiencies have been cleared.

5.7.12 Equipment warranty period will start on the date the system is formally accepted.

5.8 Institution Operations

The contractor must take every precaution to minimize any disturbance to institutional operations. Equipment and systems operational down time must be kept to a minimum. All down time must be coordinated with the Assistant Warden Operations on site or designate. The contractor's staff may be required to work during evenings, nights and/or weekends to reduce the amount of down time and to meet operational requirements. The contractor and his staff on site must cooperate fully with operational staff and conform to all security requirements.

5.8.1 Institution Addresses

Willow Cree Healing Lodge
Beardys and Okemasis 1st nation
P.O. Box 520
Duck Lake, SK
S0K 1J0
Telephone: (306) 467-1200

Okimaw Ohci Healing Lodge
43 Pacific Ave., PO Box 1929
Maple Creek, SK
S0N 1N0
Telephone: (306) 662-4700

Unit 8 (Formerly Riverbend Institution)
Saskatchewan Penitentiary
15th St W, PO Box 850
Prince Albert, SK
S6V 5S4

Pe Sakastew Center
Township Rd #444, Quarter Mile West
HWY 2A, PO Box 1500
Hobbema, AB
T0C 1N0

Unit 7 (Formerly Rockwood Institution)
HWY 7 North

PO Box 4500 STN Main
Winnipeg, MB
R0C 3A0

Drumheller MSU
Drumheller Institution
Highway 9, PO Box 3000
Drumheller, AB, T0J 0Y0

Oskana CCC
1650 Halifax St
Regina, SK, S4P 1S8

Osborne CCC
1048 Main Street
Winnipeg, MB, R2W 3R3

5.9 Integration Responsibility

The contractor is responsible for providing a fully functional system

5.10 Existing Equipment Removal

It is the responsibility of the contractor to remove from service any equipment that is being decommissioned as a result of this CCTV System upgrading. Equipment must be turned over to the local CSC Design Authority or other designated authority.

The contractor must remove and dispose of all of the wiring rendered redundant; off site in an environmentally friendly way.

5.11 Security

The Contractor must submit completed CPIC forms for all staff who will be working at the Institutions. The CPIC forms must be submitted to the RTEO, or his designate, ten (10) working days prior to the start-up date. (Form 1279-1 included)

5.12 Schedule

In accordance with ES/SOW-0101, the contractor shall provide a detailed work schedule for the installation activities. This schedule shall reflect the complete implementation plan by identifying the nature of the work to be performed and the area affected.

5.13 Safety

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

5.14 **Communication Responsibility**

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

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

The contractor must maintain a record of these briefings complete with time, date and attendees. The contractor must provide a monthly report on the status of the project in accordance to CSC specifications. A teleconference to include stakeholders may be required.

CORRECTIONAL SERVICE OF CANADA
TECHNICAL SERVICES BRANCH
ELECTRONICS SYSTEMS

MAINTENANCE HANDOVER REPORT FORM

INSTITUTION: **DATE:**

SYSTEM/EQUIPMENT:

APPLICABLE CONTRACT NO:
DSS FILE NO:
SPECIFICATIONS:

EQUIPMENT SUPPLIER (NAME AND ADDRESS):

SUPPLIER CONTACT (NAME AND TELEPHONE):

WARRANTY DETAILS:

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

Travel & living expenses during the warranty period:

Chargeable to CSC ☐

Not chargeable to CSC ☐

Equipment transportation costs are paid by CSC for:

Sending to the supplier ☐

Returning from the supplier ☐

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

Not applicable.

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

Not applicable.

DEFICIENCIES:

None remain ☐

List attached ☐

DOCUMENTATION:

Maintenance manual:

Supplied ☐

Due by ;

As-built drawings, cabling and wiring diagrams:

Supplied ☐

Due by ;

Acceptance test results:

Supplied ☐

Due by ;

DISTRIBUTION OF DOCUMENTATION:

1 copy to CESM sent on:
1 copy to RTEO sent on:
2 copies to institution sent on:

SPARES:

All delivered ☐

Delivery to be completed by ;

EQUIPMENT LIST:

See attached list. ☐

MAINTENANCE TRAINING:

Completed ☐

Scheduled for ;

SIGNATURE: Project Manager

DISTRIBUTION: CESM, NHQ
RTEO, RHQ
AWMS, Institution

SAFETY REGULATIONS FOR SECURITY ELECTRONICS CONTRACTORS WORKING AT CSC INSTITUTIONS

1. Acts and Regulations

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

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

b. In the event of conflict between any provisions of the above authorities the most stringent shall apply.

2. Safety Plan

a. The contractor is responsible to ensure that a site specific Safety Plan has been completed and maintained on site. The contractor must provide the Safety Plan, when requested, to Institution Staff and the Safety Officers and Inspectors authorized by the Acts and Regulations listed in Paragraph 1.a. above. The Safety Plan shall include a hazard assessment, controls, an emergency plan and a communications strategy.

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

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

d. An emergency plan shall be prepared that takes into consideration all of the identified hazards and the potential problems that could arise during the project. The emergency plan shall outline the emergency procedures to be taken in the event of an accident and shall include the contact names and telephone numbers of emergency response persons and services. The list of emergency response persons and services should include but not be limited to the following:

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

e. A communications strategy shall be put in place that will ensure that information concerning hazards, controls and the emergency plan is communicated to all of the contractor's staff, sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies working at the institution.

f. The Safety Plan shall address and confirm to the Acts and Regulations identified in Paragraph 1.a., above.

g. The submission of the Safety Plan to Correctional Service Canada shall not relieve the Contractor of any legal obligations as specified by the Acts and Regulations listed in Paragraph 1.a. above.

3. Safety Training

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

→ AW1859 & AW4460
Tubular Tilt Down Poles

AW4460/8

Height range 4m - 12m

The AW4460 is a light duty tilt down tubular pole more suitable for fixed camera and dome installations, whereas the AW1859 range is a heavier duty product suitable for medium to heavy PTZ applications. Both products give a neat and aesthetic appearance and are suitable for installations where the public have access, whilst enabling camera equipment to be serviced at ground level. Flush doors and secure locks make these secure products, designed for security installations. A full range of standard accessories back up this comprehensive range of tilt down poles.

Typically used for the following types of installation

- Industrial and commercial premises
- Perimeter detection
- Schools and universities
- Prisons and detention facilities
- Railway platforms & car parks
- Car parks
- Public area CCTV
- Retail Parks
- Sports stadia

Security Features

- Internal cabling
- Close fitting flush doors
- Solid secure heavy duty door locks
- Internal padlock facility to protect against un-authorised lowering
- Can be mounted with anchor bolts below ground level

General Features

- Stable structures for all camera types
- Suitable for public access areas
- Demountable winches allow for a secure installation whilst also reducing costs on multiple installations
- Compartments have doors that are close fitting and flush with heavy duty secure locks and are complete with treated backboard
- Available in bolt down and embedded/direct burial versions
- A wide range of standard Altron Accessories and Brackets available
- Pole adaptations available to suit customers/project specific requirements
- Constructed in high tensile steel and hot dip galvanised after fabrication for durability
- Option of painting over the galvanised finish in colours available from BS and RAL colour charts
- Also available in 316 stainless steel, architectural finish
- For design, manufacturing and finishing standards, see details on page 107

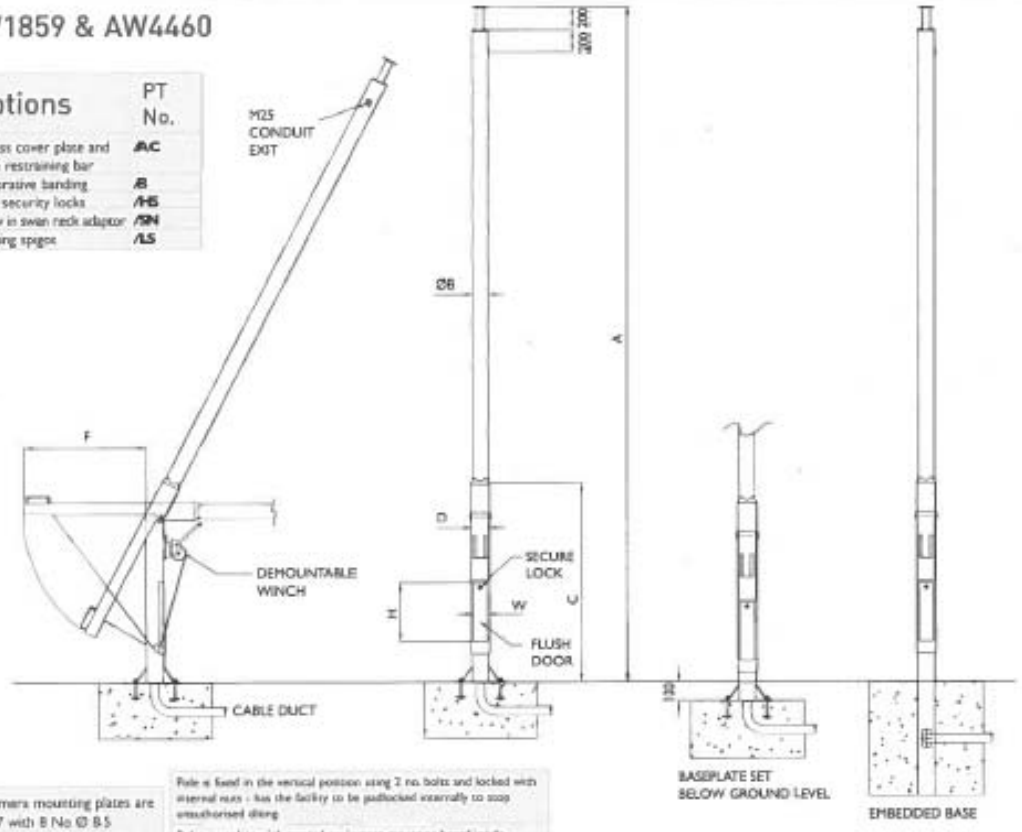
AW1859/5

AW1859/6 in tilted position

AW1859/4460 Tubular Tilt Down Pole ← Technical Specification

AW1859 & AW4460

Options	PT No.
Access cover plate and cable restraining bar	/AC
Decorative banding	/B
High security locks	/HS
Screw in swan neck adaptor	/SN
Lighting spigot	/LS



All camera mounting plates are Ø 127 with 8 No Ø 8.5 equi-spaced on 101.6 PCD. Ø 40 steel column spacer

Pole is fixed in the vertical position using 2 no. bolts and locked with internal nuts - has the facility to be padlocked externally to stop unauthorised tilting

Poles complete with erected equipment mounting board inside compartments. Earthing lugs welded pole & on door

FOR FOUNDATION & BOLTING DETAILS REFER TO PAGE 29

Model No.	Height in mtrs A	Max equip weight at pole top kgs	Max equip surface area m^2	Pole ØB	Post size D²	Post height C	Pole rear clearance when tilting F	Door aperture H x W	Winch part number	Product weight kgs
AW4460 TILT-DOWN POLES - suitable for loads up to light PTZ and dual dome applications										
AW4460/4	4	25	0.25	114	150	1700	1800	500x110	**DW1000/60**	115
AW4460/5	5	25	0.25	114	150	1700	1800	500x110	**DW1000/60**	130
AW4460/6	6	25	0.25	114	150	1700	1800	500x110	**DW1000/60**	145
AW4460/7	7	25	0.25	139	150	2000	2200	500x110	**DW1500/60**	198
AW4460/8	8	25	0.25	139	150	2000	2200	500x110	**DW1500/60**	216
AW1859 TILT-DOWN POLES - suitable for heavier PTZ applications and for heights up to 12m										
AW1859/4	4	40	0.40	139	150	1700	1800	500x110	**DW1000/59**	125
AW1859/5	5	40	0.40	139	150	1700	1800	500x110	**DW1000/59**	147
AW1859/6	6	30	0.40	139	150	1700	1800	500x110	**DW1000/59**	170
AW1859/7	7	30	0.40	168	180	2000	2200	500x130	**DW1500/59**	253
AW1859/8	8	30	0.40	168	180	2000	2200	500x130	**DW1500/59**	275
AW1859/9	9	30	0.40	193	200	2700	2900	500x140	**DW2500/59**	401
AW1859/10	10	30	0.40	193	200	2700	2900	500x140	**DW2500/59**	427
AW1859/11	11	25	0.30	193	200	2700	2900	500x140	**DW2500/59**	453
AW1859/12	12	25	0.25	193	200	2700	2900	500x140	**DW2500/59**	479

Where payloads are greater than those stated above, please contact Altron
All dimensions in mm unless stated otherwise

Accessories

Top mounting brackets for Fixed and PTZ cameras	P76
Swanneck brackets for Dome cameras	P81
Anti-climb guards	P77
Clamp-on camera mounting brackets	P79
Telemetry box mounting brackets	P77
Pole top mounting cages	P83
PIR mounting ring	P84

Quick reference

Single fixed camera knuckle	**PTS-1**
Twin fixed camera bracket	**TB2-600F**
Half swanneck for dome	**AW1699H**
Full swanneck for dome	**AW1699F**
Anti climb guard	**SGC**
PIR mounting ring	**AW1962**
Telemetry bracket	**ATBC**

→ Tubular Poles - Fixed & Tilt-Down Foundations & Bolting Details

MODEL NO.	HEIGHT MTRS	BOLT CENTRES 'P'	BURIED DEPTH 'D'	BASE PLATE SIZE 'H'	SERVICE ENTRY SIZE	HOLDING DOWN BOLT SIZE D x L	FOUNDATION SIZES FOR THE UK					
							COUNTRY LOCATION			TOWN LOCATION		
							AREA A	AREA B	AREA C	AREA A	AREA B	AREA C
AW1502 - lamp standard												
AW1502/4	4m	350	250	405	200	M16x245	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5
AW1502/5	5m	450	250	510	250	M20x325	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.0 x 1.0 x 0.5	1.0 x 1.0 x 0.5	1.1 x 1.1 x 0.55
AW1502/6	6m	450	250	510	250	M20x325	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6
AW1502/7	7m	450	250	510	250	M20x325	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65
AW1502/8	8m	550	250	630	250	M24x425	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7	1.5 x 1.5 x 0.75	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7
AW1502/10	10m	550	250	630	250	M24x425	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8	1.7 x 1.7 x 0.9	1.4 x 1.4 x 0.7	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8
AW1502/10HD	10m	700	250	800	300	M27x600	1.6 x 1.6 x 0.8	1.7 x 1.7 x 0.9	1.8 x 1.8 x 0.9	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8	1.7 x 1.7 x 0.9
AW1502/12	12m	700	250	800	300	M27x600	1.7 x 1.7 x 0.9	1.8 x 1.8 x 0.9	2.0 x 2.0 x 1.0	1.6 x 1.6 x 0.8	1.7 x 1.7 x 0.9	1.8 x 1.8 x 0.9
AW1502/15	15m	700	250	800	300	M27x600	2.0 x 2.0 x 1.0	2.1 x 2.1 x 1.0	2.2 x 2.2 x 1.1	1.8 x 1.8 x 0.9	2.0 x 2.0 x 1.0	2.1 x 2.1 x 1.0
AW1859 - tubular tilt-down												
AW1859/4	4m	350		405	120	M16x245	0.9 x 0.9 x 0.5	1.0 x 1.0 x 0.5	1.1 x 1.1 x 0.55	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	1.0 x 1.0 x 0.5
AW1859/5	5m	350		405	120	M16x245	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.0 x 1.0 x 0.5	1.0 x 1.0 x 0.5	1.1 x 1.1 x 0.55
AW1859/6	6m	350		405	120	M16x245	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6
AW1859/7	7m	450		5 10	150	M20x325	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65
AW1859/8	8m	450		5 10	150	M20x325	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65
AW1859/10	10m	550		630	180	M24x425	1.4 x 1.4 x 0.7	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8	1.4 x 1.4 x 0.7	1.5 x 1.5 x 0.75	1.5 x 1.5 x 0.75
AW1859/12	12m	550		630	180	M24x425	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8	1.7 x 1.7 x 0.9	1.4 x 1.4 x 0.7	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8
AW4460 - tubular tilt-down												
AW4460/4	4m	350		405	120	M16x245	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	0.8 x 0.8 x 0.4	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5
AW4460/6	6m	350		405	120	M16x245	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55	1.0 x 1.0 x 0.5	1.0 x 1.0 x 0.5	1.1 x 1.1 x 0.55
AW4460/8	8m	450		510	150	M20x325	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6
Tubular poles - Light Duty												
AW1755/4	4m	350		405	110	M16x245	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	0.8 x 0.8 x 0.4	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5
AW1992/5	5m	350		405	110	M16x245	0.9 x 0.9 x 0.5	1.0 x 1.0 x 0.5	1.0 x 1.0 x 0.5	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	1.0 x 1.0 x 0.5
AW1992/6	6m	350		405	110	M16x245	1.0 x 1.0 x 0.5	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55	1.0 x 1.0 x 0.5	1.0 x 1.0 x 0.5	1.1 x 1.1 x 0.55
AW1507/7	7m	450		510	150	M20x325	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6
AW1507/8	8m	450		5 10	150	M20x325	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6
AW1581/9	9m	550		630	180	M24x425	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65
AW1581/10	10m	550		630	180	M24x425	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7	1.5 x 1.5 x 0.75	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7	1.4 x 1.4 x 0.7
Medium duty												
AW1992/4	4m	350		405	110	M16x245	0.9 x 0.9 x 0.5	1.0 x 1.0 x 0.5	1.0 x 1.0 x 0.5	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	1.0 x 1.0 x 0.5
AW1507/5	5m	450		510	150	M20x325	1.0 x 1.0 x 0.5	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.0 x 1.0 x 0.5	1.0 x 1.0 x 0.5	1.1 x 1.1 x 0.55
AW1507/6	6m	450		510	150	M20x325	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6
AW1581/7	7m	450		510	180	M20x325	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65
AW1581/8	8m	550		630	180	M24x425	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7	1.4 x 1.4 x 0.7	1.3 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65
AW1576/9	9m	550		630	200	M24x425	1.4 x 1.4 x 0.7	1.5 x 1.5 x 0.75	1.5 x 1.5 x 0.75	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7	1.4 x 1.4 x 0.7
AW1576/10	10m	550		630	200	M24x425	1.5 x 1.5 x 0.75	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8	1.4 x 1.4 x 0.7	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8
Heavy duty												
AW1507/4	4m	350		405	150	M16x245	1.0 x 1.0 x 0.5	1.0 x 1.0 x 0.5	1.1 x 1.1 x 0.55	0.9 x 0.9 x 0.5	1.0 x 1.0 x 0.5	1.0 x 1.0 x 0.5
AW1581/5	5m	450		510	180	M20x325	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6	1.0 x 1.0 x 0.5	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55
AW1581/6	6m	450		510	180	M20x325	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6
AW1576/7	7m	450		510	200	M20x325	1.3 x 1.2 x 0.65	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65
AW1576/8	8m	550		630	200	M24x425	1.4 x 1.4 x 0.7	1.4 x 1.4 x 0.7	1.5 x 1.5 x 0.75	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7
AW1631/9	9m	550		630	250	M24x425	1.5 x 1.5 x 0.75	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8	1.4 x 1.4 x 0.7	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8
AW1631/10	10m	550		630	250	M24x425	1.6 x 1.6 x 0.8	1.7 x 1.7 x 0.9	1.8 x 1.8 x 0.9	1.5 x 1.5 x 0.75	1.6 x 1.6 x 0.8	1.7 x 1.7 x 0.9
AW1631/12	12m	550		630	250	M24x425	1.8 x 1.8 x 0.9	1.8 x 1.8 x 0.9	2.0 x 2.0 x 1.0	1.7 x 1.7 x 0.9	1.8 x 1.8 x 0.9	1.9 x 1.9 x 1.0
Tapered tubular poles												
AW2307/4	4m	350	250	405	150	M16x245	0.9 x 0.9 x 0.5	1.0 x 1.0 x 0.5	1.0 x 1.0 x 0.5	0.9 x 0.9 x 0.5	0.9 x 0.9 x 0.5	1.0 x 1.0 x 0.5
AW2307/6	6m	450	250	5 10	200	M20x325	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6	1.2 x 1.2 x 0.6	1.1 x 1.1 x 0.55	1.1 x 1.1 x 0.55	1.2 x 1.2 x 0.6
AW2307/8	8m	450	250	510	200	M20x325	1.3 x 1.3 x 0.65	1.4 x 1.4 x 0.7	1.4 x 1.4 x 0.7	1.2 x 1.2 x 0.6	1.3 x 1.3 x 0.65	1.3 x 1.3 x 0.65

Table dimensions in mm

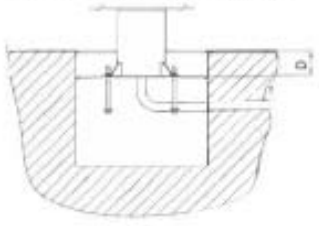
Foundation sizes in table are W x W x D
Dimensions in metres

*D= 1000 on PM and buried flange/embedded base models

REFER TO INSTALLATION METHODS ON PAGES 104 - 106

- For area D locations and exposed locations over 100m above sea level for areas A, B and 150m above sea level for area C, we recommend increased foundation sizes. Please refer to the table on page 101 for conformation of these.
- A minimum soil bearing capacity of 75 kN/m² is assumed.
- Foundation base dimensions are typical and may vary depending on site conditions.
- Please refer to the foundations & windloading section on pages 101-103 for further guidance.

BURIED DEPTH BELOW GROUND LEVEL



GALVANISED HOLDING DOWN BOLTS