PROJECT TITLE PWGSC No. R.049400.003
ROOFTOP CHILLER ENCLOSURE
GoSB, 11 STATION STREET
BELLEVILLE, ONTARIO

PROJECT NUMBER R.049400.003

PROJECT DATE 2013-05-17

END OF SECTION

Part 1 GENERAL

1.1 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work of this Contract comprises renovation of Canada Revenue Agency, located at 11 Station St, Belleville, Ontario and further identified as PWGSC Number R.049400.003.

.2 Work involves the construction of a new acoustic barrier around existing rooftop chiller. Work will include reinforcing of existing structured steel roof framing and penetrations in existing roof. Work includes a new structured steel frame to support new silencers. All work must be completed in accordance with the Canada Revenue Agency restricted access to the site.

1.2 CONTRACTOR USE OF PREMISES

.1 Contractor shall limit use of premises for Work, for storage, and for access.

.2 Coordinate use of premises under direction of Departmental Representative.

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

1.3 ALTERATIONS TO EXISTING BUILDING

.1 Provide new openings required in existing construction.

.2 Block in openings where items removed with material and finish to match existing adjoining construction.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 GENERAL

1.1 ACCESS AND EGRESS

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

.1 Provide additional EXIT signs to find ways to the fire exit stair (241).

.2 RM 237 must not be blocked and be accessible all times during construction.

1.2 USE OF SITE AND FACILITIES

.1 Execute work with least possible interference or disturbance to normal use of premises. Make arrangements with Departmental Representative to facilitate work as stated.

.2 Maintain existing services to building and provide for personnel and vehicle access.

.3 Where security is reduced by work provide temporary means to maintain security.

.4 Closures: protect work temporarily until permanent enclosures are completed.

1.3 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

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

1.4 EXISTING SERVICES

.1 Notify, Departmental Representative utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, give Departmental Representative 48 hours of notice for necessary interruption of mechanical or electrical service throughout course of work. Keep duration of interruptions minimum. Carry out interruptions after normal working hours of occupants, preferably on weekends.

.3 Construct barriers in accordance with Section 01 56 00.

1.5 SPECIAL REQUIREMENTS

.1 Carry out all Work Monday to Friday from 8:00AM to 5:00PM EST hours except that all noise and dust generating work (drilling, hammering, cutting, etc.) **shall** be performed only between the hours of 5:30PM-7:00AM EST.

.2 All material deliveries **shall** occur only between the hours of 5:00PM-7:00AM EST unless otherwise approved by Departmental Representative.

.3 Any work not performed on the roof **shall** be done within the shaded area on the second floor as shown on the drawings.

.4 Submit schedule in accordance with Section 01 32 16.

.5 Ensure Contractor's personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.

.6 Keep within limits of work and avenues of ingress and egress.

.7 Comply with the Noise By-Law of the City of Belleville.

1.6 BUILDING SMOKING ENVIRONMENT

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

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 RELATED REQUIREMENTS

.1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Departmental Representative are specified under various sections.

1.2 APPOINTMENT AND PAYMENT

.1 Departmental Representative will appoint and pay for services of testing laboratory except follows:

- .1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
- .2 Inspection and testing performed exclusively for Contractor's convenience.
- .3 Testing, adjustment and balancing of conveying systems, mechanical and electrical equipment and systems.
- .4 Mill tests and certificates of compliance.
- .5 Tests specified to be carried out by Contractor under supervision of Departmental Representative.
- .6 Additional tests specified as following paragraph.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Departmental Representative to verify acceptability of corrected work.

1.3 CONTRACTOR'S RESPONSIBILITIES

.1 Provide labour, equipment and facilities to:

- .1 Provide access to Work for inspection and testing.
- .2 Facilitate inspections and tests.
- .3 Make good Work disturbed by inspection and test.
- .4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

.2 Notify Departmental Representative 48 hours minimum sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Departmental Representative.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work at the call of Departmental Representative.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting 4 days in advance of meeting date to Departmental Representative.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within three days after meetings and transmit to Departmental Representative, meeting participants and affected parties not in attendance.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

.1 Within 7 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Departmental Representative, Contractor, major Subcontractors, field inspectors and supervisors will be in attendance.

.3 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.4 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.5 Agenda to include:

.1 Appointment of official representative of participants in the Work.

.2 Schedule of Work: in accordance with Section 01 32 16.

.3 Schedule of submission of shop drawings, samples, mock-ups, colour chips. Submit submittals in accordance with Section 01 33 00.

.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities, fences in accordance with Section 01 52 00.

.5 Delivery schedule of specified equipment in accordance with Section 01 32 16.

.6 Site security in accordance with Section 01 56 00.

.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.

.8 Record drawings and specifications in accordance with Section 01 33 00.

.9 Maintenance manuals in accordance with Section 01 78 00.

.10 Take-over procedures, acceptance, warranties in accordance with Section 01 78 00.

.11 Monthly progress claims, administrative procedures, photographs, hold backs.

.12 Appointment of inspection and testing agencies or firms.

.13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

.1 During course of Work and 2 weeks prior to project completion, schedule progress meetings every 2 weeks.

.2 Contractor, major Subcontractors involved in Work and Departmental Representative are to be in attendance.

.3 Notify parties minimum 4 days prior to meetings.

.4 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 5 days after meeting.

.5 Agenda to include the following:

.1 Review, approval of minutes of previous meeting.

.2 Review of Work progress since previous meeting.

.3 Field observations, problems, conflicts.

.4 Problems which impede construction schedule.

.5 Review of off-site fabrication delivery schedules.

.6 Corrective measures and procedures to regain projected schedule.

.7 Revision to construction schedule.

.8 Progress schedule, during succeeding work period.

.9 Review submittal schedules: expedite as required.

.10 Maintenance of quality standards.

.11 Review proposed changes for affect on construction schedule and on completion date.

.12 Other business.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 DEFINITIONS

.1 Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.

.2 Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.

.3 Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.

.4 Construction Work Week: Monday to Friday, inclusive, will provide five day work week and define schedule calendar working days as part of Bar (GANTT) Chart submission.

.5 Duration: number of work periods (not including holidays or other nonworking periods) required to complete activity or other project element. Usually expressed as workdays or workweeks.

.6 Master Plan: summary-level schedule that identifies major activities and key milestones.

.7 Milestone: significant event in project, usually completion of major deliverable.

.8 Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.

.9 Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

1.2 REQUIREMENTS

.1 Ensure Master Plan and Detail Schedules are practical and remain within specified Contract duration.

.2 Plan to complete Work in accordance with prescribed milestones and time frame.

.3 Limit activity durations to maximum of approximately 10 working days, to allow for progress reporting.

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

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00.

.2 Submit to Departmental Representative within 10 working days of Award of Contract, Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.

.3 Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

1.4 PROJECT MILESTONES

.1 Project milestones form interim targets for Project Schedule.

.1 Certificate of Substantial Performance within 80 working days of Award of Contract date.

1.5 MASTER PLAN

.1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).

.2 Departmental Representative will review and return revised schedules within 5 working days.

.3 Revise impractical schedule and resubmit within 5 working days.

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

1.6 PROJECT SCHEDULE

.1 Develop detailed Project Schedule derived from Master Plan.

.2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:

.1 Award.

.2 Shop Drawings, Samples.

.3 Permits.

.4 Mobilization.

.5 Roofing.

.6 Structured steel.

.7 Acoustic barriers.

.8 Silencers.

.9 Testing and Commissioning.

.10 Supplied equipment long delivery items.

1.7 PROJECT SCHEDULE 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.

1.8 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.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 GENERAL

1.1 ADMINISTRATIVE

.1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

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

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.

.6 Notify Departmental Representative, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are co-ordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.

.10 Keep one reviewed copy of each submission on site.

1.2 SHOP DRAWINGS AND PRODUCT DATA

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Submit drawings stamped and signed by professional engineer registered or licensed in Province of Ontario of Canada.

.3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.4 Allow 5 working days for Departmental Representative's review of each submission.

.5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.

.7 Accompany submissions with transmittal letter, in duplicate, containing:

- .1 Date.
- .2 Project title and number.
- .3 Contractor's name and address.
- .4 Identification and quantity of each shop drawing, product data and sample.
- .5 Other pertinent data.

.8 Submissions shall include:

- .1 Date and revision dates.
- .2 Project title and number.
- .3 Name and address of:
  - .1 Subcontractor.
  - .2 Supplier.
  - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
- .4 Details of appropriate portions of Work as applicable:
  - .1 Fabrication.
  - .2 Layout, showing dimensions, including identified field dimensions, and clearances.
  - .3 Setting or erection details.
  - .4 Capacities.
  - .5 Performance characteristics.
  - .6 Standards.
  - .7 Operating weight.
  - .8 Wiring diagrams.
  - .9 Single line and schematic diagrams.
  - .10 Relationship to adjacent work.

.9 After Departmental Representative's review, distribute copies.

.10 Submit three hard copies and one electronic copy of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.11 Submit three hard copies and one electronic copy of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

.12 Submit three hard copies and one electronic copy of test reports for requirements requested in specification Sections and as requested by Departmental Representative.

- .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
- .2 Testing must have been within 3 years of date of contract award for project.

.13 Submit three hard copies and one electronic copy of certificates for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.

.2 Certificates must be dated after award of project contract complete with project name.

.14 Submit three hard copies and one electronic copy of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.

.1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.

.15 Submit three hard copies and one electronic copy of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.

.16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.

.17 Submit three hard copies and one electronic copy of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.

.18 Delete information not applicable to project.

.19 Supplement standard information to provide details applicable to project.

.20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

.21 The review of shop drawings by Public Works and Government Services Canada (PWGSC) is for sole purpose of ascertaining conformance with general concept.

.1 This review shall not mean that PWGSC approves detail design inherent in shop drawings, responsibility for which shall remain with Contractor submitting same, and such review shall not relieve Contractor of responsibility for errors or omissions in shop drawings or of responsibility for meeting requirements of construction and Contract Documents.

.2 Without restricting generality of foregoing, Contractor is responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication processes or to techniques of construction and installation and for co-ordination of Work of sub-trades.

1.3 SAMPLES

.1 Submit for review samples in duplicate as requested in respective specification Sections. Label samples with origin and intended use.

.2 Deliver samples prepaid to Departmental Representative's business address.

.3 Notify Departmental Representative in writing, at time of submission of deviations in samples from requirements of Contract Documents.

.4 Where colour, pattern or texture is criterion, submit full range of samples.

.5 Adjustments made on samples by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.

.6 Make changes in samples which Departmental Representative may require, consistent with Contract Documents.

.7 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

1.4 MOCK-UPS

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

1.5 PHOTOGRAPHIC DOCUMENTATION

.1 Submit electronic and hard copy of colour digital photography in jpg format, fine resolution monthly with progress statement and as directed by Departmental Representative.

.2 Project identification: name and number of project and date of exposure indicated.

.3 Number of viewpoints: 8 locations.

.1 Viewpoints and their location as determined by Departmental Representative.

.4 Frequency of photographic documentation: as directed by Departmental Representative.

.1 Upon completion of: of Work, and as directed by Departmental Representative.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA): Canada

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

.2 National Building Code 2010 (NBC):

.1 NBC 2010, Division B, Part 8 Safety Measures at Construction and Demolition Sites.

.3 National Fire Code 2010 (NFC):

.2 NFC 2010, Division B, Part 5 Hazardous Processes and Operations, subsection 5.6.1.3 Fire Safety Plan.

.4 Province of Ontario:

.3 Occupational Health and Safety Act Revised Statutes of Ontario 1990, Chapter O.1 as amended, and Regulations for Construction Projects, O. Reg. 213/91 as amended.

.4 O. Reg. 490/09, Designated Substances.

.5 Workplace Safety and Insurance Act, 1997.

.6 Municipal statutes and authorities.

.5 Treasury Board of Canada Secretariat (TBS):

.7 Treasury Board, Fire Protection Standard April 1, 2010
www.tbs-sct.gc.ca/pol/doc-eng.aspx ?id=17316&section=text.

.6 Fire Commissioner of Canada (FCC):

.8 FC-301 Standard for Construction Operations, June 1982.

.9 FC-302 Standard for Welding and Cutting, June 1982.

Labour Program
Fire Protection Engineering Services
4900 Yonge Street 8th Floor
North York, Ontario M2N 6A8
and copies may be obtained from:
Human Resources and Social Development Canada
Labour Program
Fire Protection Engineering Services
Ottawa, Ontario K1A 0J2

1.2 SUBMITTALS

.1 Make submittals in accordance with Section 01 33 00.

.2 Submit site-specific Health and Safety Plan: Within 7 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:

.1 Results of site specific safety hazard assessment.

.2 Results of safety and health risk or hazard analysis for site tasks and operations found in work plan.

.3 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 10 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.

.4 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.

.5 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative, weekly.

.6 Submit copies of orders, directions or reports issued by health and safety inspectors of the authorities having jurisdiction.

.7 Submit copies of incident and accident reports.

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

1.3 FILING OF NOTICE

.1 File Notice of Project with Provincial authorities prior to commencement of Work.

1.4 SAFETY ASSESSMENT

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

1.5 MEETINGS

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

1.6 REGULATORY REQUIREMENTS

.1 Comply with the Acts and regulations of the Province of Ontario.

.2 Comply with specified standards and regulations to ensure safe operations at site.

1.7 GENERAL REQUIREMENTS

.1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.

.2 Departmental Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns either accepting or requesting improvements.

1.8 PROJECT/SITE CONDITIONS

.1 Work at site will involve contact with:

.1 Lead in paint,

1.9 COMPLIANCE REQUIREMENTS

.1 Comply with Ontario Occupational Health and Safety Act, R.S.O. 1990 Chapter 0.1, as amended.

1.10 RESPONSIBILITY

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

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

1.11 UNFORSEEN HAZARDS

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

.2 Follow procedures in place for Employees Right to Refuse Work as specified in the Occupational Health and Safety Act for the Province of Ontario.

1.12 HEALTH AND SAFETY CO-ORDINATOR

.1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:

.1 Have working knowledge of occupational safety and health regulations.

.2 Be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work.

.3 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

.4 Be on site during execution of Work and report directly to and be under direction of site supervisor.

1.13 POSTING OF DOCUMENTS

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

1.14 CORRECTION OF NON-COMPLIANCE

.1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Departmental Representative.

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

.3 Departmental Representative may stop Work if non-compliance of health and safety regulations is not corrected.

1.15 POWDER ACTUATED DEVICES

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

1.16 WORK STOPPAGE

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

Part 2 PRODUCTS

2.1 NOT USED

.1 Not used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 Definitions:

.1 Environmental Pollution and Damage: presence of chemical, physical, biological elements or agents which adversely affect human health and welfare; unfavourably alter ecological balances of importance to human life; affect other species of importance to humans; or degrade environment aesthetically, culturally and/or historically.

.2 Environmental Protection: prevention/control of pollution and habitat or environment disruption during construction.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Before commencing construction activities or delivery of materials to site, submit Environmental Protection Plan for review and approval by Departmental Representative.

.3 Environmental Protection Plan must include comprehensive overview of known or potential environmental issues to be addressed during construction.

.4 Address topics at level of detail commensurate with environmental issue and required construction tasks.

.5 Include in Environmental Protection Plan:

.1 Names of persons responsible for ensuring adherence to Environmental Protection Plan.

.2 Names and qualifications of persons responsible for manifesting hazardous waste to be removed from site.

.3 Names and qualifications of persons responsible for training site personnel.

.4 Descriptions of environmental protection personnel training program.

.5 Work area plan showing proposed activity in each portion of area and identifying areas of limited use or non-use.

.1 Plan to include measures for marking limits of use areas and methods for protection of features to be preserved within authorized work areas.

.6 Spill Control Plan to include procedures, instructions, and reports to be used in event of unforeseen spill of regulated substance.

.7 Non-Hazardous solid waste disposal plan identifying methods and locations for solid waste disposal including clearing debris.

.8 Air pollution control plan detailing provisions to assure that dust, debris, materials, and trash, are contained on project site.

.9 Contaminant Prevention Plan identifying potentially hazardous substances to be used on job site; intended actions to prevent introduction of such materials into air, water, or ground; and detailing provisions for compliance with Federal, Provincial, and Municipal laws and regulations for storage and handling of these materials.

.10 Waste Water Management Plan identifying methods and procedures for management and or discharge of waste waters which are directly derived from construction activities, such as concrete curing water, clean-up water, dewatering of ground water, disinfection water, hydrostatic test water, and water used in flushing of lines.

1.3 FIRES

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

1.4 POLLUTION CONTROL

.1 Maintain temporary pollution control features installed under this Contract.

.2 Control emissions from equipment and plant in accordance with local authorities' emission requirements.

.3 Prevent sandblasting and other extraneous materials from contaminating air and waterways beyond application area.

.1 Provide temporary enclosures where directed by Departmental Representative.

.4 Cover or wet down dry materials and rubbish to prevent blowing dust and debris. Provide dust control for temporary roads.

1.5 NOTIFICATION

.1 Departmental Representative will notify Contractor in writing of observed noncompliance with Federal, Provincial or Municipal environmental laws or regulations, permits, and other elements of Contractor's Environmental Protection plan.

.2 Contractor: after receipt of such notice, inform Departmental Representative of proposed corrective action and take such action for approval by Departmental Representative.

.1 Take action only after receipt of written approval by Departmental Representative.

.3 Departmental Representative will issue stop order of work until satisfactory corrective action has been taken.

.4 No time extensions granted or equitable adjustments allowed to Contractor for such suspensions.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 INSPECTION

.1 Allow Departmental Representative access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Departmental Representative instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Departmental Representative 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.

1.2 INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection/Testing Agencies will be engaged by Departmental Representative for purpose of inspecting and/or testing portions of Work, above and beyond those required of the Contractor. Cost of such services will be borne by Departmental Representative.

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, appointed agency will request additional inspection and/or testing to ascertain full degree of defect. Correct defect and irregularities as advised by Departmental Representative at no cost to Departmental Representative. Pay costs for retesting and reinspection.

1.3 ACCESS TO WORK

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.4 PROCEDURES

.1 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.

1.5 REJECTED WORK

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

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

.3 If in opinion of Departmental Representative it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Departmental Representative may deduct from Contract Amount difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Departmental Representative.

1.6 REPORTS

.1 Submit 4 copies of inspection and test reports to Departmental Representative.

.2 Provide copies to Subcontractor of work being inspected or tested, manufacturer or fabricator of material being inspected or tested.

1.7 TESTS

.1 Furnish test results as may be requested.

.2 The cost of tests beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by Departmental Representative and may be authorized as recoverable.

1.8 MILL TESTS

.1 Submit mill test certificates as required of specification Sections.

1.9 EQUIPMENT AND SYSTEMS

.1 Submit testing, adjusting and balancing reports for mechanical, electrical and building equipment systems.

.2 Submit Commissioning Documentation.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00.

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.3 WATER SUPPLY

.1 Provide continuous supply of potable water for construction use.

.2 Pay for utility charges at prevailing rates.

1.4 TEMPORARY HEATING AND VENTILATION

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building must be vented to outside or be non-flameless type. Solid fuel salamanders are not permitted.

.3 Provide temporary heat and ventilation in enclosed areas as required to:

.1 Facilitate progress of Work.

.2 Protect Work and products against dampness and cold.

.3 Prevent moisture condensation on surfaces.

.4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.

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

.4 Maintain temperatures of minimum 10°C in areas where construction is in progress.

.5 Ventilating:

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

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

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

.4 Ventilate storage spaces containing hazardous or volatile materials.

.5 Ventilate temporary sanitary facilities.

.6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.6 Permanent heating system of building, not be used when available. Be responsible for damage to heating system if use is permitted.

.7 On completion of Work for which permanent heating system is used, replace filters.

.8 Pay costs for maintaining temporary heat, when using permanent heating system.

.9 Maintain strict supervision of operation of temporary heating and ventilating equipment to:

.1 Conform with applicable codes and standards.

.2 Enforce safe practices.

.3 Prevent abuse of services.

.4 Prevent damage to finishes.

.5 Vent direct-fired combustion units to outside.

.10 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.5 TEMPORARY POWER AND LIGHT

.1 Provide and pay for temporary power during construction for temporary lighting and operating of power tools, to a maximum supply of 230 volts 30 amps.

.2 Temporary power for electric cranes and other equipment requiring in excess of above is responsibility of Contractor.

.3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

1.6 TEMPORARY COMMUNICATION FACILITIES

.1 Provide and pay for temporary telephone, fax, data, hook up, lines equipment necessary for own use and use of Departmental Representative.

1.7 FIRE PROTECTION

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on site.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)

.1 CSA Z797-09, Code of practice for Access Scaffold.

.2 CAN/CSA-Z321-96(R2006), Signs and Symbols for the Occupational Environment, withdrawn but still available from CSA, CCOHS and Techstreet.

1.2 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00.

1.3 INSTALLATION AND REMOVAL

.1 Prepare site plan indicating proposed location and dimensions of area to be fenced and used by Contractor, number of trailers to be used, avenues of ingress/egress to fenced area and details of fence installation.

.2 Identify areas which have to be gravelled to prevent tracking of mud.

.3 Indicate use of supplemental or other staging area.

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

.5 Remove from site all such work after use.

1.4 SCAFFOLDING

.1 Scaffolding in accordance with CSA Z797.

.2 Provide and maintain scaffolding and ladders.

1.5 HOISTING

.1 Provide, operate and maintain hoists/cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.

.2 Hoists/cranes shall be operated by qualified operator.

1.6 SITE STORAGE/LOADING

.1 Confine work and operations of employees to areas defined 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.

1.7 CONSTRUCTION PARKING

.1 Parking may be permitted on site provided it does not disrupt performance of Work.

.2 Provide and maintain adequate access to project site.

.3 Clean construction runways and taxi areas where used by Contractor's equipment.

1.8 SECURITY

.1 Pay for responsible security personnel to guard site and contents of site after working hours and during holidays.

1.9 OFFICES

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

.2 Provide a clearly marked and fully stocked first-aid case in a readily available location.

.3 Subcontractors may provide their own offices as necessary. Direct location of these offices.

1.10 EQUIPMENT, TOOL AND MATERIALS STORAGE

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

1.11 SANITARY FACILITIES

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

1.12 CONSTRUCTION SIGNAGE

.1 No other signs or advertisements, other than warning signs, are permitted on site.

.2 Signs and notices for safety and instruction shall be in both official languages. Graphic symbols shall conform to CAN/CSA-Z321.

.3 Maintain approved signs and notices in good condition for duration of project, and dispose of off site on completion of project or earlier if directed by Departmental Representative.

1.13 PROTECTION AND MAINTENANCE OF TRAFFIC

.1 Dust control: adequate to ensure safe operation at all times.

.2 Provide snow removal during period of Work.

1.14 CLEAN-UP

.1 Remove construction debris, waste materials, packaging material from work site daily.

.2 Clean dirt or mud tracked onto paved or surfaced roadways.

.3 Store materials resulting from demolition activities that are salvageable.

.4 Stack stored new or salvaged material.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 Canadian General Standards Board (CGSB):

.1 CAN/CGSB-1.189-2000, Exterior Alkyd Primer for Wood.

.2 CAN/CGSB-1.59-97, Alkyd Exterior Gloss Enamel.

.2 Canadian Standards Association (CSA):

.1 CSA-O121-08, Douglas Fir Plywood.

1.2 INSTALLATION AND REMOVAL

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.3 GUARD RAILS AND BARRICADES

.1 Provide secure, rigid guard rails and barricades around open edges of roofs.

.2 Provide as required by governing authorities.

1.4 WEATHER ENCLOSURES

.1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.

.3 Design enclosures to withstand wind pressure and snow loading.

1.5 DUST TIGHT SCREENS

.1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.2 Maintain and relocate protection until such work is complete.

1.6 ACCESS TO SITE

.1 Provide and maintain access roads, sidewalk crossings, ramps and construction runways as may be required for access to Work.

1.7 PUBLIC TRAFFIC FLOW

.1 Provide and maintain competent signal flag operators, traffic signals, barricades and flares, lights, or lanterns as required to perform Work and protect the public.

1.8 FIRE ROUTES

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.9 PROTECTION FOR OFF-SITE AND PUBLIC PROPERTY

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.10 PROTECTION OF BUILDING FINISHES

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

.2 Provide necessary screens, covers, and hoardings.

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

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

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 Within text of specifications, reference may be made to reference standards.

.2 Conform to these standards, in whole or in part as specifically requested in specifications.

.3 If there is 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.

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

1.2 QUALITY

.1 Products, materials, equipment and articles (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.

1.3 AVAILABILITY

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

.2 In event of failure to notify Departmental Representative at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Departmental Representative reserves right to substitute more readily available products of similar character, at no increase in Contract Amount or Contract Time.

1.4 STORAGE, HANDLING AND PROTECTION

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

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

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

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

.6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

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

.9 Touch-up damaged factory finished surfaces to Departmental Representative's satisfaction. Use touch-up materials to match original. Do not paint over name plates.

1.5 TRANSPORTATION

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

1.6 MANUFACTURER'S INSTRUCTIONS

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

.2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative 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 Amount or Contract Time.

1.7 QUALITY OF WORK

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

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

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

1.8 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.

1.9 CONCEALMENT

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

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

1.10 REMEDIAL WORK

.1 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.

1.11 LOCATION OF FIXTURES

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

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

1.12 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.

1.13 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.

1.14 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.

1.15 EXISTING UTILITIES

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 SUBMITTALS

.1 Submittals: in accordance with Section 01 33 00.

.2 Submit written request in advance of cutting or alteration which affects:

.1 Structural integrity of elements of project.

.2 Integrity of weather-exposed or moisture-resistant elements.

.3 Efficiency, maintenance, or safety of operational elements.

.4 Visual qualities of sight-exposed elements.

.5 Work of Owner or separate contractor.

.3 Include in request:

.1 Identification of project.

.2 Location and description of affected Work.

.3 Statement on necessity for cutting or alteration.

.4 Description of proposed Work, and products to be used.

.5 Alternatives to cutting and patching.

.6 Effect on Work of Owner or separate contractor.

.7 Written permission of affected separate contractor.

.8 Date and time work will be executed.

1.2 MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00.

1.3 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which are to be exposed by uncovering work; maintain excavations free of water.

1.4 EXECUTION

.1 Execute cutting, fitting, and patching to complete Work.

.2 Fit several parts together, to integrate with other Work.

.3 Uncover Work to install ill-timed Work.

.4 Remove and replace defective and non-conforming Work.

.5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.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 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.

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

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse, recycling.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 PROJECT CLEANLINESS

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Owner or other Contractors.

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

.3 Clear snow and ice from access to building, remove from site.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide and use clearly marked separate bins for recycling.

.6 Dispose of waste materials and debris off site.

.7 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.

.8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.2 FINAL CLEANING

.1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris other than that caused by others, and leave Work clean and suitable for occupancy.

.3 Prior to final review, remove surplus products, tools, construction machinery and equipment.

.4 Remove waste products and debris other than that caused by Owner or other Contractors.

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

.6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.7 Clean and polish glass, stainless steel, chrome, porcelain enamel, baked enamel, and mechanical fixtures.

.8 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures.

.9 HEPA vacuum clean and dust building interiors, behind grilles, louvres and screens.

.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 Clean and sweep roofs, gutters, areaways, and sunken wells.

.14 Sweep and wash clean paved areas.

.15 Clean equipment and fixtures to a sanitary condition; clean or replace filters of mechanical equipment.

.16 Clean roofs, downspouts, and drainage systems.

.17 Remove debris and surplus materials from ceiling spaces and other accessible concealed spaces.

.18 Remove snow and ice from access to building.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 SUBMISSION

.1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.2 Copy will be returned after final inspection, with Departmental Representative's comments.

.3 Revise content of documents as required prior to final submittal.

.4 Two weeks prior to Substantial Performance of the Work, submit to the Departmental Representative, four final copies of maintenance manuals and commissioning documentation in English.

.5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.

.6 If requested, furnish evidence as to type, source and quality of products provided.

.7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.

.8 Pay costs of transportation.

1.2 FORMAT

.1 Organize data in the form of an instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.

.4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems, under Section numbers and sequence of Table of Contents.

.6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.

.7 Text: Manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

.9 Provide 1:1 scaled CAD files in dwg format on CD.

1.3 CONTENTS - EACH VOLUME

.1 Table of Contents: provide title of project;

- .1 date of submission; names,
- .2 addresses, and telephone numbers of Contractor with name of responsible parties;
- .3 schedule of products and systems, indexed to content of volume.

.2 For each product or system:

.1 list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.

.4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.

.5 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00.

1.4 AS-BUILTS AND SAMPLES

.1 In addition to requirements in General Conditions, maintain at the site for Departmental Representative one record copy of:

.1 Contract Drawings.

.2 Specifications.

.3 Amendments and Addenda.

.4 Change Orders and other modifications to the Contract.

.5 Reviewed shop drawings, product data, and samples.

.6 Field test records.

.7 Inspection certificates.

.8 Manufacturer's certificates.

.2 Store record documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.

.3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "PROJECT RECORD" in neat, large, printed letters.

.4 Maintain record documents in clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Departmental Representative.

.6 Turn one set, paper copy and electronic copy, of AS-BUILT drawings and specifications over to Departmental Representative on completion of work.

.7 If project is completed without significant deviations from Contract drawings and specifications submit to Departmental Representative one set of drawings and specifications marked "AS-BUILT".

1.5 RECORDING ACTUAL SITE CONDITIONS

.1 Record information on set of black line opaque drawings, and in copy of Project Manual, provided by Departmental Representative.

.2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.

.3 Record information concurrently with construction progress. Do not conceal Work until required information is recorded.

.4 Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:

.1 Measured depths of elements of foundation in relation to finish first floor datum.

.2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.

.3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.

.4 Field changes of dimension and detail.

.5 Changes made by change orders.

.6 Details not on original Contract Drawings.

.7 References to related shop drawings and modifications.

.5 Specifications: legibly mark each item to record actual construction, including:

.1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.

.2 Changes made by Amendments and change orders.

.6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

1.6 FINAL SURVEY

.1 Submit final site survey certificate in accordance with Section 01 71 00, certifying that elevations and locations of completed Work are in conformance, or non-conformance with Contract Documents.

1.7 EQUIPMENT AND SYSTEMS

.1 Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.

.2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.

.6 Provide servicing and lubrication schedule, and list of lubricants required.

.7 Include manufacturer's printed operation and maintenance instructions.

.8 Include sequence of operation by controls manufacturer.

.9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination drawings, with installed colour coded piping diagrams.

.12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.

.13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include test and balancing reports as specified in Section 01 45 00.

.15 Additional requirements: As specified in individual specification sections.

1.8 MATERIALS AND FINISHES

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.3 Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.

.4 Additional Requirements: as specified in individual specifications sections.

1.9 STORAGE, HANDLING AND PROTECTION

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

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

.4 Store paints and freezable materials in a heated and ventilated room.

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

1.10 WARRANTIES AND BONDS

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties 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 Owner's permission, leave date of beginning of time of warranty until the Date of Certificate of Substantial Performance is determined.

.5 Verify that documents are in proper form, contain full information, and are notarized.

.6 Co-execute submittals when required.

.7 Retain warranties and bonds until time specified for submittal.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 SECTION INCLUDES

.1 Procedures for demonstration and instruction of equipment and systems to Owner's O&M personnel.

.2 O&M personnel includes property facility manager, building operators, maintenenace staff, security staff and technical specialists, as applicable.

1.2 DESCRIPTION

.1 Demonstrate scheduled operation and maintenance of equipment and systems to Departmental Representative's personnel two weeks prior to date of substantial performance.

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

1.3 QUALITY CONTROL

.1 When specified in individual Sections, require manufacturer to provide authorized representative to demonstrate operation of equipment and systems, instruct Owner's personnel, and provide written report that demonstration and instructions have been completed.

.2 Submit training schedule of time and date for demonstration and training of each item of equipment and each system in accordance with the training plan four weeks prior to designated dates, for Departmental Representative's approval.

.3 Submit reports within one week after completion of demonstration, that demonstration and instructions have been satisfactorily completed.

.4 Report shall give time and date of each demonstration and training, with list of persons present.

1.4 CONDITIONS FOR DEMONSTRATIONS

.1 Testing, adjusting, and balancing has been performed and equipment and systems are fully operational.

.2 Provide copies of completed operation and maintenance manuals for use in demonstrations and instructions.

1.5 PREPARATION

.1 Verify that conditions for demonstration and instructions comply with requirements.

.2 Verify that designated O&M personnel are present.

1.6 DEMONSTRATION AND INSTRUCTIONS

.1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment at agreed upon times, at the equipment or designated location.

.2 Instruct personnel in all phases of operation and maintenance using operation and maintenance manuals as the basis of instruction.

.3 Review contents of manual in detail to explain all aspects of operation and maintenance.

.4 Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instructions.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not Used.

Part 3 EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

Part 1 GENERAL

1.1 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.1 Submit demolition drawings:

.2 Submit for review and approval by Departmental Representative shoring and underpinning drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario Canada, showing proposed method.

1.2 SITE CONDITIONS

.1 Review "Designated Substance Report" and take precautions to protect environment.

.2 If material resembling spray or trowel-applied asbestos or other designated substance be encountered, stop work, take preventative measures, and notify Departmental Representative immediately.

.1 Proceed only after receipt of written instructions have been received from Departmental Representative.

.3 Notify Departmental Representative before disrupting building access or services.

Part 2 PRODUCTS

2.1 NOT USED

.1 Not used.

Part 3 EXECUTION

3.1 EXAMINATION

.1 Inspect building with Departmental Representative and verify extent and location of items designated for removal, disposal, alternative disposal, recycling, salvage and items to remain.

.2 Locate and protect utilities. Preserve active utilities traversing site in operating condition.

.3 Notify and obtain approval of utility companies before starting demolition.

.4 Disconnect, cap, plug or divert, as required, existing public utilities within the property where they interfere with the execution of the work, in conformity with the requirements of the authorities having jurisdiction. Mark the location of these and previously capped or plugged services on the site and indicate location (horizontal and vertical) on the record drawings. Support, shore up and maintain pipes and conduits encountered.

.1 Immediately notify Departmental Representative and utility company concerned in case of damage to any utility or service, designated to remain in place.

.2 Immediately notify the Departmental Representative should uncharted utility or service be encountered, and await instruction in writing regarding remedial action.

3.2 PROTECTION

.1 Keep noise, dust, and inconvenience to occupants to minimum.

.2 Protect building systems, services and equipment.

.3 Provide temporary dust screens, covers, railings, supports and other protection as required.

3.3 PREPARATION

.1 Protection of In-Place Conditions:

.1 Keep noise, dust, and inconvenience to occupants to minimum.

.2 Protect building systems, services and equipment.

.3 Provide temporary dust screens, covers, railings, supports and other protection as required.

.4 Do Work in accordance with Section 01 35 29.

.2 Demolition/Removal:

.1 Remove items as indicated.

.2 Remove parts of existing building to permit new construction.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.

.3 Refer to demolition drawings and specifications for items to be salvaged for reuse.

.4 Waste Management: separate waste materials for reuse and recycling.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

Part 1 GENERAL

1.1 SUMMARY

.1 Comply with requirements of this Section when performing following Work: Type 1 Operation.

.1 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap on walls and ceilings.

.2 Removal of lead-containing coatings or materials using a power tool with an effective dust collection system equipped with a HEPA filter on walls and ceilings.

.3 Removal of lead-containing coatings or materials with non-powered hand tool, other than manual scraping and sanding on walls and ceilings.

1.2 REFERENCES

.1 Ontario Ministry of Labour

.1 Occupational Health and Safety Branch, Guideline Lead On Construction Projects, September 2004, and O. Reg. 490/09 respecting Designated Substances - Lead made under the Occupational Health and Safety Act as amended by O. Reg. 148/12 and O. Reg. 149/12.

.2 Department of Justice Canada

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

.3 Health Canada

.1 Workplace Hazardous Materials Information System (WHMIS), Material Safety Data Sheets (MSDS).

.4 Human Resources and Social Development Canada (HRSDC)

.1 Canada Labour Code Part II, - SOR 86-304 - Occupational Health and Safety Regulations.

.5 Transport Canada (TC)

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

.6 U.S. Environmental Protection Agency (EPA)

.1 EPA 747-R-95-007-1995, Sampling House Dust for Lead.

.7 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention/National Institute for Occupational Safety and Health (NIOSH)

.1 NIOSH 94-113 - NIOSH Manual of Analytical Methods (NMAM), 4th Edition (1994).

.8 Underwriters' Laboratories of Canada (ULC)

.9 Report of the Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario, 1984.

1.3 DEFINITIONS

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

.2 Authorized Visitors: Departmental Representative or designated representative.

.3 Polyethylene: polyethylene sheeting or rip-proof polyethylene sheeting with tape along edges, around penetrating objects over cuts and tears, and elsewhere as required to provide protection and isolation. For protection of underlying surfaces from damage and to prevent lead dust entering in clean area.

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

.5 Action level: employee exposure, without regard to use of respirators, to airborne concentration of lead of 50 micrograms per cubic meter of air (50 ug/m^3) calculated as 8-hour time-weighted average (TWA). Minimum precautions for lead abatement are based on airborne lead concentrations less than 0.05 milligrams per cubic meter of air for removal of lead based paint by methods noted in paragraph 1.1.

.6 Competent person: individuals, Departmental Representative capable of identifying existing lead hazards in workplace taking corrective measures to eliminate them.

.7 Lead dust: wipe sampling on vertical surfaces and/or horizontal surfaces, dust and debris is considered to be lead contaminated if it contains more than 40 micrograms of lead in dust per square foot.

1.4 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00.

.2 Provide proof satisfactory to Departmental Representative that suitable arrangements have been made to dispose of lead based paint waste in accordance with requirements of authority having jurisdiction.

.3 Provide proof of Contractor's General and Environmental Liability Insurance.

.4 Quality Control:

.1 Provide Departmental Representative necessary permits for transportation and disposal of lead based paint waste and proof that lead based paint waste has been received and properly disposed.

.2 Provide proof satisfactory to Departmental Representative that employees have had instruction on hazards of lead exposure, respirator use, dress, and aspects of work procedures and protective measures.

1.5 QUALITY ASSURANCE

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

.2 Health and Safety:

.1 Do construction occupational health and safety in accordance with Section 01 35 29.

.2 Safety Requirements: worker and visitor protection.

.1 Protective equipment and clothing to be worn by workers and visitors in work Area include:

.1 Respirator NIOSH approved and equipped with replaceable HEPA filter cartridges with an assigned protection factor of 10, acceptable to Authority having jurisdiction. Suitable for type of lead and level of lead dust exposure. Provide sufficient amount of filters.

.2 Eating, drinking, chewing, and smoking are not permitted in work area.

.3 Ensure workers wash hands and face when leaving work area. Facilities for washing are located as indicated on drawings.

.4 Visitor Protection:

.1 Provide approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors procedures to be followed in entering and exiting work area.

1.6 WASTE MANAGEMENT AND DISPOSAL

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

.2 Disposal of lead waste generated by removal activities must comply with Federal, Provincial, Territorial and Municipal regulations. Dispose of lead waste in sealed double thickness 0.152 mm thick bags or leak proof drums. Label containers with appropriate warning labels.

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

1.7 EXISTING CONDITIONS

.1 Reports and information pertaining to lead based paint to be handled, removed, or otherwise disturbed and disposed of during this Project are bound into this specification.

.2 Notify Departmental Representative of lead based paint discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Departmental Representative.

1.8 SCHEDULING

.1 Not later than two days before beginning Work on this Project notify following in writing:

.1 Appropriate Regional or Zone Director of Medical Services Branch, Health Canada.

.2 Provincial Ministry of Labour.

.3 Disposal Authority.

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

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

.4 Hours of Work: perform work involving lead removal located on drawings outside of normal working hours. Include in Contract Sum additional costs due to this requirement.

1.9 OWNER'S INSTRUCTIONS

.1 Provide Departmental Representative satisfactory proof that every worker has had instruction and training in hazards of lead exposure, in personal hygiene, in aspects of work procedures.

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

.1 Proper fitting of equipment.

.2 Inspection and maintenance of equipment.

.3 Disinfecting of equipment.

.4 Limitations of equipment.

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

.4 Supervisory personnel to complete required training.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Polyethylene 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.

.2 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under dry conditions and wet conditions using amended water.

.3 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual lead paint residue.

.4 Lead waste containers: metal or fibre type acceptable to dump operator with tightly fitting covers and 0.15 mm thickness sealable polyethylene liners.

.1 Label containers with pre-printed bilingual cautionary Warning Lead clearly visible when ready for removal to disposal site.

Part 3 EXECUTION

3.1 SUPERVISION

.1 One Supervisor for every ten workers is required.

.2 Supervisor must remain within work area during disturbance, removal, or handling of lead based paints.

3.2 PREPARATION

.1 Remove and store items to be salvaged or reused.

.1 Protect and wrap items and transport and store in area specified by Departmental Representative.

.2 Work Area:

.1 Shut off and isolate HVAC system to prevent dust dispersal into other building areas. Conduct smoke tests to ensure duct work is airtight.

.2 Pre-clean fixed casework and equipment within work area, using HEPA vacuum and cover and seal with polyethylene sheeting and tape.

.3 Clean work area using HEPA vacuum. If not practicable, use wet cleaning method. Do not raise dust.

.4 Seal off openings with polyethylene sheeting and seal with tape.

.5 Protect floor surfaces covered from wall to wall with polyethylene sheets.

.6 Maintain emergency fire exits or establish alternatives satisfactory to Authority having jurisdiction.

.7 Where water application is required for wetting lead containing materials, provide temporary water supply appropriately sized for application of water as required.

.8 Provide electrical power and shut off for operation of powered tools and equipment. Provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical cables and equipment.

.3 Do not start work until:

.1 Arrangements have been made for disposal of waste.

.2 Tools, equipment, and materials waste containers are on site.

.3 Arrangements have been made for building security.

.4 Notifications have been completed and preparatory steps have been taken.

3.3 LEAD ABATEMENT

.1 Removal of lead-containing coatings with a chemical gel or paste and fibrous laminated cloth wrap; or removal equipped with HEPA filters; or removal with using power tools, non-powered hand tool, other than manual scraping and sanding.

.2 Remove lead based paint in small sections and pack as it is being removed in sealable 0.15 mm plastic bags and place in labelled containers for transport.

.3 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to staging area. Clean external surfaces thoroughly again by wet sponging. Wash containers thoroughly pending removal to outside. Ensure containers are removed by workers who have entered from uncontaminated areas dressed in clean coveralls.

.4 After completion of stripping work, wire brush and wet sponge surface from which lead based paint has been removed to remove visible material. During this work keep surfaces wet.

.5 After wire brushing and wet sponging to remove visible lead based paint, and after encapsulating lead containing material impossible to remove, wet clean entire work area, and equipment used in process. After inspection by Departmental Representative apply continuous coat of slow drying sealer to surfaces of work area. Do not disturb work area for 8 hours no entry, activity, ventilation, or disturbance during this period.

3.4 INSPECTION

.1 Perform inspection to confirm compliance with specification and governing authority requirements. Deviations from these requirements not approved in writing by Departmental Representative will result in work stoppage, at no cost to Owner.

.2 Departmental Representative will inspect work for:

.1 Adherence to specific procedures and materials.

.2 Final cleanliness and completion.

.3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

3.5 LEAD SURFACE SAMPLING - WORK AREAS

.1 Final lead surface sampling to be conducted as follows:

.1 After work area has passed a visual inspection for cleanliness approved and accepted by Departmental Representative. Apply coat of lock-down agent to surfaces within enclosure, and appropriate setting period of 8 hours has passed, Departmental Representative will perform lead wipe sampling.

.1 Final lead wipe sampling results from horizontal and vertical surfaces must show lead levels of less than 40 micrograms of lead in dust per square foot. Samples collected and analyzed in accordance with EPA 747-R-95-007.

.2 If wipe sampling results show levels of lead in excess of 40 micrograms per square foot, re-clean work area at contractor's expense and apply another acceptable coat of lock-down agent to surfaces.

.3 Repeat as necessary until fibre levels are less than 40 micrograms per square foot.

3.6 FINAL CLEANUP

.1 Following cleaning and when lead wipe surfaces sampling are below acceptable concentrations, proceed with final cleanup.

.2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible lead containing particles observed during cleanup, immediately, using HEPA vacuum.

.3 Place polyethylene sheets, tape, cleaning material, clothing, and contaminated waste in plastic bags and sealed labelled waste containers for transport.

.4 Conduct final check to ensure no dust or debris remains on surfaces as result of dismantling operations.

3.7 RE-ESTABLISHMENT OF OBJECTS AND SYSTEMS

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

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 ASTM International

.1 ASTM A123/A123M-09, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.

.2 ASTM A307-10, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.

.2 CSA International

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

.2 CSA S16-09, Design of Steel Structures.

.3 CSA W48-06(R2011), Filler Metals and Allied Materials for Metal Arc Welding (Developed in co-operation with the Canadian Welding Bureau).

.4 CSA W59-M03(R2008), Welded Steel Construction (Metal Arc Welding) Metric.

.3 Green Seal Environmental Standards (GS)

.1 GS-11-2008, 2nd Edition, Paints and Coatings.

.4 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.5 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual - current edition.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for sections, plates, pipe, tubing, bolts and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit two copies of WHMIS MSDS.

.1 For finishes, coatings, primers, and paints applied on site: indicate VOC concentration in g/L.

.3 Shop Drawings:

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

.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details, and accessories.

1.3 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding and packaging materials as specified in Construction Waste Management Plan.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Steel sections and plates: to CAN/ G40.20/G40.21, Grade 350W for W and HSS sections, 300W for plates, bars, angles and channels; minimum 75% recycled content for all steel.

.2 Welding materials: to CSA W59 and certified by CWB.

.3 Welding electrodes: to CSA W48 Series.

.4 Unheaded Rods: ASTM A36/A36M.

.5 Headed Bolts: ASTM A325/A325M, Type 1; heavy hex steel structural bolts and heavy hex carbon steel nuts.

.6 Washers: ASTM A36/A36M.

2.2 FABRICATION

.1 Verify dimensions and condition of existing work; report any discrepancies and potential problem areas to the Consultant before commencing with fabrication. Obtain Departmental Representative’s review before field cutting or altering any members.

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

.3 Use self-tapping shake-proof oval headed screws on items requiring assembly by screws or as indicated.

.4 Where possible, fit and shop assemble work, ready for erection.

.5 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

.6 Design structural steel connections required by the Contract Documents to withstand design loadings indicated and in accordance with requirements of the Building Code and CAN/CSA S16 to resist forces, moments, shears and allow for movements indicated.

.7 Engage fabricator who utilizes registered professional engineer to prepare calculations, shop drawings, and other structural data for connections not shown on drawings that comply with requirements of this Section.

.8 Submit Current Letter of Validation, CWB certification; and in addition, submit copies of following CWB documents:

.1 Company specific Welding Supervisor's Certificate, backside and front side indicating proper certification.

.2 Individual Welder Certificate with listing for type of work being performed.

.3 Fabricator certified by CWB to CSA W47.1, Division 1 or 2.1.

.9 Comply with applicable CWB standards for classification of work being performed including, but not limited to, following:

.1 Welding inspection: to CSA W178.

.2 Resistance welding: to CSA W55.3.

.3 Fusion welding: to CSA W59.

2.3 FINISHES

.1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m², Coating Grade 85, to ASTM A123/A123M.

2.4 SHOP PAINTING

.1 Apply one shop coat of primer to metal items, with exception of galvanized or concrete encased items.

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

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

Part 3 EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for metal fabrications installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative.

3.2 ERECTION

.1 Do welding work in accordance with CSA W59 unless specified otherwise.

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

.3 Provide suitable means of anchorage acceptable to Departmental Representative such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.

.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Supply components for work by other trades in accordance with shop drawings and schedule.

.6 Make field connections with bolts to CSA S16 or Weld field connection.

.7 Deliver items over for casting into concrete and building into masonry together with setting templates to appropriate location and construction personnel.

.8 Touch-up rivets, field welds, bolts and burnt or scratched surfaces with primer after completion of:

.1 Primer: maximum VOC limit 250 g/L to GS-11.

.9 Touch-up galvanized surfaces with zinc rich primer where burned by field welding.

.1 Primer: maximum VOC limit 250 g/L to GS-11.

3.3 TESTING AND INSPECTION

.1 Departmental Representative will appoint and pay for services of testing agency to perform testing and inspection of work of this Section:

.1 100% visual inspection of welds and workmanship

.2 Randomly check member dimensions, thicknesses, lengths and fabrication details.

.3 Check milling of columns and base plates.

.4 Randomly examine dimensions for tolerance.

.5 Examine coatings and application to verify compliance.

.2 Notify Departmental Representative prior to commencement of fabrication work so testing and inspection may be properly scheduled and reviewed.

.3 Departmental Representative may request additional testing and inspection at Contractor’s expense when defects revealed.

.4 Correct, or remove and replace structural steel with defects revealed by testing and inspection to the recommendations of the testing authority and to the approval of authorities having jurisdiction.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by metal fabrications installation.

END OF SECTION

Part 1 GENERAL

1.1 REFERENCES

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)

.1 Material Safety Data Sheets (MSDS).

.2 The Master Painters Institute (MPI)

.1 Architectural Painting Specification Manual - current edition.

.2 Maintenance Repainting Manual - current edition.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for [paint and coating products] and include product characteristics, performance criteria, physical size, finish and limitations.

.2 Submit 2 copies of WHMIS MSDS.

.3 Samples:

.1 Submit for review and acceptance of each unit.

.2 Samples will be returned for inclusion into work.

.3 Submit duplicate 200 x 300 mm sample panels of each paint with specified paint or coating in colours, gloss/sheen and textures required to MPI Painting Specification Manual standards.

.4 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

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

.2 Store painting materials and supplies away from heat generating devices.

.3 Store materials and equipment in well ventilated area within temperature as recommended by manufacturer.

.4 Fire Safety Requirements:

.1 Supply 1 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.

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

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

1.4 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces in accordance with Section 01 51 00.

.2 Co-ordinate use of existing ventilation system with Departmental Representative and ensure its operation during and after application of paint as required.

.3 Provide minimum lighting level of 323 Lux on surfaces to be painted.

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Apply paint finishes when ambient air and substrate temperatures at location of installation can be satisfactorily maintained during application and drying process, within MPI and paint manufacturer's prescribed limits.

.2 Apply paint to adequately prepared surfaces, when moisture content is below paint manufacturer's prescribed limits.

.3 Additional application requirements:

.1 Apply paint finish in areas where dust is no longer being generated by related construction operations or when wind or ventilation conditions are such that airborne particles will not affect quality of finished surface.

Part 2 PRODUCTS

2.1 MATERIALS

.1 Supply paint materials for paint systems from single manufacturer.

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

.3 Materials in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual "Approved Product" listing.

.1 Use MPI listed materials having E2 rating where indoor air quality requirements exist.

.4 Colours:

.1 Submit proposed Colour Schedule to Departmental Representative for review.

.2 Base colour schedule on selection of 5 base colours and 3 accent colours.

.5 Mixing and tinting:

.1 Perform colour tinting operations prior to delivery of paint to site, in accordance with manufacturer's written recommendations. Obtain written approval from Departmental Representative for tinting of painting materials.

.2 Use and add thinner in accordance with paint manufacturer's recommendations.

.1 Do not use kerosene or similar organic solvents to thin water-based paints.

.3 Thin paint for spraying in accordance with paint manufacturer's written recommendations.

.4 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

.6 Gloss/sheen ratings:

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

Gloss Level-Category	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish	Max. 5	Max. 10
Gloss Level 2 - Velvet	Max.10	10 to 35
Gloss Level 3 - Eggshell	10 to 25	10 to 35
Gloss Level 4 - Satin	20 to 35	min. 35
Gloss Level 5 - Semi-Gloss	35 to 70	
Gloss Level 6 - Gloss	70 to 85	
Gloss Level 7 - High Gloss	More than 85	

.2 Gloss level ratings of painted surfaces as indicated.

.7 Exterior painting:

.1 Structural Steel and Metal Fabrications: columns, beams, joists and miscellaneous metal.

.1 EXT 5.1D - Alkyd level 3 finish.

.2 Galvanized Metal: high contact/high traffic areas (doors, frames, railings and handrails, etc.).

.1 EXT 5.3B - Alkyd level 3 finish.

Part 3 EXECUTION

3.1 GENERAL

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and data sheets.

.2 Perform preparation and operations for interior painting in accordance with MPI - Architectural Painting Specifications Manual and MPI - Maintenance Repainting Manual except where specified otherwise.

3.2 EXAMINATION

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

.2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.3 PREPARATION

.1 Protection of in-place conditions:

.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Departmental Representative.

.2 Protect items that are permanently attached such as Fire Labels on doors and frames.

.3 Protect factory finished products and equipment.

.2 Surface Preparation:

.1 Remove electrical cover plates and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.

.2 Move and cover portable equipment as necessary to carry out painting operations. Replace as painting operations progress.

.3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Departmental Representative.

.4 Clean and prepare surfaces in accordance with MPI - Architectural Painting Specification Manual and MPI - Maintenance Repainting Manual specific requirements and coating manufacturer's recommendations.

.5 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pretreatment as soon as possible after cleaning and before deterioration occurs.

.6 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.7 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements.

.8 Touch up of shop primers with primer as specified.

3.4 APPLICATION

.1 Paint only after prepared surfaces have been accepted by Departmental Representative.

.2 Use method of application approved by Departmental Representative.

.1 Conform to manufacturer's application recommendations.

.3 Apply coats of paint in continuous film of uniform thickness.

.1 Repaint thin spots or bare areas before next coat of paint is applied.

.4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.5 Sand and dust between coats to remove visible defects.

.6 Finish surfaces both above and below sight lines as specified for surrounding surfaces.

.7 Mechanical/Electrical Equipment:

.1 Paint conduits, piping, hangers, ductwork and other mechanical and electrical equipment exposed in finished areas, to match adjacent surfaces, except as indicated.

.2 Do not paint over nameplates.

.3 Keep sprinkler heads free of paint.

.4 Paint fire protection piping red.

.5 Paint disconnect switches for fire alarm system and exit light systems in red enamel.

.6 Paint natural gas piping yellow.

.7 Paint both sides and edges of backboards for telephone and electrical equipment before installation.

.1 Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11.

.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11.

.3 Place paint defined as hazardous or toxic waste, including tubes and containers, in containers or areas designated for hazardous waste.

END OF SECTION

Part 1 GENERAL

1.1 SUMMARY

.1 Acoustic barrier assembled from 127 mm thick pre-manufactured components. Barrier is designed to meet performance criteria specified herein as a complete assembly.

.2 Provide labor, material, tools, equipment, scaffolding, transportation, inspection, certificates, and temporary protection necessary to:

.1 Provide Acoustical barrier as shown on Drawings and as specified in these Specifications. Provide accessories and appurtenances required for complete working installation.

.2 Connectors and flashing shall make holes in walls acoustically tight in accordance with panel manufacturer's instructions.

.3 Structural steel support frame as required.

.4 Related Sections:

.1 Structural Steel refer to Structural Drawings.

1.2 QUALITY ASSURANCE

.1 Regulatory Requirements:

.1 Acoustical performance: Minimum NRC (Noise Reduction Coefficient) rating of 1.15 and minimum STC (Sound Transmission Class) of 37 (refer to drawings for STC requirement) after panel fabrication.

.2 American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE):

.1 2003 ASHRAE Handbook – HVAC Applications.

.3 Reference Standards:

.1 ASTM E90-99 and ASTM E413-10 Standard Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.

.2 ASTM C423-90a and ASTM E795-05(2012), Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method.

.3 ASTM E1289 - 08 Standard Specification for Reference Specimen for Sound Transmission Loss

.4 ASTM E84-12c, Standard Test Method for Surface Burning Characteristics of Building Materials.

.5 ASTM E90-09, Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements.

.6 ASTM E477-06a, Standard Test Method for Measuring Acoustical and Airflow Performance of Duct Liner Materials and Prefabricated Silencers.

.7 CAN/ULC-S102-07 Method of Testing for Surface Burning Characteristics of Building Materials and Assemblies.

.8 UL 723 Test for Surface Burning Characteristics of Building Materials

.4 CSA International

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

.5 Sheet Metal and Air Conditioning Contractors' National Association (SMACNA).

1.3 SUBMITTALS

.1 Product Data: Manufacturer's product specifications.

.2 Shop Drawings: Complete drawings showing components including mechanical and electrical requirements, construction details including material types, sound pressure loses (insertion losses), pressure drop, unit dimensions and weight.

.3 Certificate of Compliance: Certify completed assembly meets requirements specified herein.

.4 Submit in accordance with Section 01 33 00.

.5 Stamped (P.E.) calculations for all structural and panel components certifying compliance with required wind load.

.6 Silencer Shop Drawings shall include the following: construction details including material types, mounting details (structural frame), sound pressure loses (dynamic insertion losses), pressure drop, unit dimensions and weight.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver products in sufficient quantity and time to maintain approved construction schedule.

.2 Materials shall be in original containers with seals unbroken and labels intact until time of use. Wrapped or bundled materials shall bear name of manufacturer and product. Damaged or otherwise unsuitable material, when so ascertained, shall be removed from Project site.

.3 Store products in secure, dry location, out of way of construction operations. Store products off ground and protect from elements. Wetting of elements not permitted.

.4 Prevent damage to materials, to other stored products, to existing construction, and project work.

1.5 WARRANTY

.1 Finish warranty: Furnish panel manufacturer's written warranty covering failure of the factory-applied finish on metal panels within the warranty period. This warranty shall be in addition to and not a limitation of other rights the Owner may have against the Contractor under the Contract Documents.

Part 2 PRODUCTS

2.1 PANEL CONSTRUCTION

.1 Except as shown on Drawings or at locations described below, use 100mm thick. Exterior surfaces are solid sheet 1.9mm (14-ga.) Galvanized steel. Interior surfaces are 0.9mm (20-ga.) Perforated galvanized steel.

.2 Sound-retarding and absorbing fill material shall be marine grade, noncombustible, inert, mildew-resistant and vermin proof.

.3 Vertical panel reinforcement shall be minimum of 1.2 mm (18 ga.) Cold rolled steel to CSA G40.20.

.4 Spot welds shall be no more than 51 mm apart.

.5 Prior to attaching face sheet, panel shall be dampened and filled with sound-retarding and absorbing elements. Fill shall be slightly larger and thicker than inside dimensions of panel. No voids will be tolerated.

.6 Acoustic fill material shall be held back from inside perforated surface by means of an open mesh spacer.

.7 Weep holes to permit water runoff shall be provided on all horizontal surfaces.

2.2 FINISH PAINT

.1 After final assembly the panel modules shall be factory coated with a polyester powder coating system that is applied through the use of an electrostatic charge which will ensure uniform panel and edge coverage. The powder will be thermally bonded to the panels.

2.3 INTERCHANGEABILITY AND REUSE

.1 Acoustic structural components having same part numbers shall be completely interchangeable.

.2 Acoustic structure shall be such that no components will be damaged upon disassembly. Design shall allow structure to be assembled, disassembled and reassembled minimum of 3 times without detraction from acoustic performance.

2.4 PANEL SYSTEM ACOUSTICAL PERFORMANCE CHARACTERISTICS

.1 Panel system shall be tested by a recognized an approved laboratory in accordance with ASTM E1289 and ASTM C423 standards.

.1 Submit certified laboratory test including absorption and transmission loss values for special panel type and construction of not less than following:

SOUND TRANSMISSION LOSS, DB
Octave Band Center Frequencies (Hz)

63	125	250	500	1K	2K	4K	STC
100 mm Thick Panel							
18	19	30	42	54	58	61	41

SOUND ABSORPTION COEFFICIENTS
Octave Band Center Frequencies (Hz)

63	125	250	500	1K	2K	4K	NRC
100 mm Thick Panel							
.	0.83	1.19	1.1	1.06	1.04	1.03 (1.1)	

2.5 PANEL SUPPORTS AND ANCHORAGE

.1 Secondary Framing:

.1 127 mm Thick Panel Supports: Provide support and attachment system for attachment of 127 mm thick panels between flanges of steel support structure. Panels may be attached in web space between column flanges. Where required by site constraints provide support required to offset parapet.

2.6 VERTICAL DISCHARGE SILENCER

.1 Silencers shall be of the size, configuration, capacity and acoustic performance as scheduled on the drawings.

.2 Silencers shall consist of removable multiple core pod cassettes, one pod per condenser fan, typical of 10 fans. All pods complete with pull handles. Each pod shall be complete with acoustical side access doors measuring a minimum of 900mm (W)x 600mm (H)and complete with stainless steel piano hinges. Core pod dimensions shall be confirmed in the field based on existing condenser fan impeller size. Access door opening dimensions to be confirmed base motor access.

.3 Exterior construction shall be 0.91 mm (20 ga) G90 galvanized panels factory coated with a polyester powder coating system that is applied through the use of an electrostatic charge which will ensure uniform panel and edge coverage. The powder will be thermally bonded to the panels, color to match acoustical barrier panels.

.4 All acoustical baffles shall be constructed with 0.76 mm (22 ga) (perforated G90 galvanized steel).

.5 Media shall be of acoustic quality, marine grade and shall be bacteria and fungus resistant, resilient such that it will not crumble or break, and conforming to irregular surfaces. Media shall not cause or accelerate corrosion of aluminum or steel.

.6 Silencer materials, including acoustic media, maximum combustion ratings as noted below when tested in accordance with ASTM E84, NFPA 255, UL 723 or CAN/ULC-S102.

.7 Flame spread classification: 20

.8 Smoke developed rating: 45

.9 Factory applied epoxy paint to match acoustic modular barriers; silencer construction to compatible with ASHRAE and SMACNA standards.

.10 Silencer shall not bare any additional weight on the existing chiller enclosure, provide structural steel support frame work as required. Coordinate supports so that they do not impede access to chiller components.

2.7 VERTICAL DISCHARGE SILENCER

.1 Install columns and required structural panel support members and anchorage in accordance with CISC Manual of Steel Construction "Code of Standard Practice".

Part 3 EXECUTION

3.1 PANEL SUPPORTS AND ANCHORAGE

.1 Install columns and required structural panel support members and anchorage in accordance with CISC Manual of Steel Construction "Code of Standard Practice".

.2 Install panel support members on foundations as per engineered requirements.

3.2 PANEL INSTALLATION

.1 Install panels according to manufacturer's instructions and recommendations, as applicable to project conditions and supporting substrates. Anchor panels and other components of the work securely in place, with provisions for thermal and structural movement.

.1 Field cutting of exterior panels is not permitted.

.2 Install panels with exposed fasteners prefinished to match panel finishes.

.2 Accessories: Install components required for a complete acoustical barrier panel system, including trim, coping, supports and attachments, connections between panels, seam covers, sealants, fillers, closures strips and similar items.

3.3 CLEANING AND ADJUSTMENT

.1 Damaged units: Replace panels and other components of the work that have been damaged or have deteriorated beyond successful repair by means of finish touch up or similar minor repair procedures.

.2 Cleaning: Remove temporary protective coverings and strippable films (if any) as soon as each panel is installed. Upon completion of panel installation, clean finished surfaces as recommended by panel manufacturer, and maintain in a clean condition during construction.

3.4 PATCHING AND REPAIRS

.1 Promptly repair damage to existing roof caused by installation of acoustic panels provided it meets warranty of existing roofing manufacturer.

3.5 SILENCER INSTALLATION

.1 Coordinate silencer installation and supports such that access to existing chiller is not affected. Silencer shall not bare any additional weight on existing chiller.

END OF SECTION

DESIGNATED SUBSTANCE SURVEY
SPECIFIED AREAS – CHILLER ALTERATION PROJECT – 2ND FLOOR
11 STATION STREET – BELLEVILLE, ONTARIO

GEC PROJECT No. 27164

GEC PROJECT NO. 27164

REPORT TO:

MR. GERRY MORAHAN
FACILITY MANAGER

ON:

DESIGNATED SUBSTANCE SURVEY
SPECIFIED AREAS – CHILLER ALTERATION PROJECT – 2ND FLOOR
11 STATION STREET, BELLEVILLE, ONTARIO

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MARCH 20, 2013

EXECUTIVE SUMMARY

Greenough Environmental Consulting Inc. (GEC) was commissioned by Mr. Gerry Morahan, of SNC-Lavalin Operations and Maintenance Inc., (SNC-Lavalin O&M), to conduct a designated substance survey and report (DSR) for the chiller alteration project in specified areas of the 2nd floor of the building located at 11 Station Street in Belleville, Ontario.

The purpose of the investigation was to identify the quantity, location, and condition of designated substances located the pending renovation area for chiller alteration project.

Based on the laboratory results and the visual inspection of the accessible areas conducted during the survey, lead-containing paint was confirmed within the subject area. Asbestos may also be present in the form of sprayed fireproofing within closed columns located throughout the project area. Silica and mercury are presumed present in select building materials, while other designated substances may be present in low concentrations in building materials, paints and adhesives within the project areas but do not represent a concern to occupational health at this time.

A summary of the designated substance survey results is presented in **Table 1**.

TABLE 1 – SUMMARY OF RESULTS & RECOMMENDATIONS
DESIGNATED SUBSTANCE SURVEY – SPECIFIED AREAS – CHILLER PROJECT AREA – 2ND FLOOR
11 STATION STREET – BELLEVILLE, ONTARIO – MARCH 2013

Component	Comments	Recommendations
Acrylonitrile	None identified.	None.
Arsenic	None identified.	None.
Asbestos	• No asbestos-containing materials were identified within the project area; however, remnant sprayed fireproofing may be present within closed plaster ceilings and columns within the building. Columns are not expected to be impacted during the chiller alteration project. • Concentrations of Chrysotile asbestos in fibreboard located in the perimeter ceiling space were detected below the method	• Although not anticipated, if the closed columns within the project area are to be manipulated, it should be assumed that remnant asbestos-containing fireproofing remains present. • Although not required under Ontario Regulation 278/05 (i.e. <0.5% Chrysotile asbestos), as a best management practice, consider treating the perimeter fibreboard as an asbestos-containing material. • Suspect materials identified during

TABLE 1 – SUMMARY OF RESULTS & RECOMMENDATIONS DESIGNATED SUBSTANCE SURVEY – SPECIFIED AREAS – CHILLER PROJECT AREA – 2ND FLOOR 11 STATION STREET – BELLEVILLE, ONTARIO – MARCH 2013		
Component	**Comments**	**Recommendations**
	detection limit (i.e. 0.5%) and are, by definition, not considered to be asbestos-containing materials under O.Reg 278/05.	demolition/renovation activities not discussed in this report herein (i.e. suspect roofing materials) should be treated as ACMs unless proven otherwise through material specific sampling and analysis in accordance with the requirements of Ontario Regulation 278/05.
Benzene	None identified.	None.
Coke Oven Emissions	None identified.	None.
Ethylene Oxides	None identified.	None.
Isocyanates	None identified.	None.
Lead	GEC collected one bulk sample of the primary paint finishes from the project area for analysis. Based on the analysis, a moderate concentration of 3090 g/g was identified. Painted surfaces were generally found to be in good condition within the project area. Lead may also be present in the solder used on copper domestic water lines, as caulking in bell fittings associated with cast iron drainage pipes and wiring and electrical equipment observed within the subject area.	The Lead Regulation on Construction Projects (enforced by Ministry of Labour) does not require removal of lead paint or lead-based materials unless work on these materials is likely to produce lead fumes or dust, for example, during welding, torch cutting, grinding, sanding, or sand blasting. In the event that any other work is conducted that has the potential to create airborne lead, every employer shall take all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities to ensure that the time-weighted average exposure of a worker to airborne lead, except tetraethyl lead, shall not exceed 0.05 milligrams lead per cubic metre of air, and in the case of exposure to tetraethyl lead 0.10 milligrams lead per cubic metre of air. R.R.O. 490/09.

TABLE 1 – SUMMARY OF RESULTS & RECOMMENDATIONS DESIGNATED SUBSTANCE SURVEY – SPECIFIED AREAS – CHILLER PROJECT AREA – 2ND FLOOR 11 STATION STREET – BELLEVILLE, ONTARIO – MARCH 2013		
Component	**Comments**	**Recommendations**
		Disposal of lead-based paints considered to be hazardous waste (determined through toxicity characteristic leaching procedure) must be disposed of as hazardous waste at an appropriate landfill. Non-hazardous waste can be disposed of at permitted solid waste landfills
Mercury	Mercury and mercury vapour are assumed to be present in fluorescent light tubes identified within the noted rooms. Mercury may also be present in thermometers, switches and thermostats present in the noted rooms.	Mercury vapour within fluorescent light tubes and other equipment poses no risk to occupants provided the mercury containers remain intact. If removal of the tubes and/or thermostats is to be completed, best management practice for disposal of mercury-containing thermostats and light tubes is to participate in the manufacturer's recycling program or to release the material to an approved waste carrier for disposal and/or recycling.
Silica	Silica is presumed present in drywall (gypsum board), drywall joint compound, concrete materials, observed within the subject area. The potential for the generation of airborne silica dust exists when manipulating the noted building materials.	Silica dust can be generated by drilling, coring, blasting, grinding, crushing and sandblasting silica-containing materials. Prior to any demolition activities, ensure that all necessary measures and procedures by means of engineering controls, work practices and hygiene practices and facilities are implemented to ensure that the TWAEV of a worker to silica is reduced to the lowest practical level and in any event shall not exceed 0.05 milligrams per cubic metre of air by volume for cristobalite and tridymite, and 0.10 milligrams silica per cubic metre of air by volume for quartz and tripoli.
Vinyl Chloride	Likely present in stable form in pipes, paints and finishes.	None.

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APPENDICES

1.0 INTRODUCTION

Greenough Environmental Consulting Inc. (GEC) was commissioned by Mr. Gerry Morahan, under the direction of SNC-Lavalin Operations and Maintenance Inc., (SNC-Lavalin O&M) to conduct a designated substance survey and report (DSR) for the planned chiller alteration project on the 2nd floor of the building located at 11 Station Street in Belleville, Ontario.

The purpose of the investigation was to identify the quantity, location, and condition of designated substances located throughout the proposed project area on the 2nd floor of the building.

All DSR work meets the requirements of Section 30 of the Ontario Occupational Health and Safety Act and WHMIS Regulation (formerly Bill 208).

2.0 SCOPE AND METHODOLOGY

The scope of work followed during the assessment was completed in accordance with the scope of work agreed upon by GEC and SNC-Lavalin O&M (GEC Proposal #13-039). The survey included the chiller alteration project area only as directed by the Client.

All work was completed in accordance with provincial regulations (O. Reg 490/09 and 278/05). The survey included the following designated substances:

- Acrylonitrile
- Arsenic
- Asbestos
- Benzene
- Coke oven Emissions
- Ethylene Oxide
- Isocyanates
- Lead
- Mercury
- Silica
- Vinyl Chloride

The site assessment was completed by GEC on March 6, 2013. The field program included a room-by-room evaluation of all accessible areas within the proposed chiller alteration project area on the 2nd floor.

Materials suspected to contain designated substances, were visually identified based on the surveyor's knowledge as well as historical application of building components. Where permitted, visual identification of materials suspected to contain asbestos was supported by the collection and analysis of representative samples. Asbestos sampling was performed by GEC in order to meet the current minimum sampling requirements of Ontario Regulation 278/05 - Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations (O. Reg. 278/05), as amended.

In Ontario, a material is defined as an ACM if the material has a minimum asbestos content of 0.5% by dry weight. ACMs are divided into two categories: friable and non-friable materials. A friable ACM is a material that can be crumbled, powdered, pulverized or reduced to dust by hand or moderate pressure. Friable materials can readily release fibres when disturbed. Common applications of friable ACMs are sprayed or trowelled surfacing materials (e.g. sprayed fireproofing and textured coatings) as well as mechanical and thermal insulations. Non-friable materials will generally release fibres only when cut, broken or have deteriorated to the point where the binding agents of the material begin to fail. Common non-friable ACMs include drywall joint compound, plaster, textile products (gaskets etc.) and asbestos cement (transite). It must be noted that some materials, although non-friable intact, become friable upon manipulation.

Bulk samples of suspected ACMs were collected by GEC during the site investigation were analyzed for asbestos content at Paracel Laboratories Ltd. (Paracel) in Ottawa, Ontario. The bulk asbestos samples were analyzed using a combination of dispersion staining and Polarised Light Microscopy (PLM). This analytical method complies with the United States Environmental Protection Agency (U.S. EPA) Method 600/R-93/116 dated July, 1993. Paracel is certified under the National Institute of Science and Technology's National Voluntary Laboratory Accreditation Program (NVLAP) to perform asbestos bulk sample analysis (NVLAP No. 200812-0). The laboratory utilizes a "positive-stop" analysis methodology and stopped analysis for the particular set of samples once asbestos concentrations at or above 0.5% is detected.

Appendix 1 presents asbestos analytical results obtained for the purpose of this survey.

For the purpose of the DSR, GEC collected paint chip samples of predominant paint finishes within the specified project areas for which previous sampling had not been completed and submitted the samples to Paracel Laboratories for analysis.

Paracel has received its Certificate of Laboratory Proficiency from the Canadian Association of Environmental Analytical Laboratories (CAEAL) and has achieved accreditation from the Standard Council of Canada.

Analysis of paint chip samples is performed using Method 6020 which describes the multi-elemental determination of analyses by ICP-MS in environmental samples. The method measures ions produced by a radio-frequency inductively coupled plasma. Analyte species originating in a liquid are nebulized and the resulting aerosol is transported by argon gas into the plasma torch. The ions produced by high temperatures are entrained in the plasma gas and introduced, by means of an interface, into a mass spectrometer. The ions produced in the plasma are sorted according to their mass-to-charge ratios and quantified with a channel electron multiplier. Interferences must be assessed and valid corrections applied, or the data flagged to indicate problems. Interference correction must include compensation for background ions contributed by the plasma gas, reagents, and constituents of the sample matrix. Prior to analysis, samples which require total values must be acid digested using appropriate sample preparation methods.

Inductively coupled plasma-mass spectrometry (ICP/MS) is applicable to the determination of sub-ug/L concentrations of a large number of elements in water samples and in waste extracts or digests. When dissolved constituents are required, samples must be filtered and acid-preserved prior to analysis. No digestion is required prior to analysis for dissolved elements in water samples. Acid digestion prior to filtration and analysis is required for groundwater, aqueous samples, industrial wastes, soils, sludges, sediments, and other solid wastes for which total (acid-leachable) elements are required. **Appendix 2** presents the lead analytical results.

For the purpose of this survey, GEC reviewed previously completed reports for 11 Station Street:

- “Asbestos Product Survey – 11 Station Street, Belleville, Ontario” Completed by Advanced Environmental (AEC) – March 2011.

3.0 SURVEY LIMITATIONS

This report reflects the observations of the accessed areas and analysis of materials sampled during the investigation. It is possible that additional designated substances and hazardous materials exist outside the survey area but they are beyond the scope of this survey.

GEC cannot warrant against the discovery of additional ACMs or presence of other designated substances inside wall cavities, closed bulkheads and closed ceilings (where present). GEC made all attempts to gain access to concealed locations to view/trace potential designated substances while on-site.

The site investigation was completed by Mr. Neil Box on March 6, 2013. Observations expressed in this document apply only to conditions on these dates and within the subject areas.

4.0 RESULTS

The results of the designated substances survey are discussed below.

4.1 Acrylonitrile

Acrylonitrile is used in production of synthetics and may be present in stable form in paints and adhesives. Over time, acrylonitrile will volatize out of these materials but it is not expected that acrylonitrile concentrations will exceed the maximum allowable Time Weighted Average Exposure Value (TWAEV) of 4.3 mg/m^3 (2ppm) of air for occupants of the subject area.

4.2 Arsenic

Arsenic, or arsenic-containing compounds, may be present in stable form in paints and adhesives. Provided these materials remain in good condition, it is not expected that arsenic concentrations will exceed the maximum allowable TWAEV of 0.1 mg/m^3 of air for occupants of the subject area.

4.3 Asbestos

Table 2 provides a summary of all bulk sampling completed by GEC for the purposes of this survey. Photos collected during the investigation are presented in **Appendix 3**.

TABLE 2 - ASBESTOS BULK SAMPLING – CHILLER ALTERATION AREA – 11 STATION STREET BELLEVILLE ONTARIO – DESIGNATED SUBSTANCE SURVEY – MARCH 6, 2013			
Sample Reference	**Building Material Description**	**Location of Sample(s)**	**Result & Type**
SA-01a-c	Fibreboard	Above Drop Ceiling – Perimeter Interior of Building	<MDL CH
SA-02a-c	Grey Mortar Materials	Seams of Fibreboard Above Drop Ceiling Perimeter Interior of Building	ND
SA-03a-c	Grey/White Plaster	Walls within Subject Area	ND
SA-04a-c	Drywall Joint Compound	Wall Ceiling and Bulkheads Throughout Subject Area	ND

- **ND = No Asbestos Detected**
- **CH = Chrysotile Asbestos**
- **MDL = 0.5%**
- *** Definition of an "Asbestos-containing material" as defined by the Ontario Ministry of Labour Regulation 278/05 is any material found to contain 0.5% or greater asbestos by dry weight.**

The following summarizes findings as they relate to asbestos within the project area.

Flooring:

Flooring within subject area consisted of sheet vinyl/rubber flooring. As indicated by Mr. Morahan the noted flooring was recently installed and is not considered an asbestos-containing material. It is not anticipated that the flooring will be impacted as part of the chiller alteration project.

Wall Finishes

Wall finishes within the project area consisted of grey plaster with a white scratch coat, drywall (gypsum board) with drywall joint compound, and exposed cinder blocks. In addition, a fibreboard material was present along the perimeter wall within the ceiling space (above the acoustic ceiling tiles). A mortar material was identified in some seams of the noted fibreboard.

Sampling of suspect asbestos-containing wall finishes is summarized below:

- Three samples (SA-01a-c) of fibreboard were collected from the perimeter walls of the building (above acoustic ceiling tiles) and submitted for laboratory analysis. Based on laboratory analysis all three samples (SA-01a-c) were found to contain Chrysotile asbestos <MDL or 0.5%. Definition of an "Asbestos-containing material" as defined by the Ontario Ministry of Labour Regulation 278/05 is any material found to contain 0.5% or greater asbestos by dry weight. Based on this rationale, the fibreboard is not considered an ACM.
    - The noted fibreboard may also be present behind existing plaster walls throughout the project area (**See Photos 1 and 2**).
- Three samples (SA-02a-c) of grey mortar were collected from the seams of the above noted fibreboard located on the perimeter walls of the building and submitted for laboratory analysis. Based on the laboratory analysis, completed in accordance with O.Reg 278/05, no asbestos was detected in the samples submitted.
- Three samples (SA-03a-c) of grey plaster with a white scratch coat were collected from the walls within the project area and submitted for laboratory analysis (**See Photos 1 and 2**). Based on laboratory analysis, completed in accordance with O.Reg 278/05, no asbestos was detected in the samples submitted.
- Three samples (SA-04a-c) of drywall joint compound were collected from the walls within the project area and submitted for laboratory analysis. Based on laboratory analysis, completed in accordance with O.Reg 278/05, no asbestos was detected in the samples submitted.

Ceiling Finishes

Ceiling finishes within the project area consisted of drywall (gypsum board) with drywall joint compound and acoustic ceiling tiles. A visual inspection of the acoustic ceiling tiles identified manufacturers date stamps indicating they were produced after the year 2000 and are not considered asbestos containing.

As indicated above, bulk sampling of drywall joint compound did not identify asbestos.

Mechanical Insulation:

Accessible sections of mechanical pipe straights and fitting insulation consisted of fibreglass or were un-insulated. As fibreglass in not considered an ACM, no sampling of mechanical insulation was completed.

Based on laboratory data as well as on-site observations, no asbestos-containing mechanical insulations were noted within the subject area at the time of the assessment.

Note:

- The above information does not include suspected ACMs or other designated substances which may be present in locations not inspected (i.e., those that may be present within concealed wall and ceiling spaces or areas outside of chiller alteration project area). Every attempt to trace designated substances in concealed locations was made during the assessment.

Fireproofing Materials:

Light green coloured sprayed fireproofing was identified throughout the majority of the project area ceiling space (**See Photo 1**). As indicated by Mr. Morahan, the fireproofing was applied during the renovation in January 2011. As the material is new and not considered an ACM no sampling was completed.

Previously completed sampling (AEC – 2011) of the original sprayed fireproofing within the building identified approximately 15 – 23 % Chrysotile Asbestos. As indicated by Mr. Morahan the majority of the sprayed fireproofing within the building was removed during a recent renovation (2011)); however, remnant fireproofing may present above closed plaster ceilings and closed columns within building.

Note: Although not expected to be impacted during the chiller alteration, if the closed columns located within the project areas are to be manipulated it must be assumed that asbestos – containing fireproofing is present.

Roofing Materials:

As indicated by Mr. Morahan, the roof was replaced in 2001. As this is a non-destructive investigation, and due to the limitations of sampling such materials (i.e., potential water leaks and damage etc.), GEC did not sample the interior layers of the roof. If suspect materials are identified during future manipulation of the roof, there materials should be treated as ACMs unless proven otherwise through material specific sampling and analysis in accordance with the requirements of Ontario Regulation 278/05.

4.4 Benzene

Benzene is likely present in a stable form within roofing materials, paints and adhesives. Over time, the benzene component volatizes out of these materials and is released into the ambient air. It is expected that only trace amounts of benzene presently exist in the building materials at the site. It is unlikely that benzene emissions from the building materials on site will exceed the maximum allowable TWAEV of 0.5ppm (parts per million) for occupants of the subject area.

4.5 Coke Oven Emissions

Coke oven emissions are the exhaust released during the burning process of coke (pure carbon). This process was not observed and is not expected to take place within this building; therefore, it is unlikely that coke oven emission concentrations will exceed the maximum allowable TWAEV of 0.15 mg/m^3 for occupants for the subject area.

4.6 Ethylene Oxides

Ethylene oxides are used in production of many foams, adhesives and paints. Over time, ethylene oxide will volatize out of these materials and may be present in trace amounts in the ambient air in the area. It is not expected that ethylene oxide levels will become hazardous to occupants of the subject area.

4.7 Isocyanates

Isocyanates are raw materials from which all polyurethane products are made. Over time, isocyanates may volatize out of these materials but will only be present in trace amounts and are not expected to exceed the maximum allowable TWAEV of 0.005ppm (parts per million) for occupants of the subject area.

4.8 Lead

GEC collected one bulk sample of the primary painted finish within the project area and submitted the sample for laboratory analysis. Based on the analysis, the lead concentrations in paint chip sample was 3090 g/g.

The analytical results are attached in **Appendix 2** and summarized in **Table 3**.

TABLE 3 - SUMMARY OF LEAD ANALYTICAL RESULTS CHILLER ALTERATION AREA – 11 STATION STREET BELLEVILLE ONTARIO - DESIGNATED SUBSTANCE SURVEY – MARCH 6, 2013			
Sample Identification	**Sample Location**	**Surface Colour**	**Results (ug/g Lead)**
PSA-01	Perimeter Wall within Project Area	Off White	3090

In 1976, the Hazardous Products Act limited the amount of lead in interior paint to 0.5 % by weight (5,000 µg/g). Over the years, the amount of lead in paint has continued to decrease due to cooperative efforts of government and industry.

Lead is also suspected to be present in the following materials:

- Solder on the joints of copper pipes;
- Drain pipe joint caulking; and
- Electrical wiring/equipment etc.

4.9 Mercury

Mercury and mercury vapour may be present in fluorescent light tubes. Fluorescent lighting was observed in the project area; however are not expected to be a concern during the project.

4.10 Silica

Silica is expected to be present in the concrete building materials, acoustic ceiling tiles and drywall joint compound. No sampling was completed for silica analysis.

4.11 Vinyl Chloride

Vinyl chloride may be present in paints and finishes. Over time, vinyl chloride will volatize out of these materials but will only be present in trace amounts and is not expected to exceed the maximum allowable TWAEV of 1ppm (parts per million) for occupants of the subject area.

5.0 RECOMMENDATIONS

5.1 Asbestos

The following comments are made regarding asbestos containing materials within the project area:

- No asbestos-containing materials were identified within the project area; however, remnant sprayed fireproofing may be present within closed plaster ceilings and columns within the building. Columns are not expected to be impacted during the chiller alteration project.
- Concentrations of Chrysotile asbestos in the perimeter fibreboard were detected below the method detection limit (i.e. 0.5%) and are by definition not considered to be asbestos an under O.Reg 278/05.

Recommendations:

- Although not anticipated, if the closed columns within the project area are to be manipulated, it should be assumed that remnant asbestos-containing fireproofing remains present.
- Although not required under Ontario Regulation 278/05 (i.e. <0.5% Chrysotile asbestos), as a best management practice, consider treating the perimeter fibreboard as an asbestos-containing material.
- Suspect materials identified during demolition/renovation activities not discussed in this report herein (i.e. suspect roofing materials) should be treated as ACMs unless proven otherwise through material specific sampling and analysis in accordance with the requirements of Ontario Regulation 278/05.

5.2 Lead

The Lead Regulation on Construction Projects (enforced by the Ministry of Labour) does not require removal of lead-based materials unless work on these materials is likely to produce lead fumes or dust; for example, during welding, torch cutting, grinding, sanding or sandblasting.

In the event that such work is conducted at this facility, every employer shall take all necessary measures and procedures by means of engineering controls, work and hygiene practices to ensure that the time-weighted average exposure of a worker to airborne lead, except tetraethyl lead, shall not exceed 0.05 milligrams lead per cubic metre of air, and in the case of exposure to tetraethyl lead 0.10 milligrams lead per cubic metre of air, Ontario regulation 490/09.

The Occupational Health and Safety Branch of the Ontario Ministry of Labour have published *Guideline: Lead on Construction Projects*. This document classifies all lead disturbances as Type 1, Type 2a, Type 2b or Type 3 work, and assigns alternate levels of respiratory protection and work procedures for each type of task being performed.

Paint with moderate lead levels less than 3090 ug/g are present at the subject area. Lead is also suspected to be present in the following materials:

- Solder on the joints of copper pipes;
- Drain pipe joint caulking; and,
- Electrical wiring / equipment etc.

When piping is removed during demolition activities, copper and drainage piping can be cut a small distance (e.g., 5cm) from the joints to avoid disturbance of the solder and joint caulking suspected to contain lead.

The work procedures outlined in the MoL document entitled *Guideline: Lead on Construction Projects* must be followed when disturbing the above noted lead-containing materials. Disturbance of paints with lead levels below 5ug/g should not result in significant airborne lead concentrations and should not require special work whereas paint samples identified to contain 163ug/g and 309,000ug/g may create significant quantities of lead dust.

The OEL for airborne lead is prescribed by Ontario Regulation 490/09 *Designated Substances*, as amended. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne lead levels that exceed this Occupational Exposure Limit.

The disposal of construction waste containing lead is governed by O. Reg. 347- General – Waste Management, as amended. The transport of the waste to the disposal site is controlled by the federal Transportation of Dangerous Goods Act (TDGA), 1992.

5.3 Mercury

Mercury or mercury vapour within fluorescent light tubes poses no risk to occupants, provided the mercury containers remain intact.

It is unlikely that the presence of mercury in equipment will lead to unintended ingestion, inhalation or absorption of mercury, provided equipment remains in good working condition.

If broken mercury-containing equipment can be repaired to good working condition, ensure that all repair work is conducted in a fume hood to ensure that equipment maintenance staffs' mercury exposure does not exceed the maximum allowable TWAEV of 0.01 mg/m^3 of air as outlined in O. Reg. 844/90. If broken mercury-containing equipment can not be repaired to good working condition, the equipment should be disposed of in a timely fashion.

Best management practice for disposal of mercury-containing light tubes, equipment and chemical waste is to participate in the product manufacturer's recycling program or to release the material to an approved waste carrier for disposal and/or recycling

5.4 Silica

Silica dust can be generated by drilling, coring, blasting, grinding, crushing and sandblasting silica-containing materials. Work on potential silica-containing building material must adhere to the following precautions:

- Segregate the work area from the rest of the building to reduce the risk of exposing building occupants to silica dust. Workers leaving the work area should pass through a designated clean room where excess dust can be brushed off clothes and facilities are available to wash dust off skin.
- The work surface should be wetted regularly to limit dust released during striking and abrasion.
- Everyone in the work area should be provided with a half-face respirator equipped with HEPA filters.
- Ensure that all necessary measures and procedures by means of engineering control, work and hygiene practices are implemented to ensure that the TWAEV of a worker to silica is reduced to the lowest practical level and in any event shall not exceed 0.05 mg/m^3 of air for cristobalite and tridymite, and 0.10 mg/ m^3 of air for quartz and tripoli.

6.0 CLOSURE

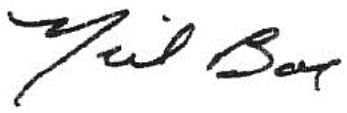
This report has been prepared for the sole benefit of the Public Health Agency of Canada and its intended use. The report may not be relied upon by any other person or entity without the written consent of Greenough Environmental Consulting Inc., (GEC) and the Public Health Agency of Canada.

GEC accepts no responsibility for any use that an outside party makes of this report and any reliance on decisions made based on it, are the responsibility of such parties.

The conclusions presented represent the best judgment of the assessor based on current environmental standards. Due to the nature of the investigation and the limited data available, the assessor cannot warrant against undiscovered environmental liabilities.

We trust that the report meets your current requirements. Should you have any questions or concerns regarding the above, please do not hesitate to contact the undersigned.

GREENOUGH ENVIRONMENTAL CONSULTING INC.



Neil J. R. Box, B.A. (Hons) EMA, WRT
Project Manager

Michael P. Buller, B.A. (Hons), AMRT, CRSP
Vice President of Operations

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APPENDIX 1

ANALYTICAL – ASBESTOS

PARACEL LABORATORIES LTD.

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Certificate of Analysis

Greenough Environmental Consulting Inc.
110-1827 Woodward Dr.
Ottawa, ON K2C 0P9
Attn: Neil Box

Phone: (613) 792-4125
Fax: (613) 792-1077

Client PO:
Project: 27164
Custody:

Report Date: 13-Mar-2013
Order Date: 7-Mar-2013
Order #: 1310235

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1310235-01	SA-01a
1310235-02	SA-01b
1310235-03	SA-01c
1310235-04	SA-02a
1310235-05	SA-02b
1310235-06	SA-02c
1310235-07	SA-03a
1310235-08	SA-03b
1310235-09	SA-03c
1310235-10	SA-04a
1310235-11	SA-04b
1310235-12	SA-04c

Approved By:

Emma Diaz For Heather S.H. McGregor, BSc
Laboratory Director - Microbiology

PARACEL LABORATORIES LTD.

Client: Greenough Environmental Consulting Inc.
110-1827 Woodward Dr.
Ottawa, ON K2C 0P9

Attn: Neil Box
Tel: (613) 792-4125
Fax: (613) 792-1077

Project: 27164
Paracel Report No.: 1310235

Received Date: 07-Mar-13
Report Date: 13-Mar-13

Asbestos by PLM **MDL - 0.5%**

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1310235-01	06-Mar-13	sample homogenized	Brown	Fiberboard	Yes	**Client ID: SA-01a** [AS-PRE]	
						[ASCrT] **Chrysotile**	<MDL
						Cellulose	95
						[ASTrc] MMVF	<MDL
						Non-Fibers	5
1310235-02	06-Mar-13	sample homogenized	Brown	Fiberboard	Yes	**Client ID: SA-01b** [AS-PRE]	
						[ASCrT] **Chrysotile**	<MDL
						Cellulose	95
						[ASTrc] MMVF	<MDL
						Non-Fibers	5
1310235-03	06-Mar-13	sample homogenized	Brown	Fiberboard	Yes	**Client ID: SA-01c** [AS-PRE]	
						[ASCrT] **Chrysotile**	<MDL
						Cellulose	95
						[ASTrc] MMVF	<MDL
						Non-Fibers	5
1310235-04	06-Mar-13	sample homogenized	Gray	Mortar	No	**Client ID: SA-02a** [AS-PRE]	
						Cellulose	10
						Non-Fibers	90
1310235-05	06-Mar-13	sample homogenized	Gray	Mortar	No	**Client ID: SA-02b** [AS-PRE]	
						Cellulose	10
						Non-Fibers	90
1310235-06	06-Mar-13	sample homogenized	Gray	Mortar	No	**Client ID: SA-02c** [AS-PRE]	
						Cellulose	10
						Non-Fibers	90
1310235-07	06-Mar-13	sample homogenized	White/Gray	Plaster	No	**Client ID: SA-03a**	
						Cellulose	1
						Non-Fibers	98
						Other fibers	1

PARACEL LABORATORIES LTD.

Client:	Greenough Environmental Consulting Inc. 110-1827 Woodward Dr. Ottawa, ON K2C 0P9	**Attn:**	Neil Box Tel: (613) 792-4125 Fax: (613) 792-1077
Project:	27164	**Received Date:**	07-Mar-13
Paracel Report No.:	1310235	**Report Date:**	13-Mar-13

Asbestos by PLM **MDL - 0.5%**

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1310235-08	06-Mar-13	sample homogenized	White/Gray	Plaster	No	**Client ID: SA-03b**	
						Cellulose	1
						Non-Fibers	98
						Other fibers	1
1310235-09	06-Mar-13	sample homogenized	White/Gray	Plaster	No	**Client ID: SA-03c**	
						Cellulose	1
						Non-Fibers	98
						Other fibers	1
1310235-10	06-Mar-13	sample homogenized	Gray	DJC	No	**Client ID: SA-04a**	
						Non-Fibers	100
1310235-11	06-Mar-13	sample homogenized	Gray	DJC	No	**Client ID: SA-04b**	
						Non-Fibers	100
1310235-12	06-Mar-13	sample homogenized	Gray	DJC	No	**Client ID: SA-04c**	
						Non-Fibers	100

MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

Analytes in bold indicate asbestos content which may include:

Actinolite, Amosite, Anthopyllite, Chrysotile, Crocidolite and/or Tremolite.

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code *	Analysis Date
Asbestos by PLM	by EPA 600/R-93/116	Ottawa West Lab	200812-0	13-Mar-13

** Reference to the NVLAP term does not permit the user of this report to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.*

Report Notes

ASCrT	Trace Chrysotile was observed below the noted method detection limit.
AS-PRE	Due to the difficult nature of the bulk sample (interfering fibers/binders), additional NOB preparation was required prior to analysis
ASTrc	Trace asbestos was observed below the noted detection limit but could not be accurately quantified.

APPENDIX 2

ANALYTICAL – LEAD

PARACEL LABORATORIES LTD.
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Certificate of Analysis

Greenough Environmental Consulting Inc.
110-1827 Woodward Dr.
Ottawa, ON K2C 0P9
Attn: Neil Box

Phone: (613) 792-4125
Fax: (613) 792-1077

Client PO:
Project: 27164
Custody:

Report Date: 13-Mar-2013
Order Date: 7-Mar-2013
Order #: 1310243

This Certificate of Analysis contains analytical data applicable to the following samples submitted:

Paracel ID	Client ID
1310243-01	PSA-01

Approved By: Mark Foto

Mark Foto, M.Sc. For Dale Robertson, BSc
Laboratory Director

PARACEL LABORATORIES LTD.

Order #: 1310243

Certificate of Analysis

Report Date: 13-Mar-2013
Order Date:7-Mar-2013

Client: **Greenough Environmental Consulting Inc.**
Client PO: Project Description: 27164

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	12-Mar-13	12-Mar-13

Sample Data Revisions

None

Work Order Revisions/Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

PARACEL LABORATORIES LTD.

Order #: 1310243

Certificate of Analysis

Report Date: 13-Mar-2013
Order Date:7-Mar-2013

Client: **Greenough Environmental Consulting Inc.**
Client PO: Project Description: 27164

Sample Results

Lead

Matrix: Paint
Sample Date: 06-Mar-13

Paracel ID	Client ID	Units	MDL	Result
1310243-01	PSA-01	ug/g	20	3090

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	**ND**	**20**	**ug/g**						
Matrix Duplicate									
Lead	**ND**	**20**	**ug/g**	**ND**			**0.0**	**30**	
Matrix Spike									
Lead	**242**		**ug/L**	**7.6**	**93.9**	**70-130**			

APPENDIX 3

PHOTOS

Photo 1 – View in Ceiling Space – Fibreboard, Plaster and New Sprayed Fireproofing.

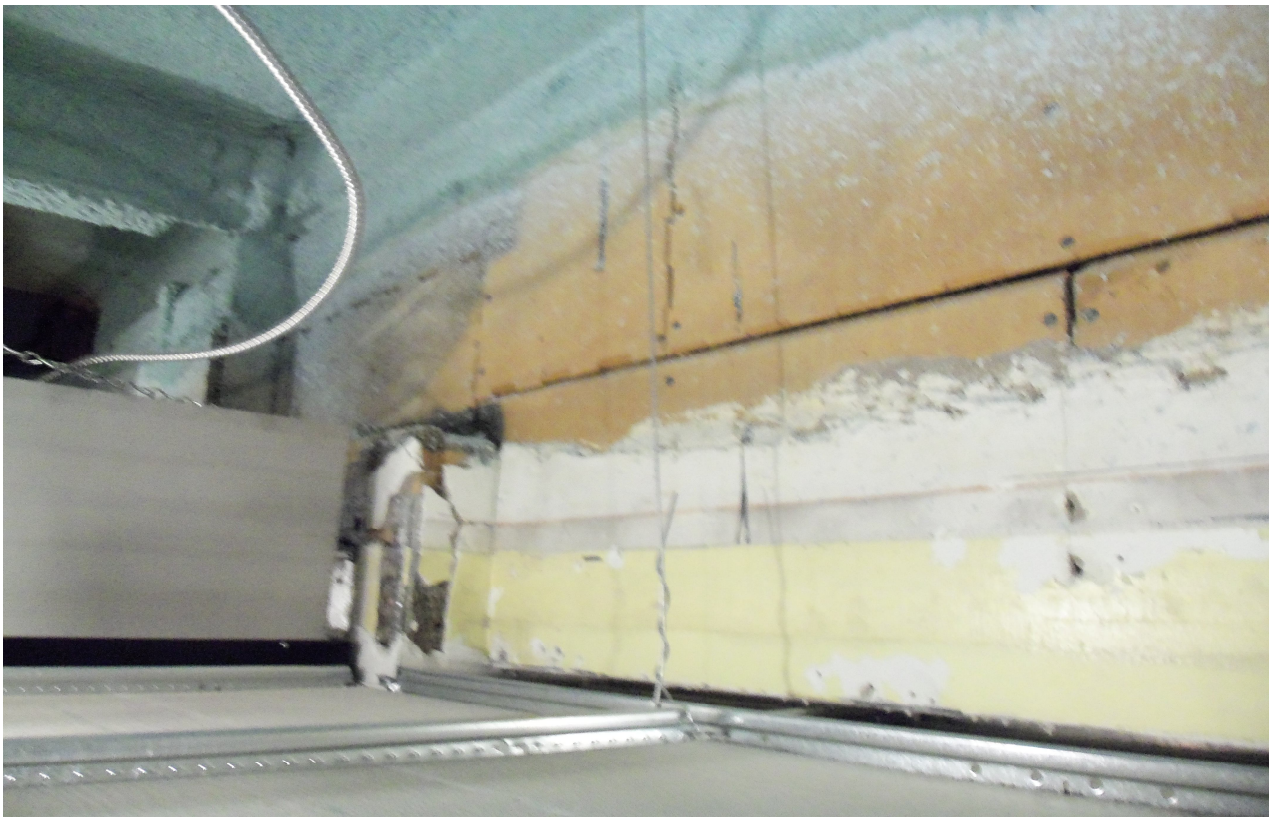

Photo 2 – View in Ceiling Space – Fibreboard behind Plaster. Sprayed Fibreboard above.

SNC-Lavalin O&M

Project Specific Designated Substance Survey
11 Station Road
Belleville, ON

June 2012
EHS[p] Project No.: 04-0001-12-050

PROJECT SPECIFIC DESIGNATED SUBSTANCE SURVEY REPORT
11 STATION STREET
BELLEVILLE, ONTARIO

EHS Project No.: 04-0001-12-050

Prepared by:
EHS Partnerships Ltd.
406 – 2 Gurdwara Road
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For:
Ms. Gerry Morahan
SNC-Lavalin O&M
1 North Front Street, Suite 401
Belleville, Ontario
K8P 5G9

June, 2012

Prepared by:	Reviewed by:
	
Matthew Laneville, B.E.S. Project Coordinator	Trent Windsor, C.E.T. Associate

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Distribution:
3 copies (1 PDF & 2 Hard Copies) – SNC-Lavalin O&M

EXECUTIVE SUMMARY

In June 2012, EHS Partnerships Ltd. (EHS[p]) was commissioned by SNC-Lavalin O&M (SNC) to conduct a Designated Substance Survey (DSS) at 11 Station Street, Belleville, ON. A DSS is required under section 30 of the **Occupational Health and Safety Act** in order to identify hazardous materials that may be present within the building.

The designated substance survey fieldwork was completed on June 6, 2012.

EHS[p]'s findings are summarized in the following table:

Executive Summary Table
Designated Substance Survey
11 Station Street, Belleville, ON

Item	Area of Concern	Recommendation
Asbestos	Asbestos was not identified in any of the samples submitted for analysis	Routine surveillance of asbestos containing material is required for all asbestos containing materials identified in previous reports. Ensure that all asbestos containing materials (ACMs) that have the potential to be damaged are removed following the actions outlined in Ontario Regulation 278/05. The Management Program must be followed and yearly asbestos reassessments should be completed.
Lead	Lead may be present in, glazing on ceramic finishes and on all solder joints of the copper piping observed throughout the subject building. Lead is present in various painted surfaces however it was identified below the industry accepted standard of 5,000ppm and as such are not considered to be lead based.	If work on lead containing materials is likely to produce lead dust or fumes, for example during welding, torch cutting, grinding, sanding or sandblasting, then proper precautions as outlined in the Guideline, Lead on Construction Projects (Ontario Ministry of Labour, September 2004) should be followed.
Silica	Crystalline silica is assumed to be present in the building within concrete structures, plaster, ceiling tile and drywall joint compound within the building	The precautions and procedures outlined in the Guideline, Silica on Construction Projects (Ontario Ministry of Labour, September 2004) should be followed when materials containing Silica are disturbed.

Executive Summary Table Designated Substance Survey 11 Station Street, Belleville, ON		
Item	**Area of Concern**	**Recommendation**
Mercury	Mercury vapour is assumed to be present within fluorescent light tubes that are located in the building.	Best management practices dictate that the mercury containing fluorescent light tubes should be returned to a participating recycling centre or picked up and disposed of by a licensed hazardous materials contractor.
CFCs	Fifteen CFC containing items were identified on the site, the CFC containing equipment consisted of refrigerated water fountains and water coolers, fridges, and air conditioners.	If the refrigerators, air conditioners, water coolers or water fountains are to be removed and disposed of all ozone depleting refrigerant must be removed from the unit prior to disposal. The removal of the refrigerant must be conducted by an individual licensed to perform such work in accordance with the Ozone Depleting Substance Regulation 1998 SOR/99-7.

TABLE OF CONTENTS

LIST OF APPENDICES

PART 1 - GENERAL

1.1 REGULATORY REQUIREMENTS

The completion of this survey and the presentation of the findings herein were made to fulfill the Project Owner's requirement to satisfy Section 30 of the Occupational Health and Safety Act and Ontario Regulation 278/05 "Regulation Respecting Asbestos on Construction Projects and in Building and Repair Operations" (O.Reg. 278/05) in order to identify any 'Hazardous Materials' that may be present within the building.

The designated substances observed in the Occupational Health and Safety Act and their corresponding regulations are:

Acrylonitrile	O. Reg. 490/09
Arsenic	O. Reg. 490/09
Asbestos	O. Reg. 278/05 and O. Reg. 490/09
Benzene	O. Reg. 490/09
Ozone Depleting Substances Chlorofluorocarbons (ODS)	Federal Halocarbon Regulation 2003
Coke Oven Emissions	O. Reg. 490/09
Ethylene Oxide	O. Reg. 490/09
Isocyanates	O. Reg. 490/09
Lead	O. Reg. 490/09 and SOR/2005-109
Polychlorinated Biphenyls	SOR/2008-273
Mercury	O. Reg. 490/09
Silica	O. Reg. 490/09
Vinyl Chloride	O. Reg. 490/09

1.2 SCOPE

This report is based on the site inspection conducted by Matthew Laneville of EHS Partnerships Ltd. (EHS[p]).

The subject building is located at 11 Station Street, Belleville, ON. The survey encompassed the entire building however the first and second floor office spaces have been remodeled. The Canadian Revenue Agency investigation offices located on the first floor were not surveyed as they were inaccessible due to security concerns.

Moderate destructive survey techniques were employed during the site reconnaissance. The visual inspection and sampling was limited to readily accessible areas. The survey did not include the demolition of ceilings or walls, or other areas to examine concealed conditions.

The designated substances mentioned above may be present in partial and non-accessed areas and concealed spaces (i.e. wall and ceiling cavities). Furthermore, materials located within wall cavities could not be observed in order to determine their condition.

PART 2 - DESIGNATED SUBSTANCES

2.1 ASBESTOS

In Ontario, any building material containing more than 0.5% asbestos is recognized as an asbestos containing material (ACM).

Site surveyors typically assess the following building components as part of the routine field procedure:

- Floor;
- Wall;
- Ceiling;
- Structure;
- Mechanical; and
- Other (electrical, exteriors, etc.).

2.1.1 Target Materials

EHS[p] personnel focused on both friable and non-friable materials.

2.1.2 Analytical Procedure

Suspect materials were primarily assessed by visual inspection. On the basis of this inspection, select samples were collected from discreet locations using industry-accepted safe sampling techniques that include the pre-wetting of materials and concealment of materials after collection.

All suspect asbestos samples were submitted to Steve Moody Micro Services, LLC. for analysis. Samples were analyzed by polarized light microscopy with dispersion staining, following USEPA method 600/R-93/116. Steve Moody Micro Services, LLC participates in the National Voluntary Laboratory Accreditation Program (NVLAP # 102056-0). The laboratory analytical report is presented in Appendix A.

2.1.3 Reporting

EHS[p] provides all building information, methodology, laboratory results, and findings within the report. All information respecting detailed findings and conditions are reported.

2.1.4 Other Reports

The asbestos management plan and the asbestos containing material reassessment survey performed by Advanced Environmental in March 2011 was provided and reviewed prior to the completion of the site work by EHS[p].

Asbestos was previously identified in the following materials:

Asbestos Containing Material (ACM)	Location
Fireproofing	Pipe chases, Structural Columns, Basement
Asbestos Fire Door	Basement
Parging Cement	Basement
Air Cell	Basement, Catwalk
Magblock	Basement
Ceiling Texture (remnants)	Room 138

2.1.5 Survey Findings

Interior Finishes

The interior finishes within the building were observed to consist primarily of drywall and plaster.

Asbestos containing ceiling texture remnants were previously identified within room 138. They were not identified on the day of the survey however portions of ceiling texture may remain within hidden cavities.

Ceiling Tiles

Ceiling tiles were within the building were previously sampled and identified as not being asbestos containing.

Flooring

The flooring observed within the building consists of rubber, previously sampled vinyl floor tile, sheet vinyl flooring and concrete. No concerns were identified with regards to asbestos.

Three (3) samples (SA-20, SA-21, and SA-22) of vinyl sheet flooring which was not previously sampled described as mosaic were obtained from room 013 and submitted for analysis. Asbestos was not detected in samples submitted for analysis.

Mechanical Pipe Systems

The mechanical pipe systems were observed to be predominately fiberglass, asbestos has been previously identified in the parging cement, air cell, and magblock insulation which is still pbserved to be present within pipe chases and the basement

Air Handling Units and Ductwork

Duct work was observed in the building. The duct work was observed to be un-insulated.

Other

Seven (7) samples (SA-01, SA-02, SA-03, SA-04, SA-05, SA-06 and SA-07) of sprayed on fireproofing were obtained from the sub-basement boiler room and submitted for analysis. Asbestos was not detected in samples submitted for analysis.

Seven (7) samples (SA-08, SA-09, SA-10, SA-11, SA-12, SA-13 and SA-14) of brick mortar were obtained from the building exterior and submitted for analysis. Asbestos was not detected in samples submitted for analysis.

Five (5) samples (SA-15, SA-16, SA-17, SA-18, and SA-19) of foundation parging were obtained from the building exterior and submitted for analysis. Asbestos was not detected in samples submitted for analysis.

Three (3) samples (SA-23, SA-24, and SA-25) of vinyl cove base were obtained from room 013 and submitted for analysis. Asbestos was not detected in samples submitted for analysis.

Three (3) samples (SA-26, SA-27, and SA-28) of grey caulking were obtained from the west entrance and submitted for analysis. Asbestos was not detected in samples submitted for analysis.

Asbestos containing fire proofing (original) was previously identified within the pipe chases and structural columns of the building this material was not observed during the survey as it is likely located behind solid wall and ceiling surfaces that were inaccessible.

Asbestos may also be present within the fire doors located within the basement of the building.

2.2 LEAD

Lead is a naturally occurring metal element. Pure metallic lead was primarily used to make products such as electric storage batteries, ammunition, solder, radiation shields, pipes and sheaths for electric cables. Inorganic lead compounds such as lead oxides, chromates, carbonates and nitrates are commonly found in insecticides, pigments, paints, frits, glasses, plastics and rubber compounds.

The lead based paint survey was conducted by EHS[p] to satisfy Section 30 of the Occupational Health and Safety Act of Ontario. The Federal Government has been limiting the concentration of lead allowed in manufactured paints since the 1970's. Painted surfaces that were applied prior to the 1980's likely contain elevated concentrations of lead. Exterior painted surfaces applied prior to the 1990's potentially contain elevated concentrations of lead. General industry practice is to categorize any painted surface that contains 0.5% (5000ppm) or greater concentration of elemental lead as a lead based paint and any paint with lead concentrations between 90-5000ppm as lead containing. Care should be taken when working with any painted surface that contains lead.

Eleven (11) samples of suspect lead based paint was collected from the building and submitted for lead analysis.

Sample PS-01, black paint was obtained from the exterior railing and submitted for analysis. The sample was confirmed to contain a lead concentration of 847.1ppm and is therefore considered to be a lead containing paint.

Sample PS-02, beige paint was obtained from the penthouse wall and submitted for analysis. The sample was confirmed to contain a lead concentration of 171.0ppm and is therefore considered to be a lead containing paint.

Sample PS-03, grey paint was obtained from the penthouse floor and submitted for analysis. The sample was confirmed to contain a lead concentration of 821.0ppm and is therefore considered to be a lead containing paint.

Sample PS-04, brown paint was obtained from the first floor door frames and submitted for analysis. The sample was confirmed to contain a lead concentration of 528.5ppm and is therefore considered to be a lead containing paint.

Sample PS-05, light blue paint was obtained from the basement door frames and submitted for analysis. The sample was confirmed to contain a lead concentration of 383.8ppm and is therefore considered to be a lead containing paint.

Sample PS-06, brown paint was obtained from the stairwell railings and submitted for analysis. The sample was confirmed to contain a lead concentration of 663ppm and is therefore considered to be a lead containing paint.

Sample PS-07, red paint was obtained from the stairwell railings of room 038 and submitted for analysis. The sample was confirmed to contain a lead concentration of 2,801ppm and is therefore considered to be a lead containing paint.

Sample PS-08, beige paint was obtained from the wall of room 038 and submitted for analysis. The sample was confirmed to contain a lead concentration of 373.6ppm and is therefore considered to be a lead containing paint.

Sample PS-09, grey paint was obtained from the floor of room 038 and submitted for analysis. The sample was confirmed to contain a lead concentration of 2,482ppm and is therefore considered to be a lead containing paint.

Sample PS-10, red paint was obtained from the housekeeping pads of the mechanical room and submitted for analysis. The sample was confirmed to contain a lead concentration of 228.4ppm and is therefore considered to be a lead containing paint.

Sample PS-11, beige paint was obtained from the floor of room 005 and submitted for analysis. The sample was confirmed to contain a lead concentration of 600.8ppm and is therefore considered to be a lead containing paint.

Lead may be present in solder joints on copper piping in the building.

2.3 ACRYLONITRILE

Acrylonitrile is used to produce polymers such as acrylonitrile-butadiene-styrene (ABS) resins. These polymers are used in the manufacture of a wide range of commercial products, (i.e., automotive parts, clothing, carpets, etc.).

The Time-Weighted Average Exposure Limits (TWAEL) of a worker to airborne acrylonitrile is to be maintained at the lowest practical level and not exceed an eight-hour average concentration of 4.3 mg/m³ of air (2 ppmv).

In its hardened polymer form, acrylonitrile is not expected to release emissions that would exceed the allowable limits.

Pure acrylonitrile was not identified during this assessment.

2.4 ARSENIC

Arsenic can be found in minor levels in paint coating on roofing flashings, floors, walls and underside of the concrete ground floor structures of old buildings.

The TWAEL of a worker to airborne arsenic is to be maintained at the lowest practical level and not exceed an eight hour average concentration of 10 μg/m³ of air.

Considering the age of the building, arsenic could be present in minor amounts in the above listed materials. However, the low probability and minor amounts did not justify that sampling be performed in the present assessment.

2.5 BENZENE

Benzene is typically found in petroleum based products such as gasoline and diesel fuels, asphalt and other hydrocarbon based products.

The TWAEL of a worker to airborne benzene is to be maintained at the lowest practical level with a view to achieving an ambient air concentration lower than 3.2 mg/m³ of air (1 ppmv) and not exceed an eight hour average concentration of 16 mg/m³ of air (5 ppmv).

Direct sources of benzene emissions were not identified within the building.

2.6 CHLOROFLUOROCARBONS

Chlorofluorocarbons (CFCs) also referred to as Ozone depleting substances (ODS) have been widely used in many industrial, commercial and residential applications. They can be found in applications such as refrigerants in heat pumps, refrigerators, freezers and air conditioners (A/C); blowing agents for plastics, foam product and insulation; cleaning agents for metals, electronic equipment and components; and as dry-cleaning fluids.

Chlorofluorocarbons were identified within the refrigerators, water coolers, air conditioners and one water fountain within the building.

The following table identifies the source of CFCs and their location:

Item	Location
Fridge	• Room 228 • Room 243A • Room 208 • Room 148 • Room 145A • Room 110 • Room 167A • Room 20
Water Cooler	• Room 208 • Room 128 (adjacent to room 129) • Room 167A
Water Fountain	• Room 131 (adjacent to door for room 149) • Room 20
Air Conditioner	• Room 164 (two)

2.7 COKE OVEN EMISSIONS

Coke Oven Emissions result from burning of coke.

The TWAEL of a worker to coke oven emissions are to be maintained at the lowest practical level and not exceed an eight-hour average concentration of 0.15mg/m³ of air.

No coke ovens were identified with the building.

2.8 ETHYLENE OXIDE

Ethylene Oxide is a common by-product of fumigation or sterilization procedures.

The TWAEL of a worker to airborne ethylene oxide is to be maintained at the lowest practical level and not exceed an eight-hour average concentration of 1.8mg/m³ of air (1ppmv).

Materials or processes that may release ethylene oxide to ambient air were not identified within the building.

2.9 ISOCYANATES

Isocyanates are mainly used in the manufacture of plastics, foams and coatings.

The TWAEL of a worker in isocyanate dust is to be maintained at the lowest practical level and not exceed an eight-hour average concentration of 0.2µmoles/m³ of air (0.005ppmv). Manufactured products under normal conditions do not pose a health risk. However, sawing or scraping uncured polyurethane that still contains some unreacted-NCO groups will release isocyanate dust.

Uncured polyurethanes were not identified within the building.

2.10 MERCURY

Mercury may be commonly found in thermostats, fluorescent lamp tubes, and High Intensity Discharge (HID) light bulbs.

The TWAEL of a worker to mercury compounds is to be maintained at the lowest practical level and not to exceed an eight-hour average concentration of 0.025mg/m³ of air for all mercury except alkyl mercury oxide for which a concentration of 0.01mg/m³ of air should not be exceeded.

Mercury vapor is assumed to be present within fluorescent light tubes that are located in the subject building.

Best management practices dictate that the mercury containing fluorescent light tubes should be returned to a participating recycling centre or picked up a disposed of by a licensed hazardous materials contractor.

2.11 POLYCHLORINATED BIPHENYLS

Chlorobiphenyls (PCB's) can be found in equipment such as transformers, capacitors, electromagnets, heat transfer unit, hydraulic engine and fluorescent lamp ballasts. Two federal Canadian Environmental Protection Act (CEPA) regulations apply to the use and storage of PCB's. The Chlorobiphenyls Regulation (SOR/92-57) limits the quantity of out of service PCB materials that can be stored at a facility for more than 6 months to 1 kg of PCB. There are also several government policies and guidelines that outline safe practices for the handling and storage of PCB containing material. Fluorescent lamp ballasts may contain minor quantities of PCBs (23.6g).

No PCB containing lamp ballasts were observed within the building.

2.12 SILICA

Silica occurs naturally as crystalline or amorphous material. It is normally found in concrete, mortar and stucco finishes. Crystalline silica is more toxic than amorphous silica, and therefore, is the only on regulated under the Occupational Health and Safety Act.

The TWAEL of a worker to silica dust is to be maintained at the lowest practical level with a view to achieving an ambient air concentration lower than 0.10mg/m³ of air for quartz and Tripoli, and 0.05mg/m³ of air for cristobalite and tridynite.

Free crystalline silica is present within all concrete and mortar based building material, drywall, plaster and ceiling tiles observed in the building.

2.13 VINYL CHLORIDE

Vinyl Chloride is found in many applications such as PVC pipes and fittings.

The Time-Weighted Average Exposure Limits (TWAEL) of a worker to vinyl chloride emission is to be maintained at the lowest practical level and not exceed and eight hour average concentration of 5.2mg/m³ of air (1ppmv).

Vinyl chloride in the PVC compound is bound in a solid matrix and is unlikely to become airborne. Vinyl chloride emissions are not likely to exceed the prescribed limits within the building.

PART 3 – RECOMMENDATIONS

3.1 ASBESTOS

In Federal Buildings disturbance of friable and non-friable asbestos is regulated by Ontario Regulation 278/05, and PWGSC DM directive 057.

All ACM's observed in good condition should be monitored regularly to ensure any newly damaged materials are repaired or removed as soon as possible.

Prior to renovation or demolition, the project owner must ensure that any ACMs that have the potential to be disturbed are removed or enclosed. Workers conducting this activity must be adequately trained and supplied with sufficient personal protective equipment. In addition, the maximum allowable airborne fibre concentration for asbestos should not be approached or exceeded.

The following is a summary of materials, which were identified as ACMs within the subject building:

- Pipe Insulation
- Fire Proofing
- Ceiling Texture

3.2 LEAD

If work on lead containing materials is likely to produce lead dust or fumes, for example during welding, torch cutting, grinding, sanding or sandblasting, or the disturbance of any painted surface within the building then proper precautions as outlined in the Guideline, Lead on Construction Projects (Ontario Ministry of Labour, September 2004) should be followed.

3.3 SILICA

The precautions and procedures outlined in the Guideline, Silica on Construction Projects (Ontario Ministry of Labour, September 2004) should be followed when materials containing Silica are disturbed.

3.4 MERCURY

Mercury vapor is assumed to be present within fluorescent light tubes that are located in the subject building.

Best management practices dictate that the mercury containing fluorescent light tubes should be returned to a participating recycling centre or picked up a disposed of by a licensed hazardous materials contractor.

3.5 CHLOROFLUOROCARBONS

If the refrigerators, air conditioners, water coolers or water fountains are to be removed and disposed of all ozone depleting refrigerant must be removed from the unit prior to disposal. The removal of the refrigerant must be conducted by an individual licensed to perform such work in accordance with the Ozone Depleting Substance Regulation 1998 SOR/99-7.

Appendix A
Analytical Results

Project Specific Designated Substance Survey Report
SNC-Lavalin O&M
11 Station Street
Belleville, ON
EHS Project No.: 04-0001-12-050

PLM Summary Report

Steve Moody Micro Services, LLC
2051 Valley View Lane
Farmers Branch, TX 75234 Phone: (972) 241-8460

NVLAP Lab No. 102056
TDSHS License No. 30-0084

Client : EHS Partnerships Ltd. - Ottawa, ON
Project : 11 Station Street, Belleville, Ontario
Project # : 04-0001-12-050 Sample Date : 06/06/2012
Identification : Asbestos, Bulk Sample Analysis
Test Method : Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 600 / R-93 / 116

Lab Job No. : 12B-06806
Report Date : 06/15/2012

On 6/11/2012, twenty eight (28) bulk material samples were submitted by Matt Laneville of EHS Partnerships Ltd. - Ottawa, ON for asbestos analysis by PLM/DS. The PLM Detail Report is attached; additional information may be found therein. The results are summarized below:

Sample Number	Client Sample Description / Location	Asbestos Content
SA-01	Fireproofing, Basement	None Detected - Fireproofing
SA-02	Fireproofing, Basement	None Detected - Fireproofing
SA-03	Fireproofing, Basement	None Detected - Fireproofing
SA-04	Fireproofing, Basement	None Detected - Fireproofing
SA-05	Fireproofing, Basement	None Detected - Fireproofing
SA-06	Fireproofing, Basement	None Detected - Fireproofing
SA-07	Fireproofing, Basement	None Detected - Fireproofing
SA-08	Brick Mortar, Exterior, Limestone	None Detected - Mortar
SA-09	Brick Mortar, Exterior, Limestone	None Detected - Mortar
SA-10	Brick Mortar, Exterior, Limestone	None Detected - Mortar
SA-11	Brick Mortar, Exterior, Brick	None Detected - Mortar
SA-12	Brick Mortar, Exterior, Brick	None Detected - Mortar
SA-13	Brick Mortar, Exterior, Brick	None Detected - Mortar
SA-14	Brick Mortar, Exterior, Brick	None Detected - Mortar
SA-15	Foundation Parging, Exterior Foundation	None Detected - Foundation Parging
SA-16	Foundation Parging, Exterior Foundation	None Detected - Foundation Parging
SA-17	Foundation Parging, Exterior Foundation	None Detected - Foundation Parging
SA-18	Foundation Parging, Exterior Foundation	None Detected - Foundation Parging
SA-19	Foundation Parging, Exterior Foundation	None Detected - Foundation Parging
SA-20	Vinyl Sheet Flooring (Mosaic), Room 013	None Detected - Sheet Flooring None Detected - Fiber Backing None Detected - Yellow Mastic

PLM Summary Report

Steve Moody Micro Services, LLC
2051 Valley View Lane
Farmers Branch, TX 75234 Phone: (972) 241-8460

NVLAP Lab No. 102056
TDSHS License No. 30-0084

Client : EHS Partnerships Ltd. - Ottawa, ON
Project : 11 Station Street, Belleville, Ontario
Project # : 04-0001-12-050 Sample Date : 06/06/2012
Identification : Asbestos, Bulk Sample Analysis
Test Method : Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 600 / R-93 / 116

Lab Job No. : 12B-06806
Report Date : 06/15/2012

On 6/11/2012, twenty eight (28) bulk material samples were submitted by Matt Laneville of EHS Partnerships Ltd. - Ottawa, ON for asbestos analysis by PLM/DS. The PLM Detail Report is attached; additional information may be found therein. The results are summarized below:

Sample Number	Client Sample Description / Location	Asbestos Content
SA-21	Vinyl Sheet Flooring (Mosaic), Room 013	None Detected - Sheet Flooring None Detected - Fiber Backing None Detected - Yellow Mastic
SA-22	Vinyl Sheet Flooring (Mosaic), Room 013	None Detected - Sheet Flooring None Detected - Fiber Backing None Detected - Yellow Mastic
SA-23	Vinyl Cove Base, Room 013	None Detected - Cove Base None Detected - Yellow Mastic
SA-24	Vinyl Cove Base, Room 013	None Detected - Cove Base None Detected - Yellow Mastic
SA-25	Vinyl Cove Base, Room 013	None Detected - Cove Base None Detected - Yellow Mastic
SA-26	Caulking (Grey), Exterior West Entrance	None Detected - Caulking
SA-27	Caulking (Grey), Exterior West Entrance	None Detected - Caulking
SA-28	Caulking (Grey), Exterior West Entrance	None Detected - Caulking

These samples were analyzed by layers. Quantification, unless otherwise noted, is performed by calibrated visual estimate. Results may not be reproduced except in full. This test report relates only to the samples tested. These test results do not imply endorsement by NVLAP or any agency of the U.S. Government. Accredited by the National Voluntary Laboratory Accreditation Program for Bulk Asbestos Fiber Analysis under Lab Code 102056.

NVLAP® LAB #102056

Analyst(s): Eric Harper

Lab Manager : Bruce Crabb Approved Signatory : Bruce Crabb

Lab Director : Steve Moody Approved Signatory : Steve Moody

Thank you for choosing Steve Moody Micro Services

LABORATORY REPORT

Steve Moody Micro Services, LLC
2051 Valley View Lane
Farmers Branch, Texas 75234 (972) 241-8460

Client : EHS Partnerships Ltd. - Ottawa, ON
Project: 11 Station Street, Belleville, Ontario
Project #: 04-0001-12-050 Sample Date: 06/06/2012
Identification: Lead Analysis - Paint
Test Method: Based on EPA 7420, Atomic Absorption Spectroscopy

Lab Job No. : 12M-06807
Report Date: 06/15/2012

On 06/11/2012, eleven (11) samples were submitted by a representative of EHS Partnerships Ltd. - Ottawa, ON for analysis of the lead content using atomic absorption spectroscopy. The results are summarized below.

Sample Number	Client Sample Description/Location	Result	Reporting Limits	Units	Analysis Date
PS-01	Black Paint, Exterior Railing	847.1	51.6	ppm	06/14/2012
PS-02	Beige Paint, Penthouse Wall	171.0	29.7	ppm	06/14/2012
PS-03	Grey Paint, Penthouse Floor	821.0	55.8	ppm	06/14/2012
PS-04	Brown Paint, First Floor Old Door Frames	528.5	77.5	ppm	06/14/2012
PS-05	Light Blue Paint, Basement Door Frames 020	383.8	51.4	ppm	06/14/2012
PS-06	Brown Paint, Stairwell Railings	663.0	87.2	ppm	06/14/2012
PS-07	Red Paint, Stairwells / Mechanical Areas 038	2,801	70.5	ppm	06/14/2012
PS-08	Beige Paint, Room 038 Wall	373.6	28.2	ppm	06/14/2012
PS-09	Grey Paint, Mechanical Room Floor	2,482	59.4	ppm	06/14/2012
PS-10	Red Paint, Housekeeping Pads	228.4	44.1	ppm	06/14/2012
PS-11	Beige Paint, Floor Room 005	600.8	26.2	ppm	06/14/2012

Digested sample materials will be retained for at least 6 months. Should you have any questions or require additional testing, please do not hesitate to call. Results may not be reproduced except in full. This test report relates only to the samples tested.
Note: Soil samples are tested as received unless noted as "Dried before analysis".

Analyst: Malcolm Brown

Lab Director: Steve Moody Approved Signatory:

Appendix B
Limitations

Project Specific Designated Substance Survey Report
SNC-Lavalin O&M
11 Station Street, Belleville, ON
EHS Project No.: 04-0001-12-050

LIMITATIONS

The conclusions and recommendations contained in this assessment report are based upon professional opinions with regard to the subject matter. These opinions are in accordance with currently accepted environmental assessment standards and practices applicable to these locations and are subject to the following inherent limitations:

1. The data and findings presented in this report are valid as of the dates of the investigations. The passage of time, manifestation of latent conditions or occurrence of future events may warrant further exploration at the properties, analysis of the data, and re-evaluation of the findings, observations, and conclusions expressed in this report.

2. The data reported and the findings, observations and conclusions expressed in this report are limited by the Scope of Work. The Scope of Work was defined by the request of the client, the time and budgetary constraints imposed by the client, and availability of access to the properties.

3. Because of the limitations stated above, the findings, observations and conclusions expressed by EHS Partnerships Limited in this report are not, and should not be, considered an opinion concerning compliance of any past or present owner or operator of the site with any federal, provincial or local laws or regulations.

4. No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon site conditions in existence at the time of investigation.

5. EHS^{P} assessment reports present professional opinions and findings of a scientific and technical nature. While attempts were made to relate the data and findings to applicable environmental laws and regulations, the report shall not be construed to offer legal opinion or representations as to the requirements of, nor compliance with, environmental laws, rules, regulations or policies of federal, provincial, or local governmental agencies. Any use of the assessment report constitutes acceptance of the limits of EHS Partnership's liability. EHS Partnership's liability extends only to its client and not to other parties who may obtain this assessment report. Issues raised by the report should be reviewed by appropriate legal counsel.