Public Works and Government Services Canada

Requisition No: EZ899-161286

DRAWINGS & SPECIFICATIONS
for

Abbotsford, BC
Pacific Institution

FIRE ALARM SYSTEM COMPUTER REPLACEMENT

Project No.: R.072304.001
September, 2015

APPROVED BY:

Regional Manager, AES — Date: 2015-09-14

Construction Safety Coordinator — Date: 2015-09-25

TENDER:

Project Manager — Date: 2014-09-14

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

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Discipline	Seal / Signature / Date
Electrical	

END OF SECTION

1 CODES

.1 Perform work to all current Codes, Construction Standards and Bylaws, including Amendments up to the tender closing date.

2 SUMMARY OF WORK

.1 Work under this Contract is to take place at Pacific Institution, 33344 King Road, Abbotsford, B.C. as shown on electrical drawings.

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

.1 Supply and Install new "Simplex" Touchscreen Monitor in the existing console in the MCCP Room of Building `G'. Provision of mouse and keyboard at monitor location. Replacement of the workstation computer in the communications room in the basement of Building G.

.2 In buildings A, B, C, D, E replacement at the main control post of fire alarm annunciator consisting of Simplex remote monitors (complete with keyboard and mouse). Replacement component shall be a Simplex LCD annunciator.

.3 In building F, addition of a Simplex Truesite workstation with touchscreen monitor, keyboard and mouse. Touchscreen monitor, keyboard and mouse shall be relocated from building E.

.4 In building U replacement (at each of two main control posts) of fire alarm annunciators consisting Simplex workstation computers and remote monitors (complete with keyboard and mouse). Replacement component shall be Simplex LCD annunciators.

.5 Programming, Verification and training as necessary to support the replacements and changes.

.6 Replace two Transformers in Building `Q' and submit recommendations for Power Factor Correction Capacitors.

.7 Other work as specified or indicated on the drawings.

.3 At the end of each work day, the entire Fire Alarm System of the Institution shall be fully operational and free of all Troubles.

.4 To minimize disruption to the existing fire alarm system the contractor shall coordinate with SimplexGrinnell to ensure work undertaken each day will, at the end of the day, allow compliance with item 3 above.

3 CONTRACTOR'S USE OF PREMISES

.1 Contractor has controlled use of site within the construction areas unless otherwise specified or as directed by Departmental Representative.

.2 Use of area within Pacific Institution is controlled by Departmental Representative.

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

.4 Pacific Institution site and all buildings will be operational during the work of this Contract. Coordinate work at or in control posts in buildings, to occur at most convenient time for the Institution operations. That is when control posts are not busy.

4 WORK RESTRICTIONS

.1 Notify, Departmental Representative of intended interruption of Fire Alarm System and provide schedule for review.

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

.3 Hours of work:
- .1 Perform work during normal working hours of the site (0730 to 1600), Monday through Friday except holidays unless a time extension is required to comply with clause 2.3 of Section 01 01 50. Working day may be extended beyond 1600 if institution is notified 5 working days in advance and approval is granted.
- .2 Work may be performed after normal working hours of Institution, Monday through Friday, on weekends and holidays, with a minimum forty-eight (48) hours advance notice and approval of the Departmental Representative.
- .3 Provide schedule for prior approval by Departmental Representative.
- .4 Schedule shall indicate:
  - .1 Days work is to be carried out for each building and task within each day.
- .5 Allow for delays and after hours work due to security protocol for entering and exiting the Institution.
- .6 Allow for work outside normal 0730 to 1600 working hours as necessary to complete the work.

.4 Access into Institution:
- .1 Vehicular access through the Principal Entrance Sally Port will be restricted during the Inmate "count" at breakfast, lunch and dinner hours.
- .2 Confirm "count" times with Departmental Representative. Delays may occur when entering and exiting the Institution with vehicles during "count" times and due to security situations and heavy traffic.
- .3 Construction escorts will be provided by the Departmental Representative, at no cost to the Contract. Notify Departmental Representative minimum 24 hours in advance of when Construction Escort is required.

5 CONSTRUCTION WORK SCHEDULE

.1 Commence work immediately upon official notification of acceptance of offer and complete the work within twelve (12) 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 the essence of this contract.

.3 Carry on Work as follows:

- .1 Within 10 working days after Contract Award, provide a schedule showing anticipated progress stages and final completion of the work within the time period required by the Contract documents. Indicate the following:
  - .1 Submission of shop drawings, product data, MSDS sheets and samples.
  - .2 Commencement and completion of work in each building as outlined.
  - .3 Indicate which days work will be carried out in Building `G'.
  - .4 Final completion date within the time period required by the Contract documents.

.4 Project Scheduling Reporting:

- .1 Update Project Schedule on weekly basis reflecting activity changes and completions, as well as activities in progress.
- .2 Include as part of Project Schedule, narrative report identifying Work status to date,comparing current progress to baseline, presenting current forecasts, defining problem areas,anticipated delays and impact with possible mitigation.

.5 Project Meetings:

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.
- .2 Weather related delays with their remedial measures will be discussed and negotiated.
- .3 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative and aggregating contract price. After approval by Departmental Representative cost breakdown will be used as basis for progress payments.

6 SUBMITTAL PROCEDURES

.1 Administrative:

- .1 Submit to Departmental Representative submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work.
- .2 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.
- .3 Do not proceed with work affected by submittal, until review is complete.
- .4 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .5 Where items or information is not produced in SI Metric units converted values are acceptable.
- .6 Review submittals prior to submission to Departmental Representative . This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and 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 submittals.
- .10 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .11 Keep one reviewed copy of each submission on site.

.2 Shop Drawings:

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

.3 Product Data:

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

.4 Submission Requirements:

- .1 Schedule submissions at least ten days before dates reviewed submissions will be needed.
- .2 Submit number of copies of product data, shop drawings which Contractor requires for distribution plus four (4) copies which will be retained by Departmental Representative.

.3 Accompany submissions with transmittal letter in duplicate.
.4 Submit either bond copies or one (1) electronic pdf file of each shop drawing and product data as directed by Departmental Representative.

.5 Coordination of Submissions:
.1 Review shop drawings, product data and samples prior to submission.
.2 Coordinate with field construction criteria.
.3 Verify catalogue numbers and similar data.
.4 Coordinate each submittal with requirements of the work of all trades and contract documents.
.5 Responsibility for errors and omissions in submittals is not relieved by Departmental Representative's review of submittals.
.6 Responsibility for deviations in submittals from requirements of Contract documents is not relieved by Departmental Representative's review of submittals, unless Departmental Representative gives written acceptance of specified deviations.
.7 Notify Departmental Representative, in writing at time of submission, of deviations in submittals from requirements of Contract documents.
.8 Make any changes in submissions which Departmental Representative may require consistent with Contract Documents and re-submit as directed by Departmental Representative.
.9 After Departmental Representative's review, distribute copies.
.10 Shop Drawings Review:
.1 Review of shop drawings by Public Works and Government Services Canada (PWGSC) is for the sole purpose of ascertaining conformance with the general concept.
.2 The Departmental Representative's review does not mean that PWGSC approves the detail design inherent in the shop drawings, responsibility remains with the contractor submitting same, and such review will not relieve the Contractor of responsibility for errors or omissions in the shop drawings or of responsibility for meeting all requirements of the construction and contract documents.
.3 Without restricting the generality of the foregoing, the Contractor is responsible for dimensions to be confirmed and correlated at the job site, for information that pertains solely to fabrication processes or to techniques of construction and installation, and for co-ordination of the work of all subtrades.

7 HEALTH AND SAFETY

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

8 ENVIRONMENTAL PROCEDURES

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

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

Representative.

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

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

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

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

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

9 REGULATORY REQUIREMENTS

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

10 QUALITY CONTROL

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

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

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

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

.3 Rejected Work:

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

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

.4 Reports:

.1 Submit (4) four copies or one scanned pdf copy of inspection and test reports to Departmental Representative.

11 TEMPORARY UTILITIES

.1 Water Supply:

.1 Existing water supply system may be used for construction purposes provided that damaged components are replaced when damaged. Provide own hoses from source.

.2 Temporary Power and Light:

.1 Electrical power and lighting in existing buildings may be used for construction purposes at no extra cost, provided that electrical components used for temporary power are replaced when damaged.

.3 Temporary Communication Facilities:

.1 Temporary telephone and fax hook up, line(s) are not permitted on site. Conform to Section 01 14 10 Security Requirements for use of cell phones inside institution.

12 CONSTRUCTION FACILITIES

.1 Installation and Removal:

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

.2 Remove from site all such work after use.

.2 Scaffolding:

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

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

.3 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.

.4 Construction Parking:
.1 Parking space is available outside double fence.

.5 Equipment, Tools and Material Storage:
.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials outside the double fence.

.6 Sanitary Facilities:
.1 Sanitary facilities for work force are available on site as directed by Departmental Representative.

13 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.
.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.
.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

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

.4 Transportation:
- .1 Pay costs of transportation of products required in performance of Work.
- .2 Transportation cost of products supplied by Departmental Representative will be paid for by Departmental Representative. Unload, handle and store such products.

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

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

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

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

.7 Co-ordination:

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

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

.8 Concealment:

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

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

.9 Remedial Work:

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

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

.10 Location of Equipment:

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

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

.11 Fastenings:

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

.2 Prevent electrolytic action between dissimilar metals and materials.

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

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

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

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

.12 Fastenings - Equipment:

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

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.
.3 Bolts may not project more than one diameter beyond nuts.
.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

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

14 EXAMINATION AND PREPARATION

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

15 EXECUTION REQUIREMENTS

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

.2 Execution:
.1 Execute cutting, fitting, and patching, including excavation and fill, to complete Work.
.2 Fit several parts together, to integrate with other Work.
.3 Uncover Work to install ill-timed Work.
.4 Remove and replace defective and non-conforming Work.
.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
.6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
.7 Employ original installer to perform cutting and patching for weather-exposed and

moisture-resistant elements, and sight-exposed surfaces.

.8 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

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

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

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

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

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

16 CLEANING

.1 Project Cleanliness:

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

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

.3 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, construction machinery and equipment.

.4 Remove waste products from site.

.5 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
.6 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
.7 Clean lighting reflectors, lenses, and other lighting surfaces.
.8 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
.9 Wax, seal, vacuum clean, shampoo or prepare floor finishes, as recommended by manufacturer.
.10 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
.11 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.
.12 Remove dirt and other disfiguration from exterior surfaces.
.13 Sweep and wash clean paved areas used during work of this contract.
.14 Clean equipment and fixtures to a sanitary condition; clean or replace filters of mechanical equipment.
.15 Clean roofs, downspouts, and drainage systems.
.16 Remove snow and ice from access to building.

17 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. Separate non-salvageable materials from salvaged items. Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes. Transport and deliver non-salvageable items to licensed disposal facility.

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

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

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

18 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 Certificates required by HRSDC Fire Protection Engineering, Utility companies have been submitted.
- .5 Operation of systems have been demonstrated to Department's personnel.
- .6 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.

19 CLOSEOUT SUBMITTALS

.1 Record Drawings:
- .1 As work progresses, maintain accurate records to show all deviations from the Contract Drawings. Note on as-built drawings as changes occur. At completion supply:
  - .1 Four (4) sets of printed as-built drawings.
  - .2 Submit one copy of check plots to Departmental Representative prior to final printing of as-built drawings.
  - .3 Departmental Representative will supply copies of the original AutoCad files.
  - .4 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 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 on CDs using pdf, or other approved format for descriptive writing, page size images and page size drawings. Organize manuals into industry standard maintenance manual tabs with links in index to each descriptive section describing the component or maintenance procedure etc.
  - .2 Organize files into CSI Masterformat numbering system or other approved descriptive titles.
  - .3 Label disk "Operation and Maintenance Data", project name, date, names of Contractor, subcontractors, consultants and subconsultants.

.4 Include scanned guarantees, diagrams and drawings.
.5 Organize contents into applicable sections of work to parallel project specification break-down. Mark each section by labeled tabs (navigational buttons).
.6 Drawings, diagrams and manufacturer's literature must be legible.
.7 Refer to Mechanical and Electrical Divisions for specific details for Mechanical and Electrical data.

.3 Maintenance Materials, Special Tools and Spare Parts:
.1 Specific requirements for maintenance materials, tools and spare parts are specified in individual sections.
.2 Deliver maintenance materials, special tools and spare parts to Departmental Representative and store in designated area as directed by Departmental Representative.
.3 Prepare lists of maintenance materials, special tools and spare parts for inclusion in Manual specified in Clause 19.2.
.4 Maintenance materials:
.1 Deliver wrapped, identify on carton or package, colour, room number, system or area as applicable where item is used.
.5 Special tools:
.1 Assemble as specified;
.2 Include identifications and instructions on intended use of tools.
.6 Spare parts:
.1 Assemble parts as specified;
.2 Include part number, identification of equipment or system for which parts are applicable;
.3 Installation instructions;
.4 Name and address of nearest supplier.

.4 Warranties and Bonds:
.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing in maintenance manual.
.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
.3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
.4 Except for items put into use with Departmental Representative's permission, leave date of beginning of time of warranty until the Date of Interim Completion is determined.
.5 Verify that documents are in proper form, contain full information, and are notarized.
.6 Retain warranties and bonds until time specified for submittal.

20 DEMONSTRATION AND TRAINING

.1 Demonstration and Training:

.1 Unless otherwise indicated, demonstrate operation and maintenance of equipment and systems to maintenance personnel following interim Completion and prior to date of final certificate of completion. (There are operational requirements for which instruction and training shall be carried out immediately following the work of annunciator replacement. Refer to the drawings for details).

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

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.

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 there may be reason to believe may be a security risk.

.5 Any person employed on the construction site will be subject to immediate removal from Institutional Property if they:
- .1 appear to be under the influence of alcohol, drugs or narcotics.
- .2 behave in an unusual or disorderly manner.
- .3. are in possession of contraband.
- .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.

.2 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.

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

9 WORK HOURS

.1 Work hours within the Institution are: conform to Section 01 01 50.

.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 Section 01 01 50.

.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 make the 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 cartridgedriven 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.

12 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.

13 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.

14 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.

15 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.

16 ACCESS TO AND REMOVAL FROM INSTITUTIONAL PROPERTY

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

17 MOVEMENT OF VEHICLES

.1 Escorted commercial vehicles may not be allowed to enter or leave the institution through the vehicle access gate during the regular "inmate count" occurring at breakfast, lunch and dinner hour as established by the institution. Confirm "count times" with Director or Departmental Representative to reduce down times for deliveries to institution and movement of contractors vehicles through institution vehicle access gate.

.2 Construction vehicles will not be allowed to leave the institution until an inmate count is completed.

.3 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.

.4 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.

.5 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.

.6 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.

.7 Private vehicles of construction employees will not be allowed within the security fence of the Institution without the authorization of the Director.

.8 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.

18 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.

19 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.

20 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.

21 CONTACT WITH INMATES

.1 Unless specifically authorized, it is forbidden to come into contact with inmates, to talk with them, to receive objects from them or to give them objects. Any 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.

22 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 GENERAL

1.1 REFERENCES

.1 Government of Canada.

.1 Canada Labour Code - Part II.

.2 Canada Occupational Health and Safety Regulations.

.2 National Building Code of Canada (NBC):

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

.3 Canadian Standards Association (CSA) as amended:

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

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

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

.4 Fire Protection Engineering Services, HRSDC:

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

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

.5 American National Standards Institute (ANSI):

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

.6 Province of British Columbia::

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

.2 Occupational Health and Safety Regulation.

1.2 RELATED SECTIONS

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

.1 Submittals procedures: Section 01 01 50

1.3 WORKERS' COMPENSATION BOARD COVERAGE

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

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

1.4 COMPLIANCE WITH REGULATIONS

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

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

1.5 SUBMITTALS

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

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

.3 Submit the following:

.1 Health and Safety Plan.

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

.3 Copies of incident and accident reports.

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

.5 Emergency Procedures.

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

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

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

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

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

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

1.6 RESPONSIBILITY

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

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

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

1.7 HEALTH AND SAFETY COORDINATOR

.1 The Health and Safety Coordinator 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 sitespecific Health and Safety Plan.

.3 Be on site during execution of work.

1.8 GENERAL CONDITIONS

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

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

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

1.9 PROJECT/SITE CONDITIONS

.1 Provide electrical lock-out procedures when working with electricity and safety harness when working at height.

1.10 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.

1.11 WORK PERMITS

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

1.12 FILING OF NOTICE

.1 The General Contractor is to file Notice of Project with Provincial authorities prior to beginning of work.

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

1.13 HEALTH AND SAFETY PLAN

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

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

.1 Primary requirements:

.1 Contractor's safety policy.

.2 Identification of applicable compliance obligations.

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

.4 General safety rules for project.

.5 Job-specific safe work, procedures.

.6 Inspection policy and procedures.

.7 Incident reporting and investigation policy and procedures.

.8 Occupational Health and Safety Committee/Representative procedures.

.9 Occupational Health and Safety meetings.

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

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

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

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

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

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

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

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

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

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

1.14 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 and site staff.

.2 Include the following provisions in the emergency procedures:

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

.2 Evacuate all workers safely.

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

.4 Notify the fire department or other emergency responders.

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

.6 Notify Departmental Representative and site staff.

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

.1 Work at high angles.

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

.3 Work with hazardous substances.

.4 Underground work.

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

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

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

.5 At least once each year, emergency drills must be held to ensure awareness and effectiveness of emergency exit routes and procedures, and a record of the drills must be kept.

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

1.15 HAZARDOUS PRODUCTS

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

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

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

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

1.16 ELECTRICAL SAFETY REQUIREMENTS

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

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

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

1.17 ELECTRICAL LOCKOUT

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

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

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

1.18 OVERLOADING

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

1.19 SCAFFOLDING

.1 Design, construct and maintain scaffolding in a rigid, secure and safe manner, in accordance with CSA Z797-2009 and B.C. Occupational Health and Safety Regulations.

1.20 FIRE SAFETY AND HOT WORK

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

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

1.21 FIRE SAFETY REQUIREMENTS

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

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

1.22 FIRE PROTECTION AND ALARM SYSTEM

.1 Fire protection and alarm systems shall not be:

.1 Obstructed.

.2 Shut off.

.3 Left inactive at the end of a working day or shift.

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

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

1.23 UNFORESEEN HAZARDS

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

1.24 POSTED DOCUMENTS

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

.1 Health and Safety Plan.

.2 Sequence of work.

.3 Emergency procedures.

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

.5 Notice of Project.

.6 Floor plans or site plans.

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

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

.9 Material Safety Data Sheets (MSDS).

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

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

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

1.25 MEETINGS

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

1.26 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 noncompliance of health and safety regulations is not corrected immediately or within posted time. The General Contractor/subcontractors will be responsible for any costs arising from such a "stop work order".

END OF SECTION

Part 1 General

1.1 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. 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 attached with Loctite 414 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.

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

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 – For Electrical

1.2 REFERENCES

.1 CAN/CSA-C22.2 No. 47-M90 (R2001), Air-Cooled Transformers (Dry Type).

.2 CSA C9-M1981 (R2001), Dry-Type Transformers.

.3 National Electrical Manufacturers Association (NEMA).

1.3 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 TRANSFORMERS

.1 Use transformers of one manufacturer throughout project and in accordance with CAN/CSA-C22.2 No. 47, CSA-C802.2-00.

.2 Design:

- .1 Ventilated: Type ANN
- .2 3-phase, 3-winding, 600 V delta primary, 120/208 V grounded 3-winding Wye secondary, 60 Hz.
- .3 Voltage taps: four 2½% primary taps (2FCAN, 2FCBN) brough out to a terminal board.
- .4 Insulation: Class 220, 150°C average temperature rise.
- .5 Basic Impulse Level (BIL): standard.
- .6 Hi-pot: standard.
- .7 Windings: copper (K factor of 13).
- .8 The core and coil shall be isolated from the enclosure to reduce noise and vibration by means of neoprene rubber or isomode vibration dampening effect based on the weight of the core and coil unit.
- .9 Finish: in accordance with Section 26 05 00 Common Work Electrical.
- .10 Average sound level: standard.
- .11 Impedence at 170°C: standard.
- .12 Enclosure: EEMAC 1

.13 Transformer shall be specifically designed to supply 100% of the 60 Hz fundamental rated current,

.1 33% of the fundamental current as third harmonic.

.2 20% of the fundamental current as fifth harmonic.

.3 14% of the fundamental current as seventh harmonic.

.4 11% of the fundamental current as ninth harmonic.

.5 and lower proportional percentages of the fundamental current through the 25th harmonic. Mark transformers with a label stating "Suitable for Non-Sinusoidal Current Load with K-Factor not to exceed 13".

.14 The core flux density shall be well below the saturation point to prevent core saturation caused by the harmonic even with a 10% primary overvoltage. The transformer core shall be constructed of grain oriented M6 or better; high grade non-aging silicon steel laminations of the mitre type construction.

.15 The secondary neutral shall be twice the ampacity of the secondary phase conductors and the primary winding conductor shall be of sufficient size to limit the temperature rise to its rated value even with the circulation third harmonic current.

.16 Transformers shall be complete with sprinkler=-proof hoods.

.17 Transformers shall be manufactured and tested (production tests) in accordance with CSA C802.2-00 incorporating modifications as specified herein.

2.2 EQUIPMENT IDENTIFICATION

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

.2 Label size: 7.

.3 Wording to match existing.

Part 3 Execution

3.1 INSTALLATION

.1 Mount dry type transformers on concrete housekeeping pads.

.2 Ensure adequate clearance around transformer for ventilation.

.3 Install transformers in level upright position.

.4 Remove shipping supports only after transformer is installed and just before putting into service.

.5 Loosen isolation pad bolts until no compression is visible.

.6 Make primary and secondary connections in accordance with wiring diagram. Conductors shall not enter the transformer through the top of the enclosure.

.7 Make flexible conduit connections on both primary and secondary sides of all transformers.

.8 Ground transformer per Canadian Electrical Code.

.9 Energize transformers after installation is complete.

.10 Provide seismic support and restraint for all new transformers.

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 Underwriter's Laboratories of Canada (ULC)

.1 CAN/ULC-S524-2006, Installation of Fire Alarm Systems.

.2 CAN/ULC-S537, Verification of Fire Alarm Systems.

1.3 OVERVIEW OF WORK

.1 The existing fire alarm system on site consists of a SimplexGrinnell networked system using 4020 and 4100 series panels. This existing system shall remain.

.2 Refer to the drawings for scope of work at each building. In general the scope of work involves replacement of annunciation facility except at building F where a graphical user interface is to be provided as an addition.

1.4 REQUIREMENTS OF REGULATORY AGENCIES

.1 System:

.1 Subject to Fire Commissioner of Canada inspection for final acceptance.

.2 System components: listed by ULC and comply with applicable provisions of National Building Code, and meet requirements of local authority having jurisdiction.

1.5 SHOP DRAWINGS

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

.2 Include:

.1 Details and performance specifications for annunciation and peripherals.

1.6 CLOSEOUT SUBMITTALS

.1 Provide operation and maintenance data for fire alarm system annunciators for incorporation into manuals specified in Section 01 01 50 – General Instructions.

.2 Include:

.1 Instructions for operating the LCD annunciators.

.2 Technical data - illustrated parts lists with parts catalogue numbers.

.3 Copy of approved shop drawings with corrections completed and marks removed except review stamps.

.4 Provide an operators condensed and simplified list of instruction on how to react to the various alarm and trouble conditions to be expected. The list shall be on one 8-1/2 inch by 11 inch sheet only. Departmental Representative shall review the operating instructions prior to distribution.

Part 2 Products

2.1 MATERIALS

.1 Annunciation components as indicated on the drawings.

.1 Graphical User Interface (GUI) shall be touchscreen style monitor. Refer to drawings.

2.2 WIRING

.1 Twisted copper conductors: rated 300 V, listed by CSA as suitable for fire alarm duty.

.2 To annunciation circuits: 18 AWG minimum, and in accordance with manufacturer's requirements.

Part 3 Execution

3.1 INSTALLATION

.1 Install annunciation systems in accordance with CAN/ULC-S524.

3.2 FIELD QUALITY CONTROL

.1 Perform tests in accordance with Section 26 05 00 - Common Work Results - Electrical and CAN/ULC-S537 and CAN/ULC-S536.

.2 Tests, inspection and verification shall be performed by SimplexGrinnell.

.3 Fire alarm system:

.1 Check annunciator panel to ensure zones are shown correctly.

.2 Verification Certificate. Provide copies of the completed verification certificate to the Departmental Representative and the Office of the Fire Commissioner of Canada.

.1 Mail one copy of the verification inspection report, verification letter and certificate to the Office of the Commissioner of Canada. The interim inspection will commence only after the Office of the Fire Commissioner of Canada have these documents in their possession.

.3 Provide final PROM program of any re-burn done for the system incorporating program changes made during construction.

3.3 DEMONSTRATION AND TRAINING

.1 Provide on-site demonstration by fire alarm equipment manufacturer to train operational personnel in use and maintenance of new fire alarm annunciation components.

END OF SECTION

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PI – Fire Alarm System Computer Replacement – Building Q Hazardous Materials Survey

Pacific Institution, 33344 King Road, Abbotsford, British Columbia

September 16, 2015

Our Ref.:
702358-001

ARCADIS

Wayne J. Cormack, M.Eng., CIH
Senior Consultant

Hazardous Materials Survey

Pacific Institution Fire Alarm System Computer Replacement – Building Q

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September 16, 2015

ARCADIS

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AT REAR OF REPORT

1. Introduction

ARCADIS Canada Inc. (ARCADIS) was retained by Public Works and Government Services Canada (PWGSC) Pacific Region, on behalf of Correctional Service Canada, to conduct a hazardous materials survey in Building Q of the Pacific Institution.

The Pacific Institution/Regional Treatment Centre is a multi-level security complex located two kilometers south of Abbotsford in the central Fraser Valley, about 80 kilometers east of Vancouver. The Pacific Institution is located within the Matsqui Correctional Service Canada complex at 33344 King Road, Abbotsford. Building Q has two levels; the Main Floor Adjunctive Therapy and Penthouse Adjunctive Therapy.

Floor plans of Building Q are provided in Appendix A.

The survey was undertaken to report on the presence or suspected presence of readily observable hazardous materials.

1.1 Scope of Work

The scope of work for our investigation included:

- review of existing information provided by PWGSC;
- Conducting a non-destructive hazardous building materials assessment (including but not limited to assessment of asbestos-containing materials, mercury thermostats, PCB-containing equipment, lead (based paints), and halocarbon-containing equipment);
- obtaining representative bulk samples of materials which could contain asbestos and paint chip samples;
- laboratory analyses of bulk samples for asbestos content and analysis of paint chip samples for lead content; and
- preparation of a report outlining the findings of the investigation.

Mr. Kenny Luong and Mr. Wayne Cormack of ARCADIS visited the site on July 29, 2015 to conduct the hazardous materials survey. Areas which were inaccessible and were not inspected included the crawlspace under the building and ceiling spaces

above solid ceilings (ceiling access hatches were locked). The crawlspace is considered to be a "confined space" and is accessible via a floor hatch located in the stairwell to the Penthouse Mechanical Room.

2. Background Information on Hazardous Materials

Canada Labour Code

Requirements related to disclosing the presence of hazardous substances (including designated substances) in federal government buildings are specified in Part II of the *Canada Labour Code*, sections 124(1)y and 125(1)Z.14, which state that employers shall:

- *"ensure that the activities of every person granted access to the work place do not endanger the health and safety of employees [Section y]; and*
- *take all reasonable care to ensure that all of the persons granted access to the workplace, other than the employer's employees, are informed of every known or foreseeable health or safety hazard to which they are likely to be exposed in the workplace. [Section Z.14]".*

When construction or redevelopment work is undertaken by a company whose primary activity is construction or redevelopment work at the site of a federally-regulated employer, the provincial health and safety laws apply. The British Columbia Workers Compensation Act and Occupational Health and Safety Regulations (B.C. Reg. 296/97) would therefore apply to any construction work undertaken at the subject site.

2.1 Asbestos

Asbestos has been widely used in buildings, both in friable applications (materials which can be crumbled, pulverized or powdered by hand pressure, when dry) such as pipe and tank insulation, sprayed-on fireproofing and acoustic texture material and in non-friable manufactured products such as floor tile, gaskets, cement board and so on. The use of asbestos in friable applications was curtailed around the mid-1970s. The use of asbestos in certain non-friable materials continued beyond the mid-1970s.

Control of exposure to asbestos is governed in British Columbia by B.C. Reg. 296/97 – Occupational Health and Safety Regulations. The WorkSafe BC publication *Safe Work Practices for Handling Asbestos* provides additional guidance.

B.C. Reg. 296/97 states that "asbestos-containing material" means the following:

(a) a manufactured article or other material, other than vermiculite insulation, that would be determined to contain at least 0.5% asbestos if tested in accordance with one of the prescribed methods.

(b) vermiculite insulation that would be determined to contain any asbestos if tested in accordance with the prescribed EPA method.

B.C. Reg. 296/97 prescribes certain requirements for asbestos management in buildings.

For on-going asbestos management in buildings, employers are required to:

- develop and implement an exposure control plan if a worker is or may be exposed to potentially harmful levels of asbestos;
- prepare an inventory (i.e., asbestos survey report) of all asbestos-containing materials in the workplace; keep the inventory at the workplace and keep the inventory current;
- ensure that a risk assessment is conducted by qualified person on asbestos-containing material identified in the inventory, with due regard for the condition of the material, its' friability, accessibility and likelihood of damage, and the potential for fibre release and exposure of workers;
- ensure that before a work activity that involves working with or in proximity to asbestos-containing material begins, the work activity is assessed by a qualified person and classified as a low, moderate or high risk activity;
- ensure that all friable asbestos-containing materials in the workplace are controlled by removal, enclosure or encapsulation so as to prevent the release of airborne asbestos fibre;
- prohibit any work that would disturb asbestos-containing material unless necessary precautions have been taken to protect workers;
- ensure that procedures for handling or using asbestos-containing material prevent or minimize the release of airborne asbestos fibres;

- ensure that the procedures for control, handling or use of asbestos are in accordance with procedures acceptable to the board;

- provide training for staff who are at risk of exposure to asbestos;

"Waste asbestos" is classified as a "hazardous waste" and is defined in the British Columbia Hazardous Waste Regulation (B.C. Reg. 63/88) as "a waste containing friable asbestos fibres or asbestos dust in a concentration greater than 1% by weight". Section 40, Part 6 of the regulation provides requirements for management of asbestos waste.

2.2 Lead

Lead is a heavy metal that can be found in construction materials such as paints, coatings, mortar, concrete, pipes, solder, packings, sheet metal, caulking, glazed ceramic products and cable splices. Lead has been used historically in exterior and interior paints.

The *Surface Coating Materials Regulations* made under the *Hazardous Products Act* (SOR/2005-109) sets a maximum concentration of total lead of 90 mg/kg (0.009 percent or 90 parts per million) for surface coating materials, including paints, effective 21 October 2010. This criterion level applies to the sale and importation of new surface coating materials.

The National Plumbing Code allowed lead as an acceptable material for pipes until 1975 and in solder until 1986.

B.C. Reg. 296/97 prescribes specific requirements for control of workplace exposure to lead. Employers are responsible for developing and implementing an exposure control plan if workers are or may be exposed to lead. The WorkSafe BC publication "Lead-Containing Paints and Coatings, Preventing Exposure in the Construction Industry" provides guidance in the measures and procedures that should be followed when handling lead-containing paints and coatings during construction projects and states the following:

- "Information from the U.S. Occupational Safety and Health Administration (OSHA) suggests that the improper removal of lead paint containing 600 mg/kg lead results in airborne lead concentrations that exceed half of the exposure limit. This would

trigger the requirement for an Exposure Control Plan (ECP) and safe work procedures.

- Lead concentrations as low as 90 mg/kg may present a risk to pregnant women and children. Any risk assessment should include for the presence of high risk individuals within the workplace."

2.3 Mercury

Mercury has been used in electrical equipment such as alkaline batteries, fluorescent light bulbs (lamps), high intensity discharge (HID) lights (mercury vapour, high pressure sodium and metal halide), "silent switches" and in instruments such as thermometers, manometers and barometers, pressure gauges, float and level switches and flow meters. Mercury-containing lamps, the bulk of which are 1.22 m (four foot) fluorescent lamps contain between 7 and 40 mg of mercury each. Mercury compounds have also been used historically as additives in latex paint to protect the paint from mildew and bacteria during production and storage.

The intentional addition of mercury to Canadian-produced consumer paints for interior use was prohibited in 1991. Mercury may have remained in paints after 1991, however, as a result of impurities in the paint ingredients or cross-contamination due to other manufacturing processes. The *Surface Coating Materials Regulations* made under the Hazardous Products Act set a maximum total mercury concentration of 10 mg/kg (0.001 percent) for surface coating materials (including paint). This criterion level applies to the sale and importation of new surface coating materials.

Mercury-containing thermostats and silent light switches are mercury tilt switches which are small tubes with electrical contacts at one end of the tube. A mercury tilt switch is usually present when no switch is visible. Mercury switches often have the word "TOP" stamped on the upper end of the switch, which is visible after removing the cover plate. If mercury switches are to be removed, the entire switch should be removed and placed into a suitable container for storage and disposal.

Waste light tubes generated during renovations or building demolition and waste mercury from equipment must either be recycled or disposed of in accordance with the requirements of B.C. Reg. 63/88 – *Hazardous Waste Regulation.*

Waste mercury is classified as "leachable toxic waste" if the extraction criterion value prescribed in Table 1 of Schedule 4 of the regulation is exceeded. Waste mercury from mercury switches or gauges should be properly collected and shipped to a recycling facility or disposed of as a hazardous waste. Removal of mercury-

containing equipment (e.g., switches, gauges, controls, etc.) should be carried out in a manner which prevents spillage and exposure to workers.

2.4 Silica

Silica exists in several forms of which crystalline silica is of most concern with respect to potential worker exposures. Quartz is the most abundant type of crystalline silica. Some commonly used construction materials containing silica include brick, refractory brick, concrete, concrete block, cement, mortar, rock and stone, sand, fill dirt, topsoil and asphalt containing rock or stone.

Employers in British Columbia are required to develop an exposure control plan (ECP) when workers are or may be exposed to airborne silica dust in excess of 50 percent of the exposure limit. The WorkSafe BC guidance document "Developing a Silica Exposure Control Plan" provides information on each of the required elements of an ECP, including safe work procedures for controlling exposure to silica during construction activities.

2.5 PCBs

In most institutional and commercial facilities and in smaller industrial facilities, the primary source of equipment potentially containing PCBs is fluorescent and H.I.D. light ballasts. Small transformers may also be present. In larger industrial facilities, larger transformers and switch gear containing, or potentially containing, PCBs may also be present.

PCBs were also commonly added to industrial paints from the 1940s to the late 1970s. PCBs were added directly to the paint mixture to act as a fungicide, to increase durability and flexibility, to improve resistance to fires and to increase moisture resistance. The use of PCBs in new products was banned in Canada in the 1970s. PCB amended paints were used in speciality industrial/institutional applications prior to the 1970s including government buildings and equipment such as industrial plants, radar sites, ships as well as non-government rail cars, ships, grain bins, automobiles and appliances.

Removal of in-service equipment containing PCBs, such as fluorescent light ballasts, capacitors and transformers, is subject to the requirements of the federal *PCB Regulations*.

The *PCB Regulations*, which came into force on 5 September 2008, were made under the *Canadian Environmental Protection Act*, 1999 (CEPA 1999) with the objective of addressing the risks posed by the use, storage and release to the

environment of PCBs, and to accelerate their destruction. The *PCB Regulations* set different end-of-use deadlines for equipment containing PCBs at various concentration levels.

The Regulations Amending the PCB Regulations and Repealing the Federal Mobile PCB Treatment and Destruction Regulations were published on 23 April 2014, in the Canada Gazette, Part II, and came into force on 1 January 2015. The most notable part of the amendments is the addition of an end-of-use deadline date of 31 December 2025 for specific electrical equipment located at electrical generation, transmission and distribution facilities.

"PCB wastes" are defined in B.C. Reg. 63/88 – *Hazardous Waste Regulation* as *PCB liquid, PCB solid and PCB equipment that have been taken out of service for the purpose of treatment, recycling, reuse or disposal or for the purpose of storage prior to treatment, recycling, reuse or disposal*. "PCB liquid" means any liquid containing more than 50 parts per million by weight of chlorobiphenyls. "PCB solid" means any material or substance other than PCB liquid that contains or is contaminated with chlorobiphenyls at a concentration greater than 50 parts per million by weight of chlorobiphenyls. "PCB equipment" means a manufactured item that contains or is contaminated with PCB liquids or PCB solids and includes transformers, capacitors and containers.

2.6 Ozone-depleting Substances and Halocarbons

In Canada, the federal, provincial and territorial governments have legislation in place for the protection of the ozone layer and management of ozone-depleting substances and their halocarbon alternatives. The use and handling of these substances are regulated by the provinces and territories in their respective jurisdictions, and through the *Federal Halocarbon Regulations, 2003* (FHR 2003) for refrigeration, air-conditioning, fire-extinguishing and solvent systems under federal jurisdiction.

The FHR 2003 were published in August 2003 and amended in July 2009 under the authority of the *Canadian Environmental Protection Act, 1999*. The purpose of the FHR 2003 is to reduce and prevent emissions of ozone-depleting substances and of their halocarbon alternatives to the environment from air-conditioning units, refrigeration, fire-extinguishing and solvent systems that are:

- located on federal or aboriginal lands; or
- owned by federal departments, board agencies, Crown corporations, or federal works and undertakings.

The FHR 2003 replaced the former *Federal Halocarbon Regulations* and incorporated new provisions to achieve an orderly transition from CFCs and Halons to alternative substances and technologies, reflecting *Canada's Strategy to Accelerate the Phase-Out of CFC and Halon Uses and to Dispose of the Surplus Stocks.*

Under the FHR 2003, a person who installs, services, leak tests, or charges a refrigeration system or an air conditioning system or does any other work on the system that may result in the release of a halocarbon must do so in accordance with the *Environmental Code of Practice for the Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems.*

Some of the requirements of FHR 2003 include:

- certification is required for all persons testing, repairing, filling or emptying equipment containing ozone-depleting substances and their halocarbon alternatives;
- no person shall store, transport or purchase a halocarbon unless it is in a container designed and manufactured to be refilled and to contain that specific type of halocarbon;
- before dismantling, decommissioning or destruction of any system, a person shall recover all halocarbons contained in the system into a container designed and manufactured to be refilled and to contain that specific type of halocarbon;
- before dismantling, decommissioning or destruction or destroying a system, a person shall affix a notice to the system containing information as required in Column 3, Item 1 of Schedule 2. This information includes the name and address of the owner of the system; name of the operator of the system, specific location of the system before its dismantling, decommissioning or destruction; description of the system; name of service technician who recovered the halocarbons; certificate number of the service technician (if applicable); name of employer of service technician (if applicable); type and quantity of halocarbon and date recovered; type and charging capacity of the system; and final destination of the system; and

- in the case of dismantling, decommissioning or destruction of any system, the owner shall keep a record of the information contained in the notice as described above.

2.7 Mould

Moulds are forms of fungi that are found everywhere both indoors and outdoors all year round. Outdoors, moulds live in the soil, on plants and on dead and decaying matter. More than 1000 different kinds of indoor moulds have been found in buildings. Moulds spread and reproduce by making spores, which are all small and light-weight, able to travel through air, capable of resisting dry, adverse environmental conditions, and hence capable of surviving a long time. Moulds need moisture and nutrients to grow and their growth is stimulated by warm, damp and humid conditions.

Recommended work practices are outlined in the following document:

- *Mould Guidelines for the Canadian Construction Industry*. Standard Construction Document CCA 82 2004. Canadian Construction Association.

2.8 Urea Formaldehyde Foam Insulation (UFFI)

Urea formaldehyde foam insulation (UFFI) is a polymer manufactured at point-of-use by blending urea formaldehyde resin with a phosphoric acid catalyst and compressed air at a nozzle tip. This nozzle was used to inject the freshly mixed foam product into enclosed wall cavities. UFFI was introduced in Canada in the l970s. In response to concerns about the health effects of formaldehyde gas, the installation of UFFI was banned in Canada in 1980.

3. Methodology

3.1 Asbestos

Bulk sampling and analysis was performed in general accordance with the requirements specified in B.C. Reg. 296/97 and in the WorkSafe BC publication *Safe Work Practices for Handling Asbestos.*

Determination of the locations of asbestos-containing materials was made based on the results of bulk sample analyses, visual observations and physical characteristics of the applications as well as our knowledge of the uses of asbestos in building materials.

Analysis of bulk samples was performed following EPA method 600/R-93/116 in conformity with the requirements specified in B.C. Reg. 296/97.

3.2 Lead

Samples of select, representative paint applications collected during the course of the site inspection were forwarded to the Maxxam Analytical Inc. laboratory in Mississauga, Ontario for analysis of lead content.

3.3 Mercury

The presence of equipment which may contain mercury, such as fluorescent light tubes, thermometers, gauges, etc. observed during the course of our site inspection was recorded.

3.4 Silica

The presence of silica-containing materials observed during the course of our site inspection was documented. Silica is known to be a constituent of brick, concrete, cement, etc. Sampling and laboratory analysis are not required to make this determination.

3.5 PCBs

Fluorescent lights were inspected during the course of our survey to determine whether they were the TI2 type and may therefore contain PCB ballasts. Nameplate information on transformers was inspected to determine whether they were an air or liquid-cooled type.

3.6 Ozone-Depleting Substances and Halocarbons

Information on the presence of air-conditioning equipment, cooling equipment (refrigerators, etc.), etc. was recorded during the site inspections by ARCADIS staff.

3.7 Mould

The presence of "suspect" mould observed during the course of our site inspection was documented. "Suspect" mould is typically a coloured, textured substance or discolouration or staining on a building material surface which, based on our experience, may be mould growth. The adjective "suspect" is used where the presence of mould has not been confirmed by laboratory analysis.

3.8 Urea Formaldehyde Foam Insulation

Investigations for the potential presence of UFFI entailed inspection of exterior and interior walls for evidence of previous openings (i.e., "nozzle holes") made for installation of insulation. In the case of "destructive" surveys, limited visual observations of the wall cavity are typically made at select, representative locations.

4. Results and Discussion

4.1 Asbestos

During the course of our designated substances survey, representative bulk samples of materials were collected by ARCADIS staff. The samples were forwarded to EMSL Canada Inc. for asbestos analyses. EMSL holds a current Certificate of Accreditation for Bulk Asbestos Fibre Analysis under the Voluntary Accreditation Program (NVLAP). The results of the bulk sample analyses for asbestos content are provided in Table 4.1, and the laboratory report is provided in Appendix B.

Table 4.1
Summary of Results of Analyses of Bulk Samples for Asbestos Content
Building Q, Pacific Institution

Sample №	Location	Description	Asbestos Content
1-A	Room Q1001	drywall joint compound	None detected
1-B	Room Q1002	drywall joint compound	None detected
1-C	Room Q1022	drywall joint compound	None detected
1-D	Room Q1031	drywall joint compound	None detected
1-E	Room Q1038	drywall joint compound	None detected
2-A	Room Q1002	2'x4' ceiling tile	None detected
2-B	Room Q1022	2'x4' ceiling tile	None detected
3-A	Room Q1002	duct mastic	None detected
3-B	Room Q1012	duct mastic	None detected
3-C	Room Q1022	duct mastic	None detected
4-A	Room Q1003	wall plaster	None detected
4-B	Room Q1005	wall plaster	None detected
4-C	Room Q1005	wall plaster	None detected
4-D	Room Q1022	wall plaster – white skim coat	None detected
4-D	Room Q1022	wall plaster – grey base coat	None detected
5-A	Room Q1012	vinyl sheet flooring	None detected

Sample Nº	Location	Description	Asbestos Content
6-A	Corridor Q1012/ Room Q1021	vinyl transition at door entrance	None detected
7-A	Room Q1005	block mortar	None detected
7-B	Room Q1022	block mortar	None detected
8-A	Room Q1022	mastic on styrofoam	None detected
9-A	Room Q1038	glazing seal on window	None detected
10-A	Mechanical Room Q2001	joint glue on fibreglass insulation	None detected
11-A	Mechanical Room Q2001	canvas/lagging on boiler	None detected
12-A	Room Q2003	fallen asphaltic debris on floor below roof penetration	**2% chrysotile asbestos**
13-A	Electrical Room Q2003	mastic at electrical penetration	None detected
14-A	Mechanical Room Q2003	floor coating	None detected

NOTES:

(1) Asbestos-containing material is defined as material that contains 0.5% or more asbestos by dry weight.

Based on visual observations and results of laboratory analyses of samples collected by ARCADIS, the following asbestos-containing materials were found to be present in Building Q:

- asphaltic material on the floor underneath a roof penetration in Mechanical Room Q2003 (see Photograph Nºs. 7 and 8 in Appendix C);
- cement board on the exterior wall of both sides at entrance Q1030A (see Photograph Nº. 6 in Appendix C);

The cement board was not sampled so as not to cause damage, however, this type of product is visually identifiable as an asbestos-containing material. This cement board was noted to be in good condition at the time of the survey.

Floor plans showing room locations are provided in Appendix A. Photographs are provided in Appendix C.

Fallen asbestos-containing asphaltic material (see Photograph No. 7 in Appendix C), believed to be from the area of the roof penetration above (see Photograph No. 8) was observed on the floor in Electrical Room Q2003. This material may be roofing material which has fallen through the opening in the deck above this location, or it may be mastic from around the penetration.

Glass fibre insulation present on piping systems in Building Q is readily visually distinguishable (typically yellow in colour) from asbestos-containing insulation materials and was, therefore, not tested for asbestos content.

Asphaltic materials and cement board are non-friable materials. Removal of these non-friable asbestos-containing materials can be performed as a moderate risk work activity as specified in B.C. Reg. 296/97 if the work is done only using non-powered, hand-held tools or if the removal work is done using power tools that are attached to dust-collecting devices equipped with HEPA filters. Backing mounting screws out of asbestos cement products and removing the boards intact is also a moderate risk work activity.

Asbestos may also be present in materials which were not sampled during the course of the asbestos survey carried out by ARCADIS, including, but not limited to, roofing materials, vinyl flooring mastics, vinyl baseboard and mastics, 1' x 1' ceiling tiles and glue pucks, window caulking, coating applied to underside of sinks (see Photograph No. 4 in Appendix C), fire stop at penetrations in walls, floors and ceilings (see Photographs Nos. 10 and 11 in Appendix C), duct flex joint, gaskets in piping, insulation in fire doors, components of electrical equipment (e.g. electric wiring insulation, non-metallic sheathed cable, electrical panel partitions, arc chutes, high-grade electrical paper, etc.), etc., and/or in locations that are presently inaccessible (e.g., in pipe chases, behind walls, and above suspended plaster ceilings). Asbestos may also be present in the form of vermiculite insulation in cavities in concrete or cement block walls (used as in-fill insulation). Confirmatory testing of any such materials could be undertaken as the need arises (i.e., at the time of renovations, modifications or demolition) or the materials can be assumed to contain asbestos based on findings in adjacent areas.

Additional sampling and analysis of bulk samples for asbestos may be warranted once the construction plans for the "*Fire Alarm System Computer Replacement*" project are developed so that the WorkSafe BC bulk sampling requirements outlined in the publication "Safe Work Practices for Handling Asbestos" can be complied with.

If any materials which may contain asbestos and which were not tested during the course of the designated substances survey are discovered during any construction/renovation activities, the work shall not proceed until such time as the

required notifications have been made and an appropriate course of action is determined.

4.2 Lead

Four samples of the predominant paints were collected by ARCADIS during the course of the survey. The samples were submitted to Maxxam Analytics for analysis of lead content. The results of the analyses are presented in Table 4.2, and the laboratory report is provided in Appendix B.

Lead was detected at a level above the WorkSafe BC guideline value of 600 mg/kg in one of the four samples.

All paint applications were noted to be generally in good condition at the time of the survey by ARCADIS. If paint will be disturbed during the course of construction/renovation work, the measures and procedures outlined in the WorkSafe BC publication *Lead-Containing Paints and Coatings, Preventing Exposure in the Construction Industry*, should be followed.

Lead may also be present in lead pipe, mortar, in the solder on the seals of bell joints of any cast iron drainpipe and in the solder on the sweated on joints between copper pipe and fittings.

Table 4.2
Summary of Results of Analyses of Paint Samples for Lead Content
Building Q, Pacific Institution

SAMPLE Nº	LOCATION	DESCRIPTION	CONDITION	LEAD CONTENT (mg/kg)
P-1	Room Q1005	off white-coloured paint on plaster wall	Good	33
P-3	Corridor Q1012	peach-coloured paint on block wall	Good	<2.5
P-4	Exterior at Room Q1023	peach-coloured paint on window sill	Good	120
P-5	Electrical Room Q2003	yellow-coloured coating on floor	Good	**49,000**

NOTES:

Results shown in bold type exceed the criterion level of 600 mg/kg for classification of lead paint (where high risk individuals, such as pregnant women and children, are not present).
< = less than.
mg/kg - milligrams lead per kilogram paint.
1 mg/kg - 1 part per million (ppm).

4.3 Mercury

During the course of our site inspections, fluorescent lights were observed throughout Building Q. Mercury should be assumed to be present as a gas in all fluorescent light tubes. If any fluorescent light tubes are removed, the light tubes should be recycled for mercury.

Proper procedures for removing and handling mercury-containing fluorescent light tubes typically involve:

- ensuring that electrical power to light fixtures has been disconnected and locked out;
- taking all necessary precautions to ensure that fluorescent lamp tubes are removed in a manner that prevents breakage; and
- transporting fluorescent lamp tubes to a licensed processing location for separation and recovery of mercury.

4.4 Silica

Materials observed in Building Q which should be considered to contain silica included drywall, drywall joint compound, plaster, concrete, cement block walls, brick and mortar.

The WorkSafe BC guidance document *Developing a Silica Exposure Control Plan*, provides guidance in controlling exposure to silica dust during construction/renovation activities.

4.5 PCBs

Fluorescent lights were observed throughout Building Q during the course of our site inspection. Light ballasts, such as those associated with the type of fluorescent lights (T8s) observed in the study area, are usually an electronic-type which do not contain PCBs, however, this should be confirmed by an electrician at the time of dismantling of the lights.

Two dry-type Siemens transformers located in Electrical Room Q2002 are air-cooled and will therefore not contain PCB dielectric fluids.

4.6 Ozone-depleting Substances and Halocarbons

Suspect ODS- or halocarbon-containing equipment observed during the course of the investigation was limited to refrigerators located in Room Q1002 and Q1039.

The type of coolant present in the building air conditioning system is not known but should be assumed to be an ODS.

If any ODS-containing equipment is to be removed then they must be handled in the following manner:

- any equipment designated for disposal as scrap must be drained of its contents by a licensed technician and equipped with a label indicating that the equipment no longer contains any refrigerant. The specific requirements for information on the label, as specified in the regulation, must be adhered to; and
- all refrigerants must be stored in approved containers that are designed and manufactured for the specific refrigerant.

4.7 Mould

No suspect mould was observed during the course of our site inspection.

The inspection of mould was limited to visual observations of readily-accessible surfaces and did not include intrusive inspections of wall cavities. During renovations or interior demolition work, any mould-impacted materials uncovered/discovered should be remediated following the measures and procedures outlined in the Canadian Construction Association Standard Construction Document CCA-82 2004 - Mould guidelines for the Canadian Construction Industry.

4.8 Urea Formaldehyde Foam Insulation (UFFI)

UFFI was not observed during the course of the investigation.

5. Recommendations

We recommend the following are the basis of the findings of the non-destructive hazardous material assessment outlined in this report:

1. Cleanup fallen asbestos-containing mastic debris present on the floor in Electrical Room Q2003. This cleanup work would be classified as "moderate risk" work and should be performed by a qualified abatement contractor.

2. Ensure that "asbestos management" for the identified asbestos-containing materials in Building Q (asphaltic material in Electrical Room Q2003 and cement board at entrance to Q1030A) includes for:
   - advising CSC staff and any contractors, etc. who could disturb the material during the course of their work of its presence;
   - conducting periodic reassessment of the condition of material;
   - performing any work affecting these materials in accordance with work practices and procedures specified in B.C. Reg. 296/97 and outlined in the WorkSafe BC publication "Safe Work Practices for Handling Asbestos".

3. Conduct a "destructive" hazardous materials survey prior to undertaking any construction work in Building Q to supplement the findings of this "non-destructive" survey.

4. Ensure that a risk assessment is performed and an exposure control plan for lead is developed prior to disturbance or work affecting the lead-containing floor coating in the Penthouse Mechanical Room.

5. Prior to undertaking renovations or construction activities:
   - develop a silica exposure control plan;
   - if fluorescent lights will be removed ensure that a licensed electrician inspects ballasts to determine whether or not any may contain PCBs. Guidance in identification of PCB ballasts is provided in the Environment Canada publication titled "Identification of Lamp Ballasts Containing PCBs. Report EPS 2/CC/2 (revised)", August 1991;

- if any ODS equipment is to be removed then they must be handled in accordance with the requirements of the Federal Halocarbon Regulations.

6. Use and Limitations of Hazardous Materials Survey Report

This report, prepared for Public Works and Government Services Canada, on behalf of Correctional Service Canada, does not provide certification or warranty, expressed or implied, that the investigation conducted by ARCADIS identified all hazardous materials in the subject facility. The work undertaken by ARCADIS was directed to provide information on the presence of hazardous materials in building construction materials based on visual inspection of readily accessible areas in the subject building and on the results of laboratory analysis of a limited number of bulk samples of material for asbestos content and laboratory analysis of a limited number of paint samples for lead content. The survey did not include for identification of asbestos in equipment (including electrical equipment and wiring), nor material outside of the building (e.g. asphaltic pavement).

The material in this report reflects ARCADIS' best judgment in light of the information available at the time of the investigation, which was performed on July 29, 2015.

This report is not intended to be used as a scope of work or technical specification for remediation of designated substances or hazardous materials.

This report was prepared by ARCADIS for Public Works and Government Services Canada, on behalf of Correctional Service Canada. Any use which any other party makes of the report, or reliance on, or decisions to be based on it, is the responsibility of such parties.

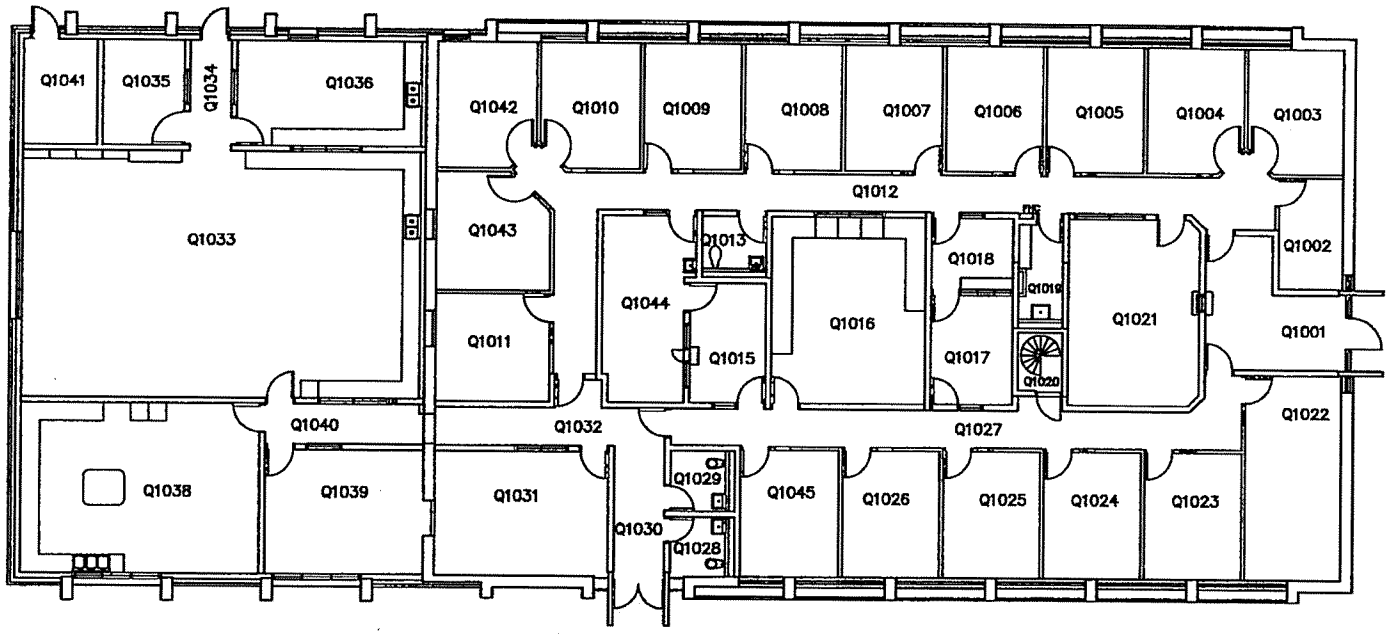
Appendix A

Floor Plans

NORTH

building Q
ADJUNCTIVE THERAPY
main floor

Q1001	STAFF & VISITOR ENTRY
Q1002	PHOTOCOPY ROOM
Q1003	OFFICE
Q1004	OFFICE
Q1005	OFFICE
Q1006	OFFICE
Q1007	OFFICE
Q1008	OFFICE
Q1009	OFFICE
Q1010	OFFICE
Q1011	OFFICE
Q1012	CORRIDOR
Q1013	STAFF WASHROOM
Q1015	LAB
Q1016	ASSESSMENT CENTRE
Q1017	TESTING LAB
Q1018	STAFF
Q1019	JANITOR
Q1020	STAIRS
Q1021	INMATE PAY CLERKS
Q1022	OFFICE
Q1023	OFFICE
Q1024	OFFICE
Q1025	OFFICE
Q1026	OFFICE
Q1027	CORRIDOR
Q1028	FEMALE VISITOR WASHROOM
Q1029	MALE VISITOR WASHROOM
Q1030	INMATE ENTRY
Q1031	GROUP ROOM
Q1032	CORRIDOR
Q1033	LIVING/ TASK ROOM
Q1034	CORRIDOR
Q1035	KILN ROOM
Q1036	POTTERY ROOM
Q1038	KITCHEN
Q1039	CLASSROOM
Q1040	CORRIDOR
Q1041	WATER
Q1042	OFFICE
Q1043	OFFICE
Q1044	OFFICE



MAIN FLOOR PLAN
SCALE 1:250

0 5 10 15

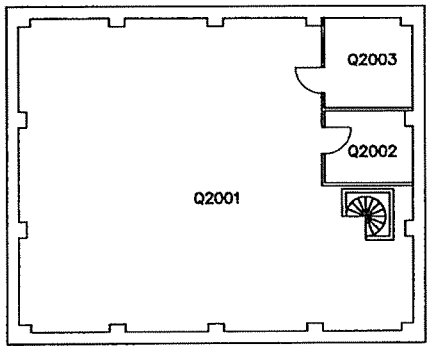
Scale 1 = 1.0m

unit Q

ADJUNCTIVE THERAPY

PAGE No.25
TAG No. 832-10
PLOTTED OCTOBER 28, 2011
ACAD FILE PI-RTC-25.DWG
DRAWN @ 1:1, PLOT @ 1:250

NORTH



PENTHOUSE FLOOR PLAN
SCALE 1:250

building Q
ADJUNCTIVE THERAPY
penthouse

Q2001 MECHANICAL ROOM
Q2002 ELECTRICAL ROOM
Q2003 T & E ROOM

0 5 10 15

Scale 1 = 1.0m

unit Q

ADJUNCTIVE THERAPY

PAGE No.26
TAG No. 832-10
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ACAD FILE PI-RTC-26.DWG
DRAWN @ 1:1, PLOT @ 1:250

ARCADIS

Hazardous Materials Survey
33344 King Road
Abbotsford, British Columbia

Appendix B

Laboratory Reports

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: 289-997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 551508424
Customer ID: 55DCSL97
Customer PO: 702358-001
Project ID:

Attn: Wayne Cormack
ARCADIS Canada Inc.
121 Granton Drive
Unit 12
Richmond Hill, ON L4B 3N4

Proj: 702358-001

Phone: (905) 882-5984
Fax: (905) 882-8962
Collected:
Received: 8/04/2015
Analyzed: 8/11/2015

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: 1-A **Lab Sample ID:** 551508424-0001
Sample Description: DRYWALL JOINT COMPOUND, ROOM Q1001

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	White	0%	100%	None Detected	

Client Sample ID: 1-B **Lab Sample ID:** 551508424-0002
Sample Description: DRYWALL JOINT COMPOUND, ROOM Q1002

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	White	0%	100%	None Detected	

Client Sample ID: 1-C **Lab Sample ID:** 551508424-0003
Sample Description: DRYWALL JOINT COMPOUND, ROOM Q1022

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	White	0%	100%	None Detected	

Client Sample ID: 1-D **Lab Sample ID:** 551508424-0004
Sample Description: DRYWALL JOINT COMPOUND, ROOM Q1031

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	White	0%	100%	None Detected	

Client Sample ID: 1-E **Lab Sample ID:** 551508424-0005
Sample Description: DRYWALL JOINT COMPOUND, ROOM Q1038

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	White	0%	100%	None Detected	

Client Sample ID: 2-A **Lab Sample ID:** 551508424-0006
Sample Description: 2X4' CEILING TILE, ROOM Q1002

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray/White	80%	20%	None Detected	

Client Sample ID: 2-B **Lab Sample ID:** 551508424-0007
Sample Description: 2X4' CEILING TILE, ROOM Q1022

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray/White	80%	20%	None Detected	

EMSL Canada Inc.
2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: 289-997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 551508424
Customer ID: 55DCSL97
Customer PO: 702358-001
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: 3-A **Lab Sample ID:** 551508424-0008
Sample Description: DUCT MASTIC, ROOM Q1002

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	0%	100%	None Detected	

Client Sample ID: 3-B **Lab Sample ID:** 551508424-0009
Sample Description: DUCT MASTIC, CORRIDOR Q1012

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	0%	100%	None Detected	

Client Sample ID: 3-C **Lab Sample ID:** 551508424-0010
Sample Description: DUCT MASTIC, ROOM Q1022

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	0%	100%	None Detected	

Client Sample ID: 4-A **Lab Sample ID:** 551508424-0011
Sample Description: PLASTER, ROOM Q1003

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	0%	100%	None Detected	

Client Sample ID: 4-B **Lab Sample ID:** 551508424-0012
Sample Description: PLASTER WALL, ROOM Q1005

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	0%	100%	None Detected	

Client Sample ID: 4-C **Lab Sample ID:** 551508424-0013
Sample Description: PLASTER WALL, ROOM Q1005

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	0%	100%	None Detected	

Client Sample ID: 4-D-Rough Coat **Lab Sample ID:** 551508424-0014
Sample Description: PLASTER WALL (W/ LAYERS), ROOM Q1022

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	0%	100%	None Detected	

Client Sample ID: 4-D-Skim Coat **Lab Sample ID:** 551508424-0014A
Sample Description: PLASTER WALL (W/ LAYERS), ROOM Q1022

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/11/2015	White	0%	100%	None Detected	

EMSL Canada Inc.
2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: 289-997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 551508424
Customer ID: 55DCSL97
Customer PO: 702358-001
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: 5-A **Lab Sample ID:** 551508424-0015
Sample Description: VINYL SHEET FLOORING, ROOM Q1012

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Beige	0%	100%	None Detected	

Client Sample ID: 7-A **Lab Sample ID:** 551508424-0016
Sample Description: BLOCK MORTAR, ROOM Q1005

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	0%	100%	None Detected	

Client Sample ID: 7-B **Lab Sample ID:** 551508424-0017
Sample Description: BLOCK MORTAR, ROOM Q1022

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	0%	100%	None Detected	

Client Sample ID: 6-A **Lab Sample ID:** 551508424-0018
Sample Description: VINYL TRANSITION AT DOOR ENTRANCE, Q1012/1021

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Beige	0%	100%	None Detected	

Client Sample ID: 8-A **Lab Sample ID:** 551508424-0019
Sample Description: MASTIC ON STYROFOAM

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Black	0%	100%	None Detected	

Client Sample ID: 9-A **Lab Sample ID:** 551508424-0020
Sample Description: GLAZING SEAL ON WINDOW, ROOM Q1038

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Black	0%	100%	None Detected	

Client Sample ID: 10-A **Lab Sample ID:** 551508424-0021
Sample Description: JOINT GLUE ON FIBREGLASS INSULATION, MECH RM. 2001

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	White	0%	100%	None Detected	

Client Sample ID: 11-A **Lab Sample ID:** 551508424-0022
Sample Description: CANVAS/LAGGING ON BOILER, MECH. RM.2001

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	80%	20%	None Detected	

EMSL Canada Inc.

2756 Slough Street Mississauga, ON L4T 1G3
Phone/Fax: 289-997-4602 / (289) 997-4607
http://www.EMSL.com / torontolab@emsl.com

EMSL Canada Order 551508424
Customer ID: 55DCSL97
Customer PO: 702358-001
Project ID:

Test Report: Asbestos Analysis in Bulk Material for Occupational Health and Safety British Columbia Regulation 188/2011 via EPA 600/R-93/116 Method

Client Sample ID: 12-A ***Lab Sample ID:*** 551508424-0023

Sample Description: MASTIC AT ROOF PENETRATION, RM.2003

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Black	0%	98%	2% Chrysotile	

Client Sample ID: 13-A ***Lab Sample ID:*** 551508424-0024

Sample Description: MASTIC AT ELECTRICAL PENETRATION, RM. 2003

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Gray	0%	100%	None Detected	

Client Sample ID: 14-A ***Lab Sample ID:*** 551508424-0025

Sample Description: FLOOR COATING MECH. RM. 2001

TEST	Analyzed Date	Color	Non-Asbestos Fibrous	Non-Asbestos Non-Fibrous	Asbestos	Comment
PLM	8/10/2015	Brown/Gray/Black	0%	100%	None Detected	

Analyst(s):

Jon Delos Santos PLM (22)
Natalie D'Amico PLM (1)
Romeo Samson PLM (3)

Reviewed and approved by:

Matthew Davis
or Other Approved Signatory

None Detected = <0.5%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Mississauga, ON NVLAP Lab Code 200877-0

Initial report from: 08/10/201522:16:38

Maxxam
A Bureau Veritas Group Company

Success Through Science®

Your Project #: 702358-001
Site Location: PACIFIC INSTITUTION, ABBOTSFORD, BC
Your C.O.C. #: na

Attention:Wayne Cormack

ARCADIS Canada Inc
121 Granton Dr
Unit 11
Richmond Hill, ON
L4B 3N4

Report Date: 2015/08/12
Report #: R3625352
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B5F3668
Received: 2015/08/04, 18:30

Sample Matrix: Soil
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Reference
Metals in Paint	4	2015/08/10	2015/08/11	CAM SOP-00408	EPA 6010C m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Keshani Vijh
12 Aug 2015 16:54:39 -04:00

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Keshani Vijh, Project Manager
Email: KVijh@maxxam.ca
Phone# (905) 817-5700

==========

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.maxxam.ca

Maxxam Job #: B5F3668
Report Date: 2015/08/12

ARCADIS Canada Inc
Client Project #: 702358-001
Site Location: PACIFIC INSTITUTION, ABBOTSFORD, BC

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Maxxam ID		ASY567		ASY568		ASY569		ASY570		
Sampling Date										
COC Number		na		na		na		na		
	Units	P-1 PAINT ON WALL, Q1005, OFF-WHITE	RDL	P-3, PEACH PAINT ON BLOCK WALL, Q1012	RDL	P-4, PAINT ON EXTERIOR WINDOW SILL, Q1023	RDL	P-5, FLOOR COATING, Q2001	RDL	QC Batch
Metals										
Lead (Pb)	mg/kg	33	1.3	<2.5	2.5	120	2.0	49000	100	4141071

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch

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Maxxam Job #: B5F3668
Report Date: 2015/08/12

ARCADIS Canada Inc
Client Project #: 702358-001
Site Location: PACIFIC INSTITUTION, ABBOTSFORD, BC

GENERAL COMMENTS

Metals: Due to limited amount of sample available for analysis, a smaller than usual portion of the sample was used. Detection limits were adjusted accordingly.

Sample ASY570-01 : Metals Analysis: Due to the sample matrix, sample required dilution. Detection limit was adjusted accordingly.

Results relate only to the items tested.

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Maxxam Job #: B5F3668
Report Date: 2015/08/12

QUALITY ASSURANCE REPORT

ARCADIS Canada Inc
Client Project #: 702358-001
Site Location: PACIFIC INSTITUTION, ABBOTSFORD, BC

			Matrix Spike		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
4141071	Lead (Pb)	2015/08/11	NC	75 - 125	<1.0	mg/kg	8.1	35	107	75 - 125

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

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Maxxam Job #: B5F3668
Report Date: 2015/08/12

ARCADIS Canada Inc
Client Project #: 702358-001
Site Location: PACIFIC INSTITUTION, ABBOTSFORD, BC

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Cristina Carriere

Cristina Carriere, Scientific Services

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Maxxam

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone 905 817 5700 Fax 905 817 5779 Toll free 800 563 6266
CAM FCD-01191/

CHAIN OF CUSTODY RECORD

Page of

Invoice Information
Company Name: ARCADIS CANADA
Contact Name: WAYNE CORMACK
Address: 121 GRANTON DRIVE, #12 RICHMOND HILL, ONTARIO
Phone: 905-882-5984 Fax:
Email: Wayne.Cormack@arcadis.com

Report Information (if differs from invoice)
Company Name:
Contact Name:
Address:
Phone: Fax:
Email:

Project Information (where applicable)
Quotation #:
P.O. #/ AFE#:
Project #: 702358-001
Site Location: PACIFIC INSTITUTION
Site #: ABBOTSFORD, BC
Sampled By:

Turnaround Time (TAT) Required
☑ Regular TAT (5-7 days) Most analyses
PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS
Rush TAT (Surcharges will be applied)
☐ 1 Day ☐ 2 Days ☐ 3-4 Days
Date Required:
Rush Confirmation #:

MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE MAXXAM DRINKING WATER CHAIN OF CUSTODY

Regulation 153
☐ Table 1 ☐ Res/Park ☐ Med/ Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/ Other
☐ Table ____
FOR RSC (PLEASE CIRCLE) Y / N

Other Regulations
☐ CCME ☐ Sanitary Sewer Bylaw
☐ MISA ☐ Storm Sewer Bylaw
☐ PWQO Region
☐ Other (Specify)
☐ REG 558 (MIN. 3 DAY TAT REQUIRED)

Include Criteria on Certificate of Analysis: Y / N

SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Analysis Requested: # OF CONTAINERS SUBMITTED; FIELD FILTERED (CIRCLE) Metals / Hg / Cr VI; BTEX/ PHC F1; PHCs F2 - F4; VOCs; REFER TO BACK OF COC: REG 153 METALS & INORGANICS; REG 153 ICPMS METALS; REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B); LEAD IN PAINT; HOLD - DO NOT ANALYZE

	SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX
1	P-1, Paint on wall, Q1005, Off white			
2	~~P-2~~			
3	P-3, Peach paint on block wall, Q1012			
4	P-4, Paint on exterior window sill, Q1023			
5	P-5, Floor coating, Q2001			
6				
7				
8				
9				
10				

LABORATORY USE ONLY

CUSTODY SEAL Y / N Present	Intact	COOLER TEMPERATURES
✓	✓	23/22/22

COOLING MEDIA PRESENT: Y / (N)

COMMENTS

RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)
[signature]	2015/08/04	3:20pm	[signature] Harjit Gill	2015/08/04	18 30

4-Aug-15 18:30
Keshani Vijh
B5F3668
FW ENV-938

Appendix C

Photographs

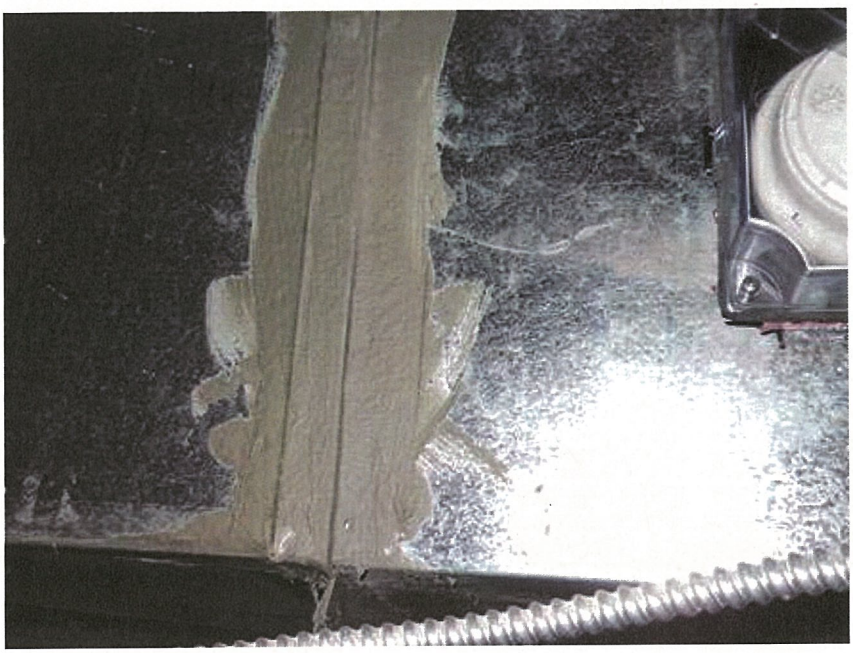
ARCADIS

Appendix C

Hazardous Materials Survey
33344 King Road
Abbotsford, British Columbia

Photograph 1:
Building Q entrance.

Photograph 2:
Building Q exterior.



Photograph 3:
Non-asbestos mastic on ventilation system duct joint.

Photograph 4:
Coating on underside of sink.
Room Q1038 (kitchen).

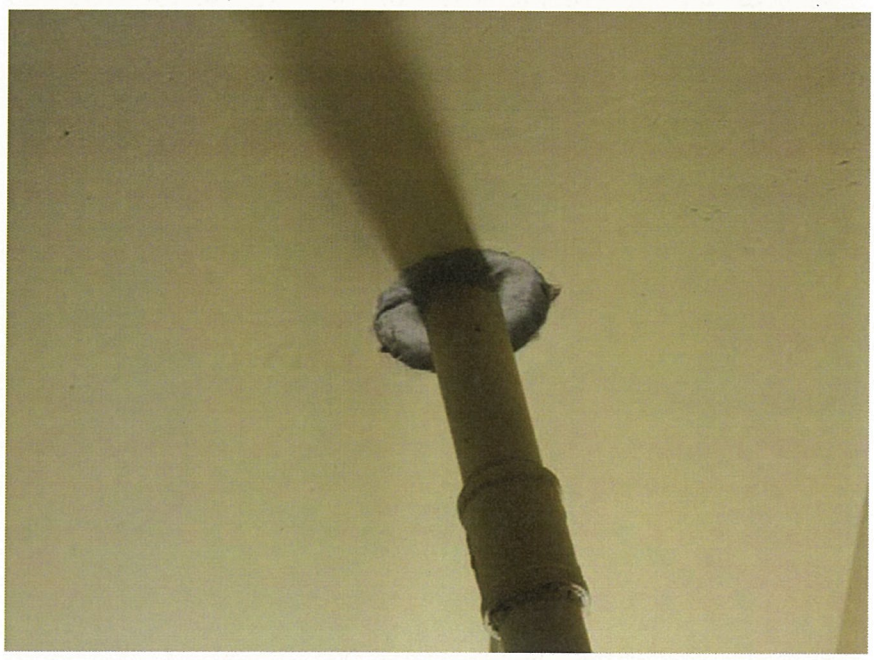
Photograph 5:
Non-asbestos glazing seal on window. Room Q1038 (kitchen).

Photograph 6:
Exterior asbestos cement board at entrance Q1030A.

Photograph 7:
Asbestos-containing asphaltic debris on floor in Electrical Room Q2003.

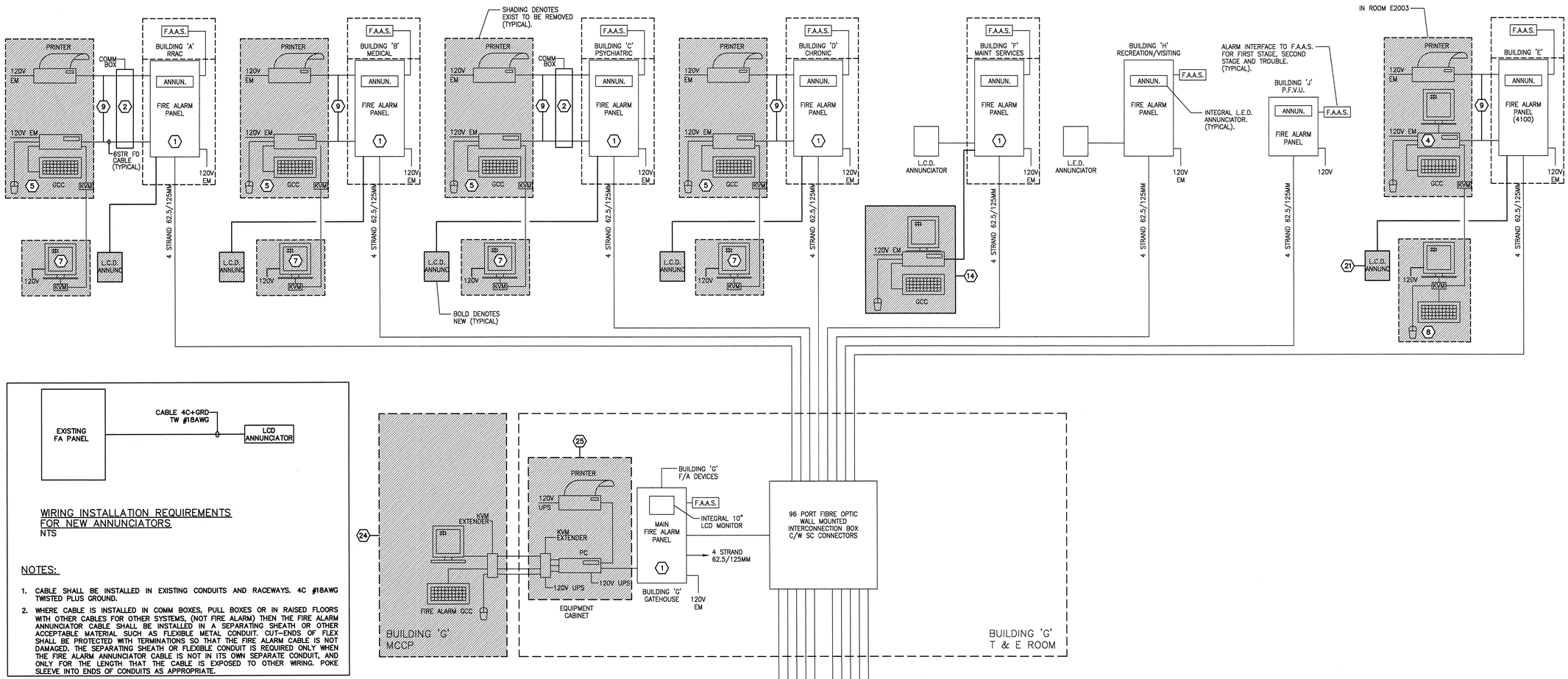
Photograph 8:
Roof penetration in Electrical Room Q2003.

Photograph 9:
Dry-type transformer in Electrical Room Q2002.



Photograph 10:
Firestop at pipe penetration.

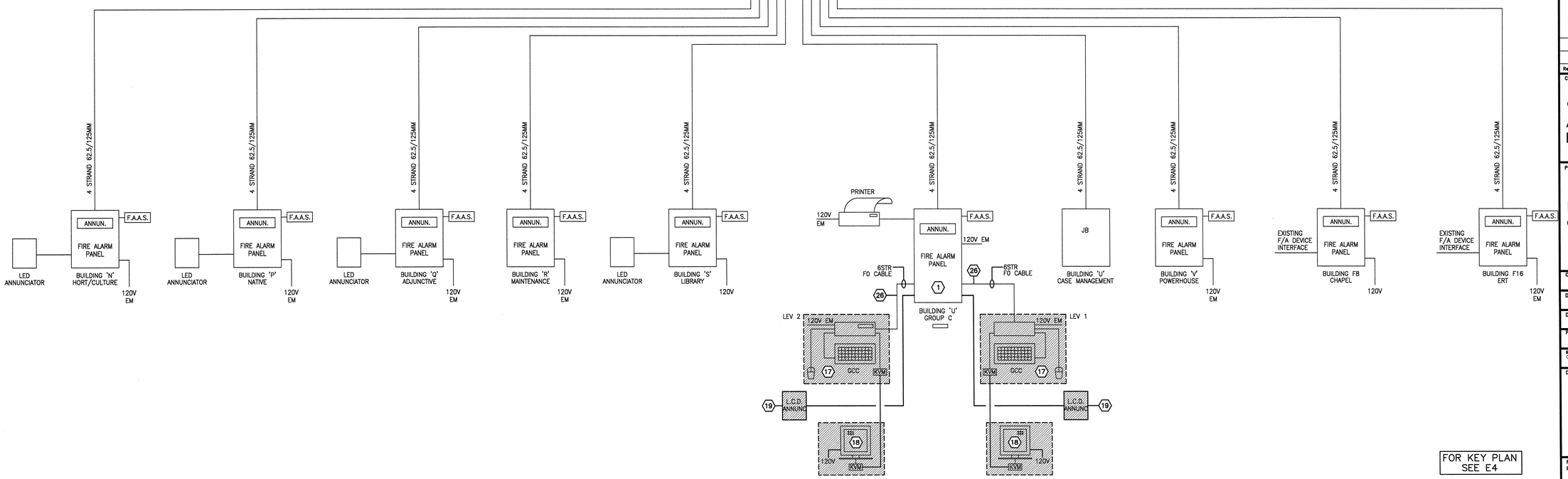
Photograph 11:
Firestop at penetration.



WIRING INSTALLATION REQUIREMENTS FOR NEW ANNUNCIATORS
NTS

NOTES:

1. CABLE SHALL BE INSTALLED IN EXISTING CONDUITS AND RACEWAYS. 4C #18AWG TWISTED PLUS GROUND.
2. WHERE CABLE IS INSTALLED IN COMM BOXES, PULL BOXES OR IN RAISED FLOORS WITH OTHER CABLES FOR OTHER SYSTEMS, (NOT FIRE ALARM) THEN THE FIRE ALARM ANNUNCIATOR CABLE SHALL BE INSTALLED IN A SEPARATING SHEATH OR OTHER ACCEPTABLE MATERIAL SUCH AS FLEXIBLE METAL CONDUIT. CUT-ENDS OF FLEX SHALL BE PROTECTED WITH TERMINATIONS SO THAT THE FIRE ALARM CABLE IS NOT DAMAGED. THE SEPARATING SHEATH OR FLEXIBLE CONDUIT IS REQUIRED ONLY WHEN THE FIRE ALARM ANNUNCIATOR CABLE IS NOT IN ITS OWN SEPARATE CONDUIT, AND ONLY FOR THE LENGTH THAT THE CABLE IS EXPOSED TO OTHER WIRING. POKE SLEEVE INTO ENDS OF CONDUITS AS APPROPRIATE.



FOR KEY PLAN SEE E4

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

REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER PROVINCE OF BRITISH COLUMBIA M. DEZFOOLI # 31916
Sept 14/2015

Revision	Description	Date
2	Re-Issued For Tender	09/03/15
1	Issued For Tender	02/23/15

Client

Correctional Service Canada
Abbotsford BC
Pacific Institution

Project title/Titre du projet

Fire Alarm System Computer Replacement

Consultant Signature Only

Designed by/Concept par
T. JERED

Drawn by/Dessins par
LVM/TJ

Sept. 2015

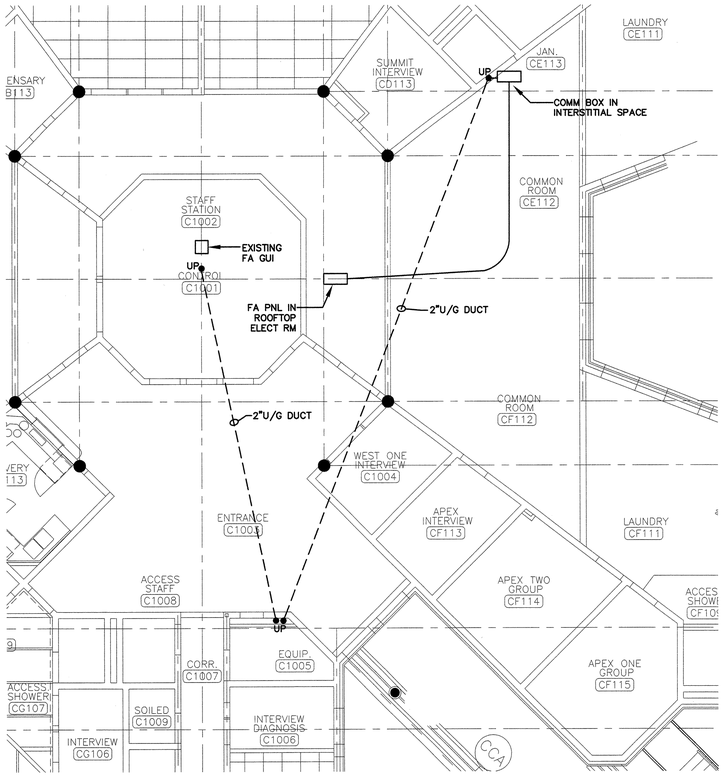
PWGSC Project Manager/Administrateur de Projets TPSGC
Tony Tang

Regional Manager, Architectural and Engineering Services / Gestionnaire régionale, Services d'architectural et de génie, TPSGC
P. Paul

Drawing title/Titre du dessin

Fire Alarm Riser

Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.072304.001	E1	R2



PART PLAN LEVEL 1 – BUILDING C
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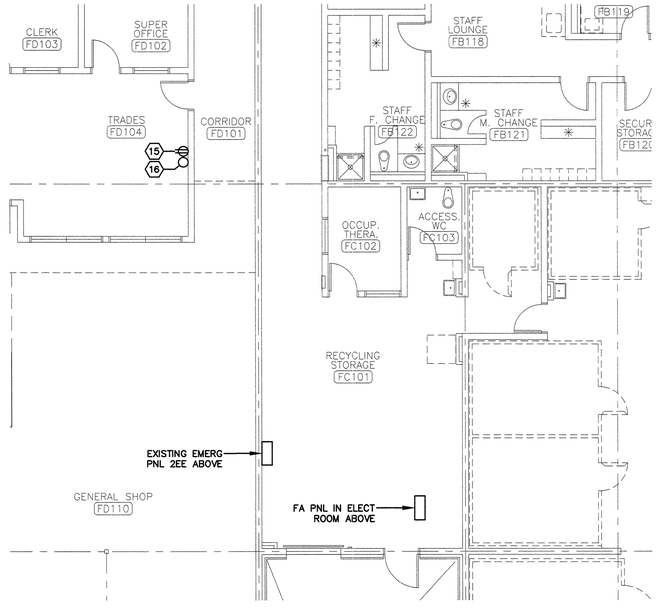

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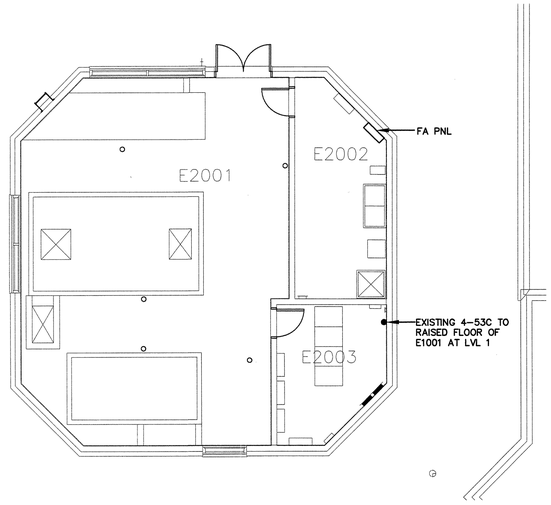

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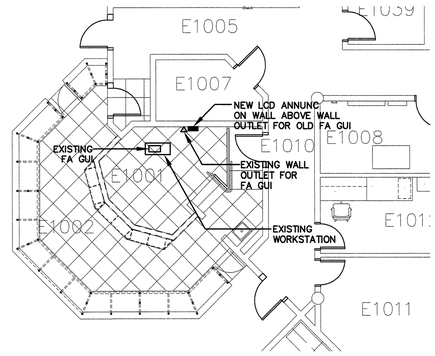

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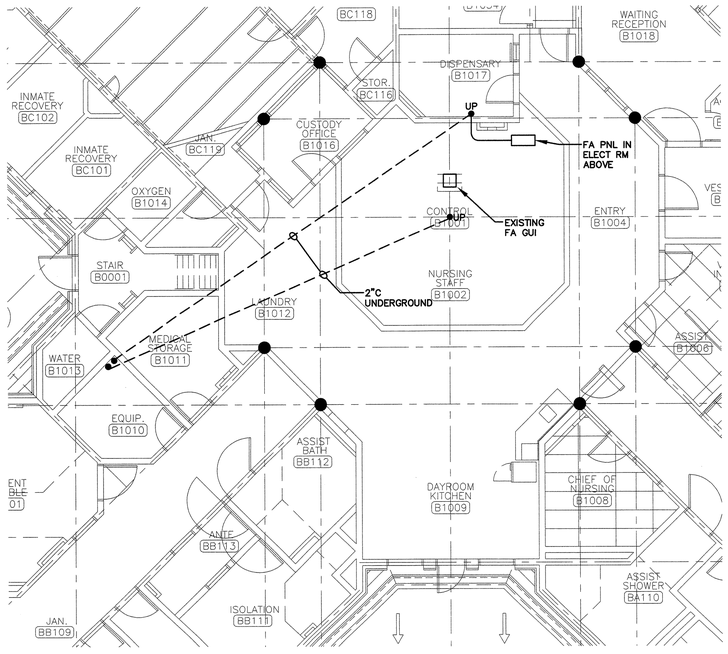

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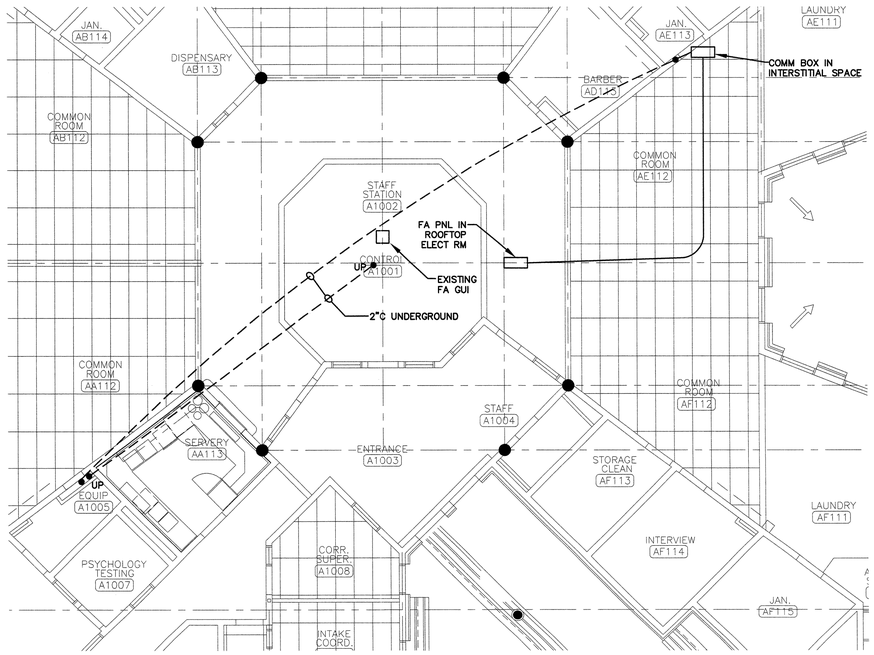

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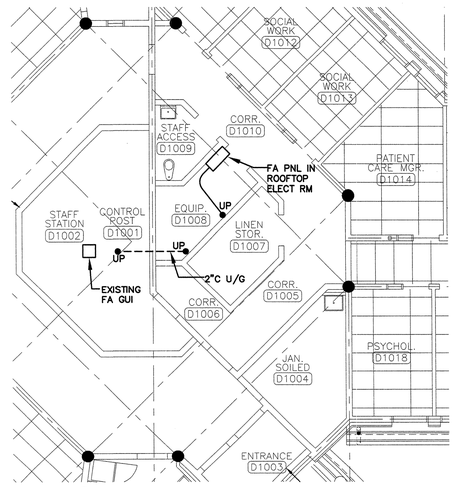

PART PLAN LEVEL 1 – BUILDING D
SCALE: 1:100

Public Works and Government Services Canada
Travaux publics et Services gouvernementaux Canada
REAL PROPERTY SERVICES
Pacific Region
SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER
PROVINCE OF B.C.
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31916
SEPT. 14/2015

Revision	Description	Date
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Client

Correctional Service Canada
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Pacific Institution

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Fire Alarm System
Computer Replacement

Consultant Signature Only

Designed by/Concept par
T. JEREB

Drawn by/Dessiné par
LVG/TJ
Sept. 2015

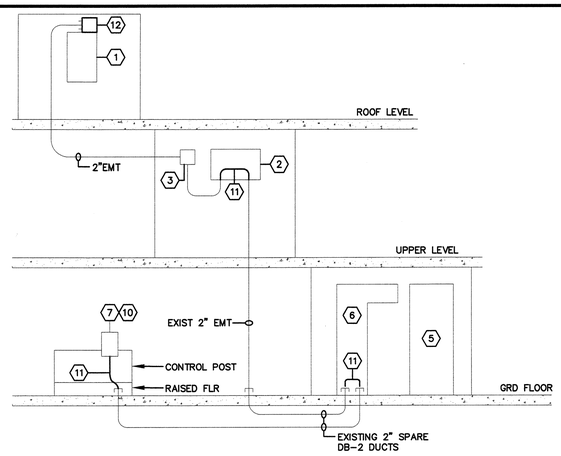
PWGSC Project Manager/Administrateur de Projets TPSGC
Tony Tang

Regional Manager, Architectural and Engineering Services
Gestionnaire régionale, Services d'architectural et de génie, TPSGC
P. Paul

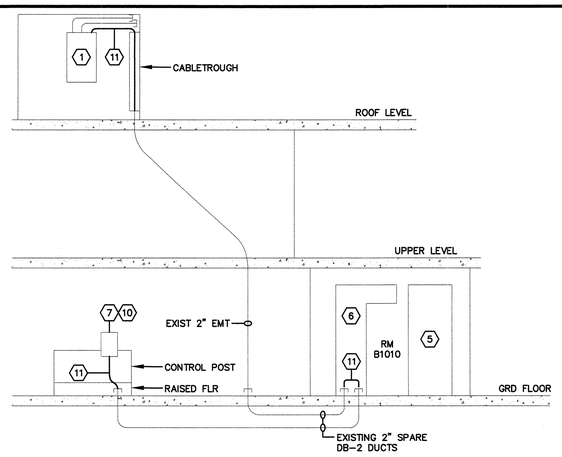
Drawing title/Titre du dessin

Part Floor Plans

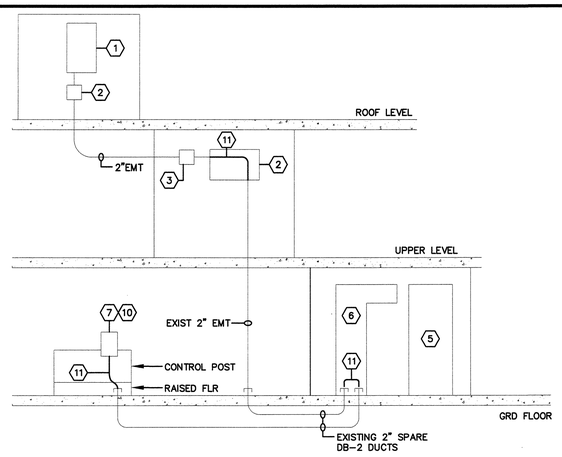
Project No./No. du projet	Sheet/Feuille	Revision no./ La Révision no.
R.072304.001	E2	R2



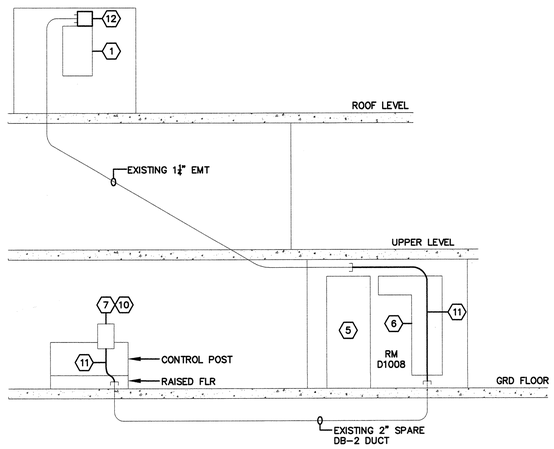
DETAIL 'X' – BUILDING A
NTS



DETAIL 'X' – BUILDING B
NTS



DETAIL 'X' – BUILDING C
NTS



DETAIL 'X' – BUILDING D
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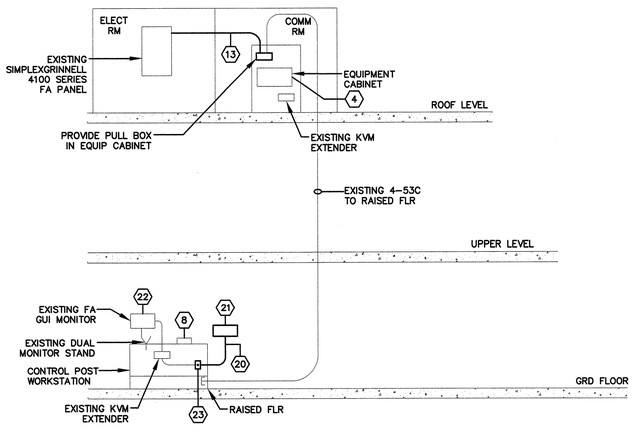

DETAIL 'X' – BUILDING E
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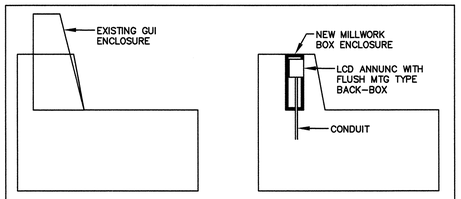

DETAIL Y – CONTROL POST ANNUNCIATOR BLDGS A,B,C,D
NTS

NOTES:

a. REMOVE EXISTING GUI AND SHEETMETAL ENCLOSURE.
b. RETAIN AND PAY FOR A MILLWORK CONTRACTOR TO FILL AND PATCH THE MOUNTING AND WIRING HOLES LEFT IN THE EXISTING WORKSTATION COUNTERTOP BY THE REMOVAL OF THE OLD GUI ENCLOSURE. (ELECTRICIANS SHALL NOT TRY TO PATCH THE HOLES).
c. RETAIN AND PAY FOR A MILLWORK COMPANY TO MANUFACTURE AN INFIL BOX IN BLACK ARBORITE FINISH TO FIT FULL WIDTH AND FULL HEIGHT OF THE SPACE WHERE THE OLD ENCLOSURE WAS REMOVED. THE DEPTH SHALL ACCOMMODATE THE ANNUNCIATOR WHICH IS APPROX 3" DEEP. THE BOX SHALL BE SET AT THE BACK OF THE OPENING IN THE WORKSTATION. (A WELDED BLACK-FINISHED CUSTOM SIZED ELECTRICAL BOX THE SAME SIZE AS THE MILLWORK BOX WILL ALSO BE ACCEPTABLE. BOX SHALL BE FACTORY MANUFACTURED AND HAVE GLOSSY FINISH).
d. CAULK WITH BLACK COLOURED CAULKING.
e. THE WHOLE INSTALLATION AT THE EXISTING CONTROL POST MILLWORK SHALL BE PROFESSIONALLY DONE TO THE SATISFACTION OF THE DEPARTMENTAL REPRESENTATIVE.

NOTES:

1. OLD GUI COMPUTER EQUIPMENT REMOVED SHALL BE RECYCLED OR DISPOSED OF IN AN ENVIRONMENTALLY ACCEPTABLE MANNER.
2. PERFORM ALL ROUGH-INS AHEAD OF TIME SO THAT THE TIME FOR THE VARIOUS FACILITIES TO BE WITHOUT LOCAL FIRE ALARM ANNUNCIATION IS MINIMIZED. ON THE DAYS WHEN ANNUNCIATORS WILL BE INACTIVE IN THE CONTROL POSTS THE CONTRACTOR SHALL PROVIDE AN ADDITIONAL ELECTRICIAN WHOSE FUNCTION ON THAT DAY WILL BE TO WATCH THE FIRE ALARM PANEL FOR ALARMS AND IN TURN RELATE ZONE INFORMATION TO THE CONTROL POST.
3. IN BUILDINGS A, B, C, D IN THE EQUIPMENT ROOMS AT THE GROUND FLOOR LEVEL REMOVE THE METAL CABINETS. THE CABINETS WERE USED TO HOUSE EQUIPMENT TO SUPPORT THE FIRE ALARM GUI'S AND FOR DOOR CONTROL. THE DOOR CONTROL EQUIPMENT HAS BEEN RELOCATED BUT THE RACKS MAY BE USED TO SPLICE SOME DOOR CONTROL WIRING. CONTRACTOR IS TO INVESTIGATE RACKS AND REMOVE ANY DOOR CONTROL WIRING OUT OF RACKS. ANY DOOR WIRING SPLICING SHALL BE RELOCATED TO OUTSIDE THE CABINET AND BE DONE INSIDE A MINIMUM 12" X 12" BOX ON RAIL MOUNTED TERMINAL STRIPS. ASSUME FOR THE PURPOSES OF BIDDING AND TO ENABLE REMOVAL OF EACH CABINET THAT 40 SPLICES NEED TO BE MADE OUTSIDE EACH CABINET. REMOVE THE CABINETS FROM PACIFIC INSTITUTION AND TRANSPORT THEM TO AND STORE THEM IN THE EXISTING SHIPPING CONTAINERS ON THE MATSQUI INSTITUTION SITE. (CABINETS REMAIN THE PROPERTY OF THE INSTITUTION).
4. OBTAIN FROM THE DEPARTMENTAL REPRESENTATIVE THE SHEETMETAL TRIM PIECE FOR THE CONTROL CABINET IN MCCP. INSTALL TRIM AT FLUSH MOUNTED FIRE ALARM GUI.

ITEM	DESCRIPTION	COMMENTS
1	EXISTING SIMPLEX 4020 FA PANEL	REMAIN
2	EXISTING COMM PULL BOX	REMAIN
3	EXISTING JUNCTION/PULL BOX	REMAIN
4	EXISTING FA COMPUTER. BUILDING E	TO BE RELOCATED FROM BLDG E TO BUILDING F. REMOVE KEYBOARD, MOUSE, MONITOR AND KVM EXTENDER IN EQUIPMENT RACK AND GIVE TO D.R.
5	EXISTING 90" HIGH EQUIPMENT CABINET IN EQUIPMENT ROOM	CABINET TO BE REMOVED. SEE NOTE 3. REMOVE FA PRINTER, GUI COMPUTER, KEYBOARD, MOUSE AND KVM EXTENDER AND ALL CABLING IN CABINET AND EQUIPMENT ROOM
6	EXISTING CABLE TRAY OR WIREWAY	REMAIN
7	EXISTING GRAPHICAL USER INTERFACE (GUI) FIRE ALARM ANNUNCIATOR AND SHEETMETAL ENCLOSURE	REMOVE GUI MONITOR, SHEET METAL ENCLOSURE AND KVM EXTENDER AND CABLES TO EQUIPMENT ROOM
8	KEYBOARD AND MOUSE	RELOCATED TO BUILDING F. REMOVE KVM EXTENDER AND WIRING BACK TO FA PANEL
9	PRINTER CABLE AND 6-STRAND ORANGE-COLOURED FIBER OPTIC CABLE	REMOVE CABLES BETWEEN CABINET IN EQUIPMENT ROOM AND FIRE ALARM PANEL
10	REPLACE GUI ANNUNCIATOR WITH LCD ANNUNCIATOR	SEE DETAIL Y. PROVIDE FIRE ALARM CABLE BETWEEN ANNUNCIATOR AT CONTROL POST AND FIRE ALARM PANEL
11	PROTECTIVE SLEEVE	PROVIDE FLEXIBLE METAL CONDUIT SLEEVE (OR SEALTITE FLEX) TO PROVIDE SEPARATION BETWEEN CABLES AND NEW FIRE ALARM ANNUNCIATOR CABLE
12	CUSTOM BOX ON END OF CONDUIT TO ALLOW ENTRY TO FA PANEL	PROVIDE PULL BOX AND RACEWAY EXTENSION FOR ENTRY OF NEW FIRE ALARM ANNUNCIATOR CABLE INTO FIRE ALARM PANEL
13	EMT SIZED TO SUIT. (MIN 21mm)	INSTALL FROM FA PANEL TO EQUIP CABINET
14	GUI, COMPUTER, KEYBOARD AND MOUSE	PROVIDE AT WORKSTATION LOCATION IN BUILDING F. COMPONENTS RELOCATED FROM BUILDING E
15	SEPARATE CIRCUIT RED RECEPTACLE IN WIREMOLD BOX WITH BRUSHED STAINLESS STEEL COVERPLATE	PROVIDE SEPARATE CIRCUIT FROM PANEL 2EE ON UPPER LEVEL
16	COMPUTER CABLE OUTLET CONSISTING OF SURFACE MOUNTED WIREMOLD BOX WITH 3" GROMETTED HOLE IN BRUSHED STAINLESS STEEL COVERPLATE	PROVIDE EMT FROM FIRE ALARM PANEL TO OUTLET. PROVIDE IN EMT, CABLE AS INDICATED
17	EXISTING EQUIPMENT CABINET IN CONTROL POST AT EACH LEVEL OF BUILDING	SEE DETAIL X. REMOVE FROM EQUIPMENT CABINET COMPUTER, KEYBOARD, MOUSE AND KVM EXTENDERS FOR GUI. REMOVE ALL WIRING BETWEEN FA PANEL AND EQUIPMENT CABINET, EQUIPMENT CABINET AND EXISTING GUI. RETAIN CABINET FOR DOOR ALARM
18	EXISTING FIRE ALARM GRAPHICAL USER INTERFACE (GUI) (MONITOR)	REMOVE MONITOR AND ASSOCIATED BUZZER IN BOX BESIDE GUI SLOPING SURFACE BOX. RETAIN SLOPING SURFACE BOX FOR NEW LCD ANNUNC. REMOVE ALL WIRING FROM ANNUNC TO EQUIPMENT CABINET
19	LCD ANNUNCIATOR AT EXISTING OLD GUI SLOPED SURFACE BOX	SEE DETAIL ON E4. PROVIDE WIRING FROM FA PANEL TO SUIT
20	IVORY WIREMOLD TO LCD ANNUNCIATOR	INSTALL FROM SURFACE WIREMOLD BOX
21	SURFACE MOUNTED LCD FIRE ALARM ANNUNCIATOR	WALL MTD ABOVE FLUSH OUTLET FOR OLD ANNUNC CAT 6 CABLE
22	REMOVE INSTALLATION FOR FA GUI INCLUDING KVM EXTENDER, CAT 6 CABLE TO ROOFTOP EQUIPMENT RM. RELOCATE GUI TO BUILDING F	REMOVE DUAL MONITOR STAND FROM TABLE. GIVE TO DEPARTMENTAL REPRESENTATIVE. OBTAIN RECEIPT. REMOVE KVM EXTENDERS. GIVE TO D.R. OBTAIN RECEIPT
23	IVORY WIREMOLD EXTENSION BOX ON OUTLET BOX	INSTALL ON FLUSH OUTLET
24	GUI MONITOR IN MCCP	REPLACE EXISTING MONITOR WITH NEW TOUCHSCREEN MONITOR SIZED TO SUIT THE EXISTING OPENING IN THE CONSOLE AT MCCP. REPLACE KVM EXTENDER KEYBOARD AND MOUSE. REPLACE WIRING AS NECESSARY BETWEEN GUI AND COMPUTER IN BASEMENT. USE EXISTING RACEWAY
25	COMPUTER FOR FIRE ALARM GUI (MONITOR) IN MCCP	REPLACE COMPUTER TO SUIT THE REPLACEMENT GUI. REPLACE KVM EXTENDER AS NECESSARY
26	FIBRE OPTIC CABLE	REMOVE BETWEEN FIRE ALARM PANEL AND EQUIPMENT RACK IN CONTROL POST
27	PULL BOX	PROVIDE PULL BOX AND RE-ROUTE CONDUITS INTO PULL BOX AS SHOWN TO PRECLUDE FIRE ALARM ANNUNC CABLE FROM ENTERING EQUIPMENT CABINET

OUTLINE OF SCOPE OF WORK:

1. IN BUILDINGS A, B, C, D AND U REMOVE THE ANNUNCIATOR GUI AND SHEETMETAL ENCLOSURE. REMOVE THE COMPUTER COMPONENT, KEYBOARD, MOUSE AND PRINTER AS WELL AS THE MONITOR AND KVM EXTENDERS AND CABLES.
2. REMOVE THE PRINTER CABLES AND GUI COMPUTER CABLE BETWEEN EQUIPMENT ROOM AND FIRE ALARM PANEL. IN BUILDINGS A, B, C AND D AND ELSEWHERE AS FURTHER INDICATED.
3. INSTALL NEW SIMPLEXGRINNELL LCD FIRE ALARM ANNUNCIATORS IN BUILDINGS A, B, C, D, E AND U. (TWO ANNUNCIATORS ARE REQUIRED IN BUILDING U).
4. INSTALL REPLACEMENT GUI COMPONENTS IN BUILDING G. REPLACE COMPUTER, MONITOR, KEYBOARD, MOUSE AND KVM EXTENDERS. (KVM EXTENDERS MAY BE RE-USED IF SATISFACTORY FOR NEW COMPUTER AND MONITOR).
5. IN BUILDING E RELOCATE THE GUI MONITOR, COMPUTER, KEYBOARD AND MOUSE TO BUILDING F AND PROVIDE A NEW LCD ANNUNCIATOR.
6. INSTALL IN BUILDING F, THE RELOCATED GUI INCLUDING COMPUTER, MONITOR, KEYBOARD AND MOUSE. COMPONENTS TO BE RELOCATED FROM BUILDING E.

PROPOSED ORDER OF WORK:

1. ORDER NEW ANNUNCIATOR COMPONENTS INCLUDING GUI, COMPUTER, KEYBOARD AND MOUSE FOR BUILDING G.
2. PERFORM ROUGH-IN IN BUILDING F.
3. INSTALL NEW LCD ANNUNCIATOR CABLES BETWEEN FIRE ALARM PANELS AND NEW ANNUNCIATOR LOCATIONS. LEAVE UNTERMINATED.
4. UPON ARRIVAL OF EQUIPMENT ON SITE WORK WITH SIMPLEXGRINNELL TO PERFORM THE FOLLOWING:
   - 4.1. ARRANGE WITH THE DEPARTMENTAL REPRESENTATIVE TO ALLOW THE ANNUNCIATOR IN UNIT A TO BE REPLACED ON DAY 1. IF THERE IS DOWNTIME FOR SIMPLEXGRINNELL ON DAY 1 THE CONTRACTOR SHALL PROVIDE ADDED FORCES TO WORK AT BUILDING F. SIMPLEXGRINNELL WILL VERIFY AND PROVIDE INSTRUCTION ON OPERATION.
   - 4.2. ARRANGE WITH THE DEPARTMENTAL REPRESENTATIVE TO ALLOW THE ANNUNCIATOR IN UNIT B TO BE REPLACED ON DAY 2. IF THERE IS DOWNTIME FOR SIMPLEXGRINNELL ON DAY 2 THE CONTRACTOR SHALL PROVIDE ADDED FORCES TO WORK AT BUILDING G. SIMPLEXGRINNELL WILL VERIFY AND PROVIDE INSTRUCTION ON OPERATION.
   - 4.3. ARRANGE WITH THE DEPARTMENTAL REPRESENTATIVE TO ALLOW ANNUNCIATOR IN UNIT C TO BE REPLACED ON DAY 3. IF THERE IS DOWNTIME FOR SIMPLEXGRINNELL ON DAY 3 THE CONTRACTOR SHALL PROVIDE ADDED FORCES TO WORK AT BUILDING U. SIMPLEXGRINNELL WILL VERIFY AND PROVIDE INSTRUCTION ON OPERATION.
   - 4.4. ARRANGE WITH THE DEPARTMENTAL REPRESENTATIVE TO ALLOW ANNUNCIATOR IN UNIT D TO BE REPLACED ON DAY 4. SIMPLEXGRINNELL WILL VERIFY AND PROVIDE INSTRUCTION ON OPERATION.
   - 4.5. ARRANGE WITH THE DEPARTMENTAL REPRESENTATIVE TO ALLOW THE ANNUNCIATOR IN UNIT E TO BE REPLACED ON DAY 5. SIMPLEXGRINNELL WILL VERIFY AND PROVIDE INSTRUCTION ON OPERATION.
   - 4.6. REMOVE PRINTER AND FIBER OPTIC CABLES BETWEEN CABINET IN EQUIPMENT ROOM AND FIRE ALARM PANEL IN BUILDINGS A, B, C, D, E AND U.
   - 4.7. ARRANGE WITH SIMPLEXGRINNELL FOR INSTRUCTION ON NEW GUI EQUIPMENT AT BUILDINGS F AND G, AS WELL AS NEW ANNUNCIATORS AT BUILDINGS A, B, C, D, E AND U. SIMPLEXGRINNELL SHALL PROVIDE INSTRUCTION AT EACH BUILDING. AS PART OF INSTRUCTION PROVIDE THE SIMPLIFIED INSTRUCTION SHEET SPECIFIED IN SPEC SECTION 26 31 02. INSTRUCTION SHALL BE ON THE SAME DAY AS THE NEW LCD ANNUNCIATOR IS INSTALLED AND VERIFIED. SEE ABOVE.

FIRE ALARM MANUFACTURER COMPONENTS AND NOTES

BLDG	COMPONENT/S	NOTES
A	LCD ANNUNCIATOR IN FLUSH MOUNTED BACK BOX. ANNUNCIATOR #4603-9101	SOFT KEYS NOT PROGRAMMED
B	LCD ANNUNCIATOR IN FLUSH MOUNTED BACK BOX. ANNUNCIATOR #4603-9101	SOFT KEYS NOT PROGRAMMED
C	LCD ANNUNCIATOR IN FLUSH MOUNTED BACK BOX. ANNUNCIATOR #4603-9101	SOFT KEYS NOT PROGRAMMED
D	LCD ANNUNCIATOR IN FLUSH MOUNTED BACK BOX. ANNUNCIATOR #4603-9101	SOFT KEYS NOT PROGRAMMED
E	LCD ANNUNCIATOR IS SURFACE MOUNTING TYPE BACK-BOX. ANNUNCIATOR #4603-9101, BACK BOX #2975-9206	a. 4 TOUCHSCREEN BUTTONS ON EXISTING GUI SHALL BE REPROGRAMMED TO THE 4 SOFT KEYS ON THE 4603 ANNUNCIATOR. b. THE ONE TOUCHSCREEN BUTTON ON THE EXISTING GUI FOR THE SHUTOFF OF SUPPLY TO THE HOSE VALVES SHALL BE REPROGRAMMED TO APPEAR AT THE MCCP ANNUNCIATOR. c. THE GUI SHALL BE RELOCATED AND RE-USED AT BUILDING F.
F	GUI, KEYBOARD, MOUSE AND COMPUTER RELOCATED FROM BUILDING E.	WIRING TO DESKTOP COMPUTER IS SAME AS FOR LCD ANNUNCIATOR. PRIOR TO INSTALLATION CONFIRM CABLE TYPE WITH SIMPLEXGRINNEL.
G	EXISTING GUI COMPUTER IN BASEMENT COMM ROOM TO BE REPLACED. (NOTE EXISTING COMPUTER HAS FIBER OPTIC CABLE CONNECTION, WHICH SHALL BE RE-USED). EXISTING GUI MONITOR, KEYBOARD, MOUSE AND KVM EXTENDERS TO BE REPLACED IN MCCP	NEW GUI MONITOR IN MCCP SHALL BE TOUCHSCREEN TYPE OF A SIZE TO FIT THE CONTROL CABINET. NOMINAL OPENING SIZE IN CABINET IS 19" WIDE x 16" HIGH. MOUNT GUI FLUSH IN CABINET. PROVIDE REAR SUPPORT AS NECESSARY. GUI WILL HAVE FRONT COVER TRIM INSTALLED TO MATCH OTHER SCREENS IN THE CABINET. SEE NOTE 4.
U	LCD ANNUNCIATOR IN SURFACE MOUNTED TYPE BACK-BOX. ANNUNCIATOR #4603-9101, BACK BOXX #2975-9206	TWO UNITS REQUIRED

NOTES RE FIRE ALARM MANUFACTURER COMPONENTS:

a. LCD MONITOR FOR BUILDING 'G' MCCP SHALL BE TYPE AS PROVIDED FOR TRUE-SITE WORKSTATION BUT MUST BE SIZED TO FIT WORKSTATION CONTROL CABINET OPENING.
b. IF POSSIBLE, WHEN FIRE ALARM ANNUNCIATION IS OFF LINE IN A BUILDING, HAVE ALARMS FOR THAT BUILDING MAINTAINED AT MCCP.
c. AT THE END OF EACH WORK DAY AND PRIOR TO LEAVING THE SITE IT SHALL BE ENSURED THAT THE ENTIRE FIRE ALARM SYSTEM IN THE INSTITUTION SHALL BE FULLY OPERATIONAL.

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REAL PROPERTY SERVICES
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SERVICES IMMOBILIERS
Région de Pacifique

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
M. DEZFOOLI
9916
Sept. 14 / 2015

Revision	Description	Date
2	Re-Issued For Tender	09/03/15
1	Issued For Tender	02/23/15

Client

Correctional Service Canada
Abbotsford BC
Pacific Institution

Project title/Titre du projet

Fire Alarm System
Computer Replacement

Consultant Signature Only

Designed by/Concept par
T. JEREB

Drawn by/Dessiné par
LMG/TJ Sept. 2015

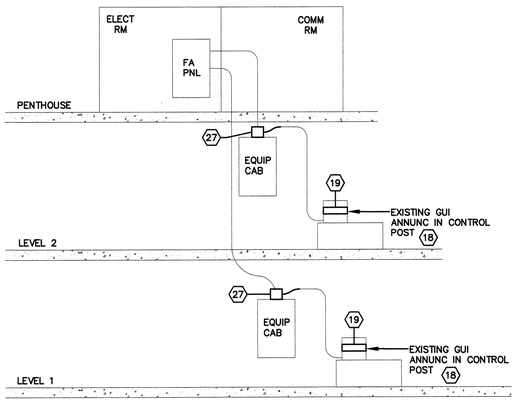
PWGSC Project Manager/Administrateur de Projets TPSGC
Tony Tang

Regional Manager, Architectural and Engineering Services
Gestionnaire régionale, Services d'architectural et de génie, TPSGC
P. Faul

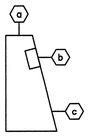
Drawing title/Titre du dessin

Details 1

Project No./No. du projet	Sheet/Feuille	Revision no./La Révision no.
R.072304.001	E3	R2

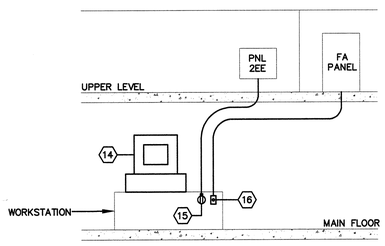


DETAIL 'X' – BUILDING U
NTS



BUILDING 'U' CONTROL POST ANNUNCIATOR
NTS

ITEM	DESCRIPTION	COMMENTS
a	EXISTING ANGLED SURFACE BOX FOR GUI ANNUNCIATOR	RE-USE BOX FOR LCD ANNUNCIATOR
b	FLUSH MOUNT ANNUNCIATOR IN ANGLED FACE OF OLD GUI ANNUNCIATOR BOX	INSTALL BACK BOX ON ANNUNCIATOR. INSTALL UNISTRUT SUPPORTS OR OTHER SUPPORT TO FIX NEW LCD ANNUNCIATOR AND BACK BOX FLUSH MTD INTO ANGLED SURFACE BOX
c	PROVIDE 16 GAUGE BLACK FINISHED SHEETMETAL CLOSURE TO FRONT OF ANGLED SURFACE BOX	USE BLACK GLOSS FINISH. ARRANGE AND PAY FOR PAINTING TO BE DONE PROFESSIONALLY. FOR EXAMPLE AN AUTO BODY SHOP. UNPROFESSIONAL PAINT–JOBS WILL BE REJECTED BY THE D.R. AND REPLACED AT NO COST TO THE CONTRACT



DETAIL 'X' – BUILDING F
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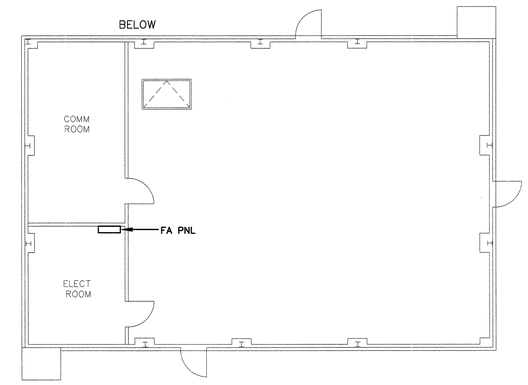

PENTHOUSE – BUILDING U
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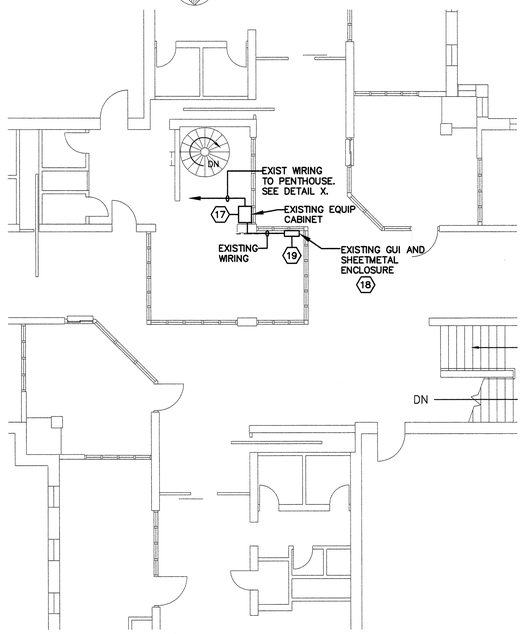

PART PLAN LEVEL 2 – BUILDING U
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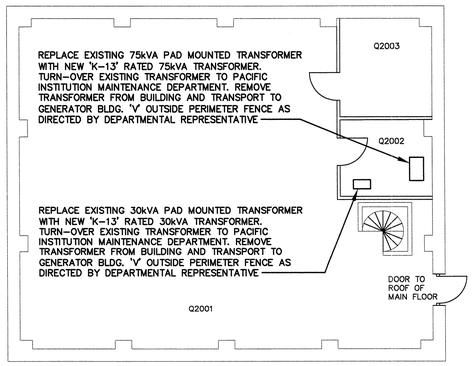

BUILDING Q – PENTHOUSE FLOOR PLAN
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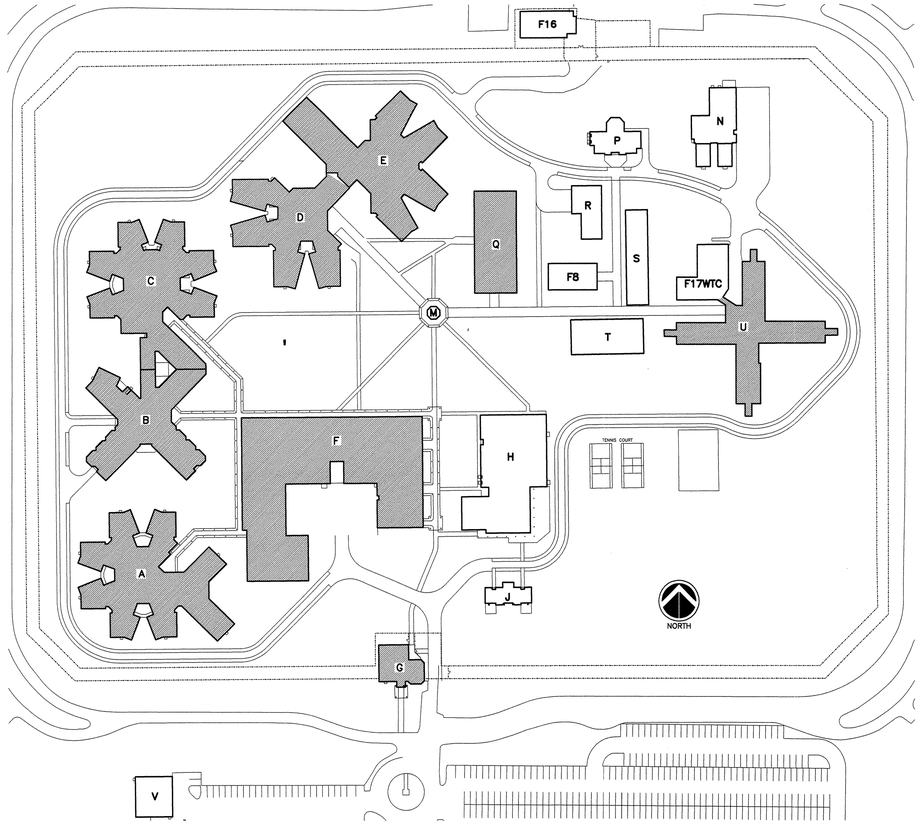

KEY PLAN – SHADING INDICATES BUILDINGS IN WHICH WORK IS TO BE PERFORMED
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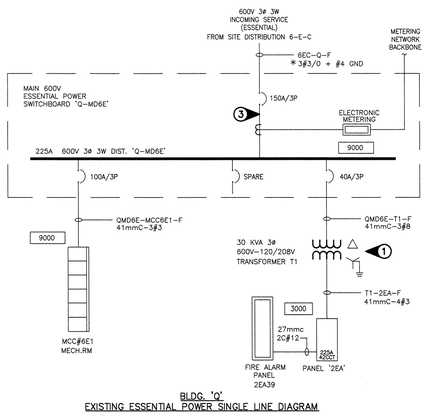
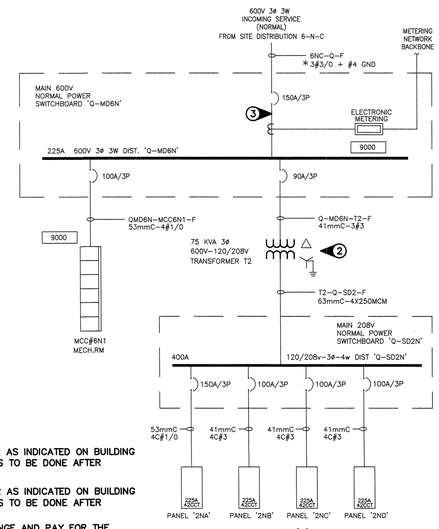


BLDG. 'Q'
EXISTING ESSENTIAL POWER SINGLE LINE DIAGRAM



BLDG. 'Q'
EXISTING NORMAL POWER SINGLE LINE DIAGRAM

SINGLE LINE KEY NOTES

1. REPLACE EXISTING 30kVA TRANSFORMER WITH NEW 30kVA 'K–13' RATED TRANSFORMER AS INDICATED ON BUILDING 'Q' PENTHOUSE FLOOR PLAN. ALL POWER INTERRUPTIONS TO REPLACE TRANSFORMER IS TO BE DONE AFTER NORMAL WORKING HOURS.
2. REPLACE EXISTING 75kVA TRANSFORMER WITH NEW 75kVA 'K–13' RATED TRANSFORMER AS INDICATED ON BUILDING 'Q' PENTHOUSE FLOOR PLAN. ALL POWER INTERRUPTIONS TO REPLACE TRANSFORMER IS TO BE DONE AFTER NORMAL WORKING HOURS.
3. UPON COMPLETION OF THE INSTALLATION OF NEW 'K–13' RATED TRANSFORMERS ARRANGE AND PAY FOR THE INSTALLATION OF TRENDING/DATA LOGGING INSTRUMENTATION TO LOG VOLTAGE/CURRENT/FREQUENCY/POWER FACTOR AND HARMONICS. LOG READINGS FOR 1 CALENDAR MONTH. ARRANGE AND PAY FOR CAPACITOR MANUFACTURER TO DETERMINE RATING OF POWER FACTOR CAPACITOR(S) AND OPTIMAL LOCATION TO INSTALL CAPACITOR(S) TO ACHIEVE A POWER FACTOR OF NO LESS THAN 95%. SUBMIT MANUFACTURERS RECOMMENDATIONS AND ASSOCIATED COSTS TO SUPPLY & INSTALL CAPACITORS TO DEPARTMENTAL REPRESENTATIVE.

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REAL PROPERTY SERVICES
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PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
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31916
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Fire Alarm System
Computer Replacement

Consultant Signature Only

Designed by/Concept par
T. JEREB

Drawn by/Dessiné par
LMG/TJ
Sept. 2015

PWGSC Project Manager/Administrateur de Projets TPSGC
Tony Tang

Regional Manager, Architectural and Engineering Services
Gestionnaire régionale, Services d'architectural et de génie, TPSGC
P. Paul

Drawing title/Titre du dessin

Details 2

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R.072304.001	E4	R2