Public Works and Government Services Canada

Travaux Publics et Services Gouvernmentaux Canada

Requisition No: EZ899-160003/A

DRAWINGS & SPECIFICATIONS
For:

Agassiz BC Kent Institution

CONSTRUCT NEW YARD
Cell Block J

Project # R.070773.001
November 2014

APPROVED BY:

Regional Manager, AES — Date: Nov. 5/2014

Construction Safety Coordinator — Date: 14.10.29

TENDER:

Project Manager — Date: Nov. 6/14

SPECIFICATION SECTION — **Number of Pages**

LIST OF DRAWINGS

Bound with Specification

AP 1 Exercise Bar
AP 2 Exercise Bar

Bound Separately

A0 Title Sheet Location Plan
A01 Existing Topographic Plan
A02 New Topographic Plan
A1 Existing Lower Floor Plan
A2 Details

S1 Structural General Notes Details

E1 Partial Floor Plans Upper Lower
E2 Details

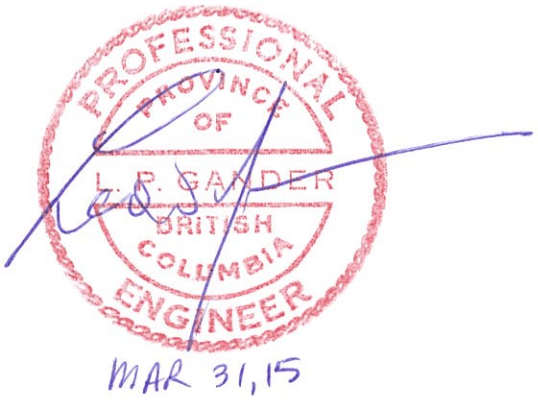
END OF INDEX

SEAL & SIGNATURE

Discipline	Seal & Signature
Structural	PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA L. K. S. LAM Nov 3, 2014

END OF SECTION

SEAL & SIGNATURE

Discipline	Seal & Signature
Electrical	

END OF SECTION

1 SUMMARY OF WORK

.1 Work covered by Contract Documents:

.1 Work under this Contract comprises the addition of 2 accessible Exercise Yards at Cell Block J, located within Kent Institution, Agassiz BC.

.1 Contract also includes some minor removal & disposal of asphalt paving and concrete stairs; site work and new asphalt paving; concrete well with ramp and landing; chain link fencing and gates; concrete foundation and steel receptacles for exercise bar; new exterior door & frame assembly; security cameras and lighting; and remedial work as required where affected by contract.

.2 Provide temporary construction hoarding at interior and exterior work areas as indicated, in accordance with clause 11.

.3 Delay start of demolition of opening for new door and frame assembly until the new door and frame assembly is on site and temporary secure hoarding is in place.

.2 Contractor to confirm locations of any underground services at construction site, interfering with new Work.

.3 Work not included in Contract includes:

.1 Steel exercise bar (see drawing AP1 and AP2).

.2 Contractor's Use of Premises:

.1 The Institution and Cell Block J will be operational during entire construction period.

.2 Co-operate with Departmental Representative in scheduling operations to minimize conflict and to facilitate CSC usage of premises.

.3 Contractor will have limited use of Cell Block J and must phase work as instructed by Departmental Representative to suit operational requirements.

.4 Contractor has use of immediate exterior construction areas for performance of Work and limited storage space for materials.

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

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

.3 Contractor Responsibilities:

.1 Contractor to remove debris off-site daily.

.2 Review shop drawings and manufacturer's instructions. Submit to Departmental Representative notification of observed discrepancies or problems anticipated due to site conditions and/or non-conformance with Contract Documents.

.3 Implement contract as per drawings and specifications.

.4 Handle products at site, including uncrating and temporary daily storage.

.5 Protect products from damage, and from exposure to elements.

.6 Assemble, install, connect, adjust, and finish products.

.7 Repair items damaged by Contractor on site (under his control).

.5 Departmental Representative Responsibilities:

.1 Departmental Representative to co-ordinate project with Institution.

2 WORK RESTRICTIONS

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

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

.3 Hours of work:
.1 Perform work 07:30 to 05:30, Monday through Friday except holidays, except as noted in Construction Work Schedule .
.2 Work may be performed on weekends and holidays. 7 days of notification to the Departmental Representative are required.
.3 Notify Departmental Representative forty-eight hours in advance of when after hours work will be required.
.4 Provide after hours work schedule for prior approval of Departmental Representative.

3 CONSTRUCTION WORK SCHEDULE

.1 Commence work immediately upon official notification of acceptance of offer and complete the work within sixteen (16) weeks from the date of such notification.

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

.3 Submittal:
.1 Submit to Departmental Representative within ten (10) working days of Award of Contract schedule of work.
.2 Departmental Representative will review schedule and return one copy.
.3 Re-submit two (2) copies of finalized schedule to Departmental Representative after return of reviewed preliminary copy.

.4 Project Meetings:
.1 Progress meetings to be bi-weekly.

4 SUBMITTAL PROCEDURES

.1 Administrative:
.1 Submit to Departmental Representative submittal listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.
.2 Work affected by submittal shall not proceed until review is complete.
.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
.4 Where items or information is not produced in SI Metric units converted values are acceptable.
.5 Review submittal prior to submission to Departmental Representative . This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents.

.6 Submittal not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.
.7 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
.8 Verify field measurements and affected adjacent Work are coordinated.
.9 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative review of submittal.
.10 Keep one reviewed copy of each submission on site.

5 HEALTH AND SAFETY

Specified in Section 01 35 33.

6 ENVIRONMENTAL PROCEDURES

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

.2 Under no circumstances dispose of rubbish or waste materials in waste bins on CSC property.

7 REGULATORY REQUIREMENTS

.1 References and Codes:
.1 Perform Work in accordance with National Building Code of Canada (NBCC2010) and where applicable British Columbia Building Code (BCBC2006) including all amendments up to bid closing date and other codes of provincial or local application provided that in case of conflict or discrepancy, more stringent requirements apply.
.2 Meet or exceed requirements of:
.1 Contract documents.
.2 Specified standards, codes and referenced documents.

8 QUALITY CONTROL

.1 Inspection:
.1 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.
.2 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.
.3 Departmental Representative may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Departmental Representative shall pay cost of examination and replacement.

.2 Independent Inspection Agencies:
.1 Provide and pay for independent Inspection/Testing Agencies for purpose of inspecting and/or testing portions of Work as specified in Sections 31 23 10, 31 23 13 and 32 12 18.
.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 Departmental Representative at no extra cost to Contract. Pay costs for retesting and reinspection.

.3 Procedures:

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

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

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

.4 Rejected Work:

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

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

.5 Reports:

.1 Submit four copies of inspection and test reports or pdf file emailed to Departmental Representative.

.6 Mill Tests:

.1 Submit mill test certificates as requested and as required by specification sections.

9 TEMPORARY UTILITIES

.1 Temporary Ventilation:

.1 The existing air system will be in use during work of this contract inside existing building. During dust/fume generating construction work block off all outlets and seal air tight.

.2 Provide adequate ventilation to meet health regulations for safe working environment.

.2 Ventilating:

.3 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.

.4 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.

.5 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.

.2 Temporary Power and Light:

.1 Electrical power and lighting in existence in work area may be used for construction purposes at no extra cost provided electrical components used for temporary power are replaced when damaged. Provide own cables from source.

.2 Conform to Section 01 35 33 Safety Requirements for use of existing power systems

10 CONSTRUCTION FACILITIES

.1 Installation and Removal:
- .1 Provide construction facilities in order to execute work expeditiously.
- .2 Remove from site all such work after use.

.2 Site Storage/Loading:
- .1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.
- .2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

.3 Construction Parking:
- .1 Park personnel vehicles outside perimeter fence in designated parking areas.

.4 Contractor's Site Office and enclosure:
- .1 Locate office outside Institution double fence as directed by the Departmental Representative.

.5 Equipment, Tools and Material Storage:
- .1 Provide and maintain, in a clean and orderly condition, lockable bins for storage of tools, and equipment.
- .2 Locate materials in a manner to cause least interference with work activities.

.6 Sanitary Facilities:
- .1 Existing washroom facilities may be used during the construction period as designated by Departmental Representative.

.7 Construction Signs:
- .1 Signs and notices for safety or instruction to be in English language, or commonly understood graphic symbols.
- .2 Remove signs from site at completion of project or as directed by Departmental Representative.

11 TEMPORARY BARRIERS AND ENCLOSURES

.1 Protection of openings:
- .1 Provide secure protection for openings during construction to maintain security.
- .2 Interior secure dust partition:
  - .1 Construct full height partition from 38 x 89 wood or 90 mm x1.6 mm steel studs at 300 mm oc with flattened expanded sheet steel security mesh fastened to each stud at 200 mm oc with steel screws. Expanded metal specified in Section 05 50 00 paragraph 2.1.4. Install 12 mm plywood over security mesh fastened with 38 mm long steel screws at 300 mm oc. Install 6 mm poly dust barrier applied to face of studs fastened with staples and adhesive caulking at perimeter of wall and at seams. (Plywood and security mesh on attack side and poly facing work space)
- .3 Exterior weatherproof hoarding:
  - .1 Construct wall and sloped roof structure from 38 x 89 wood or 90 mm x1.6 mm steel studs at 300 mm oc with 6 mm poly weather barrier applied to outside face of studs with wood battens fastened using screws and washers and adhesive caulking at perimeter of wall and at seams.

.4 Remove secure hoarding and partition, repair surfaces to match existing and dispose of materials off site. Repair holes in brick/CMU walls with cement patching compound and damaged interior drywall surfaces with gypsum patching compound, primer and paint to match.

.2 Protection of workers:

.1 During construction cover exterior building walls, where windows occur facing construction site, with synthetic mesh fabric capable of being draped over wall full height and fastened in place. Mesh grid 3 - 4 mm square. Fastening method to be at mortar joints and repairable upon removal.

.2 Install mesh protection during exterior construction work. Remove fabric and repair walls when directed by Departmental Representative.

.3 Protection of CSC Property:

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

.2 Be responsible for damage incurred.

.4 Protection of Building Finishes:

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

.2 Provide necessary screens, covers, and hoarding.

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

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

12 COMMON PRODUCT REQUIREMENTS

.1 Reference Standards:

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

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

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

.2 Quality:

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

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

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

.3 Storage, Handling and Protection:

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

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

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

.4 Store 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.

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

.4 Transportation:

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

.5 Manufacturer's Instructions:

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

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

.6 Quality of Work:

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

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

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

.7 Co-ordination:

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

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

.8 Remedial Work:

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

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

.9 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 work, unless stainless steel or other material is specifically requested in affected specification Section.

.10 Substitution after award of Contract:

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

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

.3 Proposals will be considered by the Departmental Representative if:
.1 Products selected by tenderer from those specified are not available;
.2 delivery date of products selected from those specified would unduly delay completion of Contract, or
.4 Alternative product to that specified, which is brought to the attention of and considered by Departmental Representative as equivalent to the product specified, and will result in a credit to the Contract amount.
.5 Should the proposed substitution be accepted either in part or in whole, assume full responsibility and costs when substitution affects other work on the project. Pay for design or drawing changes required as result of substitution.
.6 Amounts of all credits arising from approval of the substitutions will be determined by the Departmental Representative, and the Contract price will be reduced accordingly.

13 EXECUTION REQUIREMENTS

.1 Preparation:
.1 Inspect existing conditions, including elements subject to damage or movement during drilling and patching.
.2 After uncovering, inspect conditions affecting performance of Work.
.3 Beginning of cutting and drilling or patching means acceptance of existing conditions.
.4 Provide devices and methods to protect adjacent surfaces from damage.

.2 Execution:
.1 Execute drilling, cutting 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 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
.6 Cut rigid materials using purpose made power saw or core drill. Pneumatic or impact tools not allowed on brittle materials without prior approval.
.7 Restore work with new products in accordance with requirements of Contract Documents.
.8 Fit Work airtight to penetrations through surfaces.
.9 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

14 CLEANING

.1 Project Cleanliness:
.1 Maintain Work in tidy condition, free from accumulation of waste products and debris. Remove on a regular basis at the end of each daily work shift.
.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
.3 Provide on-site containers for collection of waste materials and debris.
.4 Provide and use clearly marked separate bins for recycling. Refer to-Construction/Demolition Waste Management And Disposal.
.5 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.
.6 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.7 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
.8 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
.9 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

.2 Final Cleaning:
.1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.
.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.
.3 Prior to final review, remove surplus products, tools, and equipment.
.4 Remove waste products.
.5 Clean adjacent surfaces affected by renovation work.
.6 Remove stains, spots, marks and dirt from adjacent surfaces, walls and floors.
.7 Vacuum clean and dust building interior at work areas.

15 CONSTRUCTION/DEMOLITION WASTE MANAGEMENT AND DISPOSAL

.1 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and/or recyclable materials and waste:
.1 Separate non-salvageable materials from salvaged items.
.2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.
.3 Transport and deliver non-salvageable items to licensed disposal facility.

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

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

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

16 CLOSEOUT PROCEDURES

.1 Inspection and Declaration:
.1 Contractor's Inspection: Conduct an inspection of Work with all subcontractors, identify deficiencies and defects, and repair as required to conform to Contract Documents.
.2 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
.3 Request Departmental Representative's Inspection.

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

.3 Completion: submit written certificate that following have been performed:
.1 Work has been completed and inspected for compliance with Contract Documents.
.2 Defects have been corrected and deficiencies have been completed.

.3 Equipment and systems have been tested, adjusted and balanced and are fully operational.
.4 Work is complete and ready for Final Inspection.

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

17 CLOSEOUT SUBMITTAL

.1 Record Drawings:
.1 As work progresses, maintain accurate records to show all deviations from the Contract Drawings. Note on as-built drawings as changes occur. At completion supply:
.1 Submit one copy of check plots to Departmental Representative prior to final printing/copying of as-built drawings.
.2 Four (4) copies of CD's in AutoCad file format (version: 2014) with all as-built information on the CD's.
.3 Four (4) sets of printed as-built drawings following review.
.4 Convert reviewed as-built Autocad drawings to PDF format for inclusion to electronic interactive O&M manual.
.5 Departmental Representative will supply copies of the original AutoCad files.
.6 Retain original logo and title block on the as-built drawings. Contractor may place on the upper right-hand title block area a small company logo, the text "AS-BUILT" and the date.
.2 Costs for transferring as-built information from marked up working set of drawings to electronic format using ACAD and plotting service is included in the Contract.

.2 Maintenance manual:
.1 On completion of project submit to Departmental Representative four (4) CD R/ disk copies and four paper (in loose leaf type binder) of Operations and Maintenance Manual, made up as follows:
.1 Provide maintenance manual, with as-built drawings, in O&M manual on CDs using pdf, or other approved format for descriptive writing, page size images and page size drawings. Organize manuals into industry standard maintenance manual tabs with links in index to each descriptive section describing the component or maintenance procedure etc.
.2 Organize files into CSI Masterformat numbering system or other approved descriptive titles.
.3 Label disk "Operation and Maintenance Data", project name, date, names of Contractor, subcontractors, consultants and subconsultants.
.4 Include scanned guarantees, diagrams and drawings.
.5 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labeled tabs (navigational buttons).
.6 Drawings, diagrams and manufacturer's literature must be legible.
.7 Refer to Electrical Divisions for specific details for Electrical data.

END OF SECTION

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.

2 DEFINITIONS

.1 "Contraband" means:
(a) an intoxicant, including alcoholic beverages, drugs and narcotics
(b) 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,
(c) an explosive or a bomb or a component thereof,
(d) currency over any applicable prescribed limit, $25.00, and
(e) any item not described in paragraphs (a) to (d) that could jeopardize the security of a Penitentiary or the safety of persons, when that item is possessed without prior authorization.

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

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

.4 "CSC" means Correctional Service Canada.

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

.6 "Construction employees" means persons working for the general contractor, the sub-contractors, equipment operators, material suppliers, testing and inspection companies and regulatory agencies. Workers 18 years or younger are not permitted within Institution.

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

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

.9 "Construction zone" means the area, as indicated in the contract documents, that the contractor will be allowed to work". This area may or may not be isolated from the security area of the Institution. Limits to be confirmed at construction start-up meeting.
.1 Construction zone for this contract includes the project location at Kent Institution - Cell Block J - Exercise Yard.

3 PRELIMINARY PROCEEDINGS

.1 At construction start-up meeting:
.1 Discuss the nature and extent of all activities involved in the Project.
.2 Establish mutually acceptable security procedures in accordance with this instruction and the Institution's particular requirements.

.2 The contractors's responsibilities:
.1 Ensure that all construction employees are aware of the CSC security requirements.
.2 Ensure that a copy of the CSC security requirements is always prominently on display at the job site.
.3 Co-operate with institutional personnel in ensuring that security requirements are observed by all construction employees.

4 CONSTRUCTION EMPLOYEES

.1 Submit to the Departmental Representative a list of the names with date of birth of all construction employees to be employed on the construction site and a security clearance form for each employee.

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

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

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

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

.1 appear to be under the influence of alcohol, drugs or narcotics.
.2 behave in an unusual or disorderly manner.
.3. are in possession of contraband.
.4 are 18 years old or younger.

5 VEHICLES

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

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

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

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

6 PARKING

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

7 SHIPMENTS

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

8 TELEPHONES

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

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

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

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

9 WORK HOURS

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

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

10 OVERTIME WORK

.1 Conform to Division 1.

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

11 TOOLS AND EQUIPMENT

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

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

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

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

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

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

.7 The Director will ensure that the security staff members carry out checks of the Contractor's tools and equipment against the list provided by the Contractor. These checks may be carried out at the following intervals:
- .1 At the beginning and conclusion of every work day or shift upon entering and exiting the Institution.
- .2 At any time when contractor is on Institution property.

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

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

12 KEYS

.1 Security Hardware Keys.
- .1 Arrange with the security hardware supplier/installer to have the keys for the security hardware to be delivered directly to Institution, specifically the Security Maintenance Officer (SMO).
- .2 The SMO will provide a receipt to the Contractor for security hardware keys.
- .3 Provide a copy of the receipt to the Departmental Representative.

.2 Other Keys
- .1 Use standard construction cylinders for locks for his use during the construction period.
- .2 Issue instructions to employees and sub-trades, as necessary, to ensure safe custody of the construction set of keys.
- .3 Upon completion of each phase of the construction, the CSC representative will, in conjunction with the lock manufacturer:
  - .1 Prepare an operational keying schedule
  - .2 Accept the operational keys and cylinders directly from the lock manufacturer.
  - .3 Arrange for removal and return of the construction cores and install the operational core in all locks.
- .4 Upon putting operational security keys into use, the PWGSC construction escort will obtain these keys as they are required from the SMO and open doors as required by the Contractor. The Contractor shall issue instructions to his employees advising them that all security keys shall always remain with the PWGSC construction escort.

13 SECURITY HARDWARE

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

14 PRESCRIPTION DRUGS

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

15 SMOKING RESTRICTIONS

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

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

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

16 CONTRABAND

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

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

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

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

17 SEARCHES

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

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

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

18 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 Director.

19 MOVEMENT OF VEHICLES

.1 Construction vehicles are not to leave the Institution until an inmate count is completed. Escorted commercial vehicles will be allowed to enter or leave the Institution through the vehicle access gate during the following hours:
- .1 AM: 0745 hrs. to 1100 hrs.
- .2 PM: 1300hrs. to 1530 hrs.

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

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

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

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

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

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

20 MOVEMENT OF CONSTRUCTION EMPLOYEES ON INSTITUTIONAL PROPERTY

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

.2 However, notwithstanding paragraph above, the Director may:
.1 Prohibit or restrict access to any part of the Institution.
.2 Require that in certain areas of the Institution, either during the entire construction project or at certain intervals, construction employees only be allowed access when accompanied by a member of the CSC security staff or PWGSC Construction Escort Officer.

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

21 SURVEILLANCE AND INSPECTION

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

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

22 STOPPAGE OF WORK

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

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

23 CONTACT WITH INMATES

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

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

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

24 COMPLETION OF CONSTRUCTION PROJECT

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

END OF SECTION

1 REFERENCES

.1 Government of Canada:
- .1 Canada Labour Code - Part II.
- .2 Canada Occupational Health and Safety Regulations.

.2 American National Standards Institute (ANSI):
- .1 ANSI A10.3-2006, – Safety Requirements for Powder-Actuated Fastening Systems ANSI for Construction and Demolition Operations

.3 Canadian Standards Association (CSA):
- .1 CSA Z797-2009 Code of Practice for Access Scaffold.
- .2 CSA S269.1-1975 (R2003), Falsework for Construction Purposes.
- .3 CSA-S350-M1980, Code of Practice for Safety in Demolition of Structures.

.4 HRSDC Fire Protection Engineering Section:
- .1 FCC No. 301-1982, Standard for Construction Operations.
- .2 FCC No. 302, Standard for Welding and Cutting.

.5 National Building Code of Canada (NBCC 2010):
- .1 Part 8, Safety Measures at Construction and Demolition Sites.

.6 Province of British Columbia:
- .1 Workers Compensation Act Part 3 - Occupational Health & Safety.
- .2 Occupational Health & Safety Regulations.

2 RELATED SECTIONS

.1 Section 01 01 50 - General Instructions for; Submittals procedures, Section Temporary utilities, Construction facilities and Temporary barriers and enclosures.

.2 Section 02 41 17 - Demolition and Removal Work.

3 WORKERS' COMPENSATION BOARD COVERAGE

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

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

4 COMPLIANCE WITH REGULATIONS

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

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

5 SUBMITTALS

.1 Make submittals in accordance with Section 01 01 50 General Instructions for Submittals.

.2 Submit the following:
.1 Health and Safety Plan.
.2 Copies of reports or directions issued by federal and provincial health and safety inspectors.
.3 Copies of incident and accident reports.
.4 Complete set of Material Safety Data Sheets (MSDS), and all other documentation required by Workplace Hazardous Materials Information System (WHMIS) requirements.
.5 Emergency Procedures.

.3 The Departmental Representative will review the Contractor's site-specific project Health and Safety Plan and emergency procedures, and provide comments to the Contractor within 5 days after receipt of the plan. Revise the plan as appropriate and resubmit to Departmental Representative for review.

.4 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.

.5 Submission of the Health and Safety Plan, and any revised version, to the Departmental Representative is for information and reference purposes only. It shall not:
.1 Be construed to imply approval by the Departmental Representative.
.2 Be interpreted as a warranty of being complete, accurate and legislatively compliant.
.3 Relieve the Contractor of his legal obligations for the provision of health and safety on the project.

6 RESPONSIBILITY

.1 Assume responsibility as the Prime Contractor for work under this contract and appoint a qualified coordinator for the purpose of ensuring the coordination of health and safety activities for the location in accordance with sections 118 and 119 of Part 3 of the Workers Compensation Act.

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

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

7 HEALTH AND SAFETY COORDINATOR

.1 The Health and Safety Coordinator (Registered Occupational Hygienist, Certified Industrial Specified Hygienist) must:
.1 Be responsible for completing all health and safety training, and ensuring that personnel that do not successfully complete the required training are not permitted to enter the site to perform work.

.2 Be responsible for implementing, daily enforcing, and monitoring the site-specific Health and Safety Plan.
.3 Be on site during execution of work.

8 GENERAL CONDITIONS

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

.2 Ensure that non-authorized persons are not allowed to circulate in designated construction areas of the work site.
.1 Provide appropriate means by use of barricades, fences, warning signs, traffic control personnel, and temporary lighting as required.
.2 Secure site after working hours in accordance with Section 01 14 10 - Security Requirements.

9 PROJECT/SITE CONDITIONS

.1 Work at site will involve:
.1 Working in areas where inmates may be present who are under supervision by CSC staff. Conform to Security Requirements Section 01 14 10 Contact With Inmates clause and other security requirements pertaining to a CSC institution.

10 REGULATORY REQUIREMENTS

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

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

11 FILING OF NOTICE

.1 Submit a Notice of Project, form 52E49, to WorkSafeBC in accordance with OH&S Regulation 20.2, at least 24 hours before start of work.

.2 Submit copy to Departmental Representative.

12 HEALTH AND SAFETY PLAN

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

.2 Prepare and comply with a site-specific project Health and Safety Plan based on hazard assessment, including, but not limited to, the following:
.1 Primary requirements:
.1 Contractor's safety policy.
.2 Identification of applicable compliance obligations.
.3 Definition of responsibilities for project safety/organization chart for project.
.4 General safety rules for project.
.5 Job-specific safe work, procedures.

.6 Inspection policy and procedures.
.7 Incident reporting and investigation policy and procedures.
.8 Occupational Health and Safety Committee/Representative procedures.
.9 Occupational Health and Safety meetings.
.10 Occupational Health and Safety communications and recordkeeping procedures.

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

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

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

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

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

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

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

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

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

13 EMERGENCY PROCEDURES

.1 List standard operating procedures and measures to be taken in emergency situations. Include an evacuation plan and emergency contacts (i.e. names/telephone numbers) of:
.1 Designated personnel from own company.
.2 Regulatory agencies applicable to work and as per legislated regulations.
.3 Local emergency resources.
.4 Departmental Representative.

.2 Include the following provisions in the emergency procedures:
.1 Notify workers of the nature and location of the emergency.
.2 Evacuate all workers safely.
.3 Check and confirm the safe evacuation of all workers.
.4 Notify the fire department or other emergency responders.
.5 Notify adjacent workplaces which may be affected if the risk extends beyond the workplace.
.6 Notify Departmental Representative.

.3 Provide written rescue/evacuation procedures as required for, but not limited to:
.1 Work at high angles.
.2 Work in confined spaces or where there is a risk of entrapment.
.3 Work with hazardous substances.
.4 Underground work.

14 HAZARDOUS PRODUCTS

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

.2 Where use of hazardous and toxic products cannot be avoided:
.1 Advise Departmental Representative beforehand of the product(s) intended for use. Submit applicable MSDS and WHMIS documents in accordance with clause 5.2.4.
.2 Provide adequate means of ventilation.

15 ELECTRICAL SAFETY REQUIREMENTS

.1 Comply with authorities and ensure that, when installing new facilities or modifying existing facilities, all electrical personnel are completely familiar with existing and new electrical circuits and equipment and their operation.
.1 Before undertaking any work, coordinate required energizing and de-energizing of new and existing circuits with Departmental Representative.
.2 Maintain electrical safety procedures and take necessary precautions to ensure safety of all personnel working under this Contract, as well as safety of other personnel on site.

16 ELECTRICAL LOCKOUT

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

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

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

17 OVERLOADING

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

18 FALSEWORK

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

19 SCAFFOLDING

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

20 CONFINED SPACES

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

21 POWDER-ACTUATED DEVICES

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

22 FIRE SAFETY AND HOT WORK

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

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

23 FIRE SAFETY REQUIREMENTS

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

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

24 FIRE PROTECTION AND ALARM SYSTEM

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

.2 Do not use fire hydrants for purposes other than firefighting.

.3 Be responsible/liable for costs incurred from the fire department and the Departmental Representative, resulting from false alarms.

25 UNFORESEEN HAZARDS

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

26 POSTED DOCUMENTS

.1 Post legible versions of the following documents on site:
- .1 Health and Safety Plan.
- .2 Sequence of work.
- .3 Emergency procedures.
- .4 Site drawing showing project layout, locations of the first-aid station, evacuation route and marshalling station, and the emergency transportation provisions.
- .5 Notice of Project.
- .6 Floor plan(s).

.7 Notice as to where a copy of the Workers' Compensation Act and Regulations are available on the work site for review by employees and workers.
.8 Workplace Hazardous Materials Information System (WHMIS) documents.
.9 Material Safety Data Sheets (MSDS).
.10 List of names of Joint Health and Safety Committee members, or Health and Safety Representative, as applicable.

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

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

27 MEETINGS

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

28 CORRECTION OF NON-COMPLIANCE

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

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

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

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 01 01 50 - General Instructions: Hours and schedule of work, security dust screens, waste management and temporary barriers.

.2 Section 01 14 10 - Security Requirements.

.3 Section 01 35 33 - Health and Safety Requirements.

.4 Section 02 82 10 - Hazardous Materials Abatement and Removal

.5 Section 03 30 00 - Cast-in-Place Concrete.

1.2 REGULATORY REQUIREMENTS

.1 Comply with WCB Industrial Health and Safety Regulations and Canada Labour Code, Canada Occupational Safety and Health Regulations.

1.3 REFERENCES

.1 CSA S350-M1980(R2003), Code of Practice of Safety in Demolition of Structures.

.2 Federal Legislation.
- .1 Canadian Environmental Assessment Act (CEAA), 1992, c. 37.
- .2 Canadian Environmental Protection Act (CEPA), 1999, c. 33.
- .3 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

1.4 EXISTING CONDITIONS

.1 Take over areas where demolition/removal work is indicated based on the condition at time of examination prior to tendering.

.2 Hazardous materials including lead based paint coatings have been identified in the work area:
- .1 Lead based coatings exist on the interior and exterior steel window frames.
- .2 Refer to Section 02 82 10 Hazardous Materials Abatement and Removal for removal procedures and Hazardous Building Materials Assessment report for analysis results and sample locations.

.3 Asbestos containing materials were not found in the projected work areas.

.4 If other unidentified Hazardous Containing Materials (HCM) are encountered in course of removal work or cutting and boring activities, stop work, take preventative measures, and notify Departmental Representative immediately. Do not proceed until written instructions have been received from the Departmental Representative.

.5 The existing premises will be occupied by Institution staff and is operational near the work area, during work of this Contract. Maintain access around protected work areas.

1.5 PROTECTION

.1 Prevent movement, settlement or damage of services, adjacent parts of existing walls, ceilings and parts of building not being removed or altered.

1.6 DEFINITIONS

.1 Alternate Disposal: reuse and recycling of materials by designated facility, user or receiving organization which has valid Certificate of Approval to operate. Alternative to landfill disposal.

.2 Hazardous Containing Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, including but not limited to: corrosive agents, flammable substances, asbestos containing materials, lead based coatings or other material that can endanger human health, well being or environment if handled improperly.

.3 Recycle: process by which waste and recyclable materials are transformed or collected for purpose of being transferred into new products.

.4 Recycling: process of sorting, cleansing, treating and reconstituting solid waste and other discarded materials for purpose of using in altered form.
.1 Recycling does not include burning, incinerating, or thermally destroying waste.

.5 Reuse: repeated use of product in same form but not necessarily for same purpose.

.6 Salvage: removal of materials from deconstruction/disassembly for purpose of reuse or recycling offsite.

.7 Source Separation: acts of keeping different types of waste materials separate, beginning from first time they became waste.

1.7 ENVIRONMENTAL PROTECTION

.1 Do not dispose of waste or volatile materials into watercourses, storm or sanitary sewers.

.2 Employ reasonable means necessary to protect salvaged materials from vandalism, theft, adverse weather, or inadvertent damage.

.3 Organize site and workers in manner which promotes efficient flow of materials through disassembly, processing, stockpiling, and removal.

.4 Remove and transport toxic or dangerous materials from site in accordance with provincial authority.

2 Products

2.1 REPAIR MATERIALS

.1 Patching grout: non shrink grout-fast set, sanded, cement-based, expanding grout produced to achieve fast set times and high, early strength, designed for use as a plastic or flowable grout meeting the requirements of ASTM C 1107 classification "B" for post set dimensional stability and the ASTM C 928 requirements for length change stability.

Compressive Strength to ASTM C 1107	Plastic (MPa)	Flowable (Mpa)
2 hour	15	7
4 hour	20	10
1 day	30	15
7 day	50	35
28 day	65	50
Set Times to ASTM C 266		
Initial -	20	30 minutes
Final -	35 minutes	60 minutes
Density (kg/m³)	2210	2049

.1 Acceptable Product: Basalite Top N Bond Portland cement based patching compound. Other products are acceptable provided they meet the performance requirements specified.

3 Execution

3.1 SITE VERIFICATION OF CONDITIONS

.1 Employ necessary means to assess site conditions to determine quantity and locations of hazardous materials.

.2 Investigate site and building to determine removal work, processing and storage logistics required prior to beginning of Work. Confirm location of existing hazardous containing materials remaining on site. Conform to Clause 1.4.

.3 Dismantle and remove parts of building as indicated or directed by Departmental Representative and dispose of removed material off property in accordance with local authorities having jurisdiction and in accordance with Section 01 01 50 General Instructions - Construction Waste Management and Disposal clause.

.4 Inspect site with Departmental Representative to verify extent and location of items designated for removal and disposal and items to remain.

.4 Locate and protect building systems. Preserve active systems in operating condition, serving remainder of site and building.

3.2 PREPARATION

.1 Schedule start of demolition of building wall after new door and frame assembly are delivered to site and temporary security walls, structures and partitions are in place as specified in Section 010150 General Instructions.

.2 Conform to schedule for all removal work.

3.3 REMOVAL WORK

.1 At end of each day's work, leave work in safe and secure condition, clean up and remove debris and materials not being reinstalled.

3.4 SELECTIVE REMOVAL AND DEMOLITION WORK

.1 Saw cut and remove a portion of exterior concrete/masonry wall with windows to accommodate the new door/frame assembly. Take precautions to support concrete/masonry wall until new steel reinforcement is installed and capable of supporting loads. See drawing S-1.

.2 Provide openings in walls to accommodate the electrical services lines.

.3 Salvage brick masonry for reuse at jambs in new arrangement.

3.5 SELECTIVE SITE DEMOLITION AND REMOVAL WORK

.1 Remove steel security fencing and asphalt pavement from areas where new yard Work is indicated including asphalt/gravel paving, concrete work, fencing/gates, drywell and as directed by Departmental Representative.

3.6 REPAIRS

.1 Patch and repair walls, concrete floors, wall and ceiling finishes damaged by demolition/removal work except where new finishes will cover these areas as indicated on drawings and throughout this specification. New materials to match existing in quality, colour and appearance except as specified otherwise.

3.7 REMOVAL FROM SITE

.1 Dispose of removed materials and equipment not reusable or salvageable to approved disposal facilities in accordance with applicable regulations.

END OF SECTION

Part 1 General

1.1 SUMMARY

.1 Comply with requirements of this Section when performing the removal & disposal work of materials noted on drawings where saw cutting and grinding is required at existing concrete foundation wall; and at lead based coatings (paint) on steel window casings and exterior window paint.

1.2 SECTION INCLUDES

.1 Requirements and procedures for Hazardous Materials Abatement & Removal.

1.3 RELATED SECTIONS

.1 Section 01 35 33 - Health and Safety Requirements.

1.4 REFERENCES

.1 Department of Justice Canada (Jus).

.1 Canadian Environmental Protection Act, 1999 (CEPA).

.2 Transport Canada (TC).

.1 Transportation of Dangerous Goods Act, 1992 (TDGA).

1.5 DEFINITIONS

.1 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.

.2 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow thorough wetting of fibres.

.3 Asbestos-Containing Materials (ACMs): materials identified under Existing Conditions including fallen materials and settled dust. Ground concrete is equivalent to ACM's.

.4 Hazardous Materials Work Area: area where work takes place, which will, or may, disturb ACMs.

.5 Authorized Visitors: Engineers, Consultants or designated representatives, and representatives of regulatory agencies.

.6 Non-Friable Material: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.

.7 Occupied Area: area of the building that is outside Hazardous Materials Work Area.

.8 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required providing protection and isolation.

.9 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must have appropriate capacity for work.

1.6 REGULATORY REQUIRMENTS

.1 Comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications the more stringent requirement applies. Comply with regulations in effect at time work is performed.

1.7 HAZARDOUS MATERIAL ASSESSMENT

.1 All grinding of existing concrete to be considered as Hazardous Material removal.

.2 Refer to Appendix A – Limited Hazardous Building Materials Assessment.

1.8 SUBMITTALS

.1 Submit proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of Hazardous Materials-containing waste in accordance with requirements of authority having jurisdiction.

.2 Submit copy of "Hazardous/Special Waste Disposal request Form" provided to provincial authorities, in accordance with the provincial "Asbestos Policy Directive"

.3 Submit proof of Contractor's Asbestos Liability Insurance.

.4 Submit to Departmental Representative necessary permits for transportation and disposal of Hazardous Materials-containing waste and proof that Hazardous Materials-containing waste has been received and properly disposed.

1.9 INSTRUCTION AND TRAINING

.1 .1 Before commencing work, provide to Engineer satisfactory proof that every worker has had instruction and training in hazards of Hazardous Materials exposure, in personal hygiene and work practices, and in use, cleaning, and disposal of respirators and protective clothing. Renovation space to be provided with HEPA filter air filtration during work.

.2 IP+C Dust Control Logistic Plan to be in place throughout construction phase. (Inspection Control Plan for hording). Contractor to be CSA approved for hording. Maintain negative air pressure within the containment area and exhaust to outdoors.

.3 Instruction and training related to respirators includes, at a minimum:

- .1 Fitting of equipment.
- .2 Inspection and maintenance of equipment.
- .3 Disinfecting of equipment.
- .4 Limitations of equipment.

.4 Instruction and training must be provided by a competent, qualified person.

1.10 WORKER PROTECTION

.1 Protective equipment and clothing to be worn by workers while in the Hazardous Materials Work Area include:

.1 Non-powered reusable or replaceable filter-type respirator equipped with HEPA filter cartridges, personally issued to the worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to the Provincial Authority having jurisdiction.

.2 Disposable-type protective clothing that does not readily retain or permit penetration of asbestos fibres, consisting of full-body covering including head covering with snug-fitting cuffs at wrists, ankles, and neck.

.2 Eating, drinking, chewing, and smoking are not permitted in Hazardous Materials Work Area.

.3 Before leaving the Hazardous Materials Work Area , dispose of protective clothing as contaminated waste as specified.

.4 Ensure workers wash hands and face when leaving Hazardous Materials Work Area. Facilities for washing are located as indicated on drawings.

.5 Ensure that no person required to enter an Hazardous Materials Work Area has facial hair that affects the seal between the respirator and the face.

1.11 QUALITY ASSURANCE

.1 Regulatory Requirements: comply with Federal, Provincial, and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications, more stringent requirement applies. Comply with regulations in effect at time Work is performed.

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

.3 Departmental Representative to retain a qualified consultant to specify, inspect and verify successful removal or disturbance of hazardous material.

1.12 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Waste Management Plan.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan.

.4 Separate for reuse and recycling and place in designated containers Steel Metal Plastic waste in accordance with Waste Management Plan.

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

.6 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.

.7 Fold up metal banding, flatten and place in designated area for recycling.

.8 Disposal of Hazardous Materials waste generated by removal activities must comply with Federal, Provincial, and Municipal regulations. Dispose of Hazardous Materials waste in sealed double thickness 6 ml bags or leak proof drums. Label containers with appropriate warning labels.

.9 Provide manifests describing and listing waste created. Transport containers by approved means to licence landfill for burial.

1.13 EXISTING CONDITIONS

.1 During tender evaluate existing site conditions.

1.14 SCHEDULING

.1 Not later than ten (10) days before beginning Work on this Project notify following in writing:

.1 Regional Office of WorkSafeBC.

.2 Inform sub-trades of presence of Hazardous Materials-containing materials identified in Existing Conditions.

.3 Submit to Departmental Representative copy of notifications prior to start of Work.

1.15 OWNER'S INSTRUCTIONS

.1 Before beginning Work, provide Departmental Representative satisfactory proof that every worker has received instruction and training in hazards of Hazardous Materials exposure, personal hygiene and work practices, and use, cleaning, and disposal of respirators and protective clothing.

1.16 COORDINATION AND SCOPE

.1 Sawcut existing concrete foundation wall to suit new exterior door as noted on drawings.

.2 Removal & disposal of existing steel window units.

Part 2 Products

2.1 MATERIALS

.1 Drop Sheets:

.1 Polyethylene: 0.15 mm thick.

.2 FR polyethylene: 0.15 mm thick woven fibre reinforced fabric bonded both sides with polyethylene.

.2 Hoarding Wall:

.1 Wood stud framing: 2"x4" studs

.2 Plywood sheeting: 3/8" plywood (4'x8'); exterior white primer or white polyethylene

.3 Polyethylene: 0.15 mm thick; white

.3 Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in a concentration to provide thorough wetting of Hazardous Materials-containing material.

.4 Waste Containers: contain waste in two separate containers.

.1 Inner container: 0.15 mm thick sealable polyethylene waste bag.

.2 Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise, outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.

.3 Labelling requirements: affix pre-printed cautionary asbestos warning in both official languages that is visible when ready for removal to disposal site.

Part 3 Execution

3.1 PROCEDURES

.1 Do deconstruction in accordance with Section 01 35 33 - Health and Safety Requirements.

.2 Before beginning Work, isolate Hazardous Materials Work Area using, minimum, pre-printed cautionary Hazardous Materials warning signs in both official languages that are visible at access routes to Hazardous Materials Work Area.

.1 Remove visible dust from surfaces in the work area where dust is likely to be disturbed during course of work.

.2 Use HEPA vacuum or damp cloths where damp cleaning does not create a hazard and is otherwise appropriate.

.3 Do not use compressed air to clean up or remove dust from any surface.

.3 Prevent spread of dust from Hazardous Materials Work Area using measures appropriate to work to be done.

.1 Use FR polyethylene drop sheets over flooring in Hazardous Materials Work Area where dust and contamination cannot otherwise be safely contained.

.4 Wet materials containing Hazardous Materials to be cut, ground, abraded, scraped, drilled, or otherwise disturbed unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low - velocity fine - mist sprayer.

.2 Perform Work to reduce dust creation to lowest levels practicable.

.3 Work will be subject to visual inspection and air monitoring.

.4 Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.5 Clean-Up:

.1 Frequently during Work and immediately after completion of Work, clean up dust and Hazardous Materials-containing waste using HEPA vacuum or by damp mopping.

.2 Place dust and Hazardous Materials-containing waste in sealed dust-tight waste bags. Treat drop sheets and disposable protective clothing as Hazardous Materials waste; wet and fold these items to contain dust, and then place in plastic bags.

.3 Clean exterior of each waste-filled bag using damp cloths or HEPA vacuum and place in second clean waste bag immediately prior to removal from Hazardous Materials Work Area.

.4 Seal waste bags and remove from site. Dispose of in accordance with requirements of Provincial and Federal Authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and those guidelines and regulations for Hazardous Materials disposal are followed.

.5 Perform final thorough clean-up of Work areas and adjacent areas affected by Work using HEPA vacuum.

3.2 SCOPE – HAZARDOUS MATRIALS ABATEMENT & REMOVAL

.1 All sawcutting & grinding of existing Concrete Foundation Wall.

.2 Removal & disposal of existing steel window units.

END OF SECTION

PART 1 GENERAL

1.1 Related Work

.1	Section 03 20 00	Concrete Reinforcing
.2	Section 03 30 00	Cast-In-Place Concrete

1.2 References

.1 Canadian Standards Association (CSA International)

- .1 CSA-A23.1-09/A23.2-09 (R2014), Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.
- .2 CSA-O86S1-05, Supplement No. 1 to CAN/CSA-O86-14, Engineering Design in Wood.
- .3 CSA O121-M2008 (R2013), Douglas Fir Plywood.
- .4 CSA O151-09 (R2014), Canadian Softwood Plywood.
- .5 CSA O153-13, Poplar Plywood.
- .6 CAN/CSA-O325-07 (R2012), Construction Sheathing.
- .7 CSA O437 Series-93 (R2011), Standards for OSB and Waferboard.
- .8 CSA S269.1-1975 (R2003), Falsework for Construction Purposes.
- .9 CAN/CSA-S269.3-M92 (R2013), Concrete Formwork, National Standard of Canada

.2 Underwriters' Laboratories of Canada (ULC)

- .1 CAN/ULC-S701-11, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.

1.3 Submittals

.1 Submittals in accordance with Section 01 01 50 – General Instructions.

.2 Submit shop drawings for formwork and falsework.

- .1 Submit drawings stamped and signed by professional engineer registered or licensed in Province of British Columbia, Canada.

.3 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 35 33 – Health and Safety Requirements.

.4 Co-ordinate submittal requirements and provide submittals required by Section 01 01 50.

.5 Indicate method and schedule of construction, shoring, stripping and re-shoring procedures, materials, arrangement of joints, special architectural exposed finishes, ties, liners, and locations of temporary embedded parts. Comply with CSA S269.1, for falsework drawings and Comply with CAN/CSA-S269.3 for formwork drawings.

.6 Indicate formwork design data: permissible rate of concrete placement, and temperature of concrete, in forms.

.7 Indicate sequence of erection and removal of formwork/falsework as directed by Departmental Representative.

1.4 Delivery, Storage and Handling

.1 Store and manage hazardous materials in accordance with Section 01 01 50 - General Instructions.

.2 Waste Management and Disposal:

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

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

.3 Divert wood materials from landfill to a recycling, reuse, composting facility as approved by Departmental Representative.

.4 Divert plastic materials from landfill to a recycling, reuse, composting facility as approved by Departmental Representative.

.5 Divert unused form release material from landfill to an official hazardous material collections site as approved by the Departmental Representative.

PART 2 PRODUCTS

2.1 Materials

.1 Materials and resources in accordance with Section 01 01 50 – Requirements.

.2 Formwork materials:

.1 For concrete without special architectural features, use wood and wood product formwork materials to CSA-O121, CAN/CSA-O86, CSA O437 Series, CSA-O153.

.2 Rigid insulation board: to CAN/ULC-S701.SPEC NOTE: Drawings should designate areas requiring special architectural concrete features.

.3 Form ties:

.1 For concrete not designated 'Architectural', use removable or snap-off metal ties, fixed or adjustable length, free of devices leaving holes larger than 25 mm diameter in concrete surface.

.4 Form liner:

.1 Plywood: high density overlay, medium density overlay, Douglas Fir to CSA O121, Canadian Softwood Plywood to CSA O151 or Poplar to CSA O153 grade, square edge, 20 mm thick.

.5 Form release agent: non-toxic, biodegradable, low VOC.

.6 Form stripping agent: colourless mineral oil, non-toxic, biodegradable, low VOC, free of kerosene, with viscosity between 70 and 110s Saybolt Universal 15 to 24 mm^2/s at 40 degrees C, flashpoint minimum 150 degrees C, open cup.

.7 Falsework materials: to CSA-S269.1.

.8 Sealant: to Section 07 90 00 – Sealants.

PART 3 EXECUTION

3.1 Fabrication and Erection

.1 Verify lines, levels and centres before proceeding with formwork/falsework and ensure dimensions agree with drawings.

.2 Obtain Departmental Representative's approval for use of earth forms framing openings not indicated on drawings.

.3 Hand trim sides and bottoms and remove loose earth from earth forms before placing concrete.

.4 Fabricate and erect falsework in accordance with CSA S269.1.

.5 Do not place shores and mud sills on frozen ground.

.6 Provide site drainage to prevent washout of soil supporting mud sills and shores.

.7 Fabricate and erect formwork in accordance with CAN/CSA-S269.3 to produce finished concrete conforming to shape, dimensions, locations and levels indicated within tolerances required by CSA-A23.1/A23.2.

.8 Align form joints and make watertight.

.1 Keep form joints to minimum.

.9 Use 25 mm chamfer strips on external corners and/or 25 mm fillets at interior corners, joints, unless specified otherwise.

.10 Form chases, slots, openings, drips, recesses, expansion and control joints as indicated.

.11 Build in anchors, sleeves, and other inserts required to accommodate Work specified in other sections.

.1 Ensure that anchors and inserts will not protrude beyond surfaces designated to receive applied finishes, including painting.

.12 Line forms for following surfaces:

.1 Outer face of outside girders beams and vertical edge of sidewalk slab.

.2 Soffit of girders and underside of bridge decks if exposed.

.3 Exposed faces of abutments, wingwalls, piers and pylons: do not stagger joints of form lining material and align joints to obtain uniform pattern. Secure lining taut to formwork to prevent folds.

.4 Pull down lining over edges of formwork panels.

.5 Ensure lining is new and not reused material.

.6 Ensure lining is dry and free of oil when concrete is poured.

.7 Application of form release agents on formwork surface is prohibited where drainage lining is used.

.8 If concrete surfaces require cleaning after form removal, use only pressurized water stream so as not to alter concrete's smooth finish.

.9 Cost of textile lining is included in price of concrete for corresponding portion of Work.

.13 Clean formwork in accordance with CSA-A23.1/A23.2, before placing concrete.

3.2 Removal and Shoring

.1 Leave formwork in place for following minimum periods of time after placing concrete.

.1 Three days for walls and sides of beams.

.2 Three days for columns.

.3 Three days for beam soffits, slabs, decks and other structural members, or one days when replaced immediately with adequate shoring to standard specified for falsework.

.4 One days for footings and abutments.

.2 Remove formwork when concrete has reached 75% of its design strength or minimum period noted above, whichever comes later, and replace immediately with adequate reshoring.

.3 Provide necessary reshoring of members where early removal of forms may be required or where members may be subjected to additional loads during construction as required.

.4 Space reshoring in each principal direction at not more than 3000 mm apart.

.5 Re-use formwork and falsework subject to requirements of CSA-A23.1/A23.2.

END OF SECTION

PART 1 GENERAL

1.1 Related Work

.1	Section 03 10 00	Concrete Forming and Accessories
.2	Section 03 30 00	Cast-In-Place Concrete Short Form

1.2 Measurement Procedures

.1 Measure reinforcing steel in kilograms tonnes of steel incorporated into Work, computed from theoretical unit mass specified in CAN/CSA-G30.18 for lengths and sizes of bars as indicated or authorized in writing by Departmental Representative.

.2 No measurement will be made under this Section.

.1 Include reinforcement costs in items of concrete work in Section 03 30 00 - Cast-In-Place Concrete.

1.3 References

.1 American Concrete Institute (ACI)

.1 SP-66-04, ACI Detailing Manual 2004.

.1 ACI 315-99, Details and Detailing of Concrete Reinforcement.

.2 ACI 315R-04, Manual of Engineering and Placing Drawings for Reinforced Concrete Structures.

.2 American Society for Testing and Materials International (ASTM)

.1 ASTM A143/A143M-07, Standard Practice for Safeguarding Against Embrittlement of Hot-Dip Galvanized Structural Steel Products and Procedure for Detecting Embrittlement.

.2 ASTM A185/A185M-07, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.

.3 ASTM A497/A497M-07 Standard Specification for Steel Welded Wire Reinforcement, Deformed, for Concrete.

.3 Canadian Standards Association (CSA International)

.1 CSA-A23.1-09/A23.2-09, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.

.2 CSA-A23.3-04, Design of Concrete Structures.

.3 CAN/CSA-G30.18-09, Billet-Steel Bars for Concrete Reinforcement, A National Standard of Canada.

.4 CSA-G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.

.5 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles, A National Standard of Canada.

.6 CSA W186-M1990(R2007), Welding of Reinforcing Bars in Reinforced Concrete Construction.

.4 Reinforcing Steel Institute of Canada (RSIC)

.1 RSIC-2004, Reinforcing Steel Manual of Standard Practice.

1.4 Submittals

.1 Submittals in accordance with Section 01 01 50 – Shop Drawings, Product Data and Samples.

.2 Prepare reinforcement drawings in accordance with RSIC Manual of Standard Practice and ACI 315.

.3 Submit shop drawings including placing of reinforcement and indicate:

.1 Bar bending details.

.2 Lists.

.3 Quantities of reinforcement.

.4 Sizes, spacings, locations of reinforcement and mechanical splices if approved by Departmental Representative, with identifying code marks to permit correct placement without reference to structural drawings.

.5 Indicate sizes, spacings and locations of chairs, spacers and hangers.

.4 Detail lap lengths and bar development lengths to CSA-A23.3, unless otherwise indicated.

.1 Provide type A tension lap splices where indicated unless otherwise indicated.

When Chromate solution is used as replacement for galvanizing non-prestressed reinforcement, provide product description for review by Departmental Representative prior to its use.

.5 Quality Assurance: Provide the following to the Departmental Representative.

.1 Mill Test Report: upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, minimum 4 weeks prior to beginning reinforcing work.

.2 Upon request submit in writing to Departmental Representative proposed source of reinforcement material to be supplied.

1.5 Delivery, Storage and Handling

.1 Store and manage hazardous materials in accordance with Section 01 01 50 - General Instructions.

.2 Waste Management and Disposal:

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

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

PART 2 PRODUCTS

2.1 Materials

.1 Materials and resources in accordance with Section 01 01 50 - General Instructions.

.2 Substitute different size bars only if permitted in writing by Departmental Representative.

.3 Reinforcing steel: billet steel, grade 400, deformed bars to CAN/CSA-G30.18, unless indicated otherwise.

.4 Reinforcing steel: weldable low alloy steel deformed bars to CAN/CSA-G30.18.

.5 Cold-drawn annealed steel wire ties: to ASTM A497/A497M.

.6 Deformed steel wire for concrete reinforcement: to ASTM A497/A497M.

.7 Welded steel wire fabric: to ASTM A185/A185M.

.1 Provide in flat sheets only.

.8 Welded deformed steel wire fabric: to ASTM A497/A497M.

.1 Provide in flat sheets only.

.9 Epoxy Coating of non-prestressed reinforcement: to ASTM A775/A775M.

.10 Galvanizing of non-prestressed reinforcement: to CAN/CSA-G164, minimum zinc coating 610 g/m^2.

.1 Protect galvanized reinforcing steel with chromate treatment to prevent reaction with Portland cement paste.

.2 If chromate treatment is carried out immediately after galvanizing, soak steel in aqueous solution containing minimum 0.2% by weight sodium dichromate or 0.2% chromic acid.

.1 Temperature of solution equal to or greater than 32 degrees and galvanized steels immersed for minimum 20 seconds.

.3 If galvanized steels are at ambient temperature, add sulphuric acid as bonding agent at concentration of 0.5% to 1%.

.1 In this case, no restriction applies to temperature of solution.

.4 Chromate solution sold for this purpose may replace solution described above, provided it is of equivalent effectiveness.

.1 Provide product description as described in PART 1 - SUBMITTALS

.11 Chairs, bolsters, bar supports, spacers: to CSA-A23.1/A23.2.

.12 Mechanical splices: subject to approval of Departmental Representative.

.13 Plain round bars: to CSA-G40.20/G40.21.

2.2 Fabrication

.1 Fabricate reinforcing steel in accordance with CSA-A23.1/A23.2, ACI 315 and Reinforcing Steel Manual of Standard Practice by the Reinforcing Steel Institute of Canada.

.1 ACI 315R unless indicated otherwise.

.3 Obtain Departmental Representative's approval for locations of reinforcement splices other than those shown on placing drawings.

.4 Upon approval of Departmental Representative, weld reinforcement in accordance with CSA W186.

.5 Ship bundles of bar reinforcement, clearly identified in accordance with bar bending details and lists.

.1 Ship epoxy coated bars in accordance with ASTM A775A/A775M.

2.3 Source Quality Control

.1 Upon request, provide Departmental Representative with certified copy of mill test report of reinforcing steel, showing physical and chemical analysis, minimum 4 weeks prior to beginning reinforcing work.

.2 Upon request inform Departmental Representative of proposed source of material to be supplied.

PART 3 EXECUTION

3.1 Preparation

.1 Galvanizing to include chromate treatment.

.1 Duration of treatment to be 1 hour per 25 mm of bar diameter.

.2 Conduct bending tests to verify galvanized bar fragility in accordance with ASTM A143/A143M.

3.2 Field Bending

.1 Do not field bend or field weld reinforcement except where indicated or authorized by Departmental Representative.

.2 When field bending is authorized, bend without heat, applying slow and steady pressure.

.3 Replace bars, which develop cracks or splits.

3.3 Placing Reinforcement

.1 Place reinforcing steel as indicated on placing drawings and in accordance with CSA-A23.1/A23.2.

.2 Use plain round bars as slip dowels in concrete.

.1 Paint portion of dowel intended to move within hardened concrete with one coat of asphalt paint.

.2 When paint is dry, apply thick even film of mineral lubricating grease.

.3 Prior to placing concrete, obtain Departmental Representative's approval of reinforcing material and placement.

.4 Ensure cover to reinforcement is maintained during concrete pour.

.5 Protect epoxy and paint coated portions of bars with covering during transportation and handling.

3.4 Field Touch-Up

.1 Touch up damaged and cut ends of epoxy coated or galvanized reinforcing steel with compatible finish to provide continuous coating.

END OF SECTION

PART 1 GENERAL

1.1 Related Work

.1	Section 03 10 00	Concrete Forming and Accessories
.2	Section 03 20 00	Concrete Reinforcing
.3	Section 03 35 00	Concrete Finishing

1.2 References

.1 American Society for Testing and Materials International (ASTM)

- .1 ASTM A185/A185M-07, Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
- .2 ASTM D260-86(2001), Standard Specification for Boiled Linseed Oil.
- .3 ASTM D1751-04(2008), Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non extruding and Resilient Bituminous Types).

.2 Canadian Standards Association (CSA International)

- .1 CSA-A23.1-2009/A23.2-2009, Concrete Materials and Methods of Concrete Construction/Methods of Test and Standard Practices for Concrete.CAN/CSA-A3000-08, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).
  - .1 CSA-A3001-08, Cementitious Materials for Use in Concrete.
- .2 CAN/CSA-G30.18-09, Billet-Steel Bars for Concrete Reinforcement.

1.3 Design Requirements

.1 Alternative 2 - Prescription: in accordance with CSA-A23.1/A23.2, and as described in Mixes of PART 2 - PRODUCTS.

1.4 Submittals

.1 Submittals in accordance with Section 01 01 50 – General Instructions.

.2 Shop Drawings:

- .1 Submit placing drawings prepared in accordance with plans to clearly show size, shape, location and all necessary details of reinforcing.
- .2 Submit drawings showing formwork and falsework design to: CSA-A23.1/A23.2.
- .3 Drawings to bear stamp and signature of qualified professional engineer registered or licensed in British Columbia.

.3 At least 4 weeks prior to beginning Work, inform Departmental Representative source of fly ash and submit samples to Departmental Representative.

- .1 Do not change source of Fly Ash without written approval of Departmental Representative.

.4 At least 4 weeks prior to beginning Work, submit to Departmental Representative samples of following materials proposed for use: curing compound.

.5 Submit samples of materials to be used in concrete mix for testing:

.1 Supplementary cementing materials.

.2 Blended hydraulic cement.

.3 Admixture.

.6 Submit testing inspection results and reports for review by Departmental Representative and do not proceed without written approval when deviations from mix design or parameters are found.

.7 Concrete hauling time: submit for review by Departmental Representative deviations exceeding maximum allowable time of 120 minutes for concrete to be delivered to site of Work and discharged after batching.

1.5 Quality Assurance

.1 Submit to Departmental Representative, minimum 4 weeks prior to starting concrete work, valid and recognized certificate from plant delivering concrete.

.2 Health and Safety Requirements: do construction occupational health and safety in accordance with Section 01 35 33 - Health and Safety Requirements.

1.6 Delivery, Storage and Handling

.1 Concrete hauling time: maximum allowable time limit for concrete to be delivered to site of Work and discharged not to exceed 120 minutes after batching.

.1 Modifications to maximum time limit must be agreed to by the Departmental Representative and concrete producer as described in CSA A23.1/A23.2.

.2 Deviations to be submitted for review by the Departmental Representative.

.2 Concrete delivery: ensure continuous concrete delivery from plant meets CSA A23.1/A23.2.

1.7 Waste Management and Disposal

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

.2 Ensure emptied containers are sealed and stored safely.

.3 Use excess concrete for:

.4 Divert unused concrete materials from landfill to local facility as reviewed by Departmental Representative.

.5 Provide appropriate area on job site where concrete trucks and be safely washed.

.6 Divert admixtures and additive materials from landfill to approved official hazardous material collections site as reviewed by Departmental Representative.

.7 Unused admixtures and additive materials must not be disposed of into sewer systems, into lakes, streams, onto ground or in other location where it will pose health or environmental hazard

PART 2 PRODUCTS

2.1 Materials

.1 Cement: to CAN/CSA-A3001, Type GU.

.2 Blended hydraulic cement: Type GUb to CAN/CSA-A3001.

.3 Supplementary cementing materials: with minimum 10% Type F fly ash replacement, by mass of total cementitious materials to CAN/CSA A3001.Water: to CSA-A23.1/A23.2.

.4 Air entraining admixture: to CAN/CSA-23.1

.5 Chemical admixtures: to CAN/CSA-A23.1 as approved by Departmental Representative.

.6 Reinforcing bars: to CAN/CSA-G30.18, Grade 400.

.7 Welded steel wire fabric: to ASTM A185.

.8 Premoulded joint filler:

.1 Bituminous impregnated fibreboard: to ASTM D1751.

.9 Joint sealer/filler: grey to ASTM C920, Type S, Grade P, Class 25.

.10 Sealer: boiled linseed oil to ASTM D260, mixed with mineral spirits 1:1 proprietary poly-siloxane resin blend. Exterior pavement areas : to ASTM C309 Liquid Membrane-Forming compound for Curing Concrete, Type 1.

.11 Other concrete materials: to CSA-A23.1/A23.2.

2.2 Mixes

.1 Proportion normal density concrete in accordance with CAN/CSA-A23.1, Alternative 1 to give the following properties:

.1 Cement: Type GU Portland cement

.2 Minimum compressive strength at 28 days, class of exposure and nominal size of coarse aggregate:

Member	minimum 28-days strength (MPa)	maximum aggregate size (mm)	exposure class Category	air content
Perimeter footings, Exterior footings	25	25	F-2	1
Slab on grade (Exterior)	32	20	C-2	1

.3 Slump at time and point of discharge: To CSA-A23.1 Clause 4.3.2.3. When super plasticizers are used, the slump may be increased by shall kept below the point where segregation will occur. The cost of super plasticizers shall be included in the cost of the concrete. Smaller aggregate size may be used where necessary to increase slump.

.4 Air content: To CSA-A23.1 Table 2 & 4 to suit appropriate exposure class.

.5 Chemical admixtures: following admixtures in accordance with to ASTM C494M. Admixtures shall contain no salts or acids.

.6 Concrete mix designs shall be submitted to a material consultant for approval and to Departmental representative for review prior to any concrete work.

PART 3 EXECUTION

3.1 Preparation

.1 Provide Departmental Representative 72 hours notice before each concrete pour.

.2 Place concrete to CAN/CSA A23.1, Clause 19; Adhere strictly to CSA A23.1 for proper preparation of Cold Weather Concrete.

.3 Place concrete reinforcing in accordance with Section 03 20 00 - Concrete Reinforcing.

.4 During concreting operations:

.1 Development of cold joints not allowed.

.2 Ensure concrete delivery and handling facilitates placing with minimum of rehandling, and without damage to existing structure or Work.

.5 Protect previous Work from staining.

.6 Clean and remove stains prior to application of concrete finishes.

3.2 Construction

.1 Perform cast-in-place concrete work in accordance with CSA-A23.1/A23.2.

3.3 Inserts

.1 Cast in sleeves, ties, slots, anchors, reinforcement, frames, conduit, bolts, waterstops, joint fillers and other inserts required to be built-in.

.1 Sleeves and openings greater than 100 mm x 100 mm not indicated, must be reviewed by Departmental Representative.

3.4 Finishes

.1 Formed surfaces exposed to view: sack rubbed finish in accordance with CSA-A23.1/A23.2.

.2 Pavements, walks, curbs and exposed site concrete:

.1 Screed to plane surfaces and use [aluminum] [magnesium] [wood] floats.

.2 Provide round edges and joint spacings using standard tools.

.3 Trowel smooth to provide lightly brushed non-slip finish.

3.5 Control Joints

.1 Cut and form control joints in slabs on grade at locations indicated, in accordance with CSA-A23.1/A23.2 and install specified joint sealer/filler.

3.6 Expansion and Isolation Joints

.1 Install premoulded joint filler in expansion and isolation joints full depth of slab flush with finished surface to CSA-A23.1/A23.2.

3.7 Curing

.1 Use curing compounds compatible with applied finish on concrete surfaces free of bonding agents and in accordance with CSA-A23.1/A23.2.

3.8 Sealing

.1 Following curing, apply two even coats of linseed oil mixture to clean dry surfaces, each at 8 m^2/L. Allow first coat to dry before applying second coat. Apply poly-siloxane resin blend sealer at 4 m^2/L.

3.9 Site Tolerances

.1 Concrete floor slab finishing tolerance in accordance with CSA-A23.1/A23.2.

3.10 Field Quality Control

.1 Concrete testing: to CSA-A23.1/A23.2 by testing laboratory designated and paid for by Departmental Representative. Accelerated test methods will apply.

3.11 Verification

.1 Quality Control Plan: ensure concrete supplier meets performance criteria of concrete as established in PART 2 - PRODUCTS, by Departmental Representative and provide verification of compliance.

3.12 Cleaning

.1 Use trigger operated spray nozzles for water hoses.

.2 Designate cleaning area for tools to limit water use and runoff.

.3 Cleaning of concrete equipment to be done in accordance with Section 01 35 43: Environmental Procedures.

END OF SECTION

PART 1 GENERAL

1.1 Related Work

.1 Section 03 30 00 — Cast-in-Place Concrete

1.2 References

.1 Canadian Standards Association (CSA)

.1 CSA-A23.1- 2004 (R2014), Concrete Materials and Methods of Concrete Construction.

1.3 Performance Requirements

.1 Product quality and quality of work in accordance with Section 01 01 50 - Product Requirements.

.2 Submit written declaration that components used are compatible and will not adversely affect finished flooring products and their installation adhesives.

1.4 Product Data

.1 Submit product data in accordance with Section 01 01 50 – Shop Drawings, Product Data and Samples.

.2 Submit WHMIS MSDS - Material Safety Data Sheets. WHMIS MSDS acceptable to Labour Canada and Health and Welfare Canada for concrete floor treatment materials. Indicate VOC content.

.3 Include application instructions for concrete floor treatments.

1.5 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with Section 01 01 50 - Waste Management And Disposal and the Waste Reduction Work plan.

.2 Place materials defined as hazardous or toxic waste in designated containers.

.3 Ensure emptied containers are sealed and stored safely for disposal away for children.

.4 Use chemical hardeners that are non-toxic, biodegradable and have zero or low VOC's.

.5 Dispose of surplus chemical and finishing materials in accordance with federal, provincial and municipal regulations.

.6 Dispose of waste from stripping of floors in a manner that will not have unfavourable effects on the environment.

1.6 Environmental Requirements

.1 Temporary lighting:

.1 Minimum 1200 W light source, placed 2.5 m above floor surface, for each 40 sq m of floor being treated.

.2 Electrical power:

.1 Provide sufficient electrical power to operate equipment normally used during construction.

.3 Work area:

.1 Make the work area water tight protected against rain and detrimental weather conditions.

.4 Temperature:

.1 Maintain ambient temperature of not less than 10°C from 7 days before installation to at least 48 hours after completion of work and maintain relative humidity not higher than 40% during same period.

.5 Moisture:

.1 Ensure concrete substrate is within moisture limits prescribed by flooring manufacturer.

.6 Safety:

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

.7 Ventilation:

.1 Departmental Representative will arrange for ventilation system to be operated during installation of concrete floor treatment materials. Ventilate area of work as directed by Departmental Representative by use of approved portable supply and exhaust fans.

.2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities.

.3 Provide continuous ventilation during and after coating application.

PART 2 PRODUCTS

2.1 Curing Compounds

.1 Select low VOC, water-based and organic-solvent free curing compounds.

2.2 Mixes

.1 Mixing, ratios and application in accordance with manufacturer's instructions.

PART 3 EXECUTION

3.1 Examination

.1 Verify that slab, substrate and site conditions surfaces are ready to receive work and elevations are as indicated on shop drawings instructed by manufacturer.

3.2 Preparation of Existing Slab

.1 Rub exposed sharp edges of concrete with carborundum to produce 3 mm radiused edges unless otherwise indicated.

.2 Saw cut control joints to CSA-A23.1, 24 hours maximum after placing of concrete.

.3 Use strong solvent mechanical stripping to remove chlorinated rubber or existing surface coatings.

.4 Use protective clothing, eye protection, and respiratory equipment during stripping of chlorinated rubber or existing surface coatings.

3.3 Protection

.1 Protect finished installation in accordance with manufacturer's instructions.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 02 41 17 - Demolition and Removal Work

.2 Section 05 50 00 - Metal fabrications.

.3 Section 08 11 20 - Detention Doors, Frames and Security Hardware.

1.2 DESCRIPTION OF WORK

.1 Work includes salvaging exterior bricks from demolition and reusing at new opening to match existing.

1.3 REFERENCE STANDARDS

.1 Canadian Standards Association (CSA International)
- .1 CSA A179-04(R2014), Mortar and Grout for Unit Masonry.
- .2 CSA A179-04(2014), Connectors for Masonry.
- .3 CSA-A371-04(R2014), Masonry Construction for Buildings.

.2 ASTM International (ASTM)
- .1 ASTM C207 - 06(2011) Standard Specification for Hydrated Lime for Masonry Purposes.
- .2 ASTM C144 - 11 Standard Specification for Aggregate for Masonry Mortar.
- .3 ASTM A1064 / A1064M - 13 Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

1.4 SUBMITTALS

.1 Submit Samples and Product Data in accordance with Section 01 01 50 - General Instructions - Submittal Procedures clause.

.2 Submit representative samples for each type masonry unit and full sized units as directed.

.3 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and data sheets.
- .2 Submit WHMIS MSDS - Material Safety Data Sheets and indicate VOC's for coatings and galvanized protective coatings and touch-up products.
- .3 Indicate VOC's for mortar, grout, colour additives and admixtures.
- .4 Indicate sizes, spacing, location and quantities of reinforcement and connectors.

1.5 COLD WEATHER REQUIREMENTS

.1 Comply with Clause 3.15 of CAN/CSA-S304.

.2 When air temperature is below 5° C take following precautions in preparing and using mortar:
- .1 Heat sand slowly and evenly. Do not use scorched sand, having a reddish cast, in mortar.
- .2 Heat water to 70° C maximum; 20 deg. C minimum.

.3 After combining heated ingredients maintain temperature of mortar between 5° C and 50 deg. C until used.
.4 Protect mortar from rain and snow.

.3 Maintain dry beds for salvaged masonry and use dry masonry units only.

1.6 HOT WEATHER REQUIREMENTS

.1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.

.2 Comply with Clause 6.7 of CSA A371.

1.7 PROTECTION

.1 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until completed and protected by permanent construction.

.2 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.

1.8 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 01 50 – General Instructions for Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities approved by Departmental Representative.

.3 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

2 Products

2.1 MASONRY UNITS

.1 Brick units: salvaged from existing demolition work.
.1 Clean mortar from salvaged brick units. Select salvaged brick for best appearance.

2.2 REINFORCEMENT AND CONNECTORS

.1 Connectors shall be corrosion resistant: hot dip galvanized to CSA-A370 and CSA-S304.

2.3 MORTAR MATERIALS

.1 Mortar and grout: to CSA A179.

.2 Lime: Type S to ASTM C207 and CSA A179.

.3 Sand: clean white quartzite or silica type to ASTM C144.

2.4 MORTAR TYPES

.1 Mortar: to CSA A179M.
.1 For all exterior brick masonry: type S based on mortar proportion by volume.

2.5 REINFORCING AND TYING

.1 Metal ties: to CSA-S304.

.2 Corrosion protection: to Clauses 4.2.1 and Table 2 of CAN3-A370, for metal anchors in exterior walls.

3 Execution

3.1 INSTALLATION

.1 Do masonry work in accordance with CSA-A371 except where specified otherwise.
.1 Bond: stack bond.
.2 Coursing height:
.1 Brick: to match existing joint spacing
.3 Tooled joints:
.1 Horizontal joints and flush vertical joints to match with existing CMU.

.2 Build masonry plumb, level, and true to line, with vertical joints in alignment.

.3 Layout coursing and bond to achieve correct coursing heights, and continuity of bond each side of new door opening.

.4 Salvage bricks from exterior wall where required to rebuild exterior wythe to match existing brick.

3.2 CONSTRUCTION

.1 Exposed masonry:
.1 Select undamaged units, in exposed masonry.
.2 Make cuts straight, clean, and free from uneven edges.

3.3 CONNECTING

.1 Install masonry connectors in accordance with CSA-A370, CSA-A371 and CSA-S304.1 unless indicated otherwise. Tie salvaged brick masonry to existing brick wythe.

3.4 BONDING AND TYING

.1 Tie salvaged brick masonry to existing masonry exterior wythe in accordance with NBCC2010, CSA-S304.1, CSA-A371..

3.5 SITE TOLERANCES

.1 Tolerances in notes to Clause 5.3 of CSA-A371 apply.

3.6 FIELD QUALITY CONTROL

.1 Inspection and testing will be carried out by Testing Service as directed by the Departmental Representative.

3.7 CLEANING

.1 Allow mortar droppings on concrete masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of brick and finally by brushing.

3.8 PROTECTION

.1 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 03 30 00 - Cast-in-Place Concrete for Installation of anchors in concrete.

.2 Section 04 04 99 - Masonry.

.3 Section 09 91 23 - Finish painting.

.4 Section 08 11 20 - Detention Doors, Frames and Security Hardware.

1.2 REFERENCE STANDARDS

.1 American Society for Testing and Materials (ASTM)
.1 ASTM A53 / A53M - 12 Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless.
.2 ASTM A 307-12, Specification for Carbon Steel Bolts and Studs, 60,000psi Tensile.
.3 ASTM A325 - 10e1, Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
.4 ASTM A 653/A653M-13, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
.5 ASTM A1011 / A1011M - 13 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength.
.6 ASTM F1267 - 12 Standard Specifications For Expanded Metal - Steel.

.2 Canadian Standards Association (CSA)
.1 CSA G40.20-13/G40.21-13: General requirements for rolled or welded structural quality steel/Structural quality steel.
.2 CSA W59-03(R2008), Welded Steel Construction (Metal Arc Welding).

.3 Canadian Institute of Steel Construction (CISC)/Canadian Paint Manufacturer's Association (CPMA).
.1 CISC/CPMA1-73b, Quick-Drying, One-Coat Paint for Use on Structural Steel.
.2 CISC/CPMA2 -75, Quick-Drying, Primer for use on Structural Steel.

1.3 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 01 50 - General Instructions, Submittals clause.
.2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section Section 01 01 50 - General Instructions, Submittals clause. Indicate VOC's:
.1 For finishes, coatings, primers and paints.

.2 Shop Drawings
.1 Submit shop drawings in accordance with Section 01 01 50 - General Instructions, Submittals clause.
.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

.3 Professional Engineer responsible for the shop drawings for steel lintel and framed

opening :

.1 Inspect the installation of the work for conformance with the design and the shop drawings.

1.4 QUALITY ASSURANCE

.1 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.2 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty 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 01 50 - General Instructions, Common Product Requirements clause.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site containers for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

2 Products

2.1 MATERIALS

.1 Steel sections and plates: to CSA-G40.21, Grade 300W Class C and 350W Class C for HSS members.

.2 Welding materials: to CSA W59.

.3 Bolts and anchorbolts: to ASTM A307; corrosion resistant types to ASTM A325M, Type 3. Provide all required anchoring devices including anchor clips, bar and strap anchors, expansion bolts and shields, and other devices designed to support and secure work.

.4 Expanded sheet steel mesh: commercial sheet steel to ASTM A1011 and to ASTM A1267 type II, flattened expanded, class 1 uncoated, Style: 20 - #13, opening size SWD-17 mm x LWD-45 mm ± 1 mm, designed for penetration resistance, sheet thickness 1.78 mm, 72-77% open area and 3.7 kg/m². Acceptable Product: Exmet C3/4-13F.

.5 Drilled adhesive anchors: injection adhesive anchor consisting of fast curing 2-part adhesive injected into drilled hole, followed by insertion of bolt, rod or reinforcing bar. See drawings for type size and location.

2.2 FABRICATION

.1 Build work square, true, straight and accurate to required size, with joints closely fitted and properly secured.

.2 Fabricate items from steel unless indicated otherwise; use galvanized steel for exterior items, unless indicated otherwise.

.3 Where possible, fit and shop assemble work, match mark, ready for erection.

.4 Use self-tapping shake-proof countersunk flat headed screws on items requiring assembly by screws or as indicated. Use screws for interior work. Use welded connections for exterior work, unless approved otherwise by Departmental Representative.

.5 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush with sharp edges and corners rounded to 3 mm radius. Where continuous welds may cause distortion of fabrication use stitch welds and plastic filler, grind and sand smooth.

2.3 MISCELLANEOUS STEEL CHANNELS PLATES AND ANGLES

.1 Fabricate steel wall and base plates, HSS lintel and channel framework to reinforce exterior wall at new opening. Drill holes to suit fastening of interior wall plate and jamb channels as indicated on drawing S-1.

.2 Prime paint steel with primer.

.3 Provide steel channel, plate and HSS reinforcement at new door opening.

2.4 RECEPTACLES

.1 Fabricate steel HSS receptacles, of size indicated, for setting into concrete base by concrete trade, to accommodate two future (NIC) exercise bar frames.

.2 Length of receptacle set into concrete 457 mm and protruding 50 mm above finish pavement with temporary cap to protect opening. Total 8 receptacles required; 4 receptacle to fit 50 x 50 HSS and 4 receptacles to fit 50 x 75 HSS.

2.5 FINISHES

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

2.6 ISOLATION COATING

.1 Isolate aluminum from following components, by means of bituminous paint:
- .1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.
- .2 Concrete, mortar and masonry.

2.7 SHOP PAINTING

.1 Remove scale rust, grease and other surface coating and apply one shop coat of primer to all ferrous metal items after fabrication, with exception of concrete encased 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°C.

.3 Clean surfaces to be field welded; do not paint.

3 Execution

3.1 ERECTION

.1 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections. Hold in place until concrete embedment are cured.

.2 Provide suitable means of anchorage as indicated or as acceptable to the Departmental Representative, such as dowels, epoxy type anchors, expansion bolts and shields.

.3 Make field connections with high tensile bolts, to CAN/CSA-S16 or weld.

.4 Hand items over for casting into concrete and to appropriate trades together with setting templates.

.5 Touch-up field welds, bolts and burnt or scratched surfaces after completion of erection using primer.

3.2 MISCELLANEOUS STEEL REINFORCEMENT

.1 Install steel plate, HSS and channel framework to reinforce exterior wall at new opening in accordance with reviewed shop drawing.

.2 Weld lintel angle to HSS. Adjust level of lintel angle with lowest brick.

.3 Fasten jamb channels to concrete wall and base plates to floor with epoxy anchors. Weld channel to two base plates and to underside of HSS after fastening to wall.

3.3 SECURITY MESH TEMPORARY WALL REINFORCEMENT

.1 Fasten security mesh to wood or steel stud framed temporary wall with screws as described in Section 01 01 50 paragraph 11.1.2.

.2 Butt join panels at solid bearing and fasten each panel to studs with screws.

3.4 RECEPTACLES

.1 Install receptacles plumb with top cap set 50 mm above finish pavement. Set each group of four receptacles level with each other.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 05 50 00 Metal Fabrications.

.2 Section 08 80 50 - Glazing.

.3 Section 09 91 23 - Painting.

.4 Section 32 31 13 - Chain Link Security Fencing and Gates: for security locks in exercise yard gates.

1.2 REFERENCE STANDARDS

.1 American Society for Testing and Materials International, (ASTM).
.1 ASTM A1008 / A1008M - 13 Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
.2 ASTM A924/A924M-13 Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
.3 ASTM A653/A653M-13 Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
.4 ASTM A1011/A1011M-14 Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Form ability, and Ultra-High Strength.
.5 ASTM C665-12 Standard Specification for Mineral-Fiber Blanket Thermal Insulation for Light Frame Construction and Manufactured Housing.
.6 ASTM F1450-12a Standard Test Methods for Hollow Metal Swinging Door Assemblies for Detention Facilities

.2 Canadian Standards Association (CSA International).
.1 G40.20-13/G40.21-13 - General requirements for rolled or welded structural quality steel / Structural quality steel.
.2 CSA W59-03(2008) - Welded Steel Construction (Metal Arc Welding).
.3 CAN/CGSB-1.40-M97, Primer, Structural Steel, Oil Alkyd Type.

.3 ANSI/NAAMM/HMMA 863-04 Guide Specifications For Detention Security Hollow Metal Doors & Frames

1.3 SUBMITTALS

.1 Submit shop drawings and test reports in accordance with Section 01 01 50 - General Instructions; for Submittals.
.1 Clearly indicate each type of door and frame, material core thickness, mortises, reinforcements, anchorages, glazing, location of exposed fasteners and hardware arrangements.

1.4 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility approved by Engineer.

.5 Divert unused wood materials from landfill to either recycling, reuse or composting facility

2 Products

2.1 MATERIALS

.1 Sheet Steel (WGCS): tension leveled steel to ASTM A924M galvanized to ASTM A653M, commercial steel (CS), type B, coating designation ZF120 (paintable Galvaneal).

.2 Hot Rolled Carbon Steel Sheet (HRCS): commercial quality to ASTM A1011, for concealed reinforcement for materials, 2.7 mm minimum thickness.

.3 Cold rolled carbon steel sheet (CRCS) commercial quality to ASTM A1008, shop prime coated.

.4 Shop paint primer: primer compatible with finish coat, to manufacturer's standard.

.5 Fasteners: security screws and bolts with security heads (five lobe and centre post) to prevent removal except with special tools; non-corrosive type. Approved Product: Torx-Plus Tamper Resistant. Fasteners that are not required to be removed to be flat head, having an extra head that will twist off when fully secured, leaving the main head countersunk flush without slots, so that screw cannot be backed out by means of a screw driver or wrench. Where thickness of metal will not allow screws to be countersunk, use round head security screws with hexagonal break-off heads.

2.2 FABRICATION

.1 Form metal in accordance with shop drawings, free from defects impairing strength, durability and appearance.

.2 Fabricate components with required structural properties to safely withstand or abstain strain and stresses to which they will be subjected.

.3 Steel plates: free from buckles and waves.

.4 Supply anchoring devices required for fabrication and erection of this Section.

.5 After fabrication remove mill scale, scrape and clean all ferrous metals and apply 1 coat of primer.

.6 Welding: grind exposed welds smooth and flush. Fill open joints, seams and depressions with filler or by continuous brazing or welding. Grind smooth to true sharp arises and profiles, and sand down to smooth, true, uniform finish.

2.3 SECURITY DOOR & FRAME

.1 Supply and install hinged doors and frames as noted on drawings.

.2 Frame: Fabricate from 2.8 mm thick steel and to double rebate profile throat size to accommodate steel subframe system at new opening in exterior wall. Minimum frame width 147 mm.

.1 Fabricate frame subframes and side panels to fit the demolished opening and accommodate the new security door.

.2 Side panel: of minimum 2.8 mm thickness steel to tubular profile formed to match door frame. Door frame and side panel are a one piece unit.

.3 Sub frame: See drawing S-1 for details.

.4 Provide 2.8 mm flush access panel on interior side panel, to access electrical junction boxes. Attach panel to 6 mm plate frame weld to inside face of side panel. Coordinate panel size and location with electrical and lock wiring. Space MS type screws at 100 mm oc tapped into plate frame. Install gasket seal at perimeter of access panel.

.5 Provide 6 mm thick steel plate reinforcing for frame mounted electric lock. Provide cutout with tapered plate shroud in side panel on push side of door for key access, complete with 4.8 mm thick steel cover plate at exterior, secured to side panel face with security screws (Part of lock mounting hardware). Prime paint. Finish painting to Section 09 91 23.

.2 All exposed fasteners security TORX type.

.3 Doors:

.1 Detention Type, 50 mm thickness hollow steel vertically stiffened with steel ribs and all voids filled with sound deadening semi-rigid fibrous insulation conforming to level 3 ANSI/NAAM 863 and ASTM F1450 performance criteria for static load, rack, impact and edge crush tests.

.2 Door skins 2.8 mm thickness steel sheet. Doors with 2.8 mm steel channel reinforcement at perimeter and at all openings. Door to incorporate hardware as indicated. Arrange internal steel ribs to frame openings in door.

.3 Provide reinforced opening for double slot glazed opening 125 max x 600 with 2.8 mm thickness formed steel stops to accommodate 9 mm tempered glass. Note: locate framed openings for glass 200 mm from door edge at head, strike and hinge side of door.

.4 Door Hardware:

.1 Lockset: Folger Adam 56E-6-L, solenoid operated lock, keyed two sides, with lock mounting/plate and escutcheons x 32D, mounted in wide door frame/mullion.

.1 Function: when connected to a momentary-contact switch, the latchbolt retracts when the solenoid is energized. Once retracted, the latchbolt is held mechanically retracted until the door is opened. The latchbolt extends when the door is open.

.2 Description:

.1 UL Listed as Burglary-Resistant Mechanisms and Fire Door Accessories to a three-hour rating. ASTM F-1577 Grade 1 – Impact.

.2 Solenoid voltage - 120VAC, two piece plug connector. Instant solenoid operation - continuous-duty solenoid.

.3 Automatic deadlocking - When the latchbolt is extended, it automatically deadlocks on closure. Full 20 mm bolt throw - Projects 6 mm when retracted.

.4 Mechanical unlocking by key - During power failure, or any time the lock unlocks by use of prison paracentric key. Latchbolt remains retracted until relocked by key.

.5 Indication switch - A lock status indication switch which monitors the extension of the latch bolt and the deadlocked condition. Rugged construction - Case and cover are 7 gauge steel.

.6 Solid steel latchbolt - Latchbolt is galvanized steel, concealed pins resist sawing.

.7 Deadlock actuator - Roller type, galvanized steel, adjustable for variations in door-to-jamb clearance.

.8 Finish - Galvanized.

.9 Keying: Six tumblers, new key code for Kent Institution with three paracentric silicon bronze keys.

.3 Pushbutton and indicating lights: to Section 28 13 00.

.2 Hinges: 4 ½" full mortise, model 4-1/2FM-ICS Institutional stainless steel hinges, with concealed nonremovable pins. Number of hinges to suit door weight.

.1 To ANSI/National Association of Architectural Metal Manufacturers (NAAMM) Standard HMMA 863 requiring the hinge to withstand 200 blows of 200 ft. lbs. each and comply with requirements of NFPA 80.

.2 Integral studs on each leaf with 12 mm diameter, 12.9 mm long studs on each leaf. Studs anchor the hinge to door and frame, and provide support even if screws are sheared.

.3 Threshold: aluminum, serrated non slip surface, same width as door frame.

.4 Door Pulls: cast stainless steel, 228 long x 56 mm projection, two 10 mm security head fasteners, one per side of door.

.1 Style: Raised (Loop)

.2 Finish: US32D

.3 Mounting Screws: Security Oval Hd 3/8-16 x 3/4'.

.5 Door closer:

.1 Closers: provide adjustable backcheck for 90° to 180° opening. Finish to be 628 satin aluminum, powder coated finish.

.2 Surface mounted overhead door closers: to ANSI/BHMA A156.4, door mounted, parallel mounted, non-handed, non-sized with site adjustable spring tension from size 2-6, with heavy duty forged steel arms, full rack and pinion hydraulic action, adjustable closing speed, adjustable back-checking action, high strength cast iron cylinder walls with stable hydraulic fluid to make winter/summer adjustments unnecessary.

.3 Provide through bolts for attachment to doors. Closer housing of smooth rectangular design approximately 90 mm high.

.4 Heavy duty security type parallel arm.

.5 Finish to C28 in lacquer or polyester powder coat finish.

.6 Acceptable Product: LCN Security Closer4210.

2.4 CLEANING AND PAINTING

.1 Clean steel door and frame work to thoroughly remove all loose mill scale, rust, spatter, slag, oil, dirt and other foreign materials.

.2 Grind all welds smooth and apply one (1) coat primer to all steel.

3 Execution

3.1 ERECTION

.1 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.

.2 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, threaded holes, expansion bolts and shields, and toggles. New opening for door and frame assembly is framed with steel channel at jambs and with HSS, plate and angle member at lintel all bolted to concrete wall.

.3 Touch-up field welds, bolts and burnt or scratched surfaces after completion of erection with primer.

3.2 DOOR FRAME INSTALLATION

.1 Install frames plumb, level and square. Install frames within a tolerance +/- 2mm maximum.

.2 Frames solidly braced at time of installation both vertically and horizontally and solidly blocked within the frame opening to prevent bowing of the frame.

.3 Install door frame assembly to steel subframe assembly and adjust for correct alignment using steel shims. Stitch weld door frame to new steel subframe. Grind and sand welds to remove high profiles and fill depressions, sand smooth ready for painting.

3.3 DOOR AND HARDWARE INSTALLATION

.1 Install door and hardware in accordance with templates, manufacturer's instructions and reviewed shop drawings.

.2 Install lock mounting plate on exterior side of wide frame in accordance with manufacturer's instructions and reviewed shop drawings. Install gasket seal under removable plate.

.3 Adjust operable parts for correct function.

3.4 CLEANING AND TOUCH UP

.1 Clean all steel work to remove all loose dirt, oil and other foreign materials and touch up any damaged primer coat.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 08 11 20 - Security Door, Frame and Hardware.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
.2 CAN/CGSB-19.13-M87 Sealing Compound, One-Component, Silicone Base, Solvent Curing.

.2 UL Environmental Standard.
.1 Sustainability for Sealants and Caulking Compounds, Standard 2761, Edition 1 October 03, 2011.

.3 Glass Association of North America (GANA).
.1 GANA Glazing Manual - 50th Anniversary Edition (2008).
.2 Laminated Glazing Reference Manual, 2009 Edition.

1.3 SYSTEM DESCRIPTION

.1 Performance Requirements:
.1 Size glass to withstand wind loads, dead loads and positive and negative live loads acting normal to plane of glass to a design pressure for locality as measured in accordance with ANSI/ASTM E330.
.2 Limit glass deflection to 1/200 with full recovery of glazing materials.

1.4 SUBMITTALS

.1 Submit shop drawings or catalogue illustrations of accessories in accordance with Section 01 01 50 - General Instructions for submittals.

.2 Provide maintenance data for plastic glazing for incorporation into Operation and Maintenance Manual specified in Section 01 01 50 - General Instructions for closeout submittals.

1.5 WASTE MANAGEMENT AND DISPOSAL

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

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material for recycling in accordance with Waste Management Plan.

.4 Divert unused metal materials from landfill to metal recycling facility approved by Departmental Representative.

.5 Divert unused wood materials from landfill to either recycling, reuse or composting facility.

2 Products

2.1 GLASS MATERIALS

.1 Float glass: to CAN/CGSB 12.3M, glazing quality of thickness indicated.

.2 Safety glass:
.1 Tempered: to CAN2 12.1M, Type 2, tempered, Class B float of minimum 9 mm thickness, category I.

2.2 GLAZING AND SEALING COMPOUND MATERIALS

.1 Sealant compound: glazing sealant: purpose made for glazing use, compatible with hermetically sealed insulating glass units sealants, colours selected by Departmental Representative where exposed to view.

.2 Glazing tape: Preformed macro-polyisobutylene tape with continuous integral Neoprene shim, paper release, black colour, width x thickness recommended by sash manufacturer to suit installation.

.3 Setting blocks: Setting blocks: Neoprene or EPDM, 80-90 Shore A durometer hardness to ASTM D 2240, to suit glazing method, glass light weight and area.

.4 Spacer shims: neoprene, 40-60 Shore "A" durometer hardness as required.

3 Execution

3.1 WORKMANSHIP

.1 Install products using the recommendations of manufacturers of glass, sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those in the "GANA Glazing Manual".

.2 Remove protective coatings and clean contact surfaces with solvent and wipe dry.

.3 Apply primer-sealer to contact surfaces.

.4 Place setting blocks as per manufacturer's instructions.

.5 Install glass, rest on setting blocks, ensure full contact and adhesion at perimeter.

.6 Install removable stops, without displacing tape or sealant.

.7 Provide edge clearance of 3 mm minimum for glass in accordance with manufacturer's instructions.

.8 Insert spacer shims to centre glass in space.

.9 Apply cap bead of clear silicone sealant at exterior void and between stop and glazing.

.10 Apply sealant to uniform and level line, flush with sight line and tooled or wiped with solvent to smooth appearance.

.11 Do not cut or abrade tempered glass.

3.2 INSTALLATION: INTERIOR/EXTERIOR - DRY METHOD (TAPE AND TAPE)

.1 Perform work in accordance with IGMAC and GANA Glazing Manual for glazing installation methods.

.2 Cut glazing tape to length; install on glazing light. Seal corners by butting tape and sealing junctions with sealant.

.3 Place setting blocks at 1/3 points.

.4 Rest glazing on setting blocks and push against fixed stop with sufficient pressure to attain full contact.

.5 Install removable stops without displacing glazing tape. Exert pressure for full continuous contact.

.6 Trim protruding tape edge.

.7 Exterior glazing: fill gaps between light and applied stop with sealant to depth equal to bite on glazing, to uniform and level line.

3.3 FINISHING

.1 Immediately remove sealant and compound droppings from finished surfaces. Remove labels after work is completed.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 01 01 50 - Submittal Procedures, Waste Management And Disposal.

1.2 DESCRIPTION OF WORK

.1 Refer to notes on drawings for finishing exterior door & frame.

1.3 REFERENCES

.1 American Society for Testing and Materials (ASTM):
.1 ASTM D 3960-05, Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.

.2 Architectural Painting Specifications Manual, Master Painters Institute (MPI).

.3 Test Method for Measuring Total Volatile Organic Compound Content of Consumer Products, Method 24 (for Surface Coatings) of the Environmental Protection Agency (EPA).

.4 National Fire Code of Canada.

1.4 QUALITY ASSURANCE

.1 Qualified journeymen who have a "Tradesman Qualification Certificate of Proficiency" shall be engaged in painting work. Apprentices may be employed provided they work under the direct supervision of a qualified journeyman in accordance with trade regulations.

.2 Conform to latest MPI requirements for painting work including preparation and priming.

.3 Materials (primers, paints, coatings, fillers, thinners, solvents, etc.) shall be in accordance with MPI Painting Specification Manual "Approved Product" listing and shall be from a single manufacturer for each system used.

.4 Other paint materials such as linseed oil, shellac, turpentine, etc. shall be the highest quality product of an approved manufacturer listed in MPI Painting Specification Manual and shall be compatible with other coating materials as required.

.5 Retain purchase orders, invoices and other documents to prove conformance with noted MPI requirements when requested by Departmental Representative.

.6 Standard of Acceptance:
.1 No defects visible from a distance of 1000 mm at 90° to surface.
.2 No defects visible from at 45° to surface when viewed using final lighting source.
.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.5 SAMPLES

.1 Submit sample colours of each paint type specified in accordance with Section 01 01 50.

.2 Submit duplicate mm sample panels of each paint, clear coating, special finish, type colour texture specified.

.3 Submit full range of available colours where colour availability is restricted.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 01 50.

.2 Labels shall clearly indicate:
- .1 Manufacturer's name and address.
- .2 Type of paint or coating.
- .3 Compliance with applicable standard.
- .4 Colour number in accordance with established colour schedule.

.3 Remove damaged, opened and rejected materials from site.

.4 Provide and maintain dry, temperature controlled, secure storage.

.5 Observe manufacturer's recommendations for storage and handling.

.6 Store materials and supplies away from heat generating devices.

.7 Store materials and equipment in a well ventilated area with temperature range 7° C to 30° C.

.8 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.9 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Departmental Representative. After completion of operations, return areas to clean condition to approval of Consultant.

.10 Remove paint materials from storage only in quantities required for same day use.

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

.12 Fire Safety Requirements:
- .1 Provide one 9 kg Type ABC dry chemical 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 the National Fire Code of Canada.

1.7 ENVIRONMENTAL PERFORMANCE REQUIREMENTS

.1 Provide paint products meeting MPI "Environmentally Friendly"E2, E3 rating based on VOC (EPA Method 24) content levels.

1.8 SITE REQUIREMENTS

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces in accordance with Section 01 01 50.

.2 Perform no painting work unless adequate and continuous ventilation and sufficient heating facilities are in place to maintain ambient air and substrate temperatures above 10 ° C for 24 hours before, during and after paint application until paint has cured sufficiently.

.3 Where required, provide continuous ventilation for seven days after completion of application of paint.

.4 Coordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.

.5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.

.6 Perform no painting work unless a minimum lighting level of 323 Lux is provided on surfaces to be painted. Adequate lighting facilities is provided by General Contractor.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless specifically pre-approved by the specifying body, Paint Inspection Agency and the applied product manufacturer, perform no painting work when:

.1 Ambient air and substrate temperatures are below 10 ° C.

.2 Substrate temperature is over 32 ° C unless paint is specifically formulated for application at high temperatures.

.3 Substrate and ambient air temperatures are expected to fall outside MPI or paint manufacturer's prescribed limits.

.3 Surface and Environmental Conditions:

.1 Apply paint finish only 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 Apply paint only to adequately prepared surfaces and to surfaces within moisture limits noted herein.

.3 Apply paint only when previous coat of paint is dry or adequately cured.

.4 Additional Interior Application Requirements:

.1 Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.

.2 Schedule operations to approval of Departmental Representative such that painted surfaces will have dried and cured sufficiently before occupants are affected.

1.9 SCHEDULING OF WORK

.1 Submit work schedule for various stages of painting to Departmental Representative for approval. Submit schedule minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization form Departmental Representative for any changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants in and about the occupied floors in building.

1.10 WASTE MANAGEMENT

.1 Separate and recycle waste materials in accordance with Section 01 01 50 - General Instructions for Waste Management And Disposal.

.2 Non-water based opaque and transparent finishes and related materials (thinners, solvents, etc.,) 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.

.3 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.4 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste

.5 To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground the following procedures shall be strictly adhered to:

.1 Retain cleaning water for water-based materials to allow sediments to be filtered out.

.2 Retain cleaners, thinners, solvents and excess paint and place in designated containers and ensure proper disposal.

.3 Return solvent and oil soaked rags used during painting operations for contaminant recovery, proper disposal, or appropriate cleaning and laundering.

.4 Dispose of contaminants in an approved legal manner in accordance with hazardous waste regulations.

.5 Empty paint cans are to be dry prior to disposal or recycling (where available).

.6 Where paint recycling is available, collect waste paint by type and provide for delivery to recycling or collection facility.

.7 Set aside and protect surplus and uncontaminated finish materials: Deliver to or arrange collection by employees, individuals, or organizations for verifiable re-use or re-manufacturing.

.8 Close and seal tightly partly used containers and store protected in well ventilated fire-safe area at moderate temperature.

2 Products

2.1 MATERIALS

.1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Paint materials for paint systems shall be products of a single manufacturer.

.3 Only qualified products with E2, E3 "Environmentally Friendly" rating are acceptable for use on this project.

.4 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes must meet a minimum "Environmentally Friendly" E2 rating.

2.2 COLOURS

.1 Departmental Representative to approve Colour Schedule after Contract award.

.2 Where specific products are available in a restricted range of colours, selection will be based on the limited range.

.3 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site. On-site tinting of painting materials is allowed only with Departmental Representative's written permission.

.2 Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.

.3 Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

.4 Thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Departmental Representative.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

.1 Paint gloss shall be defined as the sheen rating of applied paint, in accordance with the following MPI values:

loss Level	Description	Units @ 60 degrees	Units @ 85 degrees
G1	Matte or Flat finish	0 to 5	10 max.
G2	Velvet finish	0 to 10	10 to 35
G3	Eggshell finish	10 to 25	10 to 35
G4	Satin finish	20 to 35	35 min.
G5	Semi-Gloss finish	35 to 70	

G6	Gloss finish	70 to 85
	High-Gloss finish	> 85

.2 Gloss level ratings of painted surfaces as specified.

2.5 EXTERIOR PAINTING SYSTEMS

.1 Steel doors and frames and miscellaneous metals:
.1 EXT 5.3G - Waterborne light industrial G4 coating.

3 Execution

3.1 GENERAL

.1 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.2 PROTECTION

.1 Protect interior and exterior building surfaces not to be painted from paint spatters, markings and other damage. If damaged, clean and restore such surfaces as directed by Departmental Representative.

.2 Cover or mask glazing and other hardware to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.

.3 Protect items that are permanently attached such as Fire Labels on doors and frames.

.4 Protect factory finished products and equipment.

.5 As painting operations progress, place "WET PAINT" signs in all areas to approval of Departmental Representative.

3.3 CLEANING AND PREPARATION

.1 Clean and prepare surfaces in accordance with MPI Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
.1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths.
.2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
.4 Allow surfaces to drain completely and allow to dry thoroughly.
.5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.
.6 Use trigger operated spray nozzles for water hoses.

.7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.

.2 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 pretreatment as soon as possible after cleaning and before deterioration occurs.

.3 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.

.4 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. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes, or vacuum cleaning.

.5 Touch up of shop primers with primer as specified in applicable section. Major touch-up including cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas, shall be by supplier of fabricated material.

.6 Do not apply paint until prepared surfaces have been accepted by Departmental Representative.

3.4 APPLICATION

.1 Method of application to be as approved by Departmental Representative. Apply paint by brush, roller, airless sprayer. Conform to manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:

.1 Apply paint in a uniform layer using brush and/or roller of types suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces shall be free of roller tracking and heavy stipple unless approved by Consultant Departmental Representative.

.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Spray application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.

.3 Apply paint in a uniform layer, with overlapping at edges of spray pattern.

.4 Brush out immediately all runs and sags.

.5 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.

.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Departmental Representative.

.5 Apply coats of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.7 Sand and dust between coats to remove visible defects.

.8 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.5 FIELD QUALITY CONTROL

.1 Advise Departmental Representative when each applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

3.6 RESTORATION

.1 Remove protective coverings and warning signs as soon as practical after operations cease.

.2 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.3 Protect surfaces from paint droppings and dust to approval of Departmental Representative. Avoid scuffing newly applied paint.

.4 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Departmental Representative.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 01 50 – General Instructions

.2 All specification sections prefix-numbered 26

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA C22.1-12, Canadian Electrical Code, Part 1 (22nd Edition), Safety Standard for Electrical Installations.

.2 Electrical and Electronic Manufacturer's Association of Canada (EEMAC)

.1 EEMAC 2Y-1-1958, Light Gray Colour for Indoor Switch Gear.

1.3 DEFINITIONS

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

1.4 DESIGN REQUIREMENTS

.1 Operating voltages: to CAN3-C235.

.2 Motors, electric heating, control and distribution devices and equipment to operate satisfactorily at 60 Hz within normal operating limits established by above standard.

.1 Equipment to operate in extreme operating conditions established in above standard without damage to equipment.

.3 Language operating requirements: provide identification nameplates and labels for control items in English and French.

.4 Use one nameplate or label for each language.

1.5 SUBMITTALS

.1 Submittals: in accordance with Section 01 01 50 – General Instructions.

.2 Submit copy of electrical permit for the project to Departmental Representative prior to commencement of work. Departmental Representative will provide drawings required by Electrical Inspection Department at no cost.

.1 Pay associated fees.

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

.3 Furnish certificate of acceptance from Electrical Inspection Department upon completion of the work.

.3 Shop drawings:

.1 Submit shop drawings and product data.

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

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

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

.5 Submit 6 copies of shop drawings and product data to the Departmental Representative.

.4 Provide operation and maintenance data for incorporation into operation and maintenance manual specified in Section 01 01 50 – General Instructions.
Include in operations and maintenance data:

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

.2 Technical data, product data, supplemented by bulletins, component illustrations, exploded views, technical descriptions of items, and parts list. Advertising or sales literature not acceptable.

.3 Wiring and schematic diagrams and performance curves.

.4 Names and addresses of local suppliers for items included in maintenance manuals.

.5 Copy of reviewed shop drawings.

.5 Quality Control: in accordance with Section 01 01 50 – General Instructions.

.1 Provide CSA certified equipment and material.

.2 Submit test results of installed electrical systems.

.3 Permits and fees: in accordance with General Conditions of contract.

.4 Submit to Departmental Representative certificate of acceptance from authority having jurisdiction upon completion of Work.

.6 Record Drawings

.1 Provide record drawings of the installation as specified in Section 01 01 50 – General Instructions.

1.6 QUALITY ASSURANCE

.1 Quality Assurance: in accordance with Section 01 01 50 – General Instructions.

.2 Qualifications: electrical Work to be carried out by qualified personnel in accordance with the requirement of authorities having jurisdiction.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Material Delivery Schedule: provide Departmental Representative with schedule within 2 weeks after award of Contract.

.2 Construction/Demolition Waste Management and Disposal: where applicable separate waste materials for recycling in accordance with Section 01 01 50 – General Instructions.

1.8 SYSTEM STARTUP

.1 Instruct Departmental Representative and operating personnel in operation, care and maintenance of systems, system equipment and components.

.2 Where applicable and as further specified, arrange and pay for services of manufacturer's factory service Departmental Representative to supervise start-up of installation, check, adjust, balance and calibrate components and instruct operating personnel.

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

1.9 OPERATING INSTRUCTIONS

.1 Provide for each system and principal item of equipment as specified in technical sections for use by operation and maintenance personnel.

.2 Operating instructions to include following:

.1 Wiring diagrams, control diagrams, and control sequence for each principal system and item of equipment.

.2 Start up, proper adjustment, operating, lubrication, and shutdown procedures.

.3 Safety precautions.

.4 Procedures to be followed in event of equipment failure.

.5 Other items of instruction as recommended by manufacturer of each system or item of equipment.

Part 2 Products

2.1 MATERIALS AND EQUIPMENT

.1 Provide material and equipment in accordance with Section 01 01 50 – General Instructions.

.2 Material and equipment to be CSA certified.

.3 Factory assemble control panels and component assemblies.

2.2 WIRING TERMINATIONS

.1 Ensure lugs, terminals, screws used for termination of wiring are suitable for either copper or aluminum conductors.

2.3 EQUIPMENT IDENTIFICATION

.1 Identify electrical equipment with nameplates and labels as follows:

.1 Nameplates: lamicoid plastic engraving sheet, black face, white core, lettering accurately aligned and engraved into core and attached with construction adhesive. No pre-gummed labels are acceptable.

.2 Sizes as follows:

NAMEPLATE SIZES

Size 1	10 x 50 mm	1 line	3 mm high letters
Size 2	12 x 70 mm	1 line	5 mm high letters
Size 3	12 x 70 mm	2 lines	3 mm high letters
Size 4	20 x 90 mm	1 line	8 mm high letters
Size 5	20 x 90 mm	2 lines	5 mm high letters
Size 6	25 x 100 mm	1 line	12 mm high letters
Size 7	25 x 100 mm	2 lines	6 mm high letters

.2 Labels: plastic labels with 4mm high letters unless specified otherwise.

.3 Wording on nameplates and labels to be approved by Departmental Representative prior to manufacture.

.4 Allow for minimum of twenty-five (25) letters per nameplate and label.

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

.6 Disconnects, starters and contactors: indicate equipment being controlled and voltage.

.7 Terminal cabinets and pull boxes: indicate system and voltage.

2.4 WIRING IDENTIFICATION

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

.2 Maintain phase sequence and colour coding throughout.

.3 Colour coding: to CSA C22.1.

.4 Use colour coded wires in communication cables, matched throughout to the existing systems that have been installed.

2.5 FINISHES

.1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

.2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

Part 3 Execution

3.1 INSTALLATION

.1 Do complete installation in accordance with CSA C22.1, BC Amendments, Directives and Bulletins except where specified otherwise.

3.2 NAMEPLATES AND LABELS

.1 Ensure manufacturer's nameplates, CSA labels and identification nameplates are visible and legible after equipment is installed.

3.3 FIRESTOPPING

.1 Where cables or conduits pass through floors and fire rated walls, pack space full with a ULC approved firestopping system.

.2 Fire stopping is specified in Section 01 01 50 – General Instructions.

3.4 LOCATION OF OUTLETS

.1 Locate outlets in accordance with Section 26 05 32 - Outlet Boxes, Conduit Boxes and Fittings.

.2 Change location of outlets at no extra cost or credit, providing distance does not exceed 3000mm, and information is given before installation.

3.5 FIELD QUALITY CONTROL

.1 Carry out tests in presence of Departmental Representative or his representative. Submit written test results for review.

.2 Provide instruments, meters, equipment and personnel required to conduct tests during and at conclusion of project.

3.6 CLEANING

.1 Clean and touch up surfaces of shop-painted equipment scratched or marred during shipment or installation, to match original paint.

.2 Clean and prime exposed non-galvanized hangers, racks and fastenings to prevent rusting.

.3 At time of final cleaning, clean lighting reflectors, lenses and other lighting surfaces that have been exposed to construction dust and dirt.

END OF SECTION

Part 1 General

1.1 SECTION INCLUDES

.1 Materials and installation for wire and box connectors.

1.2 RELATED SECTIONS

.1 Section 01 01 50 – General Instructions

.2 Section 26 05 21 – Wires and Cables (0-1000V)

.3 Section 26 05 00 – Common Work Results – For Electrical

1.3 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CAN/CSA-C22.2No.18, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.

.2 CSA C22.2No.65, Wire Connectors.

.2 Electrical and Electronic Manufacturers' Association of Canada (EEMAC)

.1 EEMAC 1Y-2 Bushing Stud Connectors and Aluminum Adapters (1200 Ampere Maximum Rating).

Part 2 Products

2.1 MATERIALS

.1 Pressure type wire connectors to: CSA C22.2No.65, with current carrying parts of copper or copper alloy sized to fit copper conductors as required.

.2 Fixture type splicing connectors to: CSA C22.2No.65, with current carrying parts of copper or copper alloy sized to fit copper conductors 10 AWG or less.

.3 Bushing stud connectors: to EEMAC 1Y-2.

.4 Clamps or connectors as required to: CAN/CSA-C22.2No.18.

Part 3 Execution

3.1 INSTALLATION

.1 Remove insulation carefully from ends of conductors and:

.1 Install mechanical pressure type connectors and tighten screws or secure with appropriate compression tool recommended by manufacturer. Installation shall meet secureness tests in accordance with CSA C22.2No.65.

.2 Install fixture type connectors and tighten. Replace insulating cap.

.3 Install bushing stud connectors in accordance with EEMAC 1Y-2.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 01 50 – General Instructions

.2 Section 26 05 20 - Wire and Box Connectors - 0 - 1000 V.

.3 Section 26 05 00 – Common Work Results – For Electrical

1.2 REFERENCES

.1 CSA C22.2 No .0.3, Test Methods for Electrical Wires and Cables.

1.3 PRODUCT DATA

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

Part 2 Products

2.1 BUILDING WIRES

.1 Conductors: Minimum size: 12 AWG.

.2 Copper conductors: size as indicated, with 600V insulation of chemically cross-linked thermosetting polyethylene material rated RW90. Note: THHN not acceptable.

Part 3 Execution

3.1 INSTALLATION OF BUILDING WIRES

.1 Install wiring as follows:

.1 In conduit systems in accordance with Section 26 05 34.

.2 In wireways and auxiliary gutters in accordance with Section 26 05 37.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 01 50 – General Instructions

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

.3 Section 26 05 31 – Splitters, Junctions, Pull Boxes and Cabinets

.4 Section 26 05 32 – Outlet Boxes, Conduit Boxes and Fittings

.5 Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings

.6 Section 26 05 37 – Wireways and Auxiliary Gutters

.7 Section 26 29 03 – Control Devices

Part 2 Products

2.1 SUPPORT CHANNELS

.1 U shape, size 41 x 41 mm, 2.5 mm thick, surface mounted or suspended.

Part 3 Execution

3.1 INSTALLATION

.1 Secure equipment to masonry, tile and plaster surfaces with lead anchors.

.2 Secure equipment to poured concrete with expandable inserts.

.3 Secure equipment to hollow masonry walls or suspended ceilings with toggle bolts.

.4 Support equipment, conduit or cables using clips, spring loaded bolts, cable clamps designed as accessories to basic channel members.

.5 Fasten exposed conduit or cables to building construction or support system using straps.

- .1 One-hole steel straps to secure surface conduits and cables 50 mm and smaller.
- .2 Two-hole steel straps for conduits and cables larger than 50 mm.
- .3 Beam clamps to secure conduit to exposed steel work.

.6 Suspended support systems.

- .1 Support individual cable or conduit runs with 6 mm dia threaded rods and spring clips.
- .2 Support 2 or more cables or conduits on channels supported by 6 mm dia threaded rod hangers where direct fastening to building construction is impractical.

.7 For surface mounting of two or more conduits use channels at code required centre spacing to suit smallest conduit installed.

.8 Provide metal brackets, frames, hangers, clamps and related types of support structures where indicated or as required to support conduit and cable runs.

.9 Ensure adequate support for raceways and cables dropped vertically to equipment where there is no wall support.

.10 Do not use wire lashing or perforated strap to support or secure raceways or cables.

.11 Do not use supports or equipment installed for other trades for conduit or cable support.

.12 Install fastenings and supports as required for each type of equipment cables and conduits, and in accordance with manufacturer's installation recommendations.

.13 All hangers, supports and brackets shall be provided and be installed to be consistent with the requirements of Table 4.1.8.18 of Section 4 of the British Columbia Building Code.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 01 50 – General Instructions

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

1.2 SHOP DRAWINGS AND PRODUCT DATA

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

Part 2 Products

2.1 SPLITTERS

.1 Sheet metal enclosure, welded corners and formed hinged or screw on cover. If hinged, suitable for locking in closed position.

.2 Main and branch lugs or connection bars to match required size and number of incoming and outgoing conductors as indicated.

.3 At least three spare terminals on each set of lugs in splitters less than 400 A.

2.2 JUNCTION AND PULL BOXES

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

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

2.3 CABINETS

.1 Painted sheet steel, hinged door and return flange overlapping sides, handle, lock and catch, for surface mounting.

Part 3 Execution

3.1 SPLITTER INSTALLATION

.1 Install splitters and mount plumb, true and square to the building lines.

.2 Extend splitters full length of equipment arrangement except where indicated otherwise.

3.2 JUNCTION AND PULL BOXES INSTALLATION

.1 Install pull boxes in inconspicuous but accessible locations.

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

3.3 CABINETS

.1 Install cabinets for components as indicated.

3.4 IDENTIFICATION

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

.2 Install size 2 identification labels indicating system name, voltage and phase.

END OF SECTION

Part 1 General

1.1 REFERENCES

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

Part 2 Products

2.1 OUTLET AND CONDUIT BOXES GENERAL

.1 Size boxes in accordance with CSA C22.1.

.2 102 mm square or larger outlet boxes as required for special devices.

.3 Gang boxes where wiring devices are grouped.

.4 Blank cover plates for boxes without wiring devices.

.5 Combination boxes with barriers where outlets for more than one system are grouped.

2.2 SHEET STEEL OUTLET BOXES

.1 Electro-galvanized steel single and multi gang flush device boxes for flush installation, minimum size 76 x 50 x 38 mm. 102 mm square outlet boxes when more than one conduit enters one side with extension and plaster rings as required.

.2 Electro-galvanized steel utility boxes for outlets connected to surface-mounted EMT conduit, minimum size 102 x 54 x 48 mm.

.3 102 mm square or octagonal outlet boxes for lighting fixture outlets.

.4 102 mm square outlet boxes with extension and plaster rings for flush mounting devices in finished plaster or tile walls.

2.3 CONDUIT BOXES

.1 Cast FS or FD aluminum or feraloy boxes with factory-threaded hubs and mounting feet for surface wiring of components and devices.

2.4 FITTINGS - GENERAL

.1 Bushing and connectors with nylon insulated throats.

.2 Knock-out fillers to prevent entry of debris.

.3 Conduit outlet bodies for conduit up to 32 mm and pull boxes for larger conduits.

.4 Double locknuts and insulated bushings on sheet metal boxes.

.5 Screwed fittings for rigid galvanized screwed steel conduit installations.

Part 3 Execution

3.1 INSTALLATION

.1 Support boxes independently of connecting conduits.

.2 Use FS or FD boxes for outlets and junction boxes in areas normally accessible to inmates. See section 26 05 34.

.3 For flush installations mount outlets flush with finished wall using plaster rings to permit wall finish to come within 6 mm of opening.

.4 Provide correct size of openings in boxes for conduit connections. Reducing washers are not allowed.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 01 50 – General Instructions

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

1.2 REFERENCES

.1 Canadian Standards Association

- .1 CAN/CSA C22.2 No. 18, Outlet Boxes, Conduit Boxes, Fittings and Associated Hardware.
- .2 CSA C22.2 No. 56, Flexible Metal Conduit and Liquid-Tight Flexible Metal Conduit.
- .3 CSA C22.2 No. 83, Electrical Metallic Tubing.
- .4 CSA C22.2 No. 211.2, Rigid PVC (Unplasticized) Conduit.

1.3 SUBMITTALS

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

Part 2 Products

2.1 CONDUITS

.1 Electrical metallic tubing (EMT): to CSA C22.2 No. 83, with steel fittings.

.2 Rigid pvc conduit: to CSA C22.2 No. 211.2.

.3 Flexible metal conduit: to CSA C22.2 No. 56, steel or aluminum liquid-tight flexible metal.

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

2.2 CONDUIT FASTENINGS

.1 One hole steel straps to secure surface conduits 50 mm and smaller, except as otherwise noted. See drawings and clause 3.2.5 in this section.

- .1 Two hole steel straps for conduits larger than 50 mm, except as otherwise noted for smaller conduits. See drawings and clause 3.2.5 in this section.

.2 Beam clamps to secure conduits to exposed steel work.

.3 Channel type supports for two or more conduits.

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

2.3 CONDUIT FITTINGS

.1 Fittings: to CAN/CSA C22.2 No. 18, manufactured for use with conduit specified.

.1 Coating: same as conduit.

.2 Material: Steel (Cast fittings are not acceptable).

.2 Factory "ells" where 90 degrees bends for 21 mm and larger conduits.

2.4 FISH CORD

.1 Polypropylene.

Part 3 Execution

3.1 INSTALLATION

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

.2 Conceal conduits where possible except in mechanical and electrical service rooms and in unfinished areas.

.3 Surface mount conduits in mechanical and electrical rooms, unfinished areas and elsewhere as noted on the drawings.

.4 Use electrical metallic tubing EMT except as otherwise indicated.

.5 Use liquid tight flexible metal conduit for connection to motors or vibrating equipment in damp or wet locations.

.6 Minimum conduit size: 21mm.

.7 Bend conduit cold:

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

.8 Mechanically bend steel conduit over 19 mm diameter.

.9 Unless indicated otherwise, provide conduit for all wiring and for future use as further specified or noted on the drawings.

3.2 SURFACE CONDUITS

.1 Run parallel or perpendicular to building lines.

.2 Run conduits in flanged portion of structural steel.

.3 Group conduits wherever possible on suspended or surface U-channels.

.4 Do not pass conduits through structural members except as indicated.

.5 All wiring in areas in which inmates have access including outside the building shall be installed in rigid galvanized screwed steel conduit with screwed fittings not set screw type fittings.

.1 Fixings for conduit in areas in which inmates have access including outside the building shall be two hole galvanized steel straps installed on 610 mm centers using stainless steel machine screws into metal expansion inserts in pre-drilled holes.

.2 In areas inside the building outside of the spaces to which inmates have access, wiring shall be EMT with steel fittings.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

.1 Section 01 01 50 – General Instructions

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

1.2 REFERENCES

.1 Canadian Standards Association.

.1 CSAC22.2No.26, Construction and Test of Wireways, Auxiliary Gutters and Associated Fittings.

1.3 PRODUCT DATA

.1 Submit product data in accordance with 01 01 50 – General Instructions.

Part 2 Products

2.1 WIREWAYS

.1 Wireways and fittings: to CSA C22.2 No.26.

.2 Sheet steel with hinged or bolted cover to give uninterrupted access.

.3 Finish: baked grey enamel if of steel, aluminum.

.4 Elbows, tees, couplings and hanger fittings manufactured as accessories to wireway supplied.

Part 3 Execution

3.1 INSTALLATION

.1 Install wireways and auxiliary gutters.

.2 Keep number of elbows, offsets, connections to minimum.

.3 Install supports, elbows, tees, connectors, fittings.

.4 Install barriers where required.

.5 Install gutter to full length of equipment.

.6 Do not install wireways or auxiliary gutters in areas accessible to inmates.

END OF SECTION

Part 1 General

1.1 RELATED SECTIONS

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

.2 Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings.

1.2 SHOP DRAWINGS

.1 Submit shop drawings.

.2 Include riser diagram, block diagram of complete paging and intercom system additions including components and wiring required for connection into the existing system.

1.3 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for paging and intercom system additions for incorporation into manual specified in Section 26 05 00 Common Work Results – Electrical.

.2 Include:

.1 Operation instructions.

.2 Description of system operation.

.3 List specifying each piece of equipment in the system addition by its original manufacturer name and model number.

.4 Parts list specifying parts used in equipment by identification numbers that are standard to electronic industry.

.5 Submit shop drawings of existing touch-screen monitor layouts and changes to be made under this contract.

.6 Completed maintenance handover reports for paging and intercom system. See documents bound at end of this section. The maintenance handover reports shall contain a complete list of all materials including parts, model numbers and serial numbers.

.7 All test results.

1.4 SYSTEM STARTUP

.1 Provide instructions, in accordance with Section 26 05 00 – Common Work Results – Electrical

.2 Installing contractor to instruct:

.1 Maintenance personnel in maintenance of system.

.2 Operating personnel in use of system.

1.5 CONTRACTOR QUALIFICATIONS

.1 Contractors for installation of paging and intercom system equipment shall terminate all cables, install all components, and configure all software. Software types that are involved in the installation are indicated on the drawings. Contractors must be proficient in the existing software on this project before performing work on the software. Electrical contractors that are not experienced in the applicable software may perform rough-in and

cables installation but in that case, cable terminations and work within the software shall be performed by subcontractors experienced in working in the software. Conduit locations and routings shall be coordinated between the contractor installing the conduit system and the subcontractor who will make the system additions operational. Coordinate size and locations of pull boxes, outlet boxes.

.2 The installation of paging and intercom system devices shall be performed by a paging and intercom system company with minimum 5 years experience with Institutional (Prison) Installations.

.3 The existing system is digitally based and the bidding contractor groups must have a minimum 5 years experience working with and performing modifications/changes/additions to the existing "Simplicity" operating systems.

Part 2 Products

2.1 MATERIALS

.1 Electronic equipment standards: to CSA C22.2No.1-M1981.

.2 Conduits: to Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings.

.3 Components: See drawings.

Part 3 Execution

3.1 INSTALLATION

.1 Install all equipment in accordance with manufacturer's instructions, and as indicated on drawings.

.2 All wiring in/on buildings is to be installed in conduit as further specified in Section 26 05 34.

.3 Label all cables and conductors to match existing system. Also match existing conductor colour coding.

.4 All wiring shall be audio grade stranded copper conductors. Solid conductor cables are not acceptable.

.5 All speaker wiring shall be at minimum 2 conductor 16AWG stranded copper conductors.

.6 Install all wiring from speakers unspliced between speaker and equipment rack or amplifier.

.7 All drain wires shall have a clear PVC jacket installed over the exposed conductor. Do not leave any drain wires exposed.

.8 All system connections shall be terminated by permanent insulated stainless steel crimp connectors, or screw terminals on approved equipment. Electrical tape or other will not be accepted.

.9 All audio inputs shall be grounded at the head end equipment.

.10 Leave complete system free of any ground faults, hums, buzzing, etc. Submit test results to consultant during commissioning and include the reports in the maintenance manuals.

.11 Demonstrate to the Departmental Representative the satisfactory operation of the paging and intercom system.

3.2 FIELD QUALITY CONTROL

.1 Perform tests using industry standard testing equipment.

.2 Perform sound level tests on all speakers, submit test results to consultant.

.3 Conduct audio intelligibility tests in presence of the Departmental Representative.

.4 Perform commissioning as indicated on the drawings.

END OF SECTION

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

INSTITUTION: **DATE:**

SYSTEM/EQUIPMENT:

APPLICABLE CONTRACT NO:
PWGSC PROJECT NO:
SPECIFICATIONS:

EQUIPMENT SUPPLIER (NAME AND ADDRESS):

SUPPLIER CONTACT (NAME AND TELEPHONE):

WARRANTY DETAILS:

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

Travel & living expenses during the warranty period:

chargeable to CSC ☐

not chargeable to CSC ☐

Equipment transportation costs are paid by CSC for:

sending to the supplier ☐

returning from the supplier ☐

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

Not applicable.

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

Not applicable.

DEFICIENCIES:

None remain ☐

List attached ☐

DOCUMENTATION:

Maintenance manual:

Supplied ☐

Due by ;

As-built drawings, cabling and wiring diagrams:

Supplied ☐

Due by ;

Acceptance test results:

Supplied ☐
Due by ;

DISTRIBUTION OF DOCUMENTATION:

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

SPARES:

All delivered ☐
Delivery to be completed by ;

EQUIPMENT LIST:

See attached list. ☐

MAINTENANCE TRAINING:

Completed ☐
Scheduled for ;

SIGNATURE: Project Manager

DISTRIBUTION: CESM, NHQ
RATIS/RTEO, RHQ

Part 1 General

1.1 RELATED SECTIONS

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

.2 Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings.

1.2 SHOP DRAWINGS

.1 Submit shop drawings.

.2 Include riser diagram, block diagram of complete door control system additions including components and wiring required for connection into the existing system.

1.3 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for door control system additions for incorporation into manual specified in Section 26 05 00 Common Work Results – Electrical.

.2 Include:

.1 Operation instructions.

.2 Description of system operation.

.3 List specifying each piece of equipment in the system addition by its original manufacturer name and model number.

.4 Parts list specifying parts used in equipment by identification numbers that are standard to electronic industry.

.5 Submit shop drawings of existing touch-screen monitors and pushbutton console layouts and changes to be made under this contract.

.6 Completed maintenance handover reports for door control system. See documents bound at end of this section. The maintenance handover reports shall contain a complete list of all materials including parts, model numbers and serial numbers.

.7 All test results.

1.4 SYSTEM STARTUP

.1 Provide instructions, in accordance with Section 26 05 00 – Common Work Results – Electrical

.2 Installing contractor to instruct:

.1 Maintenance personnel in maintenance of system.

.2 Operating personnel in use of system.

1.5 CONTRACTOR QUALIFICATIONS

.1 Contractors for installation of door control system equipment shall terminate all cables, install all components, and configure all software. Software types that are involved in the installation

□

are indicated on the drawings. Contractors must be proficient in the existing software on this project before performing work on the software. Electrical contractors that are not experienced in the applicable software may perform rough-in and cables installation but in that case, cable terminations and work within the software shall be performed by subcontractors experienced in working in the software. Conduit locations and routings shall be coordinated between the contractor installing the conduit system and the subcontractor who will make the system additions operational. Coordinate size and locations of pull boxes, outlet boxes.

.2 The installation of door control system devices shall be performed by a door control installing company with minimum 5 years experience with Institutional (Prison) Installations.

.3 The existing system is digitally based and the bidding contractor groups must have a minimum 5 years experience working with and performing modifications/changes/additions to the existing operating systems.

Part 2 Products

2.1 MATERIALS

.1 Electronic equipment standards: to CSA C22.2No.1-M1981.

.2 Conduits: to Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings.

.3 Components: See drawings.

Part 3 Execution

3.1 INSTALLATION

.1 Install all equipment in accordance with manufacturer's instructions, and as indicated on drawings.

.2 All wiring in/on buildings is to be installed in conduit as further specified in Section 26 05 34.

.3 Label all cables and conductors to match existing system. Also match existing conductor colour coding.

.4 All wiring shall be 300V grade stranded copper conductors. Solid conductor cables are not acceptable.

.5 Install all wiring unspliced from door lock to equipment rack.

.6 All system connections shall be terminated by permanent insulated stainless steel crimp connectors, or screw terminals on approved equipment. Electrical tape or other will not be accepted.

.7 Leave complete system free of any grounds, faults, etc. Submit test results on integrity of cabling to consultant during commissioning and include the reports in the maintenance manuals.

□

.8 Demonstrate to the Departmental Representative the satisfactory operation of the door control system.

3.2 FIELD QUALITY CONTROL

.1 Perform tests using industry standard testing equipment.

.2 Perform commissioning as indicated on the drawings.

END OF SECTION

□

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

INSTITUTION: **DATE:**

SYSTEM/EQUIPMENT:

APPLICABLE CONTRACT NO:
PWGSC PROJECT NO:
SPECIFICATIONS:

EQUIPMENT SUPPLIER (NAME AND ADDRESS):

SUPPLIER CONTACT (NAME AND TELEPHONE):

WARRANTY DETAILS:

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

Travel & living expenses during the warranty period:

chargeable to CSC ☐

not chargeable to CSC ☐

Equipment transportation costs are paid by CSC for:

sending to the supplier ☐

returning from the supplier ☐

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

Not applicable.

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

Not applicable.

☐

DEFICIENCIES:

None remain ☐

List attached ☐

DOCUMENTATION:

Maintenance manual:

Supplied ☐

Due by ;

As-built drawings, cabling and wiring diagrams:

Supplied ☐

Due by ;

Acceptance test results:

Supplied ☐
Due by ;

DISTRIBUTION OF DOCUMENTATION:

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Delivery to be completed by ;

EQUIPMENT LIST:

See attached list. ☐

MAINTENANCE TRAINING:

Completed ☐
Scheduled for ;

SIGNATURE: Project Manager

DISTRIBUTION: CESM, NHQ
RATIS/RTEO, RHQ

☐

Part 1 General

1.1 RELATED SECTIONS

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

.2 Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings.

1.2 SHOP DRAWINGS

.1 Submit shop drawings.

.2 Include riser diagram, block diagram of closed circuit video system additions including components and wiring required for connection into the existing system.

1.3 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for closed circuit video system additions for incorporation into manual specified in Section 26 05 00 Common Work Results – Electrical.

.2 Include:

- .1 Operation instructions.
- .2 Description of system operation.
- .3 List specifying each piece of equipment in the system addition by its original manufacturer name and model number.
- .4 Parts list specifying parts used in equipment by identification numbers that are standard to electronic industry.
- .5 Submit shop drawings of existing system and additions and changes to be made under this contract. Shop drawings shall prove that specification for new monitor equals or exceeds that of existing monitors relative to video performance.
- .6 Completed maintenance handover reports for CCTV system. See documents bound at end of this section. The maintenance handover reports shall contain a complete list of all materials including parts, model numbers and serial numbers.
- .7 All test results.

1.4 SYSTEM STARTUP

.1 Provide instructions, in accordance with Section 26 05 00 – Common Work Results – Electrical

.2 Installing contractor to instruct:

- .1 Maintenance personnel in maintenance of system.
- .2 Operating personnel in use of system.

1.5 CONTRACTOR QUALIFICATIONS

.1 Contractors for installation of CCTV system equipment shall terminate all cables, install all components, and configure all software. Software types that are involved in the installation are indicated on the drawings. Contractors must be proficient in the existing software on this project before performing work on the software. Electrical contractors that are not experienced in the applicable software may perform rough-in and cables installation but in that case, cable terminations and work within the software shall be performed by subcontractors experienced in working in the software. Conduit locations and routings shall be coordinated between the contractor installing the conduit system and the subcontractor who will make the system additions operational. Coordinate size and locations of pull boxes, outlet boxes.

.2 The installation of CCTV system devices shall be performed by a CCTV installation company with minimum 5 years experience with Institutional (Prison) Installations.

.3 The existing system is digitally based and the bidding contractor groups must have a minimum 5 years experience working with and performing modifications/changes/additions to the existing "Genetec" operating systems.

Part 2 Products

2.1 MATERIALS

.1 Electronic equipment standards: to CSA C22.2No.1-M1981.

.2 Conduits: to Section 26 05 34 – Conduits, Conduit Fastenings and Conduit Fittings.

.3 Components: See drawings.

Part 3 Execution

3.1 INSTALLATION

.1 Install all equipment in accordance with manufacturer's instructions, and as indicated on drawings.

.2 All wiring in/on buildings is to be installed in conduit as further specified in Section 26 05 34.

.3 Label all cables and conductors to match existing system. Also match existing cable colour coding.

.4 Install all wiring unspliced from cameras to equipment rack.

.5 Leave complete system free of any grounds, faults, etc. Submit test results on integrity of cabling to consultant during commissioning and include the reports in the maintenance manuals.

.6 Demonstrate to the Departmental Representative the satisfactory operation of the CCTV additions to the existing CCTV control system.

3.2 FIELD QUALITY CONTROL

.1 Perform tests of category 6 data cables used for wiring connection to cameras using industry standard testing equipment for such data cables.

.2 Perform commissioning as indicated on the drawings.

.3 On a separate day following commissioning the contractor shall adjust fields of view and focusing of all cameras to the satisfaction of the Departmental Representative (DR) in the presence of the DR.

END OF SECTION

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

INSTITUTION: **DATE:**

SYSTEM/EQUIPMENT:

APPLICABLE CONTRACT NO:
PWGSC PROJECT NO:
SPECIFICATIONS:

EQUIPMENT SUPPLIER (NAME AND ADDRESS):

SUPPLIER CONTACT (NAME AND TELEPHONE):

WARRANTY DETAILS:

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

Travel & living expenses during the warranty period:

chargeable to CSC ☐

not chargeable to CSC ☐

Equipment transportation costs are paid by CSC for:

sending to the supplier ☐

returning from the supplier ☐

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

Not applicable.

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

Not applicable.

DEFICIENCIES:

None remain ☐

List attached ☐

DOCUMENTATION:

Maintenance manual:

Supplied ☐

Due by ;

As-built drawings, cabling and wiring diagrams:

Supplied ☐

Due by ;

Acceptance test results:

Supplied ☐
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MAINTENANCE TRAINING:

Completed ☐
Scheduled for ;

SIGNATURE: Project Manager

DISTRIBUTION: CESM, NHQ
RATIS/RTEO, RHQ

1 General

1.1 RELATED WORK

.1 Section 01 01 50 - General Instructions.

.2 Section 31 23 13 - Rough Grading.

.3 Section 31 32 21 - Geotextiles.

.4 Section 32 12 18 - Asphalt Paving.

1.2 REFERENCES

.1 ASTM D698-12e1, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lbf/ft3 (600 kN-m/m3)).

.2 ASTM C136-06 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.

.3 ASTM C117-04 Standard Test Method for Materials Finer than 75-µm (No. 200) Sieve in Mineral Aggregates by Washing.

1.3 SITE CONDITIONS

.1 Known underground and surface utility lines are indicated on Site Plans. Confirm location of all utility lines traversing site with Departmental Representative prior to commencing work.

.2 Establish elevation of all affected utilities prior to commencing work.

1.4 DEFINITIONS

.1 Excavation classes: four classes of excavation will be recognized; common excavation and rock excavation:
.1 Common excavation: excavation of materials of whatever nature, which are not included under rock definition.
.2 Unsuitable material: any composition of material that is not granular rock/stone and is unsuitable as a bearing surface.

1.5 SAMPLES

.1 Submit samples in accordance with Section 01 01 50.

.2 Submit to Testing Laboratory approved by Departmental Representative, samples of Type 1 and, Type 2 fill specified in Clause 2.1, for sieve analysis by testing laboratory.

.3 Pay for this service.

1.6 PROTECTION

.1 Effect approved measures to minimize dust as result of this work. Refer to Section 01 01 50.

.2 Do not stockpile excavated material to interfere with site operation or drainage.

2 Products

2.1 MATERIALS

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

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

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

ASTM Sieve Designation	% passing
80 mm	100
25 mm	60 -100
12.5 mm	40 - 90
5 mm	20 - 65
1.25 mm	9 - 35
0.3 mm	3 - 15
0 .075 mm	0 - 5

.3 Type 3 fill: selected granular material from site excavation, material or other sources, approved by Departmental Representative for use intended, unfrozen and free from rocks larger than 75 mm, construction rubble, cinders, ashes, wood-waste and organic matter, sods, refuse or other deleterious materials. Do not use the native excavated surplus material at the site for structural fill except as approved otherwise by the Departmental Representative. Remove rocks larger than 75 mm is used as common backfill in non-structural areas.

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

.5 Type 5 Fill: drain rock aggregate, 50 mm to 100 mm size smooth stone.

.6 Surface treatment: 3/4 minus crushed limestone.

3 Execution

3.1 SITE PREPARATION

.1 Site grading specified in Section 31 23 13.

.2 Remove obstructions, from surfaces to be excavated within limits indicated.

3.2 STOCKPILING

.1 Stockpile fill materials in areas designated by Departmental Representative. Stockpile granular materials in manner to prevent segregation. Protect fill materials from contamination.

3.3 SHORING AND BRACING

.1 Construct temporary works to depths, heights and locations in accordance with WCB requirements. Temporary excavation slopes should not exceed 1.5H: 1V.

3.4 DEWATERING

.1 Keep excavations free of water while work is in progress.

.2 Protect open excavations from flooding and damage due to surface run-off.

.3 Dispose of water in a manner not detrimental to public and private property, or any portion of work completed or under construction and control silt-laden runoff with silt fences.

3.5 EXCAVATION

.1 Excavate to lines, grades, elevations and dimensions indicated or as directed by Departmental Representative.

.2 Excavate subgrade to depth as follows:
.1 Excavate 300 mm of existing material and replace with granular material as noted. If topsoil is encountered in isolated areas, remove and replace with granular fill.
.2 Adjust depth of subgrade as directed by the Departmental Representative.
.3 The top 150mm of base course to be Type 1 Fill. Compact new granular fill levels to 98% Proctor.

.3 Compact excavated subgrade at Exercise Yard footprint, in presence of Departmental Representative, using three passes of plate compactor or other approved equipment. Replace soft or weak zones detected during compaction operations and replace with compacted Type 2 Fill capable of 98% compaction as directed by Departmental Representative in accordance with paragraph 3.5.9.1.

.4 Any additional excavation required to remove unsuitable soil below excavated subgrade, indicated in previous paragraphs, will be determined by Departmental Representative on site and during compaction operations. Replace over excavated areas with compacted Type 2 fill as directed by the Departmental Representative. Cost for over excavation and replacement fills will be paid as extra to contract price, as directed by the Departmental Representative, in accordance with General Conditions.

.5 Protect exposed subgrade from disturbance by construction operations as directed by the Departmental Representative.

.6 Excavation must not interfere with normal 45° splay of bearing from bottom of any existing footing as noted in paragraph 3.5.2.2.

.7 For trench excavation, unless authorized by Departmental Representative in writing do not excavate more than, 15 m of trench in advance of installation operations and do not leave trench open at end of days operation.

.8 Excavate to accommodate the drywell structure

.9 Dispose of surplus and unsuitable excavated material on site and place as directed by the Departmental Representative.

.10 Where required due to unauthorized or directed over-excavation, correct as follows:
- .1 Fill under concrete ramp and asphalt paving to underside of base course level with Type 2 fill compacted to minimum of 95% Standard Proctor Maximum Dry Density to ASTM D698, method C.
- .2 Fill under landscape areas with Type 3 fill compacted to minimum of 85% Standard Proctor Maximum Dry Density to ASTM D698, method C.

.11 Hand trim, make firm and remove loose material and debris from excavations. Where material at bottom of excavation is disturbed, compact foundation soil to density at least equal to undisturbed soil.

3.6 FILL TYPES AND COMPACTION

.1 Use fill of types as indicated or specified below. Unless otherwise specified, compact all placed fills to the following densities:
- .1 Type I: 98% Standard Proctor Maximum Dry Density, to ASTM D698, Method C.
- .2 Type 2: 95% Standard Proctor Maximum Dry Density, to ASTM D698, Method C.
- .3 Type 3 (in non-loadbearing areas): 85%, Standard Proctor Maximum Dry Density to ASTM D698, Method C.
- .4 Type 4: 95% Standard Proctor Maximum Dry Density, to ASTM D698, Method C.

.2 Asphalt paving:
- .1 Use Type 2 fill to underside of base course followed by minimum 150 mm of Type 1 Fill over compacted subbase.

.3 Gravel road paving:
- .1 Use Type 2 Fill over excavated subbase to base course level and 150 mm of Type 1 fill base course to underside of surface treatment. Place surface treatment of minimum 150 mm of crushed limestone Fill over compacted subbase.
- .2 Over backfilled drywell area place layer of geogrid with minimum 300 mm of Type 1 Fill followed by surface treatment. Place geogrid over minimum 150 mm of Type 1 Fill followed by remaining Type 1 Fill to underside of crushed limestone.

.4 Under concrete slabs:
- .1 Use minimum 150 mm minimum of Type 1 Fill over compacted subbase / Type 2 Fill.

.2 Use minimum 200 mm minimum of Type 2 Fill over compacted subbase.

.5 Underground services and structures: (Except as specified in other sections)

.1 Pipe bedding and immediate protective cover: place minimum 150 mm thickness of Type 4 Fill over excavated trench bottom, grade to pipe inverts and compact. Cradle half diameter of pipe in haunch zone using type 4 fill. After pipe or conduit is in place, cover with minimum 300 mm depth of type 4 fill.

.2 Fill above protective cover: in areas where paving and walks occur, fill remainder of trench with Type 2 fill to underside of Type 1 base course. In landscape areas, fill to subgrade (rough grade) level using type 3 fill.

.3 Compaction: compact bedding and immediate protective cover to 95% density. In areas where paving and walks occur, compact remainder of fill to 100% density. In landscape areas compact remainder of fill to 85% density.

.4 Drywell structure: place geotextile over sloped excavation around drywell and fill with Type 5 drain rock to top of drywell structure. Place geotextile over backfilled drain rock with an additional layer of heavy duty geotextile, where gravel paving occurs, and backfill with Type 1 fill as specified in para 3.6.2.2. Overlap heavy duty geotextile 1 meter beyond drywell area under gravel road.

.5 Notify Departmental Representative five (5) days prior to backfilling of trenches for mechanical and electrical services.

3.7 BACKFILLING

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

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

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

.4 Backfilling around installations.

.1 Place bedding and surround material as specified elsewhere.

.2 Place layers simultaneously on both sides of installed work to equalize loading. Layers not to exceed 150 mm compacted thickness.

.3 Place material by hand under, around and over installations until 600 mm of cover is provided. Dumping material directly on installations will not be permitted.

.5 Place backfill material in uniform layers not exceeding 300 mm compacted thickness up to grades indicated. Compact each layer before placing succeeding layer.

3.8 RESTORATION

.1 Upon completion of work, remove surplus materials and debris, trim slopes, and correct defects noted by Departmental Representative.

.2 Reinstate existing pavement and landscaping within and outside work areas to condition and elevation which existed before excavation or disturbance, except where new paving and grading is indicated.

3.9 TESTING

.1 Provide inspection and testing of soil compaction and bearing capacity performed by geotechnical engineering firm as approved by the Departmental Representative.

.2 Pay costs for tests. Refer to Section 01 01 50.

.3 Contact approved geotechnical engineering firm to perform tests on site during:
.1 Proof rolling operations.
.2 Field density tests at new compacted subbase and base course at new pavement areas, below concrete slabs/footings, asphalt and gravel paving.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 31 23 10 - Excavating, Trenching and Backfilling.

1.2 REFERENCES

.1 D698-00ae1 Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (600 kN-m/m^3)

1.3 DEFINITIONS

.1 Topsoil: native material capable of supporting good vegetative growth and suitable for use in top dressing, landscaping, free of noxious weeds and fuel contamination.

1.4 SITE CONDITIONS

.1 Reference Section 31 23 10.

1.5 PROTECTION

.1 Prevent damage to existing building, bench marks, fencing, surface or underground utility lines which are to remain, and adjoining pavements indicated to remain. Make good any damage.

.2 Effect approved measures to minimize dust as result of the work of this Section.

.3 Restrict vehicular traffic to construction site and approved access routes. Minimize construction traffic during wet conditions.

1.6 SAMPLES

.1 Submit sieve analysis of Type 1 and Type 2 fill specified in Section 31 23 10 from approved testing laboratory.

2 Products

2.1 MATERIALS

.1 Fill material: Type 2 in accordance with Part 2 of Section 31 23 10.

.2 Obtain Departmental Representative's approval of excavated or graded material used as fill for grading work. Protect approved material from contamination.

3 Execution

3.1 REMOVAL OF TOPSOIL

.1 Strip topsoil when dry enough to prevent contamination with sub grade material.

.2 Commence stripping after site has been cleared of vegetation etc., and stockpile usable topsoil on site.

.3 Do not handle topsoil in wet or frozen condition.

.4 Dispose of unusable topsoil on site where directed and grade as indicated.

3.2 GRADING

.1 Rough grade to levels, profiles, and contours allowing for surface treatment as indicated.

.2 Rough grade to following minimum depths below finish grades:
- .1 300 mm for asphalt paving, concrete sidewalks and pads.
- .3 Provide additional Type 2 fill to bring subgrades to new levels.
- .4 Placing of structural fills specified in Section 31 23 10

.3 Slope rough grade away from building minimum 1:50.

.4 Prior to placing fill over existing ground, scarify surface to depth of 150 mm. Maintain fill and existing surface at approximately same moisture content to facilitate bonding.

.5 Compact filled and disturbed areas to standard Proctor maximum dry density to ASTM D698, method C, as follows:
- .1 85% under landscaped areas.
- .2 100% under asphalt paving and concrete ramp and landings.

3.3 TESTING

.1 Inspection and testing of soil compaction will be carried out by approved testing laboratory.

.2 Costs of tests is included in Contract. Refer to Section 01 01 50.

.3 Contact approved soils investigation firm to perform tests on site for:
- .1 Gradation analysis of Type 1 and Type 2 fill.
- .2 Field density tests for existing soil subgrade under new asphalt paving and perimeter vehicular access.

3.4 SURPLUS MATERIAL

.1 Dispose of surplus and unsuitable material off site in accordance with local authority having jurisdiction.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 01 01 50 - General Instructions.

.2 Section 31 23 10 - Excavating, Trenching and Backfilling.

.3 Section 31 23 13 - Rough Grading.

1.2 REFERENCES

.1 CAN/CGSB-148.1-M89, Methods of Testing Geosynthetics - 14-93 Stiffness of Geotextiles.

.2 American Standards for Testing of Materials (ASTM):
.1 ASTM D3786 / D3786M-09, Standard Test Method for Bursting Strength of Textile Fabrics - Diaphragm Bursting Strength Tester Method.
.2 ASTM D4355 - 07, Standard Test Method for Deterioration of Geotextiles by Exposure to Light, Moisture and Heat in a Xenon Arc Type Apparatus.
.3 ASTM D4491-99a(2009), Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
.4 ASTM D4533-04(2009), Standard Test Method for Trapezoid Tearing Strength of Geotextiles.
.5 ASTM D6637-11, Standard Test Method for Determining Tensile Properties of Geogrids by the Single or Multi-Rib Tensile Method.
.6 ASTM D4632 - 08, Standard Test Method for Grab Breaking Load and Elongation of Geotextiles.
.7 ASTM D4751-04, Test Method for Determining the Apparent Opening Size of a Geotextile.
.8 ASTM D4833-07, Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products.
.9 ASTM D5818-11, Standard Practice for Exposure and Retrieval of Samples to Evaluate Installation Damage of Geosynthetics.
.10 ASTM D5261-10, Standard Test Method for Measuring Mass per Unit Area of Geotextiles.

1.3 SAMPLES

.1 Submit samples in accordance with Section 01 01 50, General Instructions: Submittals clause for Shop Drawings, Product Data and Samples.

1.4 MILL CERTIFICATES

.1 At least 1 week prior to start of work, furnish Departmental Representative with copies of mill test data and certificate that geotextile delivered to job site meets requirements of this section.

1.5 DELIVERY AND STORAGE

.1 During delivery and storage, protect geotextiles from direct sunlight, ultraviolet rays, excessive heat, mud, dirt, dust, debris and rodents.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 01 50 - General Instructions: Construction/Demolition Waste Management And Disposal clause.

.2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

2 Products

2.1 MATERIAL

.1 Roadway geogrid:
.1 Integrally formed, polypropylene, bi-axial geogrid with a load transfer mechanism of positive mechanical interlock, designed for base reinforcement and subgrade improvement, conforming to the following description and properties:

PROPERTY	TEST METHOD	METRIC
Aperture Dimensions (Nominal)	Measured	25 x 30.5 mm
Minimum Rib Thickness (Nominal)	Measured	1.78 x 1.78m
Tensile Strength @ 2% Strain	ASTM D-6637-01	8.5 x 10.0 kN/m
Tensile Strength @ 5% Strain	ASTM D-6637-01	17.5 x 20.0 kN/m
Ultimate Tensile Strength	ASTM D-6637-01	27.0 x 30.0 kN/m
Junction Efficiency	GRI-GG2-05	93%
Flexural Stiffness	ASTM D-5732-01	2,000,000 mg-cm
Aperture Stability	USCOE Method (Torsional Rigidity)	0.75 m-N/deg
Resistance to Installation Damage (SC-SW-GP)	ASTM D-5818-06/ASTM D-6637-01	95%SC/93%SW/90%GP
Resistance to Long Term Degradation	EPA 9090	100%
Resistance to UV Degradation @ 500 Hours	ASTM D-4355-05	100%

.2 Geotextile: nonwoven needlepunched geotextile made of 100% polypropylene staple filaments, resists ultraviolet and biological deterioration, rotting, naturally encountered basics and acids, is stable within a pH range of 2 to 13 and meets the following values and physical properties:

PROPERTY	TEST METHOD	METRIC
Weight - Typical	ASTM D-5261	136 g/sm

Tensile Strength	ASTM D-4632	445 N
Elongation @ Break	ASTM D-4632	50%
Mullen Burst*	ASTM D-3786*	1,448 kPa
Puncture Strength*	ASTM D-4833*	289 N
CBR Puncture	ASTM D-6241	1,335 N
Trapezoidal Tear	ASTM D-4533	222 N
Apparent Opening Size	ASTM D-4751	0.212 mm
Permittivity	ASTM D-4491	2.00 Sec-1
Water Flow Rate	ASTM D-4491	5,689 l/min/sm
UV Resistance @ 500 Hours	ASTM D-4355	70%

3 Execution

3.1 GEOTEXTILE INSTALLATION

.1 Install geotextile material at bottom of drywell manhole excavation by unrolling and placing up excavation sloped pit walls to subgrade level allowing for overlap of 600 mm. Following placement of geotextile, the subbase of Type 2 Fill is placed onto geotextile and complacted.

.2 Wrap geotextile around drywell manhole to cover all openings full height and tie wrap with approved synthetic strap material to hold in position until drain rock is placed

.3 Place geotextile over completed drywell installation approximately near top of drywell overlapping geotextile from sloped pit walls.

.4 Place geotextile material smooth and free of tension stress, folds, wrinkles and creases.

.5 Overlap each successive strip of geotextile 600 mm over previously laid strip.

.6 Protect installed geotextile material from displacement and damage after installation and after placement of additional material layers.

.7 After installation of geotextiles, cover with overlying layer within 4 h of placement.

.8 Replace damaged or deteriorated geotextile.

3.2 GEOGRID INSTALLATION

.1 Install geogrid material placed over excavated subgrade under gravel roadway area.

.2 Where roadway crosses drywell area place geogrid over 150 mm of Type 1 Fill prior to remaining placement of Type 1 Fill.

3.3 PROTECTION

.1 Do not permit passage of any vehicle directly on geotextile at any time.

END OF SECTION

Part 1 GENERAL

1.1 Section Includes

.1 Materials and installation for asphalt concrete pavement for Exercise Yard areas as indicated on drawings.

1.2 Related Sections

.1 Section 31 23 10 – Excavation, Trenching and Backfilling.

1.3 References

.1 American Society for Testing and Materials International, (ASTM)

- .1 ASTM C88-05, Standard Test Method for Soundness of Aggregates by Use of Sodium Sulphate or Magnesium Sulphate.
- .2 ASTM C117-04 Standard Test Method for Material Finer Than 0.075 (No. 200) mm Sieve in Mineral Aggregates by Washing.
- .3 ASTM C127-07, Standard Test Method for Density, Relative Density (Specific Gravity), and Absorption of Coarse Aggregate.
- .4 ASTM C131-06, Standard Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine.
- .5 ASTM C136-06, Standard Method for Sieve Analysis of Fine and Coarse Aggregates.
- .6 ASTM D995-95b(2002), Standard Specification for Mixing Plants for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
- .7 ASTM D1559-99(2005), Test Method for Resistance to Plastic Flow of Bituminous Mixtures Using Marshall Apparatus, was withdrawn in 1998 with no replacement.
- .8 ASTM D2419-09, Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
- .9 ASTM D3203-05, Standard Test Method for Percent Air Voids in Compacted Dense and Open Bituminous Paving Mixtures.
- .10 ASTM D4318-10, Standard Test Method for Liquid Limit, Plastic Limit and Plasticity Index of Soils.

.2 Asphalt Institute (AI)

- .1 AI MS-2- 1993 Sixth Edition, Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types.

.3 Canadian General Standards Board (CGSB)

- .1 CAN/CGSB-8.1- 88, Sieves Testing, Woven Wire, Inch Series.
- .2 CAN/CGSB-8.2- M88, Sieves Testing, Woven Wire, Metric.
- .3 CAN/CGSB-16.1- M89, Cutback Asphalts for Road Purposes.

.4 CAN/CGSB-16.2- M89, Emulsified Asphalts, Anionic Type, for Road Purposes.

.5 CAN/CGSB-16.3- M90, Asphalt Cements for Road Purposes.

1.4 Submittals

.1 Submit asphalt concrete mix design to Departmental Representative for approval.

.2 Materials to be tested by accredited testing laboratory approved by the Departmental Representative.

.3 Submit test certificates showing suitability of materials at least 4 weeks prior to commencing work.

.4 Inform the Departmental Representative of proposed source of aggregates and provide access for sampling at least 2 weeks prior to commencing work.

1.5 Waste Management and Disposal

.1 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.2 Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard, packaging material for recycling in accordance with Waste Management Plan.

.3 Unused protective coating material must be disposed of at an official hazardous material collections site.

.4 Unused protective coating material must not be disposed of into sewer system, into streams, lakes, onto ground or in other location where it will pose health or environmental hazard.

.5 Fold up metal banding, flatten and place in designated area for recycling.

Part 2 PRODUCTS

2.1 Materials

.1 Granular base and sub-base material: to Section 31 23 10 – Excavation, Trenching and Backfilling and following requirements:

.1 Crushed or screened stone, gravel or sand.

.2 Gradations: within limits specified when tested to ASTM C136 and ASTM C117. Sieve sizes to CAN/CGSB-8.1 and CAN/CGSB-8.2.

.3 Granular base aggregates:

.1 Crushed particles: at least 60 % of particles by mass retained on 4.75 mm sieve to have at least 1 freshly fractured face.

.2 Liquid limit: to ASTM D4318, maximum 25.

.3 Plasticity index: to ASTM D4318, maximum 6.

.2 Asphalt concrete aggregates:

.1 Fine aggregate passing 4.75 mm sieve when tested to ASTM C136.

.2 When dryer drum plant or plant without hot screening is used, process fine aggregate through 4.75 mm sieve.

.3 Separate stock piles for coarse and fine aggregate are not required for sheet asphalt.

.4 Do not use aggregates having known polishing characteristics in mixes for surface courses.

.5 Aggregate: material to Section 31 23 10 - Excavation, Trenching and Backfilling and following requirements:

.1 Crushed stone or gravel.

.2 Gradations to be within limits specified when tested to ASTM C136 and ASTM C117.

.3 Table

Sieve Designation	Asphalt Concrete
19.0 mm	100
12.5	70-85
9.5 mm	
4.75 mm	40-65
2.36 mm	32-53
1.18 mm	26-44
0.600 mm	18-36
0.300 mm	10-26
0.150 mm	4-17
0.075 mm	3-8

.4 Sand equivalent: to ASTM D2419, Minimum 40.

.5 Magnesium Sulphate soundness: to ASTM C88. Max % loss by weight: coarse aggregate 15, fine aggregate 18.

.6 Los Angeles Degradation: to ASTM C131. Max % loss by weight: coarse aggregate, 35.

.7 Absorption: to ASTM C127. Max % by weight: coarse aggregate, 1.75.

.8 Loss by washing: to ASTM C117. Max % passing 0.075 sieve coarse aggregate, upper course: 1.5. Max % passing 0.075 sieve coarse aggregate, lower course: 2.0.

.9 Crushed particles: at least 60 % of particles by mass within each of following sieve designation ranges to have at least 2 freshly fractured face. Material to be tested according to ASTM C136 and ASTM C117.

.10 Table

Passing		Retained on
25 mm	to	12.5 mm
12.5 mm	to	4.75 mm

.11 Regardless of compliance with specified physical requirements, fine aggregates may be accepted or rejected on basis of past field performance.

.3 Mineral filler for asphalt concrete:

.1 Finely ground particles of limestone, hydrated lime, Portland cement or other approved non-plastic mineral matter, thoroughly dry and free from lumps.

.2 Add mineral filler when necessary to meet job mix aggregate gradation or as directed by the Departmental Representative to improve mix properties.

.4 Asphalt cement: to CAN/CGSB-16.3.

.5 Asphalt prime: to CAN/CGSB-16.1 or CAN/CGSB-16.2.

.6 Sand blotter: clean granular material passing 4.75 mm sieve and free from organic matter or other deleterious materials.

.7 Asphalt tack coat: to CAN/CGSB-16.2, grade SS-1.

2.2 Equipment

.1 Pavers: mechanical grade controlled self-powered pavers capable of spreading mix within specified tolerances, true to line, grade and crown indicated.

.2 Rollers: sufficient number of rollers of type and weight to obtain specified density of compacted mix.

.3 Vibratory rollers:

.1 Minimum drum diameter: 1200 mm.

.2 Maximum amplitude of vibration (machine setting): 0.5 mm.

.4 Haul trucks: of sufficient number and of adequate size, speed and condition to ensure orderly and continuous operation and as follows:

.1 Boxes with tight metal bottoms.

.2 Covers of sufficient size and weight to completely cover and protect asphalt mix when truck fully loaded.

.3 In cool weather or for long hauls, insulate entire contact area of each truck box.

.5 Suitable hand tools.

2.3 Mix Design

.1 Mix design to AI MS-2.

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

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

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

.2 Mix physical requirements:

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

.3 Measure physical requirements as follows:

.1 Marshall load and flow value: to ASTM D1559.

.2 Compute void properties on basis of bulk specific gravity of aggregate to ASTM D3203. Make allowance for volume of asphalt absorbed into pores of aggregate.

.3 Air voids: to ASTM D3203.

.4 Voids in mineral aggregate: to AI MS-2, chapter 4.

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

Part 3 EXECUTION

3.1 Surface Preparation and Inspection

.1 Verify grades of drains and other items set in paving area for conformity with elevations and sections before placing granular base and sub-base material.

.2 Obtain approval of subgrade by Departmental Representative before placing granular sub-base and base.

3.2 Granular Sub-Base and Granular Base

.1 Place granular base and sub-base material on clean unfrozen surface, free from snow and ice.

.2 Place granular base and sub-base to compacted thicknesses as indicated. Do not place frozen material.

.3 Place in layers not exceeding 150 mm compacted thickness. Compact to density not less than 98 % corrected maximum dry density.

.4 Finished base surface to be within 10 mm of specified grade, but not uniformly high or low.

3.3 Asphalt Tack Coat

.1 Emulsified asphalt: to CAN/CGSB-16.2, GRADE SS-1.

3.4 Plant and Mixing Requirements

.1 In accordance with ASTM D995.

3.5 Asphalt Concrete Paving

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

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

.3 Place asphalt concrete in compacted in single layers 50 mm one lift.

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

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

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

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

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

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

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

.11 Finish surface to be within 10 mm of design elevation and with no irregularities greater than 10 mm in 4.5 m.

.12 Repair areas showing checking, rippling or segregation.

3.6 Joints

.1 Paint contact surfaces of existing structures such as manholes, curbs or gutters with bituminous material prior to placing adjacent pavement.

.2 For cold joints, cut back to full depth vertical face and tack face with hot asphalt.

.3 For longitudinal joints, overlap previously laid strip with spreader by 25 to 50 mm.

3.7 Testing

.1 Inspection and testing of asphalt pavement will be carried out by approveded testing laboratory.

.2 Costs of tests will be paid by contractor.

3.8 Protection

.1 Keep vehicular traffic off newly paved areas until paving surface temperature has cooled below 38 degrees C. Do not permit stationary loads on pavement until 24 hours after placement.

.2 Provide access to buildings as required. Arrange paving schedule so as not to interfere with normal use of premises.

END OF SECTION

1 General

1.1 Related Work

.1 Section 32 23 10 - Excavation, Trenching and Backfilling.

1.2 REFERENCES

.1 A23.4-09 (R2014) - Precast concrete - Materials and construction.

1.3 PRODUCT DATA

.1 Submit Product Data of Traffic Control Barrier units in accordance with Section 01 01 50.

1.4 PROTECTION

.1 Prevent damage to building, grades and pavement. Make good any damage.

2 Products

2.1 MATERIALS

.1 Traffic barrier: precast concrete transition barrier with formed keys approximate size 1300 long x 810 x 600 wide at base, weighing 790 ± kg, with lifting hole. Surface finish; smooth surface on exposed sides.

3 Execution

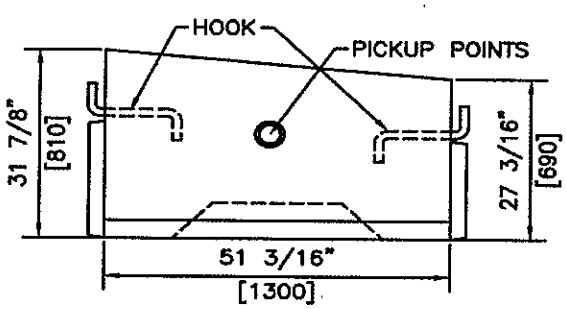
3.1 SUBGRADE

.1 Compacted fill base specified in Section 31 23 10. Ensure that base preparation conforms to levels required to allow for installation of traffic barrier in layout indicated.

3.2 INSTALLATION

.1 Install barrier units in parallel pattern perpendicular to roadway as indicated, located one each side of lighting standards. Use excavator for installing units, or other approved method.

END OF SECTION



TRANSITION TRAFFIC BARRIER

1 General

1.1 WORK INCLUDED

.1 Refer to drawings for location of new fencing.
- .1 Construct new security fence 3.66 m high, double and single gates with concrete post foundation, around Exercise Yards and as indicated.
- .2 Gates: 5 pedestrian swing gates and 2 double swing gates located in new fence and as indicated. Note: One new pedestrian gate is located in an existing fence. All gates to be lockable as specified.

1.2 RELATED WORK

.1 Section 01 01 50 - General Instructions.

.2 Section 05 50 00 - Metal Fabrications.

.3 Section 08 11 20 - Security Door, Frame and Hardware.

1.3 REFERENCE STANDARDS

.1 Canadian Standards Association (CSA International):
- .1 CAN/CSA A3001-2013 - Cementitious materials for use in concrete.
- .2 CAN/CSA-A23.1/A23.2-M2009, Concrete materials and methods of concrete construction/Test methods and standard practices for concrete
- .3 CAN/CSA-G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-138.1-96, Fence, Chain Link, Fabric.
- .2 CAN/CGSB-138.2-96, Fence, Chain Link, Framework, Zinc-Coated, Steel.
- .3 CAN/CGSB-138.3-96, Fence, Chain Link - Installation.
- .4 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.

.3 ASTM International (ASTM):
- .1 ASTM A53-/A53M -12, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
- .2 ASTM A90/A90M-13 - Standard Test Method for Mass of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings.
- .3 ASTM A123 / A123M - 12 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- .4 ASTM A 121-13 - Specification for Zinc-Coated (Galvanized) Steel Barbed Wire.
- .5 ASTM A392- 11a - Standard Specification for Zinc-Coated Steel Chain-Link Fence Fabric.
- .6 ASTM F1043-12 Standard Specification for Strength and Protective Coatings on Steel Industrial Chain Link Fence Framework.
- .7 ASTM F1379 - 95(2008) Standard Terminology Relating to Barbed Tape.
- .8 ASTM F1712-11 Standard Specification for Steel Chain-Link Fencing Materials Used for High Security Applications.
- .9 ASTM F2611-11 Standard Guide for Design and Construction of Chain Link Security Fencing.

1.4 SUBMITTALS

.1 Submit shop drawings or product data in accordance with Section 01 01 50.
.2 Product data to indicate: new overhang arms and custom hardware; construction details.

2 Products

2.1 MATERIALS

.1 Concrete mix designed to produce 25 MPa minimum compressive strength at 28 days and containing 20 mm maximum size, 5 mm minimum size coarse aggregate, with water/cement ratio to CAN/CSA-A23.1 Table 7 for Class F-2 exposure and 60 mm slump at time and point of deposit. Air entrainment to CAN/CSA-A23.1, Table 8.

.2 Chain-link fence fabric: to CAN/CGSB-138.1:
- .1 All security fence fabric:
  - .1 Interwoven steel wire fabric, 50 mm x 50 mm, 4.88 mm φ (6 Ga), with minimum 610 gm/m² galvanized coating.
  - .2 Height of wire mesh: nominal 3660 mm.
  - .3 Twisted selvedge at top and bottom for all security fencing.
  - .4 Breaking tensile strength to 10,000 N-min.

.3 Posts and rails: to CAN/CGSB-138.2, ASTM F1043, Schedule 40 electro-galvanized steel pipe (550 g/m²) in the following sizes, except as noted otherwise:
- .1 Line posts: 73 mm O.D, 8.6 kg/m. Posts shall be spaced a maximum of 2.5m apart.
- .2 Terminal & straining posts: 114.3 mm O.D, 15.92 kg/m minimum. Strain posts spaced not more than 60m apart.
- .3 Corner and gate posts: 143 mm O.D, 21.79 kg/m
- .4 Horiz. rails 42 mm O.D, 3.4 kg/m.

.4 Tie wire fasteners: single strand, galvanized steel wire conforming to requirements of fence fabric, 3.76 mm diameter (9 ga). Secure chain link fabric to bottom rail, top rail, and line posts at 300mm spacing.

.5 Tension bar: 4.76 x 20 mm minimum galvanized steel.

.6 Tension bar bands: 3.2 x 20 mm minimum galvanized steel.

.7 Zinc pigmented paint: to CGSB 1.181.

.8 Fittings and hardware: cast aluminum alloy, galvanized steel or malleable or ductile cast iron. Post caps to provide waterproof fit, to fasten securely over posts and to carry top rail.

.9 Galvanized steel wire: to ASTM 121.

.10 Galvanized steel arms provided on all posts where double coil barbed concertina wire is indicated.
- .1 Double Coil Arms: single and double arm at 45° upward, projecting in opposite directions (Y arms) and inward towards exercise yard (single arm), extending 700 mm ± horizontally from side of perimeter fence.

.11 Where nuts and bolts are required for fastening, nuts shall face yard exterior and be torqued tight.

2.2 SECURITY TOPPING

.1 Galvanized barbed tape concertina 20 x 0.5 mm clenched around a 2.5mm dia. spring steel galvanized core wire:

.1 Fence topping: to ASTM 1379, minimum 710 mm diameter (635 when installed) single coil concertina, fabricated from 0.64 mm thickness TYPE 430 stainless steel, minimum 25 mm wide, cold clenched 230° around a 2.5 mm diameter galvanized 1520 MPa tensile strength steel wire. Coils with 20 mm long blade type barbs Barb clusters spaced approx. 45mm OC. Clips of 1.65 mm x 10 mm wide stainless steel sheet designed to withstand a pull load of 90 kg spaced at 1/3 points around circumference. Resulting coil, to form a cylindrical pattern with loop spacing 230 mm max when stretched. Acceptable Product: RazorWire or approved equivalent.

.2 For coil support at fence top, provide two barbed wires stretched fixed to post arms. Barbed wire to consist of two strands of 12 gauge wire with 4 point barbs at 130mm spacing, all galvanized. The barb tape concertina to be supported and tied at 230mm spacing onto each of the barbed wire. 3.76mm galvanized steel wire ties to ASTM A 121.

.3 Hog rings (securing security topping to barbed wire and fence fabric): galvanized steel wire, 3.65 mm size.

2.3 SWING GATES

.1 Gaps at gate framing is not to exceed 125mm. Any gap between the bottom rail of a gate and ground shall not exceed 125mm.

.2 The chain link fabric for gates to match the fence on which it is mounted.

.3 Double gate framework: to ASTM A53 or galvanized steel pipe, conform to CGSB 138.4:

.1 2.35 m high x 3.05 m gate opening: 73 mm OD galvanized pipe, for outside frame and 42 mm OD galvanized pipe for interior framework. Weld two horizontal pipe frames at 1800 oc starting from bottom gate frame.

.2 Allow space for locking mechanism as indicated.

.3 Fasten fence fabric on secure of gate with twisted selvage at top and bottom.

.4 Clearance between gate perimeter framework and gate posts, top framework and grade maximum 125 mm.

.5 Furnish gates with three pair of galvanized malleable iron hinges, full height drop pipe and locking pin with provision for lock. Padlock to be installed at midpoint.

.6 Padlocks: Supplied by Departmental Representative.

.4 Single pedestrian gates:

.1 Provide 1 ½ pair standard quality gate hinges for each gate.

.2 Locking for two exercise yard gates: Southern Folger mechanical 1080A-2 detention locks:

.1 Lock mounting: steel grating mount.

.2 Lock Finish: Galvanized.

.3 Cover and case: Steel.

.4 Lockbolt: Cold-rolled steel with (3) 6 mm diameter case-hardened steel insert pins.
.5 Paracentric Cylinder: Silicon bronze/copper alloy spring tempered brass tumblers actuated by phosphor bronze springs, six tumblers per lock.
.6 Keying: Gates to exercise yards keyd alike, new key code, provide three keys
.7 Lock Size: 140 L x 99 H x 38 mm TK.
.8 Lockbolt Size: 52 H x 20 mm TK.
.9 Lockbolt Throw: 20 mm.
.10 ASTM F1577 Certified Impact Test-Grade 1.
.11 Bolt Keeper: with dust box.

.3 Locking for three access gates:
.1 Furnish three gates with a pair of galvanized malleable iron hinges, locking pin with provision for padlock which can be attached and operated from either side of installed gate.
.2 Padlocks: Supplied by Departmental Representative.

.4 Pedestrian gate framing members: 43mm O.D. pipe weighing 3.4 kg/m:
.1 Provide framed opening at mid height of exercise yard gates to accommodate security lock mounting and cuff port opening. Weld lock mounting to gate frames. Blank off opening next to cuff port with 6 mm steel plate welded in place.
.2 Fabricate 3 mm formed steel plate box welded to gate post to accommodate bolt keeper for security locks to exercise yard gates.

2.4 FINISHES

.1 Galvanizing:
.1 For chain link fabric: 610 g/m² to CAN/CGSB-138.1, ASTM A392.
.2 For posts, rails: 550 g/m² minimum to ASTM A90.
.3 For other fittings: to CSA G164, ASTM A123.

3 Execution

3.1 FENCE INSTALLATION

.1 Excavate for new fence foundations, by methods approved by Departmental Representative. Post size and depth as indicated on drawing:
.1 Center drop pipe locking mechanism at double gates: 350 mm φ by 600 mm deep concrete support with pipe receiver in center. Embed 150 long pipe into concrete to accommodate drop pipe diameter.

.2 Excavate by hand for post footings adjacent to building foundations. Coordinate with Departmental Representative for location of services in new fence areas.

.3 Remove all excavated materials and dispose off site.

.4 Place concrete in post holes then embed posts into concrete to 150 from bottom of concrete post depth. Extend concrete footing 50mm above ground level and slope to drain away from posts. Brace to hold posts in plumb position and true to alignment and elevation until concrete has set.

.5 Do not install fence fabric until concrete has cured a minimum of 5 days.

.6 Install top rail between posts, through post caps and at overhang tops.

.7 Install bottom rail between posts fastened securely to posts with fence post brackets.

.8 Lay out fence fabric onto fences, stretch tightly to tension specified and fasten to terminal, corner, gate and straining posts with tension bars secured to post with tension bar bands spaced at 300mm intervals.
- .1 Locate fastening nuts facing secure side of fence.
- .2 Join end rolls of fabric by weaving a single strand of fabric into the ends of the rolls to form a continuous mesh.
- .3 Join overlapped fabric with tie wires at 300 mm intervals along each exposed edge and stagger upper and lower ties 150 mm.
- .4 Tighten fence fabric to meet paragraph 11.

.9 Secure fabric to line posts and to horizontal rails with tie wires at 300 mm intervals twisted on secure side of fence. Give tie wires minimum two twists.

.10 Fence Tension Testing and Adjustment:
- .1 Following installation of fence fabric test and apply specified tension to the fence fabric.
- .2 Demonstrate the fence tension in the presence of the Departmental Representative.
- .3 Test method:
  - .1 While standing in the area between the outer and inner perimeter fences, place a straightedge horizontally between two adjacent posts.
  - .2 At the centre point of the panel, apply a perpendicular pulling force of 12 kg towards the straightedge.
  - .3 Measure the displacement from the fence fabric at rest.
  - .4 Adjust the fence fabric tension until the displacement is no more than 30 mm from the fence at rest plane.

3.2 SWING GATES

.1 Double gates:
- .1 Install gates plumb, in correct alignment to maximum clearance tolerances specified.
- .2 Fasten fence fabric on secure side of gate with twisted selvage at top.
- .3 Install gate locking mechanism to correct function. Install padlock supplied by Departmental Representative.

.2 Pedestrian single gates:
- .1 Install gates plumb, in correct alignment to maximum clearance tolerances specified.
- .2 Fasten fence fabric on secure side of gate with twisted selvage at top.
- .3 Install specified gate locking mechanism to correct function.
- .4 Weld 6 mm plate door stop to all gate frames.

3.3 INSTALLATION OF BARBED WIRE

.1 Install two lines of barbed wire on each arm of overhang tops to suit security topping.

.2 Install barbed wire taut and secure to overhang top slots in arm frames. Provide additional ties at overhang tops to ensure barbed wire is anchored securely.

3.4 INSTALLATION OF SECURITY TOPPING

.1 Install two coiled security topping to single and double arms, on fences indicated, attached to barbed wire on overhang tops with approved hog rings. Ensure coil tapes on security topping are spaced no more than 230 mm apart at each contact with barbed wire, in accordance with manufacturers instructions.

3.5 TOUCH UP

.1 Repair damaged galvanized surfaces. Clean damaged surfaces with wire brush removing loose and cracked coatings. Apply two coats of a 97% pure zinc metal zinc fast-drying cold-galvanizing compound to damaged areas where zinc coating is removed. (Galvacon or approved equal)

3.6 CLEANING

.1 Clean areas disturbed by operations. Dispose of surplus material and repair damaged surfaces as directed by Departmental Representative.

.2 Remove and dispose of **all** materials from exercise yards, including ties. Ensure all metal objects are removed from exercise yards.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 01 01 50 - General Instructions.

.2 Section 03 30 00 - Cast-In-Place Concrete.

.3 Section 31 23 10 - Excavation, Trenching and Backfilling, and gravel paving.

.4 Section 31 23 13 - Rough Grading.

.5 Section 31 32 21 - Geotextiles.

1.2 REFERENCES

.1 American Standards for Testing of Materials (ASTM):
- .1 ASTM A48 / A48M - 03(2012) Standard Specification for Gray Iron Castings.
- .2 ASTM C139-11, Specification for Concrete Masonry Units for Construction of Catch Basins and Manholes.
- .3 ASTM C478M-14, Specification for Precast Reinforced Concrete Manhole Sections.

.2 Canadian Standards Association International:
- .1 CSA A3001-13(2014) - Cementitious materials for use in concrete.
- .2 CAN/CSA A23.1/A23.2-00, Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
- .3 CSA A3002-13(2014) - Masonry and mortar cement.
- .4 CAN/CSA-A179-04(R2014) - Mortar and Grout for Unit Masonry.
- .5 CAN/CSA-A165 SERIES-04 (R2014) - CSA Standards on Concrete Masonry Units (Consists of A165.1, A165.2 and A165.3).
- .6 CAN/CSA G30.18-M92 (R2002), Billet-Steel Bars for Concrete Reinforcement.
- .7 CAN/CSA G164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

1.3 MATERIAL CERTIFICATION

.1 At least 2 weeks prior to commencing work, submit manufacturer's test data and certification that materials meet requirements of this section. Include manufacturer's drawings, information and shop drawings where pertinent.

2 Products

2.1 MATERIALS

.1 Concrete:
- .1 To Section 03 30 00 - Cast-In-Place Concrete.
- .2 Cement: to CSA-A3001, normal type.
- .3 Concrete mix design to produce 35 MPa minimum compressive strength at 28 d and containing 20 mm maximum size coarse aggregate, with water/cement ratio to CAN/CSA-A23.1, table 7 for class A exposure and 50 mm slump at time and point of deposit.

.2 Concrete reinforcement: to Section 03 30 00 - Concrete Reinforcement.

.3 Precast manhole sections: to ASTM C478M, circular with holes, minimum 35 Mpa compressive strength concrete.
.1 Manhole sections with formed tapered rectangular openings 150/100 long x 75/50 wide, with approximately 100 openings per 900 mm high barrel .
.2 Top section flat slab with opening to accommodate manhole cover.

.4 Cleanouts where required by provincial code: precast manhole section or construct from concrete pipe as indicated.

.5 Mortar:
.1 Aggregate: to CSA A179.
.2 Cement: to CAN/CSA-A8.

.6 Adjusting rings: to ASTM C478M.

.7 Concrete brick: to CAN/CSA-A165 Series.

.8 Frames, gratings, covers to dimensions as indicated and following requirements:
.1 Metal gratings and covers to bear evenly on frames. A frame with grating or cover to constitute one unit. Assemble and mark unit components before shipment.
.2 Gray iron castings: to ASTM A48, strength class 30B.
.3 Castings: coated with two applications of asphalt varnish.
.4 Manhole frames and covers: minimum CS-500 loading; heavy duty municipal type for road service. Provide covers cast without perforations complete with two 25 mm square lifting holes and security bolted type frame and cover.

3 Execution

3.1 EXCAVATION AND BACKFILL

.1 Excavate and backfill in accordance with Section 31 23 10 - Excavating, Trenching and Backfilling.

.2 Obtain approval of Departmental Representative before installing drywell manholes.

3.2 CONCRETE WORK

.1 Do concrete work in accordance with Section 03 30 00 - Cast-In-Place Concrete.

.2 Construct concrete manhole base on compacted fill. Use either poured in place or precast concrete base.

3.3 INSTALLATION

.1 Construct units in accordance with details indicated, plumb and true to alignment and grade.

.2 Dewater excavation and remove soft and foreign material before placing concrete base.

.3 Set concrete base on undisturbed subbase or 200 mm minimum of granular bedding (Type 2 Fill) compacted to 98% of corrected maximum dry density.

.4 Place filter fabric around perforated manhole to protect from ingress of fines as specified in Section 31 32 21 Geotextiles. Tie wrap filter fabric to manhole to hold in place until backfilling is complete.

.5 Precast units:

.1 Set bottom section of precast unit in bed of cement mortar and bond to concrete slab or base.

.2 Clean surplus mortar and joint compounds from interior surface of unit as work progresses.

.6 Set frame and cover to required elevation on no more than 4 courses of brick. Make brick joints and join brick to frame with cement mortar. Parge and make smooth and watertight.

.7 Place frame and cover on top section to elevation as indicated. If adjustment required use concrete ring.

.8 Clean units of debris and foreign materials. Remove fins and sharp projections. Prevent debris from entering system.

END OF SECTION

1 General

1.1 RELATED WORK

.1 Section 01 01 50 - General Instructions.

.2 Section 31 23 10 - Excavation, Trenching and Backfilling, and gravel paving.

.3 Section 33 05 15 - Drywell Manhole.

1.2 REFERENCES

.1 Canadian Standards Association (CSA International)
.1 CSA B1800, Plastic Non-pressure Pipe Compendium - B1800 Series (Consists of B181.1, B181.2, B181.3, B181.5, B182.1, B182.2, B182.4, B182.6, B182.7, B182.8 and B182.11).
.2 CSA B182.1-02, Plastic Drain and Sewer Pipe and Pipe Fittings.
.3 CSA B182.11-02, Recommended Practice for the Installation of Thermoplastic Drain, Storm, and Sewer Pipe and Fittings.

1.3 DEFINITIONS

.1 Pipe section is defined as length of pipe between successive manholes and/or between manhole and any other structure which is part of sewer system.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with the manufacturer's recommendations.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate disposal facilities.

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

.3 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations, and Division 2 specifications.

2 Products

2.1 SUBSOIL DRAINAGE PIPING

.1 Perforated rigid drainage pipe: Polyvinyl Chloride (PVC) to CSA-B182.2.

.2 Standard Dimensional Ratio (SDR): 35.

.3 Pipe stiffness: 320 kPa at 5% deflection, ASTM D2412.

.4 Fitting: solid hub by hub.

.5 Size: 150mm unless otherwise noted.

2.2 FLOOR DRAIN

.1 Floor Drain with Square Heavy Duty Strainer: epoxy coated cast iron floor drain with anchor flange, reversible clamping collar with primary & secondary weepholes, adjustable heavy duty square heel proof nickel bronze strainer, and no hub outlet, with optional sediment bucket, vandal proof cover with security screws and galvanized body. Acceptable product; Watts Drainage FD -100 - L8 - 5 - 6 (-13 or - 60) or approved equivalent.

2.3 CLEANOUT

.1 As required by provincial code.

3 Execution

3.1 PREPARATION

.1 Clean and dry pipes and fittings before installation.

.2 Obtain Departmental Representative's approval of pipes and fittings prior to installation.

3.2 EXECUTION

.1 Do excavation work in accordance with Section 31 23 10.

3.3 BEDDING AND COVER

.1 Place drain pipe on 150 mm sand bedding and cover with 150mm of sand measured from the top of pipe, unless otherwise shown or specified. Do not place material in frozen conditions.

.2 Shape bed true to grade to provide continuous uniform bearing surface for pipe. Do not use blocks when bedding pipe.

.3 Fill excavation below design elevation to bottom of specified bedding in accordance with Section 31 23 10 with backfill material.

3.4 INSTALLATION

.1 Lay and join pipes in accordance with manufacturer's recommendations and to approval of Departmental Representative.

.2 Handle pipe using methods approved by the Departmental Representative. Do not use chains or cables passed through rigid pipe bore so that weight of pipe bears upon pipe ends.

.3 Lay pipes on prepared bed, true to line and grade, with pipe invert smooth and free of sags or high points.

.4 Ensure barrel of each pipe is in contact with shaped bed throughout its full length.

.5 Correct pipe which is not in true alignment and grade or pipe which shows differential settlement after installation great than 10 mm in 3 meters.

.6 Begin laying at outlet and proceed in upstream direction with socket ends of pipe facing upgrade.

.7 Do not exceed maximum joint deflection recommended by pipe manufacturer.

.8 Do not allow water to flow through pipe during construction, except as may be permitted by the Departmental Representative.

.9 Install plastic pipe and fittings in accordance with CSA B182.11.

.10 Stabilize pipe at openings made in drywell manhole with shrinkage compensating grout.

.11 Provide 90 degree downward elbow at drywell manhole.

.12 Provide cleanouts at changes in direction, extended to terminate flush with grade.

.13 Install floor drain in concrete slab in accordance with manufacturer's instructions.

.14 Connect piping to floor drain.

END OF SECTION

CONSTRUCT NEW YARD
Cell Block J
Project No. R.070773.001
Agassiz BC Kent Institution

APPENDIX A

Limited Hazardous Building Materials Assessment

Unit J Exercise Yard
Kent Institution
4732 Cemetery Road
Agassiz, British Columbia

DST Consulting Engineers Inc.
Unit B – 4125 McConnell Drive
Burnaby, British Columbia
V5A 3J7

Office: 604.436.4588

Public Works and Government Services Canada
19th Floor – 800 Burrard Street
Vancouver, British Columbia
V6Z 2V8

November 18, 2014

Attention: Ms. Karen Muttersbach
Environmental Specialist

Subject: Limited Hazardous Building Materials Assessment
Unit J – Exercise Yard – Kent Institution, 4732 Cemetery Road, Agassiz, British Columbia

DST File No.: BE-VC-020165

1.0 INTRODUCTION

DST Consulting Engineers Inc. (DST) was retained by Public Works and Government Services Canada (PWGSC) for the purposes of completing a hazardous building material assessment, limited to widening of the existing doorway from J Unit to the proposed exercise yard (herein referred to as the Subject Area) at Kent Institution, located at 4732 Cemetery Road, Agassiz, BC (herein referred to as the Subject Facility).

The assessment was conducted in support of upcoming renovation activities planned for the Subject Area.

The assessment was completed on November 13, 2014 by David Kernel, Project Manager of DST.

2.0 SCOPE OF WORK

The assessment was completed to identify the presence of asbestos-containing materials (ACMs) and lead-based coatings (LBCs) that may be impacted through the widening of the existing doorway from J Unit to the proposed exercise yard. The scope of DST's assessment was limited to interior surfaces within Room 016 and surfaces outdoor, adjacent to Room 016.

Proposed renovation activities and the boundaries of DST's assessment are detailed on Drawing A-1, Lower Floor Plan, dated October 2014. A copy of this drawing is presented in **Appendix II**.

3.0 REGULATIONS AND GUIDELINES

3.1 Federal Regulations

3.1.1 Canada Labour Code

In federal jurisdictions, hazardous building materials are regulated under the *Canada Labour Code, Part II, Part X, Hazardous Substances*.

3.1.2 Asbestos-Containing Materials (ACMs)

ACMs are regulated under the Canada Occupational Health and Safety Regulations, (SOR/86-304). An asbestos-containing material is defined as a manufactured product that contains >0.5 % asbestos fibres by weight, at the time of manufacture, or vermiculite insulation that contains any asbestos fibres.

In addition, PWGSC Departmental Policy 057 provides specific requirements for the management and abatement of ACMs.

3.1.3 Lead-Based Coatings (LBCs)

Sections 6.59 to 6.69 of the BC OH&S Regulation describe specific requirements for workplace exposure to lead.

WorkSafeBC Manual – Lead-Containing Paints and Coatings – Preventing Exposure in the Construction Industry

This manual provides a guide to current practices that are to be followed in the Province of British Columbia, providing basic information on lead and lead products, health hazards and requirements for worker protection, safe work procedures and principles that should be followed in selecting the most suitable technique for the safe abatement of lead.

3.1.4 Hazardous Products Act

The *Hazardous Products Act (HPA), Surface Coating Materials Regulation (SOR/2005-109)* provides regulatory requirements for the sale and labeling of surface coatings.

The Surface Coating Materials Regulation reduced the threshold for lead in paint from 5,000 mg/kg to 600 mg/kg, and in 2010, to 90 mg/kg. However, Provincial regulations do not require lead controls for surface coatings containing <600 mg/kg, as such, DST identifies a lead-based coating as a coating containing >600 mg/kg or >0.05 mg/cm^2 (by XRF analyzer).

3.2 Transportation of Dangerous Goods Act

The Transportation of Dangerous Goods Act provides detailed requirements for the transportation of hazardous materials, including lead-containing wastes.

3.3 Provincial Regulations

In British Columbia, the management of hazardous building materials in the work place is regulated by WorkSafeBC under the Workers' Compensation Act (effective April 15, 1998), as amended by the Workers' Compensation (Occupational Health and Safety) Amendment Act (effective October 1, 1999). Specific requirements of the Occupational Health and Safety Amendment Act are prescribed in the British Columbia Occupational Health and Safety (BC OH&S) Regulation.

3.3.1 Hazardous Materials & Demolition/Renovations

Section 20.112 of the BC OH&S Regulation details the requirements that employers and owners are responsible for before beginning work on the demolition, renovation or salvage of machinery, equipment, buildings, or structures. The employer or owner must:

- Inspect the site to identify any asbestos, lead and/or other potentially hazardous materials that may be handled, disturbed, or removed;
- Have the inspection results available at the worksite; and,
- Ensure that the hazardous materials are safely contained or removed.

3.3.2 Hazardous Wastes

In British Columbia, environmental matters pertaining to waste generally fall under the jurisdiction of the British Columbia Ministry of Environment (MoE), pursuant to the Environmental Management Act. The key waste regulation under the Environmental Management Act relating to hazardous building materials is the Hazardous Waste Regulation (HWR), as amended from time to time. The HWR provides the requirements for the proper handling, storage, transportation, treatment, recycling and disposal of hazardous wastes in the province. The regulation also outlines the materials and criteria to be used to characterize waste as hazardous.

4.0 METHODOLOGY

The assessment was completed by DST on Thursday, November 13, 2014.

Suspect hazardous building materials were visually identified, based on the surveyor's knowledge of the historic composition of building products. Visual identification of materials suspected to contain hazardous materials were supported by the analysis of representative samples.

Suspect ACM samples were analyzed for asbestos content at Asbestos Analytical Services laboratory (AASL) following the National Institute for Occupational Safety and Health (NIOSH) Method 9002.

Suspect LBCs samples were tested for lead content using a Niton X-Ray Fluorescence (XRF) spectroscopy detector. The Niton XRF is designed to detect and quantify the amount of lead present in painted surfaces. Measurements were made following Niton XRF standard operating procedures for lead in surface coating measurements.

5.0 FINDINGS

5.1 Asbestos-Containing Materials (ACMs)

One (1) sample of suspect ACMs was collected and analyzed for asbestos content from the Subject Area. Asbestos analytical reports are included in **Appendix I**. The sample descriptions and analytical results are summarized in **Table 1**, below.

Table 1: Analysis of Suspect ACMs
Kent Institution, Agassiz, BC

Sample I.D.	Sample Description	Sample Location	Asbestos Content & Type
J-1	Window Caulking / Exterior	Exercise Yard – J Unit	None-Detected

Based on the analysis of suspect materials, no ACMs were identified in the Subject Area.

5.2 Lead-Based Coatings (LBCs)

Five (5) suspect LBCs were identified, sampled and analyzed within the Subject Area. The sample descriptions and analytical results are summarized in **Table 2**, below.

Lead analytical reports are included in **Appendix I**.

Table 2 – Lead-Based Coating Sample Results Kent Institution, Agassiz, BC				
Sample Number	**Location / Description**	**Color**	**Result (mg/cm2)**	**Lead-Based Coating**
L-01	Concrete Wall	Off-White	0.02	No
L-02	Concrete Ceiling	Off-White	0.02	No
L-03	**Paint on Steel Window Casing**	**Off-White**	**0.08**	**Yes**
L-04	Electrical Conduit	Off-White	0.02	No
L-05	**Exterior Window Paint**	**Brown**	**0.24**	**Yes**

Notes: **Bold print** indicates a coating containing potentially hazardous levels of lead.

Based on the results of DST's assessment, two (2) of the five (5) suspected lead-based coatings were found to contain potentially hazardous levels of lead (i.e. these surface coatings are considered to be lead-based coatings).

6.0 CONCLUSIONS

6.1 Asbestos-Containing Materials

Based on the analytical results, no ACMs were identified within the Subject Area.

6.2 Lead-Based Coatings

Based on the findings of DST's assessment and analytical results, two (2) of the five (5) suspect lead-based coatings samples were found to have hazardous levels of lead i.e., equal to or >0.05 mg/cm^2.

7.0 RECOMMENDATIONS

7.1 Lead-Based Coatings

Based on the proposed scope of renovation activities, abrasive (i.e. grinder, blasting, etc.) removal procedures that may impact upon identified LBCs should not be required. Based on the proposed scope of renovation activities, identified lead-based coatings applied to the steel window casings and paint applied to the exterior windows could be removed whole, limiting the potential for disturbance to the LBCs.

Due to the potential exposure to airborne silica (through concrete grinding), DST recommends that personal protective equipment (respiratory protection, protective clothing, etc.) and engineering controls (i.e. the use of water) be utilized during concrete grinding activities.

Control the disturbance to identified LBCs in accordance with the requirements of the Canada Labour Code, and WorkSafeBC, specifically but not limited to include those requirements prescribed in Parts 5.48-5.59 – Controlling Exposure and Parts 6.59-6.69 – Lead of the BC OH&S Regulation.

DST recommends reference to WorkSafeBC publication "*Lead-Containing Paints and Coatings – Preventing Exposure in the Construction Industry*", 2011. This manual provides a guide to current practices that are to be followed in the Province of British Columbia, providing basic information on lead and lead products, health hazards and requirements for worker protection, safe work procedures and principles that should be followed in selecting the most suitable technique for the safe abatement of LBCs.

DST recommends that any lead waste that is generated through renovation activities be sampled and submitted for leachate testing. If waste is found to leach lead above 5 mg/L, the waste would be considered to be leachable hazardous waste.

Leachable lead-containing wastes should be disposed of in accordance with the British Columbia Ministry of Environment and should be transported in accordance with the requirements of the Federal Transportation of Dangerous Goods Act.

8.0 REPORT LIMITATIONS

This report is intended for client use only. Any use of this document by a third party, or any reliance on or decisions made based on the findings described in this report, are the sole responsibility of such third parties, and DST Consulting Engineers Inc. accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions conducted based on this report. No other warranties are implied or expressed.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the client. The sampling program included asbestos bulk sampling and paint chip sampling in select representative areas for laboratory analysis. Note, however, that no scope of work, no matter how exhaustive, can guarantee to identify all contaminants. This report therefore cannot warranty that all building conditions are represented by those identified at specific locations.

Recommendations, when included, are made in good faith and are based on several successful experiences.

Note also that standards, guidelines and practices related to environmental investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any comments given in this report on potential remediation problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all of the factors that may affect construction, clean-up methods and/or costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

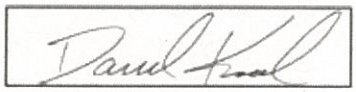
Any results from an analytical laboratory or other subcontractor reported herein have been carried out by others, and DST Consulting Engineers Inc. cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.

9.0 CLOSURE

We trust that the information contained herein meets your needs. Should you have any questions or comments, please do not hesitate to contact us.

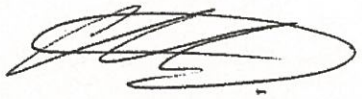
DST CONSULTING ENGINEERS INC.

Report prepared by:



David Kernel, CLR, CLI
Project Manager

Report Reviewed by:



Christian J. Injates, CEC, CEM
Sector Head, Building Environments

Asbestos Analytical Services Ltd.
7 - 2883 East Kent Avenue N., Vancouver, BC, V5S 3T9

ASBESTOS ANALYSIS REPORT

AASL Report #: **B00825**
Project Location: Exercise Yard, 4732 Cemetery Road, Agassiz, BC
Analyst: Gabrielle Sutton
Reference #s: BE-VC-020165
Report Date: 14NOV2014
Number of Samples: 1
Method: NIOSH Method 9002

# B00825	Sample	Sub-Sample	Sample Description / Location	Results	ASB
1. 1 **	**J-1**	Layer 1 - brown mastic	Caulking, Exterior Windows, J Yard (Seg)	Asbestos Fibres Not Detected 90 - 100 % Non-Fibrous	---
1. 2 **	J-1	Layer 2 - dark brown mastic	Caulking, Exterior Windows, J Yard (Seg)	Asbestos Fibres Not Detected 1 - 5 % Fibrous Glass > 95 % Non-Fibrous	---

Comments

Samples analyzed in accordance with NIOSH Laboratory Method 9002
American Industrial Hygiene Association (AIHA) BAPAT Program Laboratory Number 204301
Estimated Limit of Detection is <0.5 %
ASB = Asbestos present/absent in material
T = Asbestos Present
AASL Asbestos Analytical Services Ltd. will not accept any responsibility as to the manner of interpretation or application of these results.

** Sample preparation included ashing process.

Analyst: *Original Signed By*
Gabrielle Sutton, B.A.
Date: November 14, 2014

Original Signed By
Reviewed By: Gabrielle Sutton, B.A.

DST consulting engineers

LEAD ANALYSIS REPORT

Client: Public Works Government Services **Date:** November 14, 2014
Attention: Karen Muttersbach **Date Submitted:** November 13, 2014
Project Name: 4732 Cemetery Road, Agassiz, BC
Project Number: BE-VC-020165

LEAD-BASED COATING SAMPLE ANALYTICAL RESULTS
UNIT J – EXERCISE YARD

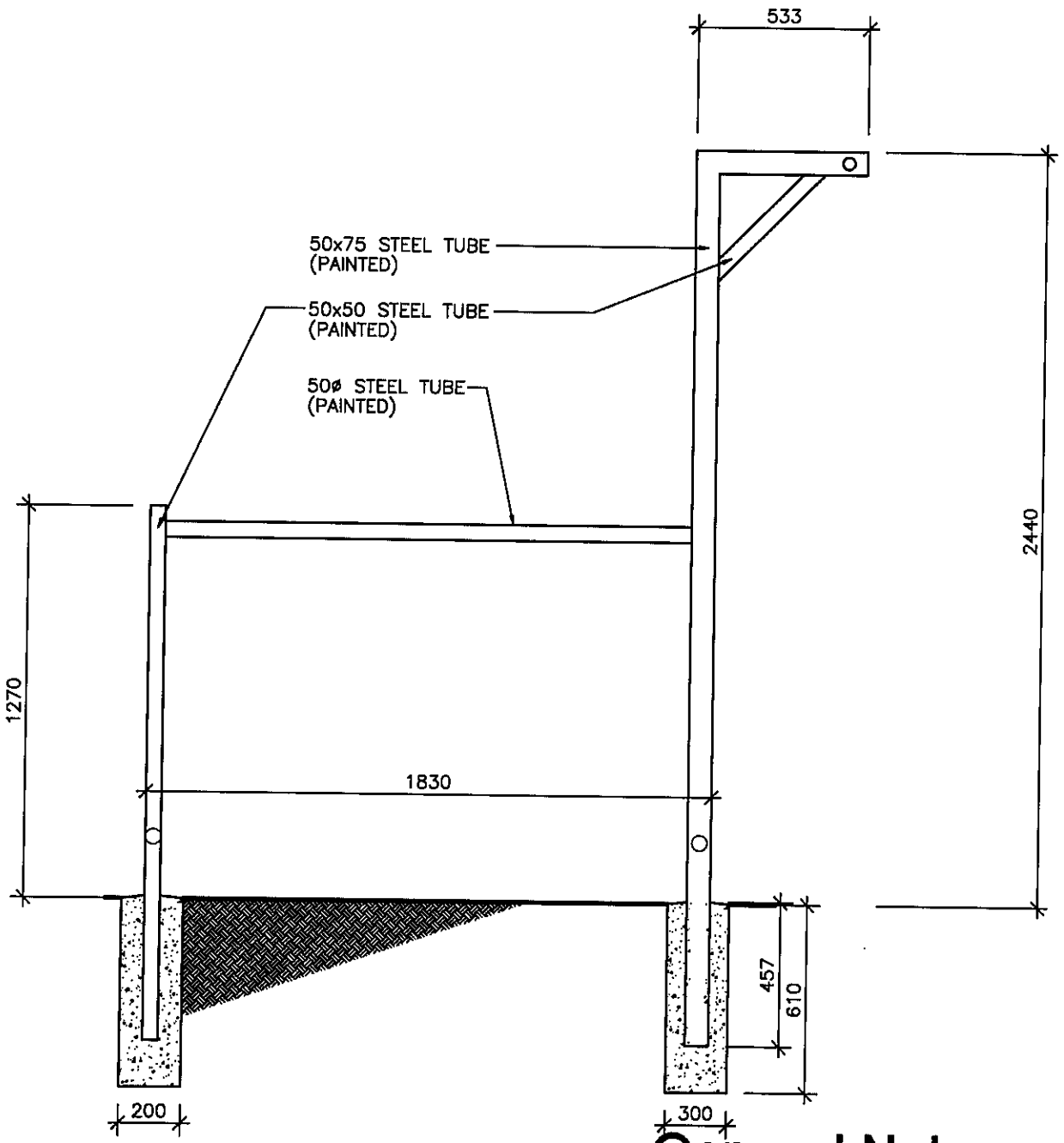
Sample Number	Location / Description	Color	Result (mg/cm2)	Lead-Based Coating
L-01	Concrete Wall	Off White	0.02	No
L-02	Concrete Ceiling	Off White	0.02	No
L-03	**Steel Window Casing**	**Off White**	**0.08**	**Yes**
L-04	Electrical Conduit	Off White	0.02	No
L-05	**Exterior Windows**	**Brown**	**0.24**	**Yes**

ANALYTICAL METHODOLOGY:

A Niton X-Ray Fluorescence (XRF) spectroscopy detector was used to make measurements on suspect building painted surfaces. The Niton XRF is designed to detect and quantify the amount of lead present primarily in painted surfaces. Measurements were made following Niton XRF standard operating procedures for lead in surface coating measurements.

Suspect surface coating samples analyzed were identified to have hazardous levels of lead (600 or greater) with a detection limit of ≥ 0.05 of lead per square centimeter of surface area (mg/cm2).

DST Consulting Engineers Inc.
Unit B – 4125 McConnell Drive
Burnaby, BC V5A 3J7
Tel (604) 436-4588



ALL METAL GALVANIZED & POWDER COATED PAINT

SIDE ELEVATION

A Exercise Bar

1 : 20

General Notes

1. THE EXERCISE BAR IS NIC CONTRACTOR TO PROVIDE CONCRETE BASE C/W STEEL RECEPTACLE (CAP) LOCATION DETERMINED BY DEPARTMENTAL REPRESENTATIVE. ONE EXERCISE BAR REQUIRED IN BOTH YARDS.

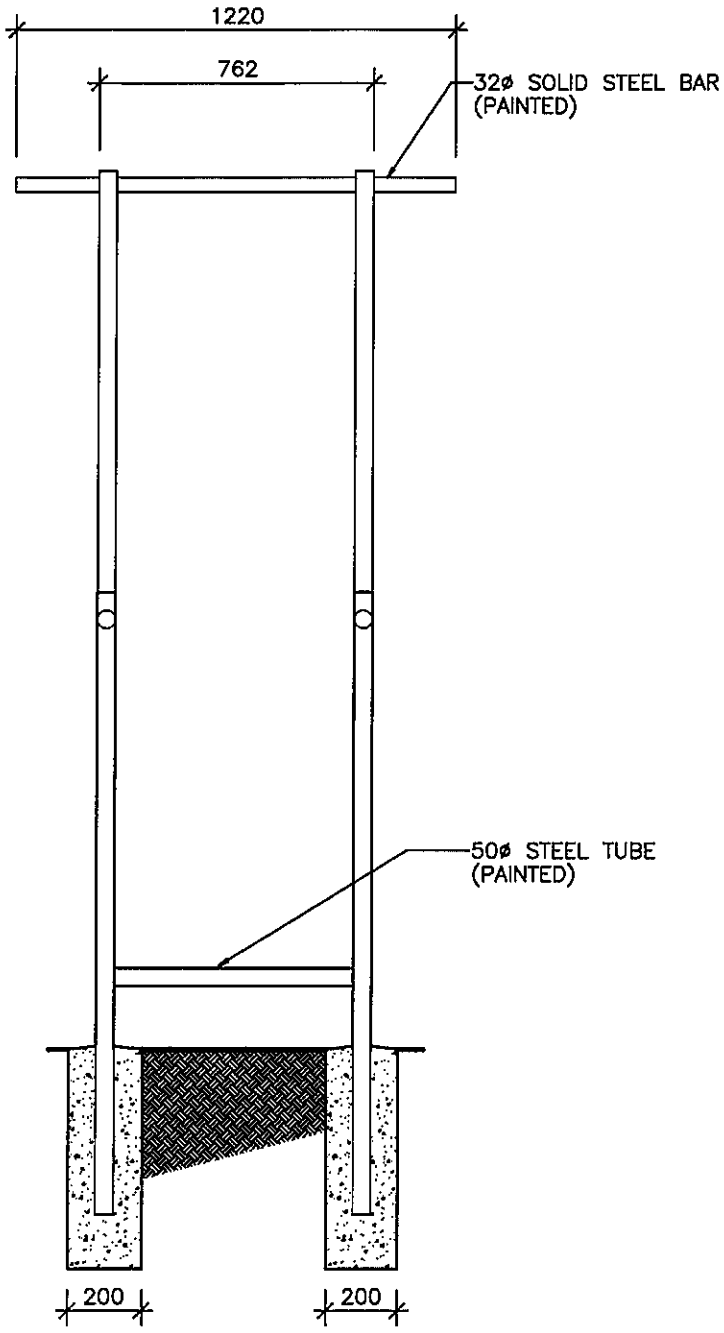
Public Works and Government Services Canada
Pacific Region

Correctional Service Canada
Agassiz BC
Kent Institution

Drawing title: Titre du dessin: Cell Block J
Construct New Yard
scale: échelle: EXERCISE BAR

date: revisions:
MARCH 2015

designed by: conçu par: D. Burns — date:
drawn by: dessiné par: D. Burns
approved by: approuvé par:
project no: no. du projet: R.070773.001
dwg. no. dessin no. AP 1



FRONT ELEVATION

(B) Exercise Bar

1 : 20

Public Works and Government Services Canada Pacific Region	Drawing title: Titre du dessin: **Cell Block J** **Construct New Yard** scale: échelle: **EXERCISE BAR**	designed by: conçu par: D. Burns drawn by: dessiné par: D. Burns	date:
Correctional Service Canada **Agassiz BC** **Kent Institution**	date: revisions: **MARCH 2015**	approved by: approuvé par: project no: no. du projet: R.070773.001	dwg. no. dessin no. **AP 2**