



ISSUED FOR TENDER SPECIFICATIONS

CSC EDMONTON INSTITUTION U5 GUN PORT (R)

Project No. R.101593.001
Edmonton Institution
21611 Meridian Street, Edmonton, AB



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A2.1	RETROFIT GUN PORT PLAN & DETAILS

END OF SECTION

Part 1 General

1.1 WORK COVERED BY CONTRACT DOCUMENTS

- .1 Work of this Contract comprises the modification of nine existing gun ports in the Control Post of Unit 5 at the Edmonton Institution in Edmonton, AB to meet current CSC Technical Criteria and fully accommodate their operational firearms.
- .2 For all intents and purposes of the contract between Public Works Government Services Canada (otherwise known as Public Services and Procurement Canada) and the Contractor, all contractual obligations for the coordination and performance of the Work remain with the Contractor, regardless if a specialty trade or major subcontractor is listed in the specifications. Major subcontractor and trade references are made to provide an organizationally practical means for coordination and scope division, to aid the Contractor with managing the project with major subcontractors and various trades, but is not intended to otherwise alleviate the Contractor from contractual obligations for the performance and coordination of the Work. All references to Sub-contractors, Mechanical Contractor, Electrical Contractor, TAB contractor, etc. shall ultimately be interpreted as being the contractual responsibility of the Contractor.
- .3 Demolition: Removal of existing gun port assembly including the doors, bolts, and sealants on the guard side. The existing steel angles and nut are to remain.
- .4 Hazardous material: Work includes lead paint found on the existing gun ports.
- .5 Hours of work shall be 22:00h – 06:00h. Contractor to confirm exact work hours and days with Departmental Representative.
 - .1 No work shall take place on site during federal statutory holidays, unless approved in writing by the Departmental Representative.
 - .2 All work areas must be made secure and all tools and equipment removed from the area prior to ending shift.
- .6 Architectural:
 - .1 Work is to related to the installation of a new 32 mm polycarbonate plate and steel gun port assembly complete with new bolts at each of the nine gun ports. The holes on the polycarbonate plate and gun port assembly must match the existing nut locations.
 - .2
- .7 The work also requires:
 - .1 Full time supervision during any work at the project site.
 - .2 Weekly Construction Progress Reports.
- .8 Refer to the drawings and specifications for complete Scope of Work.

1.2 CONTRACT METHOD

- .1 Construct Work under a stipulated price contract.

1.3 FAMILIARIZATION WITH SITE

- .1 Before submitting a bid, it is recommended that bidders visit the site to review and verify the form, nature and extent of the work, materials needed, the means of access and the temporary facilities required to perform the Work.

1.4 WORK BY OTHERS

- .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Departmental Representative.
- .2 Co-ordinate work with that of other Contractors. If any part of work under this Contract depends for its proper execution or result upon work of another Contractor, report promptly to Departmental Representative, in writing, any defects which may interfere with proper execution of Work.

1.5 WORK SEQUENCE

- .1 Construct Work to accommodate continued use of premises during construction.
- .2 Co-ordinate Progress Schedule and co-ordinate with Departmental Representative's Occupancy during construction.
- .3 Interference with security and daily operations must be minimized.
 - .1 No more than one gun port may be disrupted at any time.
 - .2 Off-site pre-fabrication is expected to expedite installation.
- .4 In the instance of a security, safety, or emergency situation, construction may be temporarily suspended at the discretion of CSC.
- .5 Construction on the project site will be performed during the full operation of the facilities. Project work and phasing must be planned and coordinated to ensure that disruptions to the daily operation of the facilities are kept to a minimum.

1.6 CONTRACTOR USE OF PREMISES

- .1 Maintain 24-hour operational access through all areas of work to meet operational requirements.
- .2 Maintain fire access/control through all areas of work.
- .3 Refer to Section 01 35 13 - Security Project Procedures.
- .4 Co-ordinate use of premises under direction of Departmental Representative.
- .5 Limit use of Project site to work in areas indicated. Do not disturb portions of Project site beyond areas in which the Work is indicated.
- .6 Keep driveways, loading areas, and entrances serving premises clear and available to Department, Departmental employees, and emergency vehicles at all times. Do not use these areas for parking or storage of materials.

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- .7 Schedule deliveries to minimize use of driveways and entrances by construction operations. Schedule deliveries to minimize space and time requirements for temporary storage of materials and equipment on site.
 - .8 Contractor will not be provided with on-site storage. Contractor is to provide storage contained at the specified laydown area outside the EMSI fence. Contractor will be expected to factor in time for moving their tools and material in and out on a daily basis from/to the storage area and work area. If required, obtain and pay for use of additional off-site storage or work areas needed for operations under this Contract.
 - .9 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by the Departmental Representative.
 - .10 At completion of operations condition of existing work: equal to or better than that which existed before new work started

1.7 BUILDING OCCUPANCY DURING CONSTRUCTION

- .1 Premises will remain occupied during entire construction period for execution of normal operations.
- .2 Co-operate with Departmental Representative in scheduling operations to minimize conflict and to facilitate building usage.
- .3 Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from Departmental Representative.
- .4 The facility will be fully occupied during construction.

1.8 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to building operations, occupants and normal use of premises. Arrange with Departmental Representative to facilitate execution of work in stages. The Contractor shall ensure the execution of work shall not jeopardize the security of the operation of the institution.

1.9 EXISTING SERVICES

- .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .1 Where Work involves breaking into or connecting to existing services, give the Departmental Representative 48 hours notice for necessary interruption of mechanical or electrical service throughout course of work. Minimize duration of interruptions. Carry out work at times as directed by governing authorities with minimum disturbance to vehicular traffic and existing building operations.
- .2 Provide alternative routes for personnel and vehicular traffic only with written permission from the Departmental Representative.

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- .3 Establish location and extent of service lines in area of work before starting Work. Notify Departmental Representative of findings.
 - .4 Submit schedule to and obtain approval from Departmental Representative for any shut-down or closure of active service or facility including power and communications services. Adhere to approved schedule and provide notice to affected parties.
 - .5 Provide temporary services when directed by the Departmental Representative to maintain critical building systems.
 - .6 Where unknown services are encountered, immediately advise the Departmental Representative and confirm findings in writing.
 - .7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.
 - .8 Record locations of maintained, re-routed and abandoned service lines.
 - .9 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers & Enclosures.

1.10 DOCUMENTS REQUIRED

- .1 Maintain at job site, one copy each document as follows:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Reviewed Shop Drawings.
 - .5 List of Outstanding Shop Drawings.
 - .6 Change Orders.
 - .7 Other Modifications to Contract.
 - .8 Field Test Reports, System Components List c/w Commissioning Verification Forms and Check Sheets and Commissioning Issues/Resolution Log.
 - .9 Copy of Approved Work Schedule.
 - .10 Three (3) week look ahead.
 - .11 Health and Safety Plan and Other Safety Related Documents.
 - .12 Manufacturer's Technical Literature and Installation Instructions
 - .13 Other documents as specified.

END OF SECTION

Part 1 General

1.1 ACCESS AND EGRESS

- .1 Design, construct and maintain temporary "access to" and "egress from" work areas, including stairs, runways, ramps or ladders and scaffolding, independent of finished surfaces and in accordance with relevant municipal, provincial and other regulations.

1.2 USE OF SITE AND FACILITIES

- .1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.
- .2 Maintain existing services to building and provide for personnel and vehicle access.
- .3 Where security is reduced by work provide temporary means to maintain security. Refer to Section 01 35 13 – Security Requirements.
- .4 Contractor must provide sanitary facilities that will remain outdoors, located inside the security fence, in near proximity to the work area.
 - .1 Coordinate bathroom access and schedule with Commissionaires.
 - .2 If Departmental Representative confirms in writing that CSC operational requirements make it unfeasible for contractor to supply a sanitary facility in near proximity to work area, the contractor will be authorized to use one or more sanitary facilities currently existing within the institution.
 - .3 Contractor must be respectful and keep clean any sanitary facilities existing within the institution that are provided temporarily for use. Mis-use of facilities will result in removal withdrawal permission.
- .5 Contractor laydown shall be located where designated by Departmental Representative. Security provisions for all tools, assets, equipment & material located in the contractor laydown shall be the responsibility of the contractor.
- .6 Contractor to use rolling trash containers to remove debris from building to ensure that no damage occurs to the existing floors.
- .7 Contractor may provide waste bin located in the laydown area. Departmental Representative will advise which location is permitted.
- .8 Closures: protect work temporarily until permanent enclosures are completed.

1.3 CONTRACTOR WORK HOURS

- .1 Hours of work shall be 22:00h – 06:00h. Contractor to confirm exact work hours and days with Departmental Representative.
 - .1 No work shall take place on site during federal statutory holidays, unless approved in writing by the Departmental Representative.
 - .2 All work areas must be made secure and all tools and equipment removed from the area prior to ending shift.

1.4 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

- .1 Execute work with least possible interference or disturbance to occupants, building operations and normal use of premises. Arrange with Departmental Representative to facilitate execution of work in stages.

1.5 EXISTING SERVICES

- .1 Notify, Departmental Representative and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum.
- .3 Provide for pedestrian personnel and vehicular traffic.
- .4 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures.

1.6 SPECIAL REQUIREMENTS

- .1 All work will be performed under Departmental Representative Commissionaire escort.
- .2 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations. Refer to 01 35 13 - Security Requirements.
- .3 Noise generating activities shall be coordinated with department representative and require authorization from the institution.
- .4 Submit schedule in accordance with Section 01 32 16.07 - Construction Progress Schedule - Bar (GANTT) Chart.
- .5 All deliveries must be received and offloaded outside the security fence by the contractor, in the contractor's laydown. No deliveries will be allowed to be received inside the security fence.
- .6 Half-an-hour (0.5) allowance to be made for screening each instance of personnel at the beginning of the work shift, and for any re-entries throughout the work shift.
 - .1 Any personnel to arrive at site at an unscheduled time or otherwise arrive on site for an unscheduled reason (i.e. late for shift, drop-in or unexpected site visit, etc.) shall allow for one (1) hour for security screening and escort to area of work
- .1 One (1) hour allowance to be made for screening each vehicle.

1.7 SECURITY

- .1 Personnel will be checked daily at start of work shift and provided with pass which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.

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- .2 Security escort:
 - .1 Escort required at all times.
 - .2 Personnel employed on this project must be escorted when executing work in non-public areas during normal working hours. Personnel must be escorted in all areas after normal working hours.
 - .3 Submit an escort request to Departmental Representative at least 14 days before service is needed. For requests submitted within time noted above, costs of security escort will be paid for by Departmental Representative. Cost incurred by late request will be Contractor's responsibility.
 - .4 Any escort request may be cancelled free of charge if notification of cancellation is given at least 4 hours before scheduled time of escort. Cost incurred by late request will be Contractor's responsibility.
 - .5 Calculation of costs will be based on average hourly rate of security officer for minimum of 8 hours per day for late service request and of 4 hours for late cancellations.

1.8 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions. Smoking is not permitted.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE

- .1 Schedule and administer project meetings throughout the progress of the work at the call of the Departmental Representative.
- .2 Prepare agenda for meetings.
- .3 Distribute written notice of each meeting four days in advance of meeting date to the Departmental Representative.
- .4 Provide physical space and make arrangements for meetings.
- .5 Preside at meetings.
- .6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.
- .7 Reproduce and distribute copies of minutes within two days after meetings and transmit to meeting participants and, affected parties not in attendance.
- .8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

- .1 Within 7 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.
- .2 Departmental Representative, Consultant, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.
- .3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.
- .4 Departmental Representative to arrange and chair meeting. Agenda to include:
 - .1 Appointment of official representative of participants in the Work.
 - .2 Schedule of Work: in accordance with Section 01 32 16.07 – Construction Progress Schedule – Bar (GANTT) Chart.
 - .3 Schedule of submission of shop drawings, samples, colour chips. Submit submittals in accordance with Section 01 33 00 - Submittal Procedures.
 - .4 Requirements for temporary facilities, site sign, offices, storage, fences and utilities in accordance with Section 01 52 00 - Construction Facilities.
 - .5 Site security in accordance with Section 01 35 13 Security Requirements.
 - .6 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
 - .7 Products provided by Department Representative.

- .8 Record drawings in accordance with Section 01 33 00 - Submittal Procedures.
- .9 Maintenance manuals in accordance with Section 01 78 00 - Closeout Submittals.
- .10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00 - Closeout Submittals.
- .11 Monthly progress claims, administrative procedures, photographs, hold backs.
- .12 Appointment of inspection and testing agencies or firms.
- .13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

- .1 During course of Work and two weeks prior to project completion, schedule progress meetings every two weeks.
- .2 Contractor to provide meeting space and make arrangements for meetings.
- .3 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.
- .4 Notify parties minimum 7 days prior to meetings.
- .5 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 2 days after meeting.
- .6 Agenda to include the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review changes for affect on construction schedule and completion date.
 - .12 Shop drawing, RFI and CCN logs.
 - .13 Health and Safety.
 - .14 Other business.

END OF SECTION

Part 1 General

1.1 GENERAL

- .1 Use a project management control system based Bar (GANTT) Chart technique.
- .2 Schedule reviews by Departmental Representative shall not mean approval of detail inherent in schedule, responsibility for which lies with Contractor.
- .3 Accept sole responsible for coordinating, scheduling of work, and the sequencing of work components and tasks.

1.2 DEFINITIONS

- .1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.
- .5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.
- .6 Master Plan: summary-level schedule that identifies major activities and key milestones.
- .7 Milestone: significant event in project, usually completion of major deliverable.
- .8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.3 REQUIREMENTS

- .1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.
- .2 Plan to complete Work in accordance with prescribed milestones and time frame.
- .3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.
- .4 Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.
- .5 Notify Departmental Representative about long delivery materials and provide regular updates on the status.

1.4 ACTION AND INFORMATION SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit to Departmental Representative within 10 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3 Submit Project Schedule to Departmental Representative within 7 working days of receipt of acceptance of Master Plan.

1.5 PROJECT MILESTONES

- .1 Project milestones form interim targets for Project Schedule include:
 - .1 Initial Detailed Inspection and Assessment;
 - .2 Shop Drawings / Work Plan;
 - .3 Site Mobilization;
 - .4 Demolition, Hoarding;
 - .5 Work;
 - .6 Interim Certificate (Substantial Completion) date;
 - .7 Final Certificate Completion.

1.6 MASTER PLAN

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return revised schedules within 7 working days.
- .3 Revise impractical schedule and resubmit within 7 working days.

- .4 Accepted revised schedule will become the Master Plan and be used as baseline for updates.

1.7 PROJECT SCHEDULE

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as a minimum milestone and activity types as follows:
 - .1 Award.
 - .2 Shop Drawings, Samples.
 - .3 Permits.
 - .4 Mobilization.
 - .5 Selective Demolition
 - .6 Interior Repairs.
 - .7 Gun Port Installation and Related Work.
 - .8 Testing and Commissioning.
 - .9 Supplied equipment long delivery items.

1.8 PROJECT SCHEDULE REPORTING

- .1 Update Project Schedule on bi-weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date, comparing current progress to baseline, presenting current forecasts, defining problem areas, anticipated delays and impact with possible mitigation.
- .3 Weekly Reports should include
 - .1 Summary of weekly man hours spent the previous week, forecast of weekly man hours for the next week.
 - .2 Schedule forecast on areas of work for the week coming up and any major activities. Identify escort requirements to department representative for scheduling.
 - .3 Material section: report on deliveries, forecasted deliveries in the weeks coming up.
 - .4 Progress of work that has been completed that last week.
 - .5 Commissioning milestones
 - .6 Deficient items.
 - .7 Forecasted inspections.
 - .8 RFI, SI, CCN, CO (forecasted or outstanding).
 - .9 Any as-builts or pictures as required.
- .4 Communicate daily any deviations from the weekly report.

1.9 PROJECT MEETINGS

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

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Not Used.

1.2 ADMINISTRATIVE

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.
- .11 Submittals shall be posted to Project Buzzsaw Directory and shall be organized and named by specification section.
 - .1 Naming convention shall be "Specification Number_Shop Drawing Description_Date of Submission".
 - .2 Once uploaded, a separate email notification indicating that the submission has been posted shall be sent from the contractor to the Departmental Representative.

1.3 SHOP DRAWINGS AND PRODUCT DATA

- .1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.
- .2 Submit drawings, in pdf format.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.
- .4 Allow 10 days for Departmental Representative review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Identification and quantity of each shop drawing, product data and sample.
 - .5 Other pertinent data.
- .8 Submissions include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name and address of:
 - .1 Subcontractor.
 - .2 Supplier.
 - .3 Manufacturer.
 - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
 - .5 Details of appropriate portions of Work as applicable:
 - .1 Fabrication.
 - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
 - .3 Setting or erection details.
 - .4 Capacities.

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- .5 Performance characteristics.
 - .6 Standards.
 - .7 Operating weight.
 - .8 Wiring diagrams.
 - .9 Single line and schematic diagrams.
 - .10 Relationship to adjacent work.
- .9 After Departmental Representative review, distribute copies.
 - .10 Submit electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
 - .11 Submit electronic copies (pdf) of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.
 - .12 Submit electronic copies (pdf) of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
 - .2 Testing must have been within 3 years of date of contract award for project.
 - .13 Submit electronic copies (pdf) of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
 - .2 Certificates must be dated after award of project contract complete with project name.
 - .14 Submit electronic copies (pdf) of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
 - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
 - .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
 - .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
 - .17 Submit electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
 - .18 Delete information not applicable to project.
 - .19 Supplement standard information to provide details applicable to project.

- .20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, electronic copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .21 The review of shop drawings by the Departmental Representative is for sole purpose of ascertaining conformance with general concept.
 - .1 This review shall not mean that the Departmental Representative approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.
 - .2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.4 SAMPLES

- .1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative.
- .3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .4 Where colour, pattern or texture is criterion, submit full range of samples.
- .5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.
- .7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.5 MOCK-UPS

- .1 Erect mock-ups in accordance with 01 45 00 - Quality Control.

1.6 PHOTOGRAPHIC DOCUMENTATION

- .1 Contractor is required to photo document work areas prior and post completion of work.
- .2 Submit electronic copy of colour digital photography in jpg format, fine resolution, monthly with progress statement and as directed by Departmental Representative.
- .3 Project identification: name and number of project and date of exposure indicated.

- .4 Viewpoints and their location as determined by Departmental Representative.
- .5 Frequency of photographic documentation: every two weeks or as directed by Departmental Representative.

1.7 CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, submit Workers' Compensation Board status.
- .2 Submit transcription of insurance immediately after award of Contract.

END OF SECTION

Part 1 General

1.1 PURPOSE

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

1.2 DEFINITIONS

- .1 "Contraband" means:
 - .1 An intoxicant, including alcoholic beverages, drugs and narcotics.
 - .2 Tobacco or associated tobacco products.
 - .3 Recreational Cannabis.
 - .4 An igniting device, lighter or matches.
 - .5 A weapon or a component thereof, ammunition for a weapon, and anything that is designed to kill, injure or disable a person or that is altered so as to be capable of killing, injuring or disabling a person, when possessed without prior authorization.
 - .6 An explosive or a bomb or a component thereof.
 - .7 currency over \$25, when possessed by an inmate without prior authorization; and
 - .8 Any item not described in paragraphs 1.2.1.1 to 1.2.1.6 that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization.
- .2 "Unauthorized Smoking and related Items" means all smoking items including, but not limited to, cigarettes, cigars, tobacco, chewing tobacco, cigarette making machines, matches and lighters.
- .3 "Commercial Vehicle" means any motor vehicle used for the shipment of material, equipment and tools required for the construction project.
- .4 "CSC" means Correctional Service Canada.
- .5 "Construction Employees" means persons working for the General Contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies.
- .6 "Departmental Representative" means the project manager from Public Works and Government Services Canada.
- .7 "Perimeter" means the fenced or walled area of the Institution that restrains the movement of the inmates.
- .8 "Construction Limits" means the Work Area as shown on the contract drawings that the Contractor will be allowed to work. This Work Area may or may not be isolated from the security area of the Institution.
 - .1 The Contractor is responsible for the safety and security of the Work Area.

- .2 The Contractor shall be expected to cooperate with the Institutional personnel in ensuring that security requirements are observed within the Work Area.
- .3 Contractors and their employees shall be confined to their Work Area. All other buildings and grounds shall be considered "Out of Bounds". Contractor's movement outside of the Work Area shall be escorted by an officer of CSC.
- .4 Contractors and their employees shall not contact or attempt to contact or deal in any way with inmates.

1.3 PRELIMINARY PROCEEDINGS

- .1 Prior to the commencement of work, the Contractor shall meet with the Departmental Representative or his/her representative to:
 - .1 Discuss the nature and extent of all activities involved in the Project.
 - .2 Establish mutually acceptable security procedures in accordance with this instruction and the institution's particular requirements.
- .2 Contractor shall:
 - .1 Ensure that all Construction Employees are aware of the rules of the institution.
 - .2 Ensure that a copy of the institutional rules is always prominently on display at the job site.
 - .3 Co-operate with institutional personnel in ensuring that the rules of the institution are observed by all Construction Employees.

1.4 CONSTRUCTION EMPLOYEES

- .1 Entry to Institutional Property will be refused to any person there may be reason to believe may be a security risk.
- .2 Any person employed on the construction site will be subject to immediate removal from Institutional Property if they:
 - .1 Appear to be under the influence of alcohol, drugs or narcotics.
 - .2 Behave in an unusual or disorderly manner.
 - .3 Are in possession of contraband.

1.5 VEHICLES

- .1 All unattended vehicles on CSC property shall have windows closed; doors and trunks shall be locked and keys removed. The keys shall be securely in the possession of the owner or an employee of the company that owns the vehicle.
 - .1 Failure to comply with the above will result in an immediate shutdown of the job site and stoppage of work for an indefinite period of time at the Contractor's expense.
- .2 The Departmental Representative may limit at any time the number and type of vehicles allowed within the Institution.
 - .1 No private vehicles allowed within the Institution's security wall or fence without special permission of the Departmental Representative or designate.
- .3 Drivers of delivery vehicles for material required by the project shall require security clearances and must remain with their vehicle the entire time that the vehicle is in the

institution. The director may require that these vehicles be escorted by institutional staff or Commissionaires while in the institution.

- .4 If the Departmental Representative permits trailers to be left inside the secure perimeter of the Institution, these trailer doors will be locked at all times. All windows will be securely locked when left unoccupied. All trailer windows shall be covered with expanded metal mesh. All storage trailers inside and outside the perimeter shall be locked when not in use.

1.6 PARKING

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

1.7 SHIPMENTS

- .1 All shipments of project material, equipment and tools shall be addressed in the Contractor's name to avoid confusion with the Institution's own shipments. The Contractor must have his/her own employees on site to receive any deliveries or shipments. CSC staff will NOT accept receipt of deliveries or shipments of any material, equipment or tools.
- .2 Contractor shall receive and offload all deliveries outside of the security gate. Only after a delivery has been offloaded and received outside of the security gate, may it be brought inside the security fence, for use on the job site.
- .3 Security provisions for all tools, assets, equipment & material located in the contractor laydown shall be the responsibility of the contractor.

1.8 TELEPHONES

- .1 There will be no installation of telephones, Facsimile machines and computers with Internet connections permitted within the perimeter of the institution unless prior approval of the Departmental Representative is received.
- .2 The Departmental Representative will ensure that approved telephones, Facsimile machine and computers with Internet connections are located where they are not accessible to inmates. All computers will have an approved password protection that will stop an Internet connection to unauthorized personnel.
- .3 Wireless cellular and digital telephones, including but not limited to devices for telephone messaging, pagers, smartphones, telephone used as two-way radios, are not permitted within the perimeter of the institution unless approved by the Departmental Representative. If wireless cellular telephones are permitted, the user will not permit their use by any inmate. Cellular telephones approved by the Departmental Representative must be signed in and out of the institution.
- .4 The Departmental Representative may approve and limit the use of two-way radios.

1.9 WORK HOURS

- .1 Work hours within the institution are: 8:00am to 4:00 pm, Monday to Friday.

1.10 OVERTIME WORK

- .1 Workers can work during the weekend outside of the building for longer hours subject to approval from the Departmental Representative.
- .2 Give a minimum twenty-four (24) hours advance notice when overtime work on the construction project is necessary and approved.
- .3 When overtime work, weekend, or statutory holiday work is required and approved by the Departmental Representative, extra staff members may be posted by the Departmental Representative or designate, to maintain the security surveillance. The actual cost of this extra staff may be attributed to the contractor.

1.11 TOOLS AND EQUIPMENT

- .1 Tools brought in need to be counted every day and workers need to have a security briefing upon their initial arrival.
- .2 Maintain a complete list of all tools and equipment to be used during the construction project. Make this inventory available for inspection when required.
- .3 Throughout the construction project maintain up-to-date the list of tools and equipment specified above.
- .4 Keep all tools and equipment under constant supervision, particularly power-driven and cartridge-driven tools, cartridges, files, saw blades, rod saws, wire, rope, ladders and any sort of jacking device.
- .5 Store all tools and equipment in approved secure locations.
- .6 Lock all tool boxes when not in use. Keys to remain in the possession of the employees of the Contractor.
- .7 All missing or lost tools or equipment shall be reported immediately to the Departmental Representative or designate.
- .8 The Departmental Representative shall ensure that the security staff members carry out checks of the Contractor's tools and equipment against the list provided by the Contractor. These checks may be carried out at the following intervals:
 - .1 At the beginning and conclusion of every construction project.
 - .2 Weekly, when the construction project extends longer than a one week period.
 - .3 The Contractor may be subject to random checks by security staff to ensure proper storage and security of tools throughout the project.
- .9 Certain tools/equipment such as cartridges and hacksaw blades are highly controlled items. The contractor will be given at the beginning of the day, a quantity that will permit one day's work. Used blades/cartridges will be returned to the Departmental Representative at the end of each day. The use of explosive-actuated tools is prohibited

on site unless otherwise approved by the Departmental Representative. All broken blades and tools must be accounted for and broken tools are not to be thrown away. Particular attention must be given to power driven tools, files, saw blades, rod saws, wire, rope and ladders. Tool kits must be locked when the area is unattended.

- .10 If propane or natural gas is used for heating the construction, the Institution will require that an employee of the Contractor supervise the construction site during non-working hours.
- .11 If torches or grinders are required tools to perform Work, Contractor shall complete a Hot Work Permit as supplied by CSC. Completed original form(s) are copied and posted on the work site in a conspicuous location. Original documents are to remain with the Institutional Fire Chief.
- .12 Prior to the mobilization of the job box to the project, the following procedure is to be followed:
 - .1 Name of responsible foreman/field supervisor for the job box
 - .2 Provide a list of tools that will be inside the job box
 - .1 This list must be signed off by the Departmental Representative
 - .3 No tools can be added to the job box without a formal revision to the tools list
 - .4 For job box, each tool is to have a number affixed to it (unless unsafe to do so and risks damaging the tool thus rendering it unsafe to use), to facilitate the tool inventory.
- .13 A laminated tool list or paper copy should be kept with the job box at all times

1.12 PRESCRIPTION DRUGS

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

1.13 SMOKING RESTRICTIONS

- .1 Contractors and construction employees are not permitted to smoke inside correctional facilities or outdoors within the perimeter of a correctional facility and must not possess unauthorized smoking items within the perimeter of a correctional facility.
- .2 Contractors and construction employees who are in violation of this policy will be requested to immediately cease smoking or dispose of any unauthorized smoking items and, if they persist, will be directed to leave the institution.
- .3 Smoking is only permitted outside the perimeter of a correctional facility in an area to be designated by the Departmental Representative.

1.14 CONTRABAND

- .1 Weapons, ammunition, explosives, alcoholic beverages, recreational cannabis, drugs and narcotics are prohibited on Institutional Property.

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- .2 Discovery of Contraband on the construction site and the identification of the person(s) responsible for the Contraband shall be reported immediately to the Departmental Representative.
 - .3 Contractors shall be vigilant with both their staff and the staff of their sub-contractors and suppliers that the discovery of Contraband may result in removal of the affected employee from the Institution. Serious infractions may result in the removal of the company from the Institution for the duration of the construction.
 - .4 Presence of arms and ammunition in vehicles of Contractors, sub-contractors and suppliers or employees of these will result in the immediate removal from the Institution of the driver of the vehicle.
 - .5 Contractor is responsible for ensuring that all persons employed directly or indirectly upon the project are familiar with Correctional and Conditional Release Act section 45. Summary Convictions as follows:
 - .6 CCRA Summary Conviction Offences 45. Every person commits a summary conviction offence who:
 - .1 Is in possession of contraband beyond the visitor control point in a penitentiary;
 - .2 Is in possession of anything referred to in paragraph (b) or (c) of the definition "contraband" in section 2 before the visitor control point at a penitentiary;
 - .3 Delivers contraband to, or receives contraband from, an inmate;
 - .4 Without prior authorization, delivers jewelry to, or receives jewelry from, an inmate; or
 - .5 Trespasses at a penitentiary.
 - .7 Refer to CSC Policy Document regarding the use of Cannabis on site.

1.15 SEARCHES

- .1 All vehicles and persons entering Institutional property may be subject to search.
- .2 When the Departmental Representative suspects, on reasonable grounds, that an employee of the Contractor is in possession of Contraband or unauthorized items, he/she may order that person to be searched under, Correctional Conditional Release Regulations Section 42.1 Contraband, Sections 43-46, 54.1-2, 55.1 Search and Seizure and Section 57 Seizure, Commissioner's Directives 566-8 section 9-16.
- .3 All employees entering the Institution may be subject to screening of personal effects for traces of Contraband drug residue.

1.16 ACCESS TO AND REMOVAL FROM INSTITUTIONAL PROPERTY

- .1 Construction personnel and commercial vehicles will not be admitted to the Institution after normal working hours, unless approved by the Departmental Representative.

1.17 MOVEMENT OF VEHICLES

- .1 Escorted commercial vehicles will be allowed to enter or leave the institution through the vehicle access gate during the following hours:

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- .1 8:00 a.m. to 4:00 p.m., Monday to Friday with the following exception:
 - .1 Vehicles cannot access the north sally port from 12:00 p.m. to 1:00 p.m. and 4:30 p.m. to 5:30 p.m.
 - .2 The Contractor shall advise the Departmental Representative twenty-four (24) hours in advance to the arrival on-site of heavy equipment such as concrete trucks, cranes, etc.
 - .3 Vehicles being loaded with soil or other debris, or any vehicle considered impossible to search, must be under continuous supervision by CSC staff or Commissionaires working under the authority of the Departmental Representative.
 - .4 Commercial vehicles will only be allowed access to institutional property when their contents are certified by the Contractor or his representative as being strictly necessary to the execution of the construction project.
 - .5 Vehicles shall be refused access to institutional property if, in the opinion of the Departmental Representative, they contain any article which may jeopardize the security of the institution.
 - .6 Private vehicles of construction employees will not be allowed within the security perimeter of medium or maximum security institutions without the authorization of the Departmental Representative. Contractor's employees will park their vehicles in an area outside the perimeter of the institution.
 - .7 With the approval of the Departmental Representative, certain equipment may be permitted to remain on the construction site overnight or over the weekend. This equipment must be securely locked, with the battery removed. The Departmental Representative may require that the equipment be secured with a chain and padlock to another fixed object.

1.18 MOVEMENT OF CONSTRUCTION EMPLOYEES ON INSTITUTIONAL PROPERTY

- .1 Subject to the requirements of good security, the Departmental Representative will permit the Contractor and his/her employees as much freedom of action and movement as is possible.
- .2 However, notwithstanding paragraph above, the Departmental Representative may prohibit or restrict access to any part of the Institution.
- .3 The Departmental Representative will also require the following:
 - .1 Workers need to be escorted by Correctional Officers while working inside of the building.
 - .2 Workers need to be escorted by commissionaires while working outside of the building.
- .4 During the lunch and coffee/health breaks, all employees will remain within the construction site. Employees are not permitted to eat in the officer's lounge and dining room.

1.19 SURVEILLANCE AND INSPECTION

- .1 Construction activities and all related movement of personnel and vehicles shall be subject to surveillance and inspection by CSC security staff members to ensure that established security requirements are met.
- .2 CSC staff members shall ensure that an understanding of the need to carry out surveillance and inspections, as specified above, is established among Construction Employees and maintained throughout the construction project.

1.20 STOPPAGE OF WORK

- .1 The Departmental Representative may order at any time that the contractor, his employees, sub-contractors and their employees to not enter or to leave the work site immediately due to a security situation occurring within the institution. The contractor's site supervisor shall note the name of the CSC staff member giving this instruction, the time of the request and obey the order as quickly as possible.
- .2 The contractor shall advise the Departmental Representative of this interruption of the work within 24 hours.

1.21 CONTACT WITH INMATES

- .1 Unless specifically authorized, it is forbidden to come into contact with inmates, to talk with them, to receive objects from them or to give them objects. Any construction employee doing any of the above without permission will be removed from the site and his/her security clearance revoked.
- .2 It is to be noted that cameras are not allowed on CSC property except if required for photographic history of the project. In this case, the contractor will be asked to use a designated memory card for the project.
- .3 Notwithstanding the above paragraph, if the Departmental Representative approves of the usage of cameras, it is strictly forbidden to take pictures of inmates, of CSC staff members or of any part of the Institution other than those required as part of this Contract.

1.22 TEMPORARY FENCES

- .1 Temporary fencing should be assumed as necessary around work area unless otherwise told by the Departmental Representative.
- .2 Refer to Section 01 50 00 - Temporary Barriers and Enclosures for other temporary fence requirements.

1.23 COMPLETION OF CONSTRUCTION PROJECT

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

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .3 Province of Alberta Occupational Health and Safety Act, R.S.A. – January 2016 or latest Edition.

1.2 SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan: Within 14 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
 - .3 Submit electronic copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative weekly.
 - .4 Submit copies of reports or directions issued by Federal and Provincial health and safety inspectors.
 - .5 Submit copies of incident and accident reports.
 - .6 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 7 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 7 days after receipt of comments from Departmental Representative.
 - .7 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
 - .8 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
 - .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

1.3 FILING OF NOTICE

- .1 File Notice of Project with Provincial authorities prior to beginning of Work.
- .2 Contractor shall agree to install proper site separation and identification in order to maintain time and space at all times throughout life of project.

1.4 SAFETY ASSESSMENT

- .1 Perform site specific safety hazard assessment related to project.

1.5 MEETINGS

- .1 Schedule and administer Health and Safety meeting with Departmental Representative prior to commencement of Work.

1.6 REGULATORY REQUIREMENTS

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

1.7 GENERAL REQUIREMENTS

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

1.8 RESPONSIBILITY

- .1 Be responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.

1.9 COMPLIANCE REQUIREMENTS

- .1 Comply with Occupational Health and Safety Act, General Safety Regulation, Alberta Reg.
- .2 Comply with Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.10 UNFORSEEN HAZARDS

- .1 When unforeseen or peculiar safety-related factor, hazard, or condition occur during performance of Work, follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Province having jurisdiction and advise Departmental Representative verbally and in writing.

1.11 HEALTH AND SAFETY CO-ORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
 - .1 Have working knowledge of occupational safety and health regulations.

- .2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.
- .3 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.
- .4 Be on site during execution of Work.

1.12 POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Province having jurisdiction, and in consultation with Departmental Representative.

1.13 CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.
- .2 Provide Departmental Representative with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.14 BLASTING

- .1 Blasting or other use of explosives is not permitted.

1.15 POWDER ACTUATED DEVICES

- .1 Use powder actuated devices only after receipt of written permission from Departmental Representative.

1.16 WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities, Chapter 3.
 - .2 EPA General Construction Permit (GCP).
- .2 Canada Federal Halocarbon Regulations, 2003
- .3 Canadian Correctional Service Canada
 - .1 Internal Service Directive 318-4 – Environmental Management of Halocarbons
- .4 Environment Canada (EC)
 - .1 Environmental Code of Practice for the Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems. (2015)

1.2 DEFINITIONS:

- .1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humankind; or degrade environment aesthetically, culturally and/or historically.
- .2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction. Control of environmental pollution and damage requires consideration of land, water, and air; biological and cultural resources; and includes management of visual aesthetics; noise; solid, chemical, gaseous, and liquid waste; radiant energy and radioactive material as well as other pollutants.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit 2 copies of WHMIS MSDS in accordance with Section 01 35 29.06 - Health and Safety Requirements.
- .3 Prior to commencing construction activities or delivery of materials to site, provide Environmental Protection Plan for review and approval by the Departmental Representative.
- .4 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.
- .5 Address topics at level of detail commensurate with environmental issue and required construction tasks.

- .6 Include in Environmental Protection Plan:
 - .1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.
 - .2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.
 - .3 Names and qualifications of persons responsible for training site personnel.
 - .4 Descriptions of environmental protection personnel training program.
 - .5 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.
 - .1 Ensure plan includes measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.
 - .6 Spill Control Plan including procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.
 - .7 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.
 - .8 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.
 - .9 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.
 - .10 Waste Water Management Plan identifying methods and procedures for management and/or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

1.4 FIRES

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

1.5 POLLUTION CONTROL

- .1 Maintain temporary erosion and pollution control features installed under this Contract.
- .2 Control emissions from equipment and plant to local authorities' emission requirements.
- .3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.
 - .1 Provide temporary enclosures where indicated directed by Departmental Representative.
- .4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.6 NOTIFICATION

- .1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.
- .2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.
 - .1 Do not take action until after receipt of written approval by Departmental Representative.
- .3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.
- .4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 Execution

2.1 CLEANING

- .1 Clean in accordance with Section 01 74 11 – Cleaning.
 - .1 Leave Work area clean at end of each day to the Satisfaction of the Departmental Representative.
- .2 Bury rubbish and waste materials on site where directed after receipt of written approval from Departmental Representative.
- .3 Ensure public waterways, storm and sanitary sewers remain free of waste and volatile materials disposal.
- .4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
- .5 Waste Management: separate waste materials for recycling/reuse in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
 - .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 General

1.1 REFERENCES AND CODES

- .1 Perform Work in accordance with National Building Code of Canada (NBC) 2015 including amendments up to tender closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
- .2 Specific design and performance requirements listed in the specifications or indicated on the Drawings may exceed the minimum requirements established by the referenced Building Code; these requirements will govern over the minimum requirements listed in the Building Code
 - .1 Meet or exceed requirements of:
 - .1 Contract documents.
 - .2 Specified standards, codes and referenced documents.

1.2 HAZARDOUS MATERIAL DISCOVERY

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify Departmental Representative immediately.
- .2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative immediately.
- .3 Mould: stop work immediately when material resembling mould is encountered during demolition work. Notify Departmental Representative immediately.

1.3 BUILDING SMOKING ENVIRONMENT

- .1 Comply with smoking restrictions and municipal by-laws.
- .2 Smoking and vaping are not permitted anywhere in the building.

1.4 QUALITY ASSURANCE

- .1 Regulatory Requirements: Except as otherwise specified, Constructor shall apply for, obtain, and pay all fees associated with, permits, licenses, certificates, and approvals required by regulatory requirements and Contract Documents, based on General Conditions of Contract and the following:
 - .1 Regulatory requirements and fees in force on date of Bid submission; and
 - .2 Any change in regulatory requirements or fees scheduled to become effective after date of tender submission and of which public notice has been given before date of tender submission.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

2.2 EASEMENTS AND NOTICES

- .1 Constructor shall give notices required by regulatory requirements.

2.3 PERMITS

- .1 Building Permit:
 - .1 Constructor shall apply for, obtain and pay for building permit on behalf of Department Representative, and other permits required for Work and its various parts.
 - .2 Constructor will require that specific Subcontractor's obtain and pay for permits required by authorities having jurisdiction, where their Work is affected by Work requiring permits.
 - .3 Constructor will display building permit and other permits in a conspicuous location at Place of Work.

END OF SECTION

Part 1 General

1.1 INSPECTION

- .1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.
- .2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
- .3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
- .4 Departmental Representative will order part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

1.2 INDEPENDENT INSPECTION AGENCIES

- .1 The General Contractor to engage independent Inspection/Testing Agencies for purpose of inspecting and/or testing portions of Work as indicated in the respective technical specification sections. Cost of such services will be borne by the General Contractor.
- .2 Provide equipment required for executing inspection and testing by appointed agencies.
- .3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by the Departmental Representative at no cost to Departmental Representative. Pay costs for re-testing and re-inspection.

1.3 ACCESS TO WORK

- .1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

- .1 Submit quality control procedures, forms and reports to Department Representatives.
- .2 Notify appropriate agency Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.

- .3 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .4 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.5 REJECTED WORK

- .1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents. Provide photographs of all corrected work.
- .2 Make good other Contractor's work damaged by such removals or replacements promptly.
- .3 If in opinion of Departmental Representative, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by the Departmental Representative.

1.6 REPORTS

- .1 Submit electronic copy of inspection and test reports to Departmental Representative.
- .2 Provide copies to subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

1.7 TESTS AND MIX DESIGNS

- .1 Furnish test results and mix designs as requested.
- .2 Cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work will be appraised by Departmental Representative and may be authorized as recoverable.

1.8 MOCK-UPS

- .1 Prepare a fully finished mock-up of a Gun Port Retrofit per details on drawing sheet A2.0 in its entirety. In lieu of installing the mock-up at an existing Gun Port location, mount the assembly on a full 1220mm x 2440mm x 19mm cabinet grade plywood sheet at the same height as the existing control post Gun Port elevations. Fabricate the opening in the plywood sheet to replicate the existing Gun Port conditions and ensure it has a similar cut-out as per the existing location. Include for all related work. Mock-ups are required for the following specification sections (as applicable to each):
 - .1 Section 05 50 00 – Metal Fabrications
 - .2 Section 08 80 00 – Glazing
 - .3 Section 09 91 99 - Painting for Minor Works

- .2 Do not install sealants as part of the mock-up.
- .3 Mock-Up is to be submitted to Departmental Representative for review and approval. Notify Departmental Representative within the Work Plan anticipated delivery of mock-up and make arrangements for delivery.
- .4 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .5 If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.
- .6 Allow 2-weeks for Departmental Representative approval of mock-up.
- .7 Do not fabricate all other Gun Port assemblies until written approval of mock-up is received.
- .8 Make arrangements with Departmental Representative for pick up of mock-up after it has been reviewed.
- .9 If revisions to mock-up are required, re-submit revised Gun Port mock-up for approval.
- .10 If Mock-Up is approved, the Gun Port assembly can be used for actual installation at Gun Port location #52 and can be tested for proper installation in existing locations.

END OF SECTION

Part 1 General

1.1 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.2 INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

1.3 WATER SUPPLY

- .1 Water service throughout the building must be maintained operational throughout the day. All interruptions to water service must be coordinated with the Departmental Representative and should be limited to evenings as required by the facilities.
- .2 If the contractor seeks to use the existing water infrastructure on site for their own use, and this does not interrupt or jeopardize institutional operations, contractor may use their own means to tie-into existing water infrastructure and the contractor will not be charged for the use. Contractor to return modified infrastructure to its original condition before project completion.
- .3 Any temporary use of institutional infrastructure must be approved by the Departmental Representative before use and can be disallowed at any time for any reason, even after approval is given. All temporary infrastructure connections must be removed at the end of the project; brought back to its original condition.

1.4 TEMPORARY VENTILATION AND HEATING

- .1 N/A

1.5 TEMPORARY POWER AND LIGHT

- .1 Departmental Representative will provide temporary power within the institution during construction for temporary lighting and operating of power tools.
- .2 Any additional temp power and light is the responsibility of the contractor. If the contractor seeks to use the departmental representative's existing electrical infrastructure on site for their own use, and this does not interrupt or jeopardize institutional operations, contractor may use their own means to tie-into departmental representatives existing electrical infrastructure and the contractor will not be charged extra for this power use.
- .3 Any temporary use of institutional electrical infrastructure must be approved by the Departmental Representative before use and can be disallowed at any time for any reason, even after approval is given. All temporary electrical infrastructure additions must be removed at the end of the project; brought back to its original condition.
- .4 Existing lighting may be used during construction but if lighting levels are not adequate, contractor to provide and pay for temporary lighting.

- .5 Provide and maintain temporary lighting throughout project. Ensure level of illumination in affected area is not less than 162 lx.

1.6 TEMPORARY COMMUNICATION FACILITIES

- .1 If required, provide and pay for temporary telephone, fax, data hook up, lines and/or equipment necessary for own use. Costs to also include installation, maintenance and removal.
- .2 The Contractor shall obtain approval from the Departmental Representative for the installation of internet connection. See 01 35 13, 1.8 Telephone.

1.7 FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-Z321-96(R2001), Signs and Symbols for the Occupational Environment.

1.2 SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.3 INSTALLATION AND REMOVAL

- .1 Prepare floor plan indicating proposed location and dimensions of area to be used by Contractor,.
- .2 Indicate use of supplemental or other staging areas.
- .3 Provide construction facilities in order to execute work expeditiously.
- .4 Coordinate locations of site trailer and laydown areas with Departmental Representatives.
- .5 The General Contractor shall be responsible for providing a site office for the purposes of conducting the work.

1.4 ELEVATORS

- .1 Elevators are NOT available nor required on this project.

1.5 SITE STORAGE/LOADING

- .1 Material storage shall be limited to the General Contractor's Work Area.
- .2 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .3 Do not load or permit to load any part of Work with weight or force that will endanger Work.
- .4 Contractor laydown location To Be Determined.

1.6 CONSTRUCTION PARKING

- .1 Refer to Section 01 35 13 – Security Requirements.

1.7 OFFICES

- .1 Provide office heated to 22 degrees C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table.

- .2 Provide marked and fully stocked first-aid case in a readily available location.
- .3 Subcontractors to provide their own offices as necessary. Direct location of these offices.

1.8 SECURITY

- .1 Refer to Section 01 35 13 – Special Project Procedures for CSC Security Requirements for security requirements.

1.9 EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials. Refer to Section 01 35 13 – Special Project Procedures for CSC Security Requirements for storage facility requirements for tools and equipment.
- .2 Locate materials not required to be stored in weatherproof sheds on site in manner to cause least interference with work activities.

1.10 SANITARY FACILITIES

- .1 The Contractor may use existing sanitary facilities as directed by the Departmental Representative or CLO.
 - .1 Contractor must keep facilities in clean working condition.

1.11 CONSTRUCTION SIGNAGE

- .1 No construction advertisement signs, other than health and safety, warning and instructional signs, are permitted on site.
- .2 Signs and notices for safety and instruction in both official languages Graphic symbols to CAN/CSA-Z321.
- .3 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.12 PROTECTION AND MAINTENANCE OF TRAFFIC

- .1 Provide access and temporary relocated roads as necessary to maintain traffic.
- .2 Maintain and protect traffic on affected roads during construction period except as otherwise specifically directed by Departmental Representative.
- .3 Provide measures for protection and diversion of traffic, including provision of watch-persons and flag-persons, erection of barricades, placing of lights around and in front of equipment and work, and erection and maintenance of adequate warning, danger, and direction signs.
- .4 Contractor's traffic on roads selected for hauling material to and from site to interfere as little as possible with public traffic.

- .5 Verify adequacy of existing roads and allowable load limit on these roads. Contractor: responsible for repair of damage to roads caused by construction operations.
- .6 Provide necessary lighting, signs, barricades, and distinctive markings for safe movement of traffic.
- .7 Dust control: adequate to ensure safe operation at all times.

1.13 CLEAN-UP

- .1 Remove construction debris, waste materials, packaging material from work site daily.
- .2 Clean dirt or mud tracked onto paved or surfaced roadways.
- .3 Store materials resulting from demolition activities that are salvageable.
- .4 Stack stored new or salvaged material not in construction facilities.

END OF SECTION

Part 1 General

1.1 GENERAL

- .1 Enclose and shelter the work areas as required to protect the existing building, the existing building components, building occupants and contents, as well as the work in progress from damage.

1.2 REFERENCE STANDARDS

- .1 Correctional Services Canada (CSC) technical Criteria.

1.3 INSTALLATION AND REMOVAL

- .1 Provide temporary measures in order to execute Work expeditiously and prevent damage to the work and/to to the Building.
- .2 Remove from site all such work after use.

1.4 DUST TIGHT SCREENS

- .1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers and finished areas of Work.
- .2 Maintain and relocate protection until such work is complete.

1.5 ACCESS TO SITE

- .1 Provide and maintain access within building as may be required for access to Work.

1.6 EXIT ROUTES

- .1 Maintain access to exit for use by occupants and workers during construction.

1.7 PROTECTION OF BUILDING FINISHES

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

1.8 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Within text of each specifications section, reference may be made to reference standards.
- .2 Conform to these reference standards, in whole or in part as specifically requested in specifications.
- .3 If there is question as to whether products or systems are in conformance with applicable standards, Departmental Representative reserves the right to have such products or systems tested to prove or disprove conformance.
- .4 Cost for such testing will be born by Departmental Representative in event of conformance with Contract Documents or by Contractor in event of non-conformance.

1.2 QUALITY

- .1 Products, materials, equipment and articles incorporated in Work shall be new, not damaged or defective, and of best quality for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.
- .2 Procurement policy is to acquire, in cost effective manner, items containing highest percentage of recycled and recovered materials practicable consistent with maintaining satisfactory levels of competition. Make reasonable efforts to use recycled and recovered materials and in otherwise utilizing recycled and recovered materials in execution of work.
- .3 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.
- .4 Should disputes arise as to quality or fitness of products, decision rests strictly with the Departmental Representative based upon requirements of Contract Documents.
- .5 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
- .6 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.3 AVAILABILITY

- .1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for items. If delays in supply of products are foreseeable, notify Departmental Representative of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

1.4 STORAGE, HANDLING AND PROTECTION

- .1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.
- .2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.
- .3 Store products subject to damage from weather in weatherproof enclosures.
- .4 Store cementitious products clear of earth or concrete floors, and away from walls.
- .5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.
- .6 Store sheet materials and lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.
- .7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.
- .8 Remove and replace damaged products at own expense and to satisfaction of Departmental Representative.
- .9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

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

1.6 MANUFACTURER'S INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.
- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 QUALITY OF WORK

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

- .2 Do not employ anyone unskilled in their required duties. Departmental Representative reserves right to require dismissal from site, workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with the Departmental Representative, whose decision is final.

1.8 CO-ORDINATION

- .1 Ensure co-operation of workers in laying out Work. Maintain efficient and continuous supervision.
- .2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 CONCEALMENT

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

1.10 REMEDIAL WORK

- .1 Refer to Section 01 73 00 – Execution Requirements.
- .2 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Co-ordinate adjacent affected Work as required.
- .3 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 FASTENINGS

- .1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.
- .2 Prevent electrolytic action between dissimilar metals and materials.
- .3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.
- .4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.
- .5 Keep exposed fastenings to a minimum, space evenly and install neatly.
- .6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.
- .7 Fasteners in inmate accessible areas must have tamper resistant fastenings

1.12 FASTENINGS - EQUIPMENT

- .1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service as indicated on drawings.

1.13 PROTECTION OF WORK IN PROGRESS

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

1.14 EXISTING UTILITIES

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants and pedestrian and vehicular traffic.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Record location of capped service.

END OF SECTION

Part 1 General

1.1 EXISTING SERVICES

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

1.2 LOCATION OF EQUIPMENT AND FIXTURES

- .1 Location of equipment, fixtures and outlets indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Departmental Representative of impending installation and obtain approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Departmental Representative.

1.3 RECORDS

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 Record locations of maintained, re-routed and abandoned service lines

END OF SECTION

Part 1 General

1.1 SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
 - .1 Structural integrity of elements of project.
 - .2 Integrity of weather-exposed or moisture-resistant elements.
 - .3 Efficiency, maintenance, or safety of operational elements.
 - .4 Visual qualities of sight-exposed elements.
 - .5 Work of Department Representative or separate contractor.
- .3 Include in request:
 - .1 Identification of project.
 - .2 Location and description of affected Work.
 - .3 Statement on necessity for cutting or alteration.
 - .4 Description of proposed Work, and products to be used.
 - .5 Alternatives to cutting and patching.
 - .6 Effect on Work of Department Representative or separate contractor.
 - .7 Written permission of affected separate contractor.
 - .8 Date and time work will be executed.

1.2 MATERIALS

- .1 Required for original installation.
- .2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00 - Submittal Procedures.
- .3 Match existing style and color and finishes for flashings and trim work where practical.

1.3 PREPARATION

- .1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering, inspect conditions affecting performance of Work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.
- .4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .5 Provide protection from elements for areas to be exposed by uncovering work; maintain excavations free of water.

- .6 Contractor must protect existing equipment in operation from dust/debris/or-other- incidental- damage resulting from construction activities, including newly commissioned units in operation and equipment/material on site but not yet installed

1.4 EXECUTION

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.
- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
 - .1 Provide temporary secure closures to openings in secure walls.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Employ manufacturer authorized installer to perform cutting and patching for weather-exposed and moisture-resistant elements, and sight-exposed surfaces.
- .8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .9 Restore work with new products in accordance with Contract Documents requirements.
- .10 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

1.5 WASTE MANAGEMENT AND DISPOSAL

- .1 Separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 PROJECT CLEANLINESS

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris. Containers to be secured and locked at all times when not in use.
- .5 Work areas must be cleaned to the satisfaction of the Departmental Representative at the end of each work day. Remove waste material and debris from site and deposit in waste container at end of each working day.
- .6 Provide and use marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .7 Dispose of waste materials and debris off site.
- .8 Clean interior areas prior to start of finishing work and maintain areas free of dust and other contaminants during finishing operations.
- .9 Store volatile waste in covered metal containers and remove from premises at end of each working day.
- .10 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .11 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .12 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2 FINAL CLEANING

- .1 When Work is Substantially Performed remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
- .2 Remove waste products and debris other than that caused by others and leave Work clean and suitable for occupancy.
- .3 Prior to final review remove surplus products, tools, construction machinery and equipment.

-
- .4 Remove waste products and debris to the Satisfaction of the Departmental Representative.
 - .5 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
 - .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
 - .7 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors and ceilings.
 - .8 Vacuum, clean, and dust building interiors, behind grilles, louvres, and screens.
 - .9 Clean lighting reflectors, lenses, and other lighting surfaces.
 - .10 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
 - .11 Remove debris and surplus materials from crawl areas, ceiling plenums and other accessible concealed spaces.
 - .12 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds affected by the Work.
 - .13 Remove dirt and other disfiguration from exterior surfaces.
 - .14 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
 - .15 Clean and sweep roofs, areaways and clean drainage system.
 - .16 Sweep and wash clean paved areas affected by the Work.
 - .17 Remove snow and ice from access to building affected by the Work.

END OF SECTION

Part 1 General

1.1 WASTE MANAGEMENT GOALS

- .1 Canadian Construction Association (CCA)
 - .1 CCA 81-2001: A Best Practices Guide to Solid Waste Reduction.
- .2 Public Works and Government Services Canada (PSPC)
 - .1 2002 National Construction, Renovation and Demolition Non-Hazardous Solid
- .3 Prior to start of Work conduct meeting with Departmental Representative to review and discuss waste management goals.

1.2 DEFINITIONS

- .1 Approved/Authorized recycling facility: waste recycler approved by applicable provincial authority or other users of material for recycling approved by the Departmental Representative.
- .2 Class III: non-hazardous waste - construction renovation and demolition waste.
- .3 Construction, Renovation and/or Demolition (CRD) Waste: Class III solid, non-hazardous waste materials generated during construction, demolition, and/or renovation activities
- .4 Inert Fill: inert waste - exclusively asphalt and concrete.
- .5 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.
- .6 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.
- .7 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form. Recycling does not include burning, incinerating, or thermally destroying waste.
- .8 Reuse: repeated use of product in same form but not necessarily for same purpose. Reuse includes:
 - .1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
 - .2 Returning reusable items including pallets or unused products to vendors.
- .9 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.
- .10 Separate Condition: refers to waste sorted into individual types.
- .11 Source Separation: act of keeping different types of waste materials separate beginning from the point they became waste.

1.3 USE OF SITE AND FACILITIES

- .1 Execute Work with minimal interference and disturbance to normal use of premises.

- .2 Maintain security measures established by facility provide temporary security measures approved by Departmental Representative.

1.4 WASTE PROCESSING SITES

- .1 Contractor is responsible to research and locate waste diversion resources and service providers. Salvaged materials are to be transported off site to approved and/or authorized recycling facilities or to users of material for recycling.
- .2 Province of: Alberta
 - .1 Name: Alberta Environment Construction, Renovation and Demolition Waste Reduction Recycling Branch Phone: (780) 427-6982 or 1-800-463-6326

1.5 STORAGE, HANDLING AND PROTECTION

- .1 Store, materials to be reused, recycled and salvaged in locations as directed by Departmental Representative.
- .2 Unless specified otherwise, materials for removal become Contractor's property.
- .3 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.
- .4 Protect structural components not removed for demolition from movement or damage.
- .5 Support affected structures. If safety of building is endangered, cease operations and immediately notify Departmental Representative.
- .6 Protect surface drainage, mechanical and electrical from damage and blockage.
- .7 Provide on-site facilities and containers for collection and storage of reusable and recyclable materials. Containers to be secured and locked at all times when not in use.
- .8 Separate & store materials produced during dismantling of structures in designated areas.
- .9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.
 - .1 On-site source separation is recommended.
 - .2 Remove co-mingled materials to off-site processing facility for separation.
 - .3 Obtain waybills, receipts and/or scale tickets for separated materials removed from site.
 - .4 Materials reused on-site are considered to be diverted from landfill and as such are to be included in all reporting.

1.6 DISPOSAL OF WASTE

- .1 Do not bury rubbish or waste materials.
- .2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner into waterways, storm, or sanitary sewers.
- .3 Keep records of construction waste including:
 - .1 Number and size of bins.
 - .2 Waste type of each bin.
 - .3 Total tonnage generated.

- .4 Tonnage reused or recycled.
 - .5 Reused or recycled waste destination.
 - .4 Remove materials on-site as Work progresses.
 - .5 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.
- 1.7 USE OF SITE FACILITIES**
- .1 Execute Work with least possible interference or disturbance to normal use of premises.
- 1.8 SCHEDULING**
- .1 Co-ordinate Work with other activities to ensure timely and orderly progress of Work.

END OF SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Acceptance of Work Procedures:
 - .1 Contractor's Inspection: Contractor and subcontractors: conduct inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
 - .1 Notify Departmental Representative in writing of satisfactory completion of Contractor's inspection and submit verification that corrections have been made.
 - .2 Request Departmental Representative inspection.
 - .2 Departmental Representative Inspection:
 - .1 Departmental Representative and Contractor to inspect Work and identify defects and deficiencies.
 - .2 Contractor to correct Work as directed.
 - .3 Completion Tasks: submit certificates that tasks have been performed as follows:
 - .1 Work: completed and inspected for compliance with Contract Documents.
 - .2 Defects: corrected and deficiencies completed.
 - .3 Equipment and systems have been tested, adjusted and are fully operational.
 - .4 Operation of systems: Training to Departmental Representative's personnel.
 - .5 Work: complete and ready for final inspection.
 - .1 Completion must be signed off by two Authorized Department Representatives.
 - .4 Final Inspection:
 - .1 When items noted above are completed, request final inspection of Work by Departmental Representative, and Contractor. If Work is deemed
 - .2 incomplete by Departmental Representative, complete outstanding items and request re-inspection.
 - .5 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects corrected and requirements of Contract substantially performed, make application for Certificate of Substantial Performance.
 - .6 Commencement of Warranty Periods: date of Departmental Representative 's acceptance of submitted declaration of Substantial Performance to be dated for commencement for warranty period.
 - .7 Final Payment:
 - .1 When Departmental Representative consider final deficiencies and defects corrected and requirements of Contract met, make application for final payment.

- .8 Payment of Holdback: after issuance of Certificate of Substantial Performance of Work, submit application for payment of holdback amount in accordance with contractual agreement.

1.2 FINAL CLEANING

- .1 Clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Remove surplus materials, excess materials, rubbish, tools and equipment.
 - .2 Waste Management: separate waste materials for recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

END OF SECTION

Part 1 General

1.1 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Prepare instructions and data using personnel experienced in maintenance and operation of described products.
- .3 Copy will be returned with Departmental Representative's comments.
- .4 Revise content of documents as required prior to final submittal
- .5 Provide spare parts, maintenance materials and special tools that are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .6 Provide evidence, if requested, for type, source and quality of products supplied.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.

1.2 ELECTRONIC SUBMITTALS

- .1 Submit number of hard copies specified for each type and format of submittal and in also submit in electronic format as pdf files and also in MS Word, Excel, Project as may be appropriate and in Autocad DWG files all on CD R/W or USB.

1.3 FORMAT

- .1 Organize data as instructional manual.
- .2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.
- .3 When multiple binders are used correlate data into related consistent groupings.
 - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by component under Section numbers and sequence of Table of Contents.
- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.

- .1 Bind in with text; fold larger drawings to size of text pages.
- .2 Provide drawings in pdf and dwg formats.

1.4 CONTENTS - PROJECT RECORD DOCUMENTS

- .1 Label CD/DVD, binders "CSC, Edmonton Institution U5 Gun Port (R)". Include name of Contractor and date of submission.
- .2 Table of Contents for Each Volume: provide title of project;
 - .1 Date of submission; names.
 - .2 Addresses, and telephone numbers of Consultants, Contractor, Sub-contractors and material suppliers with name of responsible parties.
 - .3 Schedule of products and systems, indexed to content of volume.
 - .4 Bookmark electronic copies of Project Record Documents with digital bookmarks.
- .3 Organize files into National Master Specification format (current edition) numbering system. Ensure all content is clearly legible.
- .4 For each product or system:
 - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .5 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .6 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
 - .1 Provide typewritten text as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.
- .7 Submit copies of executed guarantees and bonds.
- .8 Submit copies of approved shop drawings.
- .9 Submit copies of all Consultant Field Reports and all material and product Field Test Reports.
- .10 Training: refer to Section 01 79 00 - Demonstration and Training.

1.5 AS -BUILT DOCUMENTS AND SAMPLES

- .1 Maintain, in addition to requirements in General Conditions, at site for Departmental Representative, one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda.
 - .4 Change Orders and other modifications to Contract.

- .5 Reviewed shop drawings, product data, and samples.
- .6 Field Test Report, System Components List c/w Commissioning Verification Forms and Check Sheets and Commissioning Issues/Resolution Log.
- .7 Inspection certificates.
- .8 Manufacturer's certificates.
- .2 Store record documents and samples in field office apart from documents used for construction.
 - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
 - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.
- .4 Maintain record documents in clean, dry and legible condition.
 - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.
- .6 Departmental Representative may furnish additional drawings and specifications to clarify Work.
 - .1 Such documents become part of Contract Document.
 - .2 Include such documents in As Built submission.
- .7 Submit to Departmental Representative one copy of drawings and specifications for review prior to final submission.

1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS

- .1 Record information on a full-sized copy of the contract drawings on set of black line opaque drawings, and in copy of Project Manual.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
 - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
 - .1 Field changes of dimension and detail.
 - .2 Changes made by change orders.
 - .3 Details not on original Contract Drawings.
 - .4 Referenced Standards to related shop drawings and modifications.
 - .5 Provide dwg files for all modified shop drawings to show as-fabricated/constructed conditions.
- .5 Specifications: mark each item to record actual construction, including:

- .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
- .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

1.7 MATERIALS AND FINISHES

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

1.8 MAINTENANCE MATERIALS

- .1 Spare Parts:
 - .1 Provide spare parts, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 Extra Stock Materials:
 - .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
 - .2 Provide items of same manufacture and quality as items in Work.
 - .3 Deliver to location as directed; place and store.
 - .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.
 - .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
 - .1 Provide special tools, in quantities specified in individual specification section.
 - .2 Provide items with tags identifying their associated function and equipment.

- .3 Deliver to location as directed; place and store.
- .4 Receive and catalogue items.
 - .1 Submit inventory listing to Departmental Representative.
 - .2 Include approved listings in Maintenance Manual.

1.9 DELIVERY, STORAGE AND HANDLING

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.10 WARRANTIES AND BONDS

- .1 Develop warranty management plan to contain information relevant to Warranties.
 - .1 Contractor shall respond to maintenance issues within 3 hours of notification.
- .2 Submit Manufacturer's warranty certificate indicating warranty coverage for a period of 12 months following Substantial Completion as certified by Departmental Representative.
- .3 Verify that documents are in proper form, contain full information and are notarized.
- .4 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .5 Develop warranty management plan to contain information relevant to Warranties Manufacturers' Guarantees and Bonds.
- .6 Submit warranty management plan, 60 days before planned pre-warranty conference, to Departmental Representative approval.
 - .1 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
 - .2 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .7 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.
- .8 Assemble approved information in binder and submit upon acceptance of work. Organize binder as follows:
 - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

-
- .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
 - .3 Obtain warranties, manufacturers' guarantees and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within 10 days after completion of applicable item of work.
 - .4 Verify that documents are in proper form, contain full information, and are notarized.
 - .5 Co-execute submittals when required.
 - .6 Retain warranties and bonds until time specified for submittal.
 - .9 Except for items put into use with Department Representative's permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
 - .10 Conduct joint 4 month and 9 month warranty inspection, measured from time of acceptance, by Departmental Representative.
 - .11 Include information contained in warranty management plan as follows:
 - .1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
 - .2 Listing and status of delivery of Certificates of Warranty for extended warranty items.
 - .12 Provide list for each warranted equipment, item, feature of construction or system indicating:
 - .1 Name of item.
 - .2 Model and serial numbers.
 - .3 Location where installed.
 - .4 Name and phone numbers of manufacturers or suppliers.
 - .5 Names, addresses and telephone numbers of sources of spare parts.
 - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
 - .7 Cross-reference to warranty certificates as applicable.
 - .8 Starting point and duration of warranty period.
 - .9 Summary of maintenance procedures required to continue warranty in force.
 - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
 - .11 Organization, names and phone numbers of persons to call for warranty service.
 - .12 Typical response time and repair time expected for various warranted equipment.
 - .13 Contractor's plans for attendance at various required post-construction warranty inspections.
 - .14 Procedure and status of tagging of equipment covered by extended warranties.
 - .15 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.
 - .13 Respond in a timely manner to oral or written notification of required construction warranty repair work.

.14 Written verification to follow oral instructions.

.1 Failure to respond will be cause for the Departmental Representative to proceed with action against Contractor.

1.11 PRE-WARRANTY CONFERENCE

.1 Meet with Departmental Representative, to develop understanding of requirements of this section. Schedule meeting prior to contract completion, and at time designated by Departmental Representative.

.2 Departmental Representative will establish communication procedures for:

.1 Notification of construction warranty defects.

.2 Determine priorities for type of defect.

.3 Determine reasonable time for response.

.3 Provide name, telephone number and address of licensed and bonded company that is authorized to initiate and pursue construction warranty work action.

.4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

SECTION

Part 1 General

1.1 ADMINISTRATIVE REQUIREMENTS

- .1 Demonstrate operation and maintenance of equipment and systems to Departmental Representative two weeks prior to date of substantial completion.
- .2 The Departmental Representative will provide list of personnel to receive instructions, and co-ordinate their attendance at agreed-upon times.
- .3 Preparation:
 - .1 Verify conditions for demonstration and instructions comply with requirements.
 - .2 Verify designated personnel are present.
 - .3 Ensure testing, adjusting, and balancing has been performed and equipment and systems are fully operational.
- .4 Demonstration and Instructions:
 - .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at agreed upon times and location.
 - .2 Instruct personnel in phases of operation and maintenance using operation and maintenance manuals as basis of instruction.
 - .3 Review contents of manual in detail to explain aspects of operation & maintenance.
 - .4 Prepare and insert additional data in operations and maintenance manuals when needed during instructions.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit schedule of time and date for demonstration of each item of equipment and each system two weeks prior to designated dates, for Departmental Representative's approval.
- .3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .4 Give time and date of each demonstration, with list of persons present.
- .5 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.3 QUALITY ASSURANCE

- .1 When specified in individual Sections requiring manufacturer to provide authorized representative to demonstrate operation of equipment and systems:
 - .1 Instruct Department Representative.
 - .2 Provide written report that demonstration and instructions have been completed.

END OF SECTION

Part 1 General**1.1 SUMMARY**

- .1 Section Includes:
 - .1 General requirements relating to commissioning of project's components and systems, specifying general requirements to PV of components, equipment, sub-systems, systems, and integrated systems.
- .2 Acronyms:
 - .1 AFD - Alternate Forms of Delivery, service provider.
 - .2 BMM - Building Management Manual.
 - .3 Cx - Commissioning.
 - .4 EMCS - Energy Monitoring and Control Systems.
 - .5 O&M - Operation and Maintenance.
 - .6 PI - Product Information.
 - .7 PV - Performance Verification.

1.2 GENERAL

- .1 Cx is a planned program of tests, procedures and checks carried out systematically on systems and integrated systems of the finished Project. Cx is performed after systems and integrated systems are completely installed, functional and Contractor's Performance Verification responsibilities have been completed and approved. Objectives:
 - .1 Verify installed equipment, systems and integrated systems operate in accordance with Contract Documents and design criteria and intent.
 - .2 Ensure appropriate documentation is compiled into the BMM.
 - .3 Effectively train O&M staff.
- .2 Contractor assists in Cx process, operating equipment and systems, troubleshooting and making adjustments as required.
 - .1 During these checks, adjustments to be made to enhance performance to meet environmental or user requirements.
- .3 Design Criteria: as per contract documents or determined by Departmental Representative's. To meet Project functional and operational requirements.

1.3 COMMISSIONING OVERVIEW

- .1 Section 01 91 31- Commissioning (Cx) Plan .
- .2 For Cx responsibilities refer to Section 01 91 31- Commissioning (Cx) Plan .
- .3 Cx to be a line item of Contractor's cost breakdown.
- .4 Cx activities supplement field quality and testing procedures described in relevant technical sections.

- .5 Cx is conducted in concert with activities performed during stage of project delivery. Cx identifies issues in Planning and Design stages which are addressed during Construction and Cx stages to ensure the work is constructed and proven to operate satisfactorily under weather, environmental and occupancy conditions to meet functional and operational requirements. Cx activities includes transfer of critical knowledge to facility operational personnel.
- .6 Departmental Representative will issue Interim Acceptance Certificate when:
 - .1 Completed Cx documentation has been received, reviewed for suitability and approved by Departmental Representative .
 - .2 Equipment, components and systems have been commissioned and functional as per design intent to meet project functional requirements and to meet all requirements of the Authority Having Jurisdiction..
 - .3 Final O&M and training manual have been completed, submitted and approved by the Departmental Representative for suitability.
 - .4 Completion of Training session to all Operational and Maintenance staffs.

1.4 NON-CONFORMANCE TO PERFORMANCE VERIFICATION REQUIREMENTS

- .1 Should equipment, system components, and associated controls be incorrectly installed or malfunction during Cx, correct deficiencies, re-verify equipment and components within the unfunctional system, including related systems as deemed required by Departmental Representative, to ensure effective performance.
- .2 Costs for corrective work, additional tests, inspections, to determine acceptability and proper performance of such items to be borne by Contractor. Above costs to be in form of progress payment reductions or hold-back assessments.

1.5 PRE-CX REVIEW

- .1 Before Construction:
 - .1 Review Contract Documents, confirm by writing to Departmental Representative.
 - .1 Adequacy of provisions for Cx.
 - .2 Aspects of design and installation pertinent to success of Cx.
- .2 During Construction:
 - .1 Co-ordinate provision, location and installation of provisions for Cx.
- .3 Before start of Cx:
 - .1 Have completed Cx Plan up-to-date.
 - .2 Ensure installation of related components is complete.
 - .3 Fully understand Cx requirements and procedures.
 - .4 Have Cx documentation shelf-ready.
 - .5 Understand completely design criteria and intent and special features.
 - .6 Submit complete start-up documentation to Departmental Representative.

- .7 Have Cx schedules up-to-date.
- .8 Ensure systems have been cleaned thoroughly.
- .9 Ensure "As-Built" system schematics are available.
- .4 Inform Departmental Representative in writing of discrepancies and deficiencies on finished works.

1.6 CONFLICTS

- .1 Report conflicts between requirements of this section and other sections to Departmental Representative before start-up and obtain clarification.
- .2 Failure to report conflict and obtain clarification will result in application of most stringent requirement.

1.7 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submittals: in accordance with Section 01 33 00- Submittal Procedures.
 - .1 Submit no later than 4 weeks after award of Contract:
 - .1 Name of Contractor's Cx agent.
 - .2 Draft Cx documentation.
 - .3 Preliminary Cx schedule.
 - .2 Request in writing to Departmental Representative for changes to submittals and obtain written approval at least 8 weeks prior to start of Cx.
 - .3 Submit proposed Cx procedures to Departmental Representative where not specified and obtain written approval at least 8 weeks prior to start of Cx.
 - .4 Provide additional documentation relating to Cx process required by Departmental Representative.

1.8 COMMISSIONING DOCUMENTATION

- .1 Refer to Section 01 91 13.16- Commissioning (Cx) Forms.
- .2 Departmental Representative to review and approve Cx documentation.
- .3 Provide completed and approved Cx documentation to Departmental Representative .

1.9 COMMISSIONING SCHEDULE

- .1 Provide detailed Cx schedule as part of construction schedule in accordance with Section 01 32 16.07- Construction Progress Schedules - Bar (GANTT) Chart .
- .2 Provide adequate time for Cx activities prescribed in technical sections and commissioning sections including:
 - .1 Approval of Cx reports.
 - .2 Verification of reported results.
 - .3 Repairs, retesting, re-commissioning, re-verification.
 - .4 Training.

1.10 COMMISSIONING MEETINGS

- .1 Convene Cx meetings following project meetings: Section 01 32 16.07- Construction Progress Schedules - Bar (GANTT) Chart and as specified herein.
- .2 Purpose: to resolve issues, monitor progress, identify deficiencies, relating to Cx.
- .3 Continue Cx meetings on regular basis until commissioning deliverables have been addressed.
- .4 At 60% construction completion stage. Section 01 32 16.07- Construction Progress Schedules - Bar (GANTT) Chart, Departmental Representative to call a separate Cx scope meeting to review progress, discuss schedule of equipment start-up activities and prepare for Cx. Issues at meeting to include:
 - .1 Review duties and responsibilities of Contractor and subcontractors, addressing delays and potential problems.
 - .2 Determine the degree of involvement of trades and manufacturer's representatives in the commissioning process.
- .5 Thereafter Cx meetings to be held until project completion and as required during equipment start-up and functional testing period.
- .6 Meeting will be chaired by Departmental Representative, who will record and distribute minutes.
- .7 Ensure subcontractors and relevant manufacturer representatives are present at 60 % and subsequent Cx meetings and as required.

1.11 STARTING AND TESTING

- .1 Contractor assumes liabilities and costs for inspections. Including disassembly and re-assembly after approval, starting, testing and adjusting, including supply of testing equipment.

1.12 PROCEDURES

- .1 Verify that equipment and systems are complete, clean, and operating in normal and safe manner prior to conducting start-up, testing and Cx.
- .2 Conduct start-up and testing in following distinct phases:
 - .1 Included in delivery and installation:
 - .1 Verification of conformity to specification, approved shop drawings and completion of PI report forms.
 - .2 Visual inspection of quality of installation.
 - .2 Start-up: follow accepted start-up procedures.
 - .3 Operational testing: document equipment performance.
 - .4 System PV: include repetition of tests after correcting deficiencies.
 - .5 Post-substantial performance verification: to include fine-tuning.
- .3 Correct deficiencies and obtain approval from Departmental Representative after distinct phases have been completed and before commencing next phase.

- .4 Document require tests on approved PV forms.
- .5 Failure to follow accepted start-up procedures will result in re-evaluation of equipment by an independent testing agency selected by Departmental Representative.

1.13 START-UP DOCUMENTATION

- .1 Assemble start-up documentation and submit to Departmental Representative for approval before commencement of commissioning.
- .2 Start-up documentation to include:
 - .1 Factory and on-site test certificates for specified equipment.
 - .2 Pre-start-up inspection reports.
 - .3 Signed installation/start-up check lists.
 - .4 Start-up reports,
 - .5 Step-by-step description of complete start-up procedures, to permit Departmental Representative to repeat start-up at any time.

1.14 OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS

- .1 After start-up, operate and maintain equipment and systems as directed by equipment manufacturer.
- .2 With assistance of manufacturer develop written maintenance program and submit Departmental Representative for approval before implementation.

1.15 TEST RESULTS

- .1 If start-up, testing and/or PV produce unacceptable results, repair, replace or repeat specified starting and/or PV procedures until acceptable results are achieved.
- .2 Provide manpower and materials, assume costs for re-commissioning.

1.16 START OF COMMISSIONING

- .1 Notify Departmental Representative at least 21 days prior to start of Cx.
- .2 Start Cx after elements of building affecting start-up and performance verification of systems have been completed.

1.17 COMMISSIONING PERFORMANCE VERIFICATION

- .1 Carry out Cx:
 - .1 Under accepted simulated operating conditions, over entire operating range, in all modes.
 - .2 On independent systems and interacting systems.
- .2 Cx procedures to be repeatable and reported results are to be verifiable.
- .3 Follow equipment manufacturer's operating instructions.
- .4 EMCS trending to be available as supporting documentation for performance verification.

1.18 WITNESSING COMMISSIONING

- .1 Departmental Representative to witness activities and verify results.

1.19 EXTENT OF VERIFICATION

- .1 Provide manpower and instrumentation to verify all reported results, unless specified otherwise in other sections.
- .2 Conduct tests repeated during verification under same conditions as original tests, using same test equipment, instrumentation.
- .3 Review and repeat commissioning of systems if inconsistencies found any of reported results.
- .4 Perform additional commissioning until results are acceptable to Departmental Representative.

1.20 REPEAT VERIFICATIONS

- .1 Assume costs incurred by Departmental Representative for third and subsequent verifications where:
 - .1 Verification of reported results fail to receive Departmental Representative approval.
 - .2 Repetition of second verification again fails to receive approval.
 - .3 Departmental Representative deems Contractor's request for second verification was premature.

1.21 SUNDRY CHECKS AND ADJUSTMENTS

- .1 Make adjustments and changes which become apparent as Cx proceeds.
- .2 Perform static and operational checks as applicable and as required.

1.22 DEFICIENCIES, FAULTS, DEFECTS

- .1 Correct deficiencies found during start-up and Cx to satisfaction of Departmental Representative .
- .2 Report problems, faults or defects affecting Cx to Departmental Representative in writing. Stop Cx until problems are rectified. Proceed with written approval from Departmental Representative.

1.23 COMPLETION OF COMMISSIONING

- .1 Upon completion of Cx leave systems in normal operating mode.
- .2 Except for warranty and seasonal verification activities specified in Cx specifications, complete Cx prior to issuance of Interim Certificate of Completion.
- .3 Cx to be considered complete when contract Cx deliverables have been submitted and accepted by Departmental Representative.

1.24 MAINTENANCE MATERIALS, SPARE PARTS, SPECIAL TOOLS

- .1 Supply, deliver, and document maintenance materials, spare parts, and special tools as specified in contract.

1.25 OCCUPANCY

- .1 Cooperate fully with Departmental Representative during stages of acceptance and occupancy of facility.

1.26 OWNER'S PERFORMANCE TESTING

- .1 Performance testing of equipment or system by Departmental Representative will not relieve Contractor from compliance with specified start-up and testing procedures.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 Description of overall structure of Plan and roles and responsibilities of commissioning team.

1.2 REFERENCE STANDARDS

- .1 Canadian Standards Association (CSA)
 - .1 CSA Z320-11 Building Commissioning Standard.

1.3 GENERAL

- .1 Provide fully functional equipment:
 - .1 Equipment and components meet user's functional requirements before date of acceptance, and operate consistently.
 - .2 O&M personnel have been fully trained in aspects of installed systems.
 - .3 Optimized life cycle costs.
 - .4 Complete documentation relating to installed equipment and systems.
- .2 Term "Cx" in this section means "Commissioning".
- .3 Use this Cx Plan as master planning document for Cx:
 - .1 Outlines organization, scheduling, allocation of resources, documentation, pertaining to implementation of Cx.
 - .2 Communicates responsibilities of team members involved in Cx Scheduling, documentation requirements, and verification procedures.
 - .3 Sets out deliverables relating to O&M, process and administration of Cx.
 - .4 Describes process of verification of how built works meet Departmental Representative's requirements.
 - .5 Produces a complete functional system prior to issuance of Certificate of Occupancy.
 - .6 Management tool that sets out scope, standards, roles and responsibilities, expectations, deliverables, and provides:
 - .1 Overview of Cx.
 - .2 General description of elements that make up Cx Plan.
 - .3 Process and methodology for successful Cx.
- .4 Acronyms:
 - .1 Cx - Commissioning.
 - .2 BMM - Building Management Manual.
 - .3 EMCS - Energy Monitoring and Control Systems.

- .4 MSDS - Material Safety Data Sheets.
- .5 PI - Product Information.
- .6 PV - Performance Verification.
- .7 WHMIS - Workplace Hazardous Materials Information System.
- .5 Commissioning terms used in this Section:
 - .1 Bumping: short term start-up to prove ability to start and prove correct rotation.
 - .2 Deferred Cx - Cx activities delayed for reasons beyond Contractor's control due to lack of occupancy, weather conditions, need for heating/cooling loads.

1.4 DEVELOPMENT OF 100% CX PLAN

- .1 Cx Plan to be 95% completed before added into Project Specifications.
- .2 Cx Plan to be 100% completed within 8 weeks of award of contract to take into account:
 - .1 Approved shop drawings and product data.
 - .2 Approved changes to contract.
 - .3 Contractor's project schedule.
 - .4 Cx schedule.
 - .5 Contractor's, sub-contractor's, suppliers' requirements.
 - .6 Project construction team's and Cx team's requirements.
- .3 Submit completed Cx Plan to Departmental Representative and obtain written approval.

1.5 REFINEMENT OF CX PLAN

- .1 During construction phase, revise, refine and update Cx Plan to include:
 - .1 Changes resulting from Client program modifications.
 - .2 Approved design and construction changes.
- .2 Revise, refine and update during construction phase. At each revision, indicate revision number and date.
- .3 Submit each revised Cx Plan to Departmental Representative for review and obtain written approval.
- .4 Include testing parameters at full range of operating conditions and check responses of equipment and systems.

1.6 COMPOSITION, ROLES AND RESPONSIBILITIES OF CX TEAM

- .1 Departmental Representative to maintain overall responsibility for project and is sole point of contact between members of commissioning team.
- .2 Project Manager will select Cx Team consisting of following members:
 - .1 Departmental Representative's Design Quality Review Team: during construction, will conduct periodic site reviews to observe general progress.

- .2 Departmental Representative's Quality Assurance Commissioning Manager: ensures Cx activities are carried out to ensure delivery of a fully operational project including:
 - .1 Review of Cx documentation from operational perspective.
 - .2 Review for performance, reliability, durability of operation, accessibility, maintainability, operational efficiency under conditions of operation.
 - .3 Protection of health, safety and comfort of occupants and O&M personnel.
 - .4 Monitoring of Cx activities, training, development of Cx documentation.
 - .5 Work closely with members of Cx Team.
- .3 Departmental Representative is responsible for:
 - .1 Organizing Cx.
 - .2 Monitoring operations Cx activities.
 - .3 Witnessing, certifying accuracy of reported results.
 - .4 Witnessing and certifying other tests.
 - .5 Developing BMM.
 - .6 Ensuring implementation of final Cx Plan.
 - .7 Performing verification of performance of installed systems and equipment.
 - .8 Implementation of Training Plan.
- .4 Construction Team: contractor, subcontractors, suppliers and support disciplines, is responsible for construction/installation in accordance with Contract Documents, including:
 - .1 Testing.
 - .2 Performance of Cx activities.
 - .3 Delivery of training and Cx documentation.
 - .4 Assigning one person as point of contact with Consultant and PWGSC Cx Manager for administrative and coordination purposes.
- .5 Contractor's Cx agent implements specified Cx activities including:
 - .1 Demonstrations.
 - .2 Training.
 - .3 Testing.
 - .4 Preparation, submission of test reports.
- .6 Property Manager: represents lead role in Operation Phase and onwards and is responsible for:
 - .1 Receiving facility.
 - .2 Day-To-Day operation and maintenance of facility.

1.7 CX PARTICIPANTS

- .1 Employ the following Cx participants to verify performance of equipment and systems:

- .1 Installation contractor/subcontractor:
- .2 Equipment manufacturer
- .3 CSC representatives as determined by Departmental Representative.
- .2 Ensure that Cx participant:
 - .1 Could complete work within scheduled time frame.
 - .2 Available for emergency and troubleshooting service during first year of occupancy by user for adjustments and modifications outside responsibility of O&M personnel:
- .3 Provide names of participants to Departmental Representative and details of instruments and procedures to be followed for Cx 3 months prior to starting date of Cx for review and approval.

1.8 EXTENT OF CX

- .1 Cx Architectural Systems:
 - .1 Gun Ports:

1.9 DELIVERABLES RELATING TO O&M PERSPECTIVES

- .1 General requirements:
 - .1 Compile English documentation.
 - .2 Documentation to be computer-compatible format ready for inputting for data management.
- .2 Provide deliverables:
 - .1 Warranties.
 - .2 Project record documentation.
 - .3 Inventory of spare parts, special tools and maintenance materials.
 - .4 Maintenance Management System (MMS) identification system used.
 - .5 WHMIS information.
 - .6 MSDS data sheets.
 - .7 Preventative Maintenance Program.
 - .8 Standard Operating Procedures (SOP).
 - .9 Contractor's and Sub-Contractors' as built drawings

1.10 DELIVERABLES RELATING TO THE CX PROCESS

- .1 General:
 - .1 Start-up, testing and Cx requirements, conditions for acceptance and specifications form part of relevant technical sections of these specifications.
- .2 Definitions:
 - .1 Cx as used in this section includes:

- .1 Cx of components, equipment, systems, subsystems, and integrated systems.
 - .2 Factory inspections and performance verification tests.
- .3 Deliverables: provide:
 - .1 Cx Specifications.
 - .2 Startup, pre-Cx activities and documentation for systems, and equipment.
 - .3 Completed installation checklists (ICL).
 - .4 Completed product information (PI) report forms.
 - .5 Completed performance verification (PV) report forms.
 - .6 Results of Performance Verification Tests and Inspections.
 - .7 Description of Cx activities and documentation.
 - .8 Description of Cx of integrated systems and documentation.
 - .9 Tests witnessed by PWGSC Design Quality Review Team:
 - .10 Training Plans.
 - .11 Cx Reports.
 - .12 Prescribed activities during warranty period.
- .4 Departmental Representative to witness and certify tests and reports of results provided to Departmental Representative.
- .5 Departmental Representative to participate.

1.11 PRE-CX ACTIVITIES AND RELATED DOCUMENTATION

- .1 Items listed in this Cx Plan include the following:
 - .1 Pre-Start-Up inspections: by Departmental Representative prior to permission to rectification of deficiencies to Departmental Representative satisfaction.
 - .2 Departmental Representative to use approved check lists.
 - .3 Departmental Representative will monitor all of these pre-start-up inspections.
 - .4 Include completed documentation with Cx report.
 - .5 Departmental Representative will monitor some of these inspections.
 - .6 Include completed documentation in Cx report.
- .2 Pre-Cx activities - ARCHITECTURAL:
 - .1 Gun Ports: conduct test to ensure door and latch operate properly.

1.12 START-UP

- .1 Start up components, equipment and systems.
- .2 Departmental Representative to monitor all of these start-up activities.
 - .1 Rectify start-up deficiencies to satisfaction of Departmental Representative.
- .3 Performance Verification (PV):

- .1 Approved Cx Agent to perform.
 - .1 Repeat when necessary until results are acceptable to Departmental Representative.
- .2 Use procedures modified generic procedures to suit project requirements.
- .3 Departmental Representative to witness and certify reported results using approved PI and PV forms.
- .4 Departmental Representative to approve completed PV reports and provide to Departmental Representative.
- .5 Departmental Representative will verify up to 100 % of reported results.

1.13 CX ACTIVITIES AND RELATED DOCUMENTATION

- .1 Perform Cx using procedures approved by Departmental Representative.
- .2 Departmental Representative to monitor Cx activities.
- .3 Upon satisfactory completion, Cx agency performing tests to prepare Cx Report using approved PV forms.
- .4 Departmental Representative to witness, certify reported results of, Cx activities.

1.14 INSTALLATION CHECK LISTS (ICL)

- .1 Refer to Section 01 91 13.16- Commissioning Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms.

1.15 PRODUCT INFORMATION (PI) REPORT FORMS

- .1 Refer to Section 01 91 13.16- Commissioning Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms .

1.16 PERFORMANCE VERIFICATION (PV) REPORT

- .1 Refer to Section 01 91 13.16- Commissioning Forms: Installation Check Lists and Product Information (PI) / Performance Verification (PV) Forms .

1.17 CX SCHEDULES

- .1 Prepare detailed critical path Cx Schedule and submit to Departmental Representative for review and approval same time as project Construction Schedule. Include:
 - .1 Milestones, testing, documentation, training and Cx activities of components, equipment, subsystems, systems and integrated systems, including:
 - .1 Design criteria, design intents.
 - .2 Cx agents' credentials: 60 days before start of Cx.
 - .3 Cx procedures: 3 months after award of contract.
 - .4 Cx Report format: 3 months after contract award.
 - .5 Notification of intention to start Cx: 14 days before start of Cx.
 - .6 Identification of deferred Cx.
 - .7 Implementation of training plans.

- .8 Cx reports: immediately upon successful completion of Cx.
- .2 Detailed training schedule to demonstrate no conflicts with testing, completion of project and hand-over.
- .2 After approval, incorporate Cx Schedule into Construction Schedule.
- .3 Consultant, Contractor, Contractor's Cx agent, and Departmental Representative will monitor progress of Cx against this schedule.

1.18 CX REPORTS

- .1 Submit reports of tests, witnessed and certified by Departmental Representative to Departmental Representative who will verify reported results.
- .2 Include completed and certified PV reports in properly formatted Cx Reports.
- .3 Before reports are accepted, reported results to be subject to verification by Departmental Representative.

1.19 TESTS TO BE PERFORMED BY OWNER/USER

- .1 None is anticipated on this project .

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 NOT USED

- .1 Not Used.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Section Includes:
 - .1 Commissioning forms to be completed for equipment.

1.2 INSTALLATION/START-UP CHECK LISTS

- .1 Include the following data:
 - .1 Product manufacturer's installation instructions and recommended checks.
 - .2 Special procedures as specified in relevant technical sections.
 - .3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation.
- .2 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken.
- .3 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to Departmental Representative. Check lists will be required during Commissioning and will be included in Building Maintenance Manual (BMM) at completion of project.
- .4 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures.

1.3 PRODUCT INFORMATION (PI) REPORT FORMS

- .1 Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used during operation and maintenance of equipment. This documentation is included in the BMM at completion of work.
- .2 Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Departmental Representative's approval.

1.4 PERFORMANCE VERIFICATION (PV) FORMS

- .1 PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.
- .2 PV report forms include those developed by Contractor records measured data and readings taken during functional testing and Performance Verification procedures.
- .3 Prior to PV of integrated system, complete PV forms of related systems and obtain Departmental Representative's approval.

1.5 SAMPLES OF COMMISSIONING FORMS

- .1 Departmental Representative will develop and provide to Contractor required project-specific Commissioning forms in electronic format complete with specification data.
 - .1 Construction Checklists
 - .2 Performance Verification Forms
 - .3 Commissioning Issue/Resolution Log
 - .4 Design Review Tracker
- .2 Samples of Commissioning Forms follow this section.

Part 2 Products

2.1 NOT USED

- .1 Not Used.

Part 3 Execution

3.1 LOCATIONS

- .1 Commissioning Forms are required for the following Gun Port Locations. (Refer to drawings for additional information):
 - .1 Gun Port #44
 - .2 Gun Port #45
 - .3 Gun Port #46
 - .4 Gun Port #47
 - .5 Gun Port #48
 - .6 Gun Port #49
 - .7 Gun Port #50
 - .8 Gun Port #51
 - .9 Gun Port #52

END OF SECTION

ARCHITECTURAL FIELD REVIEW AND COMPLIANCE - COM INTERIOR - DOOR HARDWARE

| x | architecture inc.

Static Verification

REVISION #: _____

NAME: _____

COMPANY: 1x1 architecture inc. _____

ADDRESS: Suite 103 - 120 Fort St _____

Winnipeg, MB - Manitoba R3C 1C7 _____

CUSTOMER: PSPC _____

PROJECT: EMSI U5 Control Post Gun Port (R) _____

FILE NUMBER: R.101593.002 _____

DATE: DD / MM / YYYY _____

NAMEPLATE

SUBJECT	Common Interior	LOCATION	
ASSEMBLY	Gun Port	DRAWING REFERENCE	

COMPONENTS

	SPECIFIED	SHOP DRAWINGS	INSTALLED
Hardware - Latch			
Hardware - Door and Hinges			
Dimensional Conformance and Related Accessories			

Hardware - Latch

Architectural Field Review & Compliance Activity	Performance Criteria	STATUS			COMMENTS
		YES	NO	N/A	
Construction checklists prepared					
Construction checklists completed					
Field review reports completed					
Compliance test reports completed					
Deficiency (Issues) log created					
Deficiency Log items addressed					
Verify training completed					
Review required maintenance and data, and systems operations manuals					

INTERIM ACCEPTANCE

Outstanding Cx issues addressed or explained					
--	--	--	--	--	--

FINAL ACCEPTANCE

Hardware - Door and Hinges

Architectural Field Review & Compliance Activity	Performance Criteria	STATUS			COMMENTS
		YES	NO	N/A	
Construction checklists prepared					
Construction checklists completed					
Field review reports completed					
Compliance test reports completed					
Deficiency (Issues) log created					
Deficiency Log items addressed					
Verify training completed					
Review required maintenance and data, and systems operations manuals					

INTERIM ACCEPTANCE

Outstanding Cx issues addressed or explained					
--	--	--	--	--	--

FINAL ACCEPTANCE

ARCHITECTURAL FIELD REVIEW AND COMPLIANCE - COM INTERIOR - DOOR HARDWARE

| x | architecture inc.

Static Verification

REVISION #: _____

NAME: _____

COMPANY: 1x1 architecture inc. _____

ADDRESS: Suite 103 - 120 Fort St _____

Winnipeg, MB - Manitoba R3C 1C7 _____

CUSTOMER: PSPC _____

PROJECT: EMSI U5 Control Post Gun Port (R) _____

FILE NUMBER: R.101593.002 _____

DATE: DD / MM / YYYY _____

Dimensional Conformance and Related Accessories					
Architectural Field Review & Compliance Activity	Performance Criteria	STATUS			COMMENTS
		YES	NO	N/A	
Construction checklists prepared					
Construction checklists completed					
Field review reports completed					
Compliance test reports completed					
Deficiency (Issues) log created					
Deficiency Log items addressed					
Verify training completed					
Review required maintenance and data, and systems operations manuals					
INTERIM ACCEPTANCE					
Outstanding Cx issues addressed or explained					
FINAL ACCEPTANCE					

GENERAL COMMENTS:

POSITION/TITLE	SIGNATURE	DATE

ARCHITECTURAL FIELD REVIEW AND COMPLIANCE - COM INTERIOR - DOOR HARDWARE

| x | architecture inc.

Functional Performance Testing

REVISION #: _____

NAME: _____

COMPANY: 1x1 architecture inc. _____

ADDRESS: Suite 103 - 120 Fort St _____

Winnipeg, MB - Manitoba R3C 1C7 _____

CUSTOMER: PSPC _____

PROJECT: EMSI U5 Control Post Gun Port (R) _____

FILE NUMBER: R.101593.002 _____

DATE: DD / MM / YYYY _____

SHEET INTENTIONALLY LEFT BLANK FOR INDIVIDUAL TO POPULATE AS NEEDED

GENERAL COMMENTS:

POSITION/TITLE	SIGNATURE	DATE

Part 1 General

1.1 REFERENCES

- .1 CSA International
 - .1 CSA S350-M1980(R2003), Code of Practice for Safety in Demolition of Structures.
- .2 U.S. Environmental Protection Agency (EPA)/Office of Water
 - .1 EPA 832/R-92-005, Storm Water Management for Construction Activities: Developing Pollution Prevention Plans and Best Management Practices.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

- .1 Submit in accordance with Section 01 33 00 - Submittal Procedures and 01 74 21 - Construction/Demolition Waste Management Disposal.

1.3 SITE CONDITIONS

- .1 Review all Designated Substance Reports and take precautions to protect environment.
- .2 If material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Departmental Representative immediately.
 - .1 Proceed only after receipt of written instructions have been received from Departmental Representative.
- .3 Notify Departmental Representative before disrupting building access or services.

Part 2 Products

2.1 NOT USED

- .1 Not used.

Part 3 Execution

3.1 EXAMINATION

- .1 Inspect building and site with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.
- .2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

3.2 PREPARATION

- .1 Protection of In-Place Conditions:
 - .1 Prevent movement, settlement, or damage to adjacent structures, utilities, and landscaping features and parts of building to remain in place. Provide bracing and shoring required.

- .2 Keep noise, dust, and inconvenience to occupants to minimum.
- .3 Protect building systems, services and equipment.
- .4 Provide temporary dust screens, covers, railings, supports and other protection as required.
- .5 Do Work in accordance with Section 01 35 29.06 – Health and Safety Requirements.

3.3 DEMOLITION

- .1 Demolish in an orderly and careful manner. Protect existing supporting structural members and non-loadbearing assemblies.
- .2 Remove demolished materials from site except where specifically noted otherwise. Do not burn or bury materials on site.
- .3 Remove materials as Work progresses. Upon completion of Work, leave areas in clean condition.
- .4 Remove temporary Work.
- .5 Contractor must protect existing equipment in operation from dust/debris or other incidental damage resulting from construction activities.

3.4 SALVAGED MATERIAL

- .1 Refer to drawings for all items required to be salvaged.
- .2 Contact Departmental Representative for direction regarding all material indicated to be salvaged.
- .3 Where required, store and protect salvaged items until re-installation.
- .4 Turn over salvaged items to applicable specification sections for re-installation.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
 - .1 Leave Work area clean at end of each day.
- .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

END OF SECTION

Part 1 General

1.1 SUMMARY

- .1 Comply with requirements of this Section when disturbing lead-based paints from metal surrounds, trim, framing, sills, fasteners, etc. associated with the removal of the internal side of the U5 Gun Port.
- .2 Comply with requirements of this Section when disturbing lead-based paints from metal surrounds, trim, framing, sills, fasteners, etc. associated with the refinishing of the external side of the U5 Gun Port.
- .3 Furnish all labour, materials, services, insurance and equipment, in accordance with requirements of Workplace Health & Safety, Alberta Environment and other regulatory agencies to complete the work of this section.
- .4 Site conditions to be confirmed by the Contractor and any discrepancies are to be reported to the Department Representative.

1.2 SCOPE OF WORK

- .1 Removal of painted fasteners from metal surrounds, trim, framing, sills, fasteners, etc. using a power tool with an effective dust collection system equipped with a HEPA filter, or a non-powered hand tool. Control measures to include: Designated work area (banner tape) and polyethylene drop sheets. Personal Protection Equipment (PPE) to include half-face respirators with P100 filters, nitrile gloves, and full-body tyvek coveralls.
- .2 Encapsulation of lead-based paints onto metal surrounds, trim, framing, sills, fasteners, etc. using a paintbrush and an approved low-VOC paint. Control measures to include: Designated work area (banner tape) and polyethylene drop sheets. Personal Protection Equipment (PPE) to include half-face respirators with N95 filters, nitrile gloves, and painters coveralls.

1.3 REGULATIONS, CODES AND STANDARDS

- .1 Department of Justice Canada
 - .1 Canadian Environmental Protection Act, 1999 (CEPA)
 - .2 Surface Coating Materials Regulations, SOR/2005-109, Hazardous Products Act
- .2 Federal
 - .3 Canada Occupational Health and Safety Regulation, SOR/86-304.
- .3 Alberta Government
 - .1 Occupational Health and Safety Act, Regulation and Code, Province of Alberta, 2009
 - .2 Workplace Health and Safety Bulletin, Lead at the Work Site, Government of Alberta, Employment and Immigration, November 2013

- .4 Health Canada
 - .1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS)
- .5 Canadian Standards Association (CSA)
 - .1 CSA Standard Z94.4-M2003, Selection, Care, and Use of Respirators
- .6 Human Resources and Social Development Canada (HRSDC)
 - .1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations
- .7 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA)
- .8 U.S. Environmental Protection Agency (EPA)
 - .1 EPA 747-R-95-007-[1995], Sampling House Dust for Lead
- .9 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)
 - .1 NIOSH 94-113 - NIOSH Manual of Analytical Methods (NMAM), 4th Edition (1994)
- .10 U.S. Department of Labour - Occupational Safety and Health Administration (OSHA) - Toxic and Hazardous Substances
 - .1 Lead in Construction Regulation - 29 CFR 1926.62-[1993]
- .11 Underwriters' Laboratories of Canada (ULC)

1.4 **QUALITY ASSURANCE**

- .1 Ensure that the removal and handling of lead-contaminated materials is performed by persons experienced in the methods, procedures and industry practices of lead abatement.
- .2 Ensure that work proceeds to schedule, meeting all requirements of this specification.
- .3 Complete work so that at no time airborne lead, visible solid residue, or water runoff contaminate areas outside work area. The Department Representative is empowered to order a shutdown of work when such a leakage has occurred or is likely to occur. Additional work by the Contractor or Department Representative to rectify unsatisfactory conditions will be back-charged to the Contractor.

1.5 **SUBMITTALS**

- .1 Before commencing work Contractor shall:
 - .1 Submit proof satisfactory to the Department Representative that the site location, required permits and suitable arrangements for transport and disposal of lead-based paint waste or contaminated materials have been obtained. Ensure required manifest documentation regarding disposal is submitted in accordance with these specifications.
 - .2 Submit letters of mechanical system lock-out as specified.
 - .3 Submit documentation verifying lead worker training for all workers and supervisors completing the contaminated work. The training shall include instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.

- .4 Submit to the Department Representative, documentation of respirator fit tests conducted for all personnel entering the removal site.
- .5 Submit to the Department Representative, manufacturer's information, including test results, material safety data sheets and product specifications, of all materials and equipment proposed for use on this project.
- .6 Submit certification or other documentation, acceptable to the Department Representative, certifying all vacuum equipment intended for use on this project have had a filter integrity test. Vacuums must have the filter integrity test conducted within the last 12 months.
- .7 Prepare and submit work procedures and lead control plan.

1.6

SCHEDULING

- .1 Not later than two days before beginning Work on this Project notify following in writing:
 - .1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.
 - .2 Provincial Ministry of Labour.
 - .3 Disposal Authority.
- .2 Inform sub trades of presence of lead-containing materials identified in Existing Conditions.
- .3 Provide the Department Representative a copy of notifications prior to start of Work.
- .4 The work of this section shall be conducted in the most efficient manner, and may include phasing the work to meet the Department Representative's schedule.

1.7

DEFINITIONS

- .1 Action level: Employee exposure, without regard to use of respirators, to airborne concentration of lead of 50 micrograms per cubic meter of air ($50 \mu\text{g}/\text{m}^3$) calculated as 8-hour time-weighted average (TWA). Minimum precautions for lead abatement are based on airborne lead concentrations less than 0.05 milligrams per cubic meter of air for removal of lead based paint by methods noted in paragraph 1.1.
- .2 Authorized Visitors: Departmental Representative, Engineer or designated representatives.
- .3 Clean Area: An uncontaminated area or room which is part of the worker decontaminated area, with provisions for storage of workers' street clothes and protective equipment.
- .4 Competent person: Individuals capable of identifying existing lead hazards in workplace taking corrective measures to eliminate them.
- .5 Encapsulation: All herein specified procedures necessary to coat all lead-containing materials with an encapsulant to control the possible release of lead particulate into the ambient air.
- .6 Filter Integrity Test: Leak testing using liquid dioctylphthalate (DOP) or polyalphaolefin (PAO) generated into an aerosol used for challenging HEPA filter assemblies.
- .7 HEPA Filter: High Efficiency Particulate Aerosol filter that is at least 99.97 percent efficient in collecting a 0.3 micrometre aerosol.
- .8 Immediate Vicinity: A four (4) foot area surrounding a lead application.
- .9 Lead Work Area: Area where work takes place which will, or may, disturb lead paint.
- .10 Moveable Object: A unit of equipment or furniture in the work area which can be removed from the work area

- .11 Occupied Area: Areas of building or work site that is outside Work Area.
- .12 Polyethylene: Polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide a continuous polyethylene membrane to protect underlying surfaces from water damage or damage by lock-down agents, and to prevent escape of lead dusts through sheeting into Occupied Areas.
- .13 Removal: All herein specified procedures necessary to strip all lead-containing materials from the designated areas and to dispose of these materials at an acceptable site.
- .14 Sprayer: Garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.
- .15 Worker Decontamination Area: A decontamination area for workers, typically consisting of a clean area, bucket of clean tepid water, soap and towels.

1.8 **PERSONAL PROTECTION**

- .1 Half-Face Air Purifying Respirators with P100 filters shall be used by all workers during work area set-up, tear-down, and fastener application or removal work.
- .2 Half-Face Air Purifying Respirators with N95 filters shall be used by all workers during painting or encapsulation work.
- .3 Respirators shall be personally issued and approved by the National Institute of Occupational Health and Safety (NIOSH).
- .4 Provide workers, including other sub-trades, with full-body disposable coveralls and nitrile gloves. Once coveralls and gloves are worn in work area, they shall be treated as contaminated waste and disposed of accordingly.
- .5 Provide other body protection, including CSA approved safety footwear, required under applicable safety regulations.
- .6 Workers shall be clean-shaven to ensure an adequate respirator face piece seal. Unshaven workers shall not be allowed in the work area.
- .7 Workers shall be fully protected with respirators and protective clothing at all times when the possibility of disturbance of lead hazards exist, and when handling bags of lead waste.

1.9 **WASTE MANAGEMENT AND DISPOSAL**

- .1 Dispose of all lead-painted materials as hazardous waste unless a Toxicity Characterization Leaching Procedure (TCLP) test proves otherwise.
- .2 Separate waste materials for reuse and recycling in accordance with the Department Representative's requirements while following applicable transport and waste disposal regulations.
- .3 Handle and dispose of hazardous materials in accordance with CEPA, TDGA, Regional and Municipal regulations.
- .4 Disposal of lead waste generated by removal activities must comply with Federal, Provincial and Municipal regulations. Dispose of lead waste in sealed double thickness 6 ml bags or leak proof drums. Label containers with appropriate warning labels.
- .5 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

Part 2 Products and Materials

2.1 MATERIALS

- .1 Deliver all materials and disposable equipment in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name. Material that becomes contaminated with asbestos shall be disposed of in accordance with the applicable regulations.
- .2 Lead waste containers: type acceptable to dump operator with tightly fitting covers and 6 mm thickness sealable polyethylene liners.
 - .1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.
- .3 Reinforced polyethylene: Polyethylene or polyolefin materials, coated on each side, with a unit weight equivalent to or exceeding 107 g/sq. m (4.6oz/sq. yd) and 12 mil thick.
- .4 Duct Tape: Suitable for sealing polyethylene to surfaces encountered and to itself under both wet and dry conditions including use of amended water.
- .5 Disposable coveralls: Standard of acceptance - Full body coveralls with attached hood, manufactured by Dupont Tyvek, Kimberley Clarke or approved equal.
- .6 Polyethylene disposal bags, 6 mm thick.
- .7 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual lead paint residue.
- .8 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.
- .9 Paint: low-VOC, non-toxic durable paint suitable for metal surfaces.
- .10 Warning labels and signs: delineating entry and protective equipment requirements and providing warning of the potential health effects of exposure to lead hazards.

2.2 TOOLS AND EQUIPMENT

- .1 Spray equipment for application slow drying sealer: Standard of Acceptance-Grayco Hydraspray Airless spray unit.
- .2 HEPA vacuum equipment: Appropriate vacuum equipment equipped with High Efficiency Particulate Absolute air filters capable of capturing and retaining 99.97% of all fibrous material 0.3 microns or larger.
- .3 Removal tools: Suitable tools for lead removal including pliable nylon brushes for the removal of base and finish application.
- .4 Encapsulation tools: Suitable tools for encapsulating existing lead-based paint on metal surfaces with an approved low-VOC paint.

Part 3 Execution

3.1 SUPERVISION

- .1 One supervisor for every ten workers is required.
- .2 Supervisor must remain within work area during disturbance, removal, or handling of lead-based paints.

3.2 **PREPARATION**

- .1 Remove and store items to be salvaged or reused in the Lead Work Area.
 - .1 Protect and wrap items, and transport and store in area specified by the Departmental Representative.
- .2 Provide warning signs at the entrances to the Lead Work Area which state:
 - .1 Lead hazard area.
 - .2 Access to the area is prohibited, except to authorized personnel.
 - .3 Personal protective equipment is required.
 - .4 Drinking, eating and smoking are prohibited in the area.
- .3 Preparation of Lead Work Area:
 - .3 Isolate building mechanical systems. Shut off all exhaust, supply and return fan units serving work area and implement required lock-out procedures. Install plastic seals reinforced with tape over all duct openings.
 - .4 Pre-clean fixed casework and equipment within the work area, using HEPA vacuum and cover and seal with polyethylene sheeting and tape.
 - .5 Clean work area using HEPA vacuum. If not practicable, use wet cleaning method. Do not raise dust.
 - .6 Protect floor surfaces in the work area with reinforced polyethylene sheeting.
 - .7 Maintain emergency fire exits or establish alternatives satisfactory to Authority having jurisdiction.
 - .8 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical cables and equipment.
 - .9 Maintain emergency and fire exits from the work areas, or establish alternative exits satisfactory to fire officials.
- .4 Do not start work until:
 - .1 Arrangements have been made for disposal of waste.
 - .2 Tools, equipment, and materials waste containers are on site.
 - .3 Arrangements have been made for building security.
 - .4 Notifications have been completed and preparatory steps have been taken.

3.3 **LEAD PAINT DISTURBANCE AND REMOVAL**

- .1 Painted fastener removal from metal surrounds, trim, framing, sills, etc. on the internal side of the U5 Gunport. Refer to drawing A2.0 for the location of lead-based paint.
 - .1 Mist surfaces with water to reduce particulate levels.
 - .2 Place the nozzle of the HEPA vacuum immediately below the fastener to be installed or removed.

- .3 Install or remove fasteners from surfaces impacting lead-containing coatings with power tools equipped with HEPA filters; or with non-powered hand tool, other than manual scraping and sanding.
- .4 HEPA vacuum all debris and apply a lead encapsulating sealer to all surfaces where lead based paint have been impacted or debris settled.
- .5 Remove all debris materials in the work area and dispose as lead-contaminated waste.
- .2 Encapsulation of existing lead-based paints on metal surrounds, trim, framing, sills, fasteners, etc. from the external side of the U5 Gunport.
 - .1 Do not sand or abrade existing lead-based paints present on metal surfaces.
 - .2 Using an approved low-VOC paint, encapsulate all painted metal surfaces on the external side of the U5 Gunport.

3.4 **FINAL CLEANUP**

- .1 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.
- .2 Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.
- .3 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.
- .4 Final clean-up and dismantling procedures shall be undertaken by workers suitably protected with half face respirators equipped with HEPA filters, nitrile gloves, and disposable coveralls.

3.5 **INSPECTION**

- .1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Departmental Representative will result in work stoppage, at no cost to Owner.
- .2 Departmental Representative will inspect work for:
 - .1 Adherence to specific procedures and materials.
 - .2 Final cleanliness and completion.
 - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

3.6 **TRANSPORTATION AND DISPOSAL**

- .1 Transport waste lead waste in accordance with the Provincial and Federal legislation and regulations.
- .2 Ensure that all materials are properly packaged and labeled prior to transportation.
- .3 Transport hazardous waste materials in properly placarded vehicles.
- .4 Each load shall be accompanied by a properly completed Transportation of Dangerous Goods Regulation (TDGR) Waste Manifest.

3.7 **RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS**

- .1 Repair or replace objects damaged in course of work to their original state or better, as directed by the Departmental Representative.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM A36/A36M-08 - Standard Specification for Carbon Structural Steel
 - .2 ASTM A53/A53M-07, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
 - .3 ASTM A307-14, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
 - .2 CAN/CGSB-1.181-99, Ready-Mixed, Organic Zinc-Rich Coating.
- .3 Correctional Service Canada CSC Technical Criteria 2015.
- .4 Canadian Standards Association (CSA International)
 - .1 CAN/CSA-G40.20/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel.
 - .2 CAN/CSA-G164-M92(R1998), Hot Dip Galvanizing of Irregularly Shaped Articles.
 - .3 CAN/CSA-S16.1-14, Limit States Design of Steel Structures.
 - .4 CSA W48-14, Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).
 - .5 CSA W59-2013, Welded Steel Construction (Metal Arc Welding) (Imperial Version).
- .5 The Environmental Choice Program
 - .1 CCD-047a-98(R2005), Paints, Surface Coatings.

1.2 SUBMITTALS

- .1 Product Data:
 - .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's:
 - .1 For finishes, coatings, primers and paints.
- .2 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.3 CLOSEOUT SUBMITTALS

- .1 Submit in accordance with Section 01 78 00- Closeout Submittals .
- .2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.
- .3 Warranty Documentation: submit warranty documents specified.

1.4 QUALITY ASSURANCE

- .1 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
- .2 Mock-Up:
 - .1 Provide site mock-up for work of this Section indicating methods and materials, and procedures proposed to achieve final results in accordance with Section 01 45 00– Quality Control, and to comply with following requirements, using materials indicated for completed work:
 - .1 Build full mock-ups as directed by Departmental Representative.
 - .2 Obtain Departmental Representative's acceptance of mock-ups before starting construction; mock-up used throughout construction period as standard of acceptance for subsequent work.
 - .3 Mock-ups will be subject to Field Testing as directed by Departmental Representative as part of Commissioning requirements. Refer to Section 01 91 13 – General Commissioning Requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

- .1 Packing, Shipping, Handling and Unloading:
 - .1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Storage and Protection:
 - .1 Cover exposed steel surfaces with protection paper before shipping to job site.

1.6 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

Part 2 Products

2.1 MATERIALS

- .1 All materials to comply with Correctional Service Canada (CSC) Technical Criteria, 2015.

- .2 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 350W.
- .3 Welding materials: to CSA W59.
- .4 Welding electrodes: to CSA W48 Series.
- .5 Bolts and anchor bolts: to ASTM A307.

2.2 GUN PORTS

- .1 Information applies to new gun port fabrication and the modification of the existing gun ports.
- .2 Fabricate the new gun port assembly to sizes and configurations indicated on drawings. This includes the new steel doors and frames, hinges, handles, slide bars, tabs/stops, and bar sets.
- .3 Gun ports are to fit to the locations of existing steel angle openings, and existing nut / hole locations.
- .4 Site measure each existing steel angle opening and existing hole locations. Do not assume any of the openings and holes are the same at each gun port.
- .5 Construct and install work true, square, straight and accurate to required size, with joints closely fitted and properly secured.
- .6 Neatly file a 1/8" radius on all corners, ends, and edges so that there are no sharp edges.
- .7 Weld steel stops, tabs, handles, hinges, and frames as shown on drawings.
- .8 For surface preparation and painting, see specifications Section 099199 - Painting for Minor Works.

2.3 FABRICATION

- .1 Fabricate work square, true, straight and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self-tapping shake-proof round headed screws on items requiring assembly by screws or as indicated.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.4 FINISHES

- .1 Shop coat primer: to CAN/CGSB-1.40.

2.5 SHOP PAINTING

- .1 Apply one shop coat of primer to metal items.

- .2 Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7 degrees C.

Part 3 Execution

3.1 ERECTION

- .1 Do welding work in accordance with CSA W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .4 Provide components for building by other sections in accordance with shop drawings and schedule.
- .5 Make field connections with bolts to CAN/CSA-S16.1, or weld.
- .6 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

3.2 CLEANING

- .1 Perform cleaning after installation to remove construction and accumulated environmental dirt.
- .2 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 American Society for Testing and Materials International, (ASTM)
 - .1 ASTM C919-02, Standard Practice for Use of Sealants in Acoustical Applications.
- .2 Canadian General Standards Board (CGSB)
 - .1 CGSB 19-GP-5M-1984, Sealing Compound, One Component, Acrylic Base, Solvent Curing (Issue of 1976 reaffirmed, incorporating Amendment No. 1).
 - .2 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
 - .3 CGSB 19-GP-14M-1984, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing (Reaffirmation of April 1976).
 - .4 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
 - .5 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.
- .3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .4 Transport Canada (TC)
 - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.2 SUBMITTALS

- .1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Manufacturer's product to describe.
 - .1 Caulking compound.
 - .2 Primers.
 - .3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
- .3 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .4 Submit duplicate samples of each type of material and colour.
- .5 Cured samples of exposed sealants for each color where required to match adjacent material.
- .6 Submit manufacturer's instructions in accordance with Section 01 33 00 - Submittal Procedures.

- .1 Instructions to include installation instructions for each product used.

1.3 QUALITY ASSURANCE/MOCK-UP

- .1 Construct mock-up in accordance with Section 01 45 00 - Quality Control.
- .2 Construct mock-up to show location, size, shape and depth of joints complete with back-up material, primer, caulking and sealant.
- .3 Mock-up will be used:
 - .1 To judge workmanship, substrate preparation, operation of equipment and material application.
 - .2 To ensure acoustic integrity is maintained at all sound attenuated walls.
- .4 Locate where directed.
- .5 Allow 24 hours for inspection of mock-up by Departmental Representative before proceeding with sealant work.
- .6 When accepted, mock-up will demonstrate minimum standard of quality required for this Work. Approved mock-up may remain as part of finished Work.

1.4 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver, handle, store and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.5 PROJECT CONDITIONS

- .1 Environmental Limitations:
 - .1 Do not proceed with installation of joint sealants under following conditions:
 - .1 When ambient and substrate temperature conditions are outside limits permitted by joint sealant manufacturer or are below 4.4 degrees C.
 - .2 When joint substrates are wet.
- .2 Joint-Width Conditions:
 - .1 Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.
- .3 Joint-Substrate Conditions:
 - .1 Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

1.6 ENVIRONMENTAL REQUIREMENTS

- .1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and

regarding labelling and provision of Material Safety Data Sheets (MSDS) acceptable to Labour Canada.

- .2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.
- .3 Departmental Representative will arrange for ventilation system to be operated on maximum outdoor air and exhaust during installation of caulking and sealants. Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

Part 2 Products

2.1 SEALANT MATERIALS

- .1 Sealants and Caulking compounds must:
 - .1 Meet or exceed all applicable governmental and industrial safety and performance standards; and
 - .2 Be manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising therefrom, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the Fisheries Act and the Canadian Environmental Protection Act (CEPA).
- .2 Sealant and caulking compounds must not be formulated or manufactured with: aromatic solvents, fibrous talc or asbestos, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium, barium or their compounds, except barium sulphate.
- .3 Sealant and caulking compounds must not contain a total of volatile organic compound (VOC's) in excess of 50 grams per litre as calculated from records of the amounts of constituents used to make the product.
- .4 Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.
- .5 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant.
- .6 When low toxicity caulks are not possible, confine usage to areas which off-gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.
- .7 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

- .1 Silicone Sealant (Type S): medium-modulus, one-part, high-performance, non-staining, neutral-cure silicone sealant for a variety of perimeter caulking and glazing applications for glass to glass, glass to metal, and metal to metal joints.
 - .1 Applicable Standards:
 - .1 CAN/CGSB-19.13
 - .2 ASTM C920, Type S, Grade NS, Class 50, Use NT, M, G, A and O.
 - .2 Cyclical Movement +/-50%
 - .3 Elongation Capability: 235-260%
 - .4 Shore A Hardness Range: 37-40
 - .5 Peel Strength (glass): 16 - 22 pli (2.81-3.86 kN/M)
 - .6 Tensile Strnegth at Max Elongation: 220-230 psi (1.52 – 1.59 MPa)
 - .7 Sealant to be compatible with Polycarbonate Glazing as specified in Section 088000 – Glazing.
 - .8 Color: As selected by Departmental Representative from manufacturer's standard line of not less than 10 colors.

2.3 JOINT CLEANER

- .1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.

Part 3 Execution

3.1 PROTECTION

- .1 Protect installed Work of other trades from staining or contamination.

3.2 SURFACE PREPARATION

- .1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.
- .2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.
- .3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
- .4 Ensure joint surfaces are dry and frost free.
- .5 Prepare surfaces in accordance with manufacturer's directions.

3.3 PRIMING

- .1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

- .2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

- .1 Apply bond breaker tape where required to manufacturer's instructions.
- .2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 APPLICATION

- .1 Sealant.
 - .1 Apply sealant in accordance with manufacturer's written instructions.
 - .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
 - .3 Apply sealant in continuous beads.
 - .4 Apply sealant using gun with proper size nozzle.
 - .5 Use sufficient pressure to fill voids and joints solid.
 - .6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
 - .7 Tool exposed surfaces before skinning begins to give slightly concave shape.
 - .8 Remove excess compound promptly as work progresses and upon completion.
- .2 Curing.
 - .1 Cure sealants in accordance with sealant manufacturer's instructions.
 - .2 Do not cover up sealants until proper curing has taken place.
- .3 Cleanup.
 - .1 Clean adjacent surfaces immediately and leave Work neat and clean.
 - .2 Remove excess and droppings, using recommended cleaners as work progresses.
 - .3 Remove masking tape after initial set of sealant.

END OF SECTION

Part 1 General

1.1 REFERENCE STANDARDS

- .1 ASTM International
 - .1 ASTM C542-05 , Standard Specification for Lock-Strip Gaskets.
 - .2 ASTM D790-07e1 , Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
 - .3 ASTM D1003-07e1 , Standard Test Method for Haze and Luminous Transmittance of Plastics.
 - .4 ASTM D1929-96(R2001)e1 , Standard Test Method for Determining Ignition Temperature of Plastics.
 - .5 ASTM D2240-05 , Standard Test Method for Rubber Property - Durometer Hardness.
 - .6 ASTM E84-10, Standard Test Method for Surface Burning Characteristics of Building Materials.
 - .7 ASTM F1233-08, Standard Test Method for Security Glazing Materials and Systems.
- .2 Canadian General Standards Board (CGSB)
 - .1 CAN/CGSB-12.12-M90 , Plastic Safety Glazing.
- .3 Correctional Service Canada (CSC) Technical Criteria, 2015.
- .4 H.P. White Laboratory Inc.
 - .1 TEST PROCEDURE, “Transparent Materials for Use in Forced Entry or Containment Barriers , HPW-TP-0500.03 (March 2003)”
- .5 Environmental Choice Program (ECP)
 - .1 CCD-045-95(R2005), Sealants and Caulking Compounds.
- .6 Glass Association of North American (GANA)
 - .1 GANA Glazing Manual - 2008 .
 - .2 GANA Laminated Glazing Reference Manual - 2009.

1.2 ADMINISTRATIVE REQUIREMENTS

- .1 Pre-Installation Meetings:
 - .1 Convene pre-installation meeting prior to beginning work of this Section, with Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:
 - .1 Verify project requirements.
 - .2 Review installation and substrate conditions.
 - .3 Co-ordination with other building subtrades.

-
- .4 Review manufacturer's written installation instructions and warranty requirements.
 - .2 Arrange for site visit with Departmental Representative prior to start of Work to examine existing site conditions adjacent to demolition Work.
 - .3 Ensure key personnel attend.
 - 1.3 ACTION AND INFORMATIONAL SUBMITTALS**
 - .1 Submit in accordance with Section 01 33 00 - Submittal Procedures.
 - .2 Product Data:
 - .1 Submit manufacturer's instructions, printed product literature and data sheets for glazing, sealants, and glazing accessories, and include product characteristics, performance criteria, physical size, finish and limitations.
 - .3 Shop Drawings:
 - .1 Provide details in full size scale indicating description of materials and related components.
 - .4 Samples:
 - .1 Submit for review and acceptance of each unit.
 - .5 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
 - .6 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.
 - .1 Submit testing and analysis of glass under provisions of Section 01 45 00 - Quality Control.
 - 1.4 CLOSEOUT SUBMITTALS**
 - .1 Submit in accordance with Section 01 78 00 - Closeout Submittals.
 - .2 Operation and Maintenance Data: submit operation and maintenance data for glazing for incorporation into manual.
 - 1.5 QUALITY ASSURANCE**
 - .1 Certificates: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.
 - .2 Perform Work in accordance with GANA Glazing Manual and GANA Sealant Manual GANA Laminated Glazing Reference Manual for glazing installation methods.
 - .3 Installer Qualifications: Company specializing in performing the work of this section with minimum three (3) years documented experience.
 - .4 Mock-ups:
 - .1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
 - .2 Construct mock-up to include glazing, and perimeter sealant.

- .3 Mock-up will be used:
 - .1 To judge quality of work, glass smoothness (absence of roller marks), substrate preparation, operation of equipment and material application.
- .4 Locate where directed.
- .5 Allow 24 hours for inspection of mock-up before proceeding with work.
- .6 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.
- .2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
- .3 Storage and Handling Requirements:
 - .1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
 - .2 Store and protect glazing and frames from nicks, scratches, and blemishes.
 - .3 Protect prefinished aluminum surfaces with wrapping or strippable coating.
 - .4 Replace defective or damaged materials with new.

1.7 AMBIENT CONDITIONS

- .1 Ambient Requirements:
 - .1 Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.
 - .2 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.

Part 2 Products

2.1 MATERIALS

- .1 Polycarbonate and Acrylic Laminated Security Glazing Panel.
 - .1 Required Protection Level per CSC Technical Criteria 2015: Level A
 - .2 Required Rating: Shall meet H.P. White Level C Ballistics and Level III Forced Rating
 - .3 Ballistic performance: to ASTM F1233-08 – Standard Test Method for Security Glazing Materials and Systems
 - .4 Thickness: 32mm
 - .5 Flexural strength: to ASTM D790
 - .6 Light Transmittance: to ASTM D 790
 - .7 Colour: Transparent / Clear

- .8 Surface burning characteristics for flame and smoke spread: to ASTM E84.
- .9 Self ignition characteristics: to ASTM D1929.
- .10 Standard of Acceptance:
 - .1 Model: SP 1250 Laminate
 - .2 Manufacturer: Lexgard

2.2 ACCESSORIES

- .1 Sealant: material to be compatible with Polycarbonate Security Glazing
- .2 Gasketing: material to be compatible with Polycarbonate Security Glazing
- .3 Setting Blocks: Do not use setting blocks made from PVC, EPDM or neoprene rubber materials
- .4 Fasteners: As indicated

Part 3 Execution

3.1 EXAMINATION

- .1 Verification of Conditions: verify conditions of work previously installed under other Contracts are acceptable for glazing installation in accordance with manufacturer's written instructions.
 - .1 Verify that openings for glazing are correctly sized and within tolerance.
 - .2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.
 - .3 Visually inspect substrate in presence of Departmental Representative.
 - .4 Inform Departmental Representative of unacceptable conditions immediately upon discovery.
 - .5 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 FABRICATION:

- .1 32 mm polycarbonate glazing panel to be fabricated per dimensions indicated on drawings.
- .2 Inner slot to be cutout per shape and dimensions indicated on drawings, interior edges shall have bevelled vertical sides from a 6 mm perpendicular distance from the inner face of the glazing at 45° to the outer face.
 - .1 It should be noted that the bevelled edge of the polycarbonate has an opaque surface, therefore, impeding visibility.
- .3 Polycarbonate panel shall be cut flush to outside edge of the metal gun port assembly.

3.3 PREPARATION

- .1 Clean contact surfaces with solvent and wipe dry.

- .2 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION

- .1 Perform work in accordance with ANA Glazing Manual and GANA Laminated Glazing Reference Manuals for glazing installation methods.

3.5 CLEANING

- .1 Progress Cleaning: clean in accordance with Section 01 74 11- Cleaning .
 - .1 Leave Work area clean at end of each day.
 - .1 Remove traces of primer, caulking.
 - .2 Remove glazing materials from finish surfaces.
 - .3 Remove labels.
 - .4 Clean glazing using approved non-abrasive cleaner in accordance with manufacturer's instructions.
 - .2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11- Cleaning .

3.6 PROTECTION

- .1 Protect installed products and components from damage during construction.
- .2 Repair damage to adjacent materials caused by glazing installation.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
 - .1 Material Safety Data Sheets (MSDS).
- .2 Master Painters Institute (MPI)
 - .1 MPI Architectural Painting Specifications Manual, latest edition.
 - .2 MPI - Maintenance Repainting Manual, latest edition.

1.2 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Product Data:
 - .1 Submit product data and instructions for each paint and coating product to be used.
 - .2 Submit product data for the use and application of paint thinner.
 - .3 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 Submittal Procedures. Indicate VOCs during application and curing.
 - .4 Submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
 - .5 Submit manufacturer's installation and application instructions.

1.3 STORAGE AND HANDLING

- .1 Storage and Protection:
 - .1 Provide and maintain dry, temperature controlled, secure storage.
 - .2 Store materials and supplies away from heat generating devices.
 - .3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.
- .2 Fire Safety Requirements:
 - .1 Provide one 9 kg Type ABC fire extinguisher adjacent to storage area.
 - .2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from Site on a daily basis.
 - .3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

1.4 WASTE MANAGEMENT AND DISPOSAL

- .1 Remove from Site and dispose of packaging materials at appropriate recycling facilities.
- .2 Place materials defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

- .3 Paint, stain and wood preservative finishes and related materials (thinners, and solvents) are regarded as hazardous products and are subject to regulations for disposal. Information on these controls can be obtained from Provincial Ministries of Environment and Regional levels of Government.

1.5 SITE CONDITIONS

- .1 Heating, Ventilation and Lighting:
 - .1 Ensure adequate ventilation in enclosed spaces.
 - .2 Provide minimum lighting level of 500 Lux on surfaces to be painted.
- .2 Temperature, Humidity and Substrate Moisture Content Levels:
 - .1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.
 - .2 Test concrete, masonry and plaster surfaces for alkalinity as required.
 - .3 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.
- .3 Additional application requirements:
 - .1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.
 - .2 Schedule operations to approval of the Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

1.6 QUALITY ASSURANCE

- .1 Mock-Up:
 - .1 Provide site mock-up for work of this Section indicating methods and materials, and procedures proposed to achieve final results in accordance with Section 01 45 00– Quality Control, and to comply with following requirements, using materials indicated for completed work:
 - .1 Build full mock-ups as directed by Departmental Representative.
 - .2 Obtain Departmental Representative's acceptance of mock-ups before starting construction; mock-up used throughout construction period as standard of acceptance for subsequent work.
 - .3 Mock-ups will be subject to Field Testing as directed by Departmental Representative as part of Commissioning requirements. Refer to Section 01 91 13 – General Commissioning Requirements.

Part 1 Products

2.1 MATERIALS

- .1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.
- .2 Provide paint materials for paint systems from single manufacturer.

- .3 Conform to latest MPI requirements for all painting work including preparation and priming.
- .4 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual "Approved Product" listing.
- .5 Provide paint products with Zero VOC content.

2.2 COLOURS

- .1 Colour to match existing. Allow for one (1) different colours, which will be determined at later date.

2.3 GLOSS/SHEEN RATINGS

- .1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10
Gloss Level 2 - VelvetLike Finish	Max.10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - SatinLike Finish	20 to 35	min. 35
Gloss Level 5 - Traditional SemiGloss Finish	35 to 70	
Gloss Level 6 - Traditional Gloss	70 to 85	
Gloss Level 7 - High Gloss Finish	More than 85	

- .2 Gloss level ratings of painted surfaces to be egg shell, unless noted otherwise.

2.4 INTERIOR PAINTING

- .1 Exposed Structural Steel and Metal Fabrications: gun port assemblies.
 - .1 INT 5.1A Quick Dry Enamel - Gloss Level 5 (Semi Gloss) finish.
 - .1 ZERO VOC content

Part 3 Execution

3.1 GENERAL

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheet.
- .2 Perform preparation and operations for interior painting in accordance with MPI - Architectural Painting Specifications Manual and MPI - Maintenance Repainting Manual except where specified otherwise.

3.2 EXAMINATION

- .1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Contract Administrator damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

- .2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.3 PREPARATION

- .1 Protection:
 - .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Department Representative.
 - .2 Protect factory finished products and equipment.
- .2 Surface Preparation:
 - .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
 - .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
 - .3 Place "WET PAINT" signs in occupied areas as painting operations progress.
- .3 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual specific requirements and coating manufacturer's recommendations.
- .4 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.
- .5 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.
- .6 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.
- .7 Touch up of shop primers with primer as specified.
- .8 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.

3.4 APPLICATION

- .1 Method of application to conform to manufacturer's application instructions unless specified otherwise.
- .2 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
- .3 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
- .4 Sand and dust between coats to remove visible defects.

END OF SECTION

Appendix A

Aspen IAG Laboratories Bulk Paint, Lead Content Analysis
(April 15, 2019)



Client: PSPC – Project Management

Date Sampled: April 10, 2019

Project: CSC EI Unit 5 Gun Port R.101593.001

Date Submitted: April 12, 2019

Collected By: John Short

Date Analyzed: April 15, 2019

Sample Type: Bulk Paint, Lead Content

Analyzed By: Alana Hill, BSc

Lab ID #: 8389-01PB

Sample ID #	Sample #	Description	Lead Content (mg/kg)
8389-01PB	1	From Window 52 Gun Port Door Handle – Paint	165

Test Method: EPA Method 7420/NIOSH Method 7082 (Modified) **Methodology:** Flame Atomic Absorption Spectrometry

Quality Control Check – Certified Reference Material

Result: 86% Acceptable Range: 80-120%

Quality Control Check – Internal QC

Result: 94% Acceptable Range: 80-120%

Quality Control Check – Method Blank

Result: <10 mg/kg Limit: 10 mg/kg

Analysis method is modified from EPA Method 7420, Lead (Atomic Absorption, Direct Aspiration) and NIOSH Method 7082 (Lead by Flame AAS). Samples are analyzed utilizing Flame Atomic Absorption Spectrometry (FAAS). The instrument detection limit is 0.02 ppm and the method detection limit is 10 mg/kg for digested solids.

Comments:

Samples will be stored in care of Aspen IAQ Laboratories Ltd. for 30 days after the date of submission for analysis. Any storage arrangements after this time are the responsibility of the client. After the 30 days the samples will be disposed of.