SPECIFICATION FOR

Washroom Upgrades
Sir Charles Tupper Building.
2250 Riverside Drive
Ottawa, Ontario

SNC-LAVALIN O&M   PW137587

ISSUED FOR TENDER
October 04, 2010

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1.2  RELATED SECTIONS

.1  Section 01 11 10 – Summary of Work / Work Restrictions
.2  Section 01 33 00 - Submittal Procedures
.3  Section 01 78 00 – Closeout Submittals
1.3 **RIGHT TO ACCEPT OR REJECT TENDERS**

.1 Notwithstanding any other provision in this Contract, SNC Lavalin O&M shall have the right to:
   .1 accept any Tender; and
   .2 reject any Tender; and
   .3 reject all Tenders.

.2 Without limiting the generality of Item 11.1, SNC Lavalin O&M shall have the right to:
   .1 accept an irregular Tender; and
   .2 accept a Tender which is not the lowest Tender; and
   .3 reject a Tender, even if it is the only tender received by the SNC Lavalin O&M.

.3 Acceptance of the Tender shall occur at the time SNC Lavalin O&M awards the Tender and not necessarily at the time the award is communicated to the successful Tenderer.

1.4 **EXAMINATIONS OF DOCUMENTS AND SITE**

.1 Each Tenderer, before submitting their Tender, shall carefully examine the drawings and specifications to establish the extent of the work and shall visit and examine the site and fully inform himself/herself of all the existing conditions, limitations and difficulties which may arise and include in his/her Tender the cost of all labour, materials, equipment and services required to complete the Work.

.2 Carefully examine existing conditions prior to submitting bid. No extras will be authorized for work which could have been determined by a thorough, careful examination of site conditions by an experienced person.

.3 Drawings and Specifications are complementary. Items shown or mentioned in one and not in the other are deemed to be included as part of the contract.

.4 In the event of any discrepancy between the Drawings and the Specifications, the Specifications shall apply. If any item is shown on the Drawings but not in the Specifications, this does not mean that the items shown on the Drawings only are not in the Contract. See .6 below.

.5 In the event of any discrepancy between one drawing and another, the larger scale drawing shall apply. If an item is shown on a smaller scale Drawing but not on the larger it is part of the Contract.

.6 Where an item is shown on the Drawings but not in the Specifications, the Contractor shall supply and install to standard institutional quality.

.7 The sequence and numbering of the drawings and details and the organization of the specifications into Divisions and Sections are established for convenient ordering of information. It must not be assumed that such ordering of information is intended to define or limit the scope of extent of the work of any particular subcontractor or supplier. The drawings and specifications as a whole must be fully read, in detail, to determine the extent of any portion of the Work. It is the responsibility of the Contractor to coordinate subcontractors and suppliers prices such that the stipulated Tender Price is all-inclusive as specified herein.

.8 Sub-Contractors are responsible to familiarize themselves with the Contract Documents and the work of all trades therein. Sub-Contractors must base their quotations to the General Contractor on a thorough review of all the contract Drawings and Specifications.
1.5 WORK RESTRICTIONS

.1 Minimum project security requirements is PWGSC “Reliability Status” for any contractor or sub-contractor working on site. No assistance will be provided in obtaining necessary clearance. Contractor is to have required clearances in place. No time extension will be provided for completion project due to delays related to required obtaining clearances.

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

.3 Provide schedule within 5 working days after contract award, showing schedule with project milestones, anticipated progress stages and final completion of work within time provide by contract documents.

.4 Provide in form acceptable to Department Representative, within 5 working days of Contract award, schedule showing dates:

   .1 Submission of shop drawings, material list, and samples.
   .2 Commencement and completion of work of each section of specifications.
   .3 Final Completion date within time period required by Contract Documents.

.5 Carry out work:

   .1 Interior Building works; Monday to Friday from 18:00 to 6:00 hours. Co-ordinate with SNC Lavalin O&M if weekend work will be required.
   .2 Exterior Site Works; No work restrictions. Co-ordinate with SNC Lavalin O&M if after hours or weekend work will be required.
   .3 Co-ordinate with SNC Lavalin O&M project manager if scheduled work affects the clients use. Schedule work to minimize disruption to the tenants. Do not proceed with any work that affects the clients/tenants without approval from SNC Lavalin O&M project manager.
   .4 Co-ordinate with SNC Lavalin O&M project manager for access to work area and the use vehicular equipment.

1.6 CODES

.1 Perform work in accordance with National Building Code of Canada (NBC), Ontario Building Code (OBC), CSA B651-04 Accessible design for the built enviroment and any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirement shall apply.

.2 Meet or exceed requirement of:

   .1 Contract Document.
   .2 Specified standards, codes and Referenced documents
   .3 Where standards and referenced documents have changed, the most recent version shall apply.

1.7 DOCUMENTS REQUIRED

.1 Maintain at the job site, one copy each of the following:

   .1 Contact drawings.
   .2 Specifications.
   .3 Addenda.
   .4 Reviewed shop drawings
   .5 Change Orders
   .6 Other modifications to contract
.7 Field test reports.
.8 Copy of approved work schedule.
.9 Manufactures’ installation and application instruction.
.10 Site Specific Safety Plan including emergency procedures.

1.8 WORK SCHEDULE
.1 Provide Work Schedule within 5 working days after contract award, showing schedule with project milestones with anticipated progress stages and final completion of work within time provide by contract documents in coloured Gantt chart formatted in computer project software.
.1 Microsoft Project.
.2 OpenProj.
.3 or approved equal.

.2 Provide in form acceptable to Departmental Representative, within 5 working days of Contract award, schedule showing dates:
.1 Submission of shop drawings, material list, and samples.
.2 Delivery of following items of equipment and materials.
.3 Commencement and completion of work of each section of section of specifications.
.4 Final Completion date within time period required by Contract documents.

.3 Interim review of work progress based on work schedule will be conducted as decided by Departmental Representative and schedule update by Contractor in conjunction with and to approval of Departmental Representative.

1.9 SUBSTITUTIONS
.1 The Contract is based on Contract documents.
.2 Specific materials, products and systems are specified to provide standard of acceptance. Equivalent materials, products or systems by other manufactures are accepted as substitutions only when approved by addendum.

.3 Substitutions, which do not satisfy the above requirements, will be rejected by the consultant. Materials, products and systems, which are so rejected, shall be replaced by the specified item at no cost to the project.

.4 In the event that, prior to closing of tenders, tenderer wishes of offer a substitution or a proposal of work, materials or methods as an alternate to those described in contract documents, he/she shall submit a request in writing at least 7 calendar days prior to tender close date.

.5 The request shall include:
.1 A description of the proposed substitutions; and
.2 In the case of materials, products or systems, a direct comparison between the properties and compliances of the specified materials, product or systems with properties and compliances of the proposed substitution, arranged in tabular form in the same sequence as specified herein or in the sequence listed in specified manufacturer’s published literature, as applicable; and
.3 In the case of materials or projects, country of manufacture.
.4 If requested by the consultant, list of no less than five projects of comparable size where the substitution has been used in similar application. Such projects shall have been completed prior within the last five years and, where applicable, shall have been subjected to climate conditions similar to experienced in Ottawa. The list shall include the
name and current telephone number of the Architect and Owner of each project.

.6 In the event that the consultant deems the information provided with the request for approval of a substitution to be inadequate, the request may be rejected.

.7 Preference will be given to products of Canadian manufacture.

.8 Approval of alternative proposal of work, materials or methods will be signified by the issue of an addendum.

.9 The cost of additional work/or modification to design due to the use of alternative material, product or system shall be borne by the contractor.

.10 Where the terms "or equal", "or equivalent" or terms of similar meaning are used in the specifications, this shall not be construed as acceptance of any alternative material, product or system to those specified. The use of these terms does not relieve the Contractor from his responsibility to follow the procedures for approval of substitutions specified herein (during tender period) or the procedures described in Section 01 00 10 "General Instructions" (after award of Contract).

.11 No substitutions will be permitted after award of the Contract except in accordance with General Conditions GC 6.1 "CHANGES" and the article "Substitutions" in Section 01 00 10 "General Instructions". For procedures regarding substitutions after the award of the Contract, refer to General Conditions GC 6.1 "CHANGES".

1.10 COST BREAKDOWN

.1 Before submitting first progress claim submit breakdown of Contract price in detail as directed by Departmental Representative aggregating contract price. After approval by Departmental Representative cost breakdown will be used a basis for progress payment.

.2 The Cost will include a price of $1500.00 for construction progress documentations and as built drawings. No progress claim can be made for this amount prior to total completion of construction progress documentations and as built drawings.

1.11 CONTRACTOR USE OF SITE

.1 Use of site: exclusive and complete for execution of work.

.2 Project work areas during construction.

.3 Use following areas for work and storage:

.4 Existing shipping container, containing project windows for replacement.

.5 Obtain and pay for use of additional storage containers on site. No on site storage is provided.

1.12 SUBMITTAL PROCEDURES:

.1 Submit shop drawings, product Data and Samples in accordance with section 01 33 00 Submittal Procedures.

.2 Contractor to perform work in accordance with Ontario Occupational Heath and Safety Act and the Regulation for Construction Projects. Ontario Regulation 213/91.

.3 Certificates and Transcripts

.1 Immediately after award of Contract, submit Workers’ Compensation Board status.

.2 Submit transcription of insurance immediately after award of Contract.
1.13 PROJECT MEETINGS / QUALITY ASSURANCE

.1 Regulatory Requirements: ensure Work is performed in compliance with CEPA, CEAA, TDGA, and applicable Provincial/Territorial regulations.

.2 Site Meetings.
   .1 Convene pre-installation meeting one week prior to beginning work and on-site.
   .2 Verify project requirements.
   .3 Review installation and substrate conditions.
   .4 Co-ordination with other building subtrades.
   .5 Review manufacturer’s installation instructions and warranty requirements.

.3 Hold project meetings bi-week.

.4 Ensure key personnel, site supervisor, project manager and subcontractor representatives attend.

.5 Record minutes of meetings, and distribute to participants with 5 working days.

.6 Departmental Representative will arrange project meetings, notify participants and distributing final meeting minutes.

.7 General Contractor must provide written report on status of waste diversion activity at each meeting.

1.14 LOCATION OF EQUIPMENT AND FIXTURES

.1 Location of equipment, fixtures and outlets indicated or specified to be considered as approximate.

.2 Locate equipment, fixtures and distribution systems to provide minimum inference and maximum useable space and in accordance with manufacture’s recommendations for safety, access and maintenance.

.3 Inform Departmental Representative of impending installation and obtain his approval for actual location.

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

1.15 CONCEALMENT

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

1.16 CUTTING AND PATCHING

.1 Obtain Departmental Representative’s approval before cutting, boring or sleeving load-bearing members.

.2 Cut and patch as required to replace window units.

.3 Make cuts with clean, true, smooth edges.

.4 Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.

1.17 ALTERATIONS / REPAIRS TO EXISTING BUILDING

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

.2 Where security has been reduced by work of Contract, provide temporary means to maintain security.
.3 Provide temporary dust screens, barriers, warning signs and drop cloths in locations where renovation and alteration work is adjacent to areas used by public or tenant.

.4 Where elevators and conveyors exist in building, only those assigned for Contractor’s use may be used for moving personnel and materials with the building. Protect walls of passenger elevators, to approval of Departmental Representative before use. Accept liability for damage, safety to equipment and overloading of existing equipment.

1.18 ADDITIONAL DRAWINGS

.1 Departmental Representative may furnish additional drawings for clarifications. These additional drawings have the same meaning and intent as if they are included with plans referred to in Contract documents.

.2 Clarifications:

.1 Clarifications are issued for the purpose of recording any clarification or interpretation of the contract documents or giving direction on problems resulting from field conditions.

.2 Clarifications are subject to the provisions of the contract documents.

.3 Should the contractor require a change in contract price or project schedule resulting from a clarification, he shall submit to the Departmental Representative with 5 days of the date hereof, an itemized proposal. If the proposal is accepted by the Departmental Representative, the clarification will be superseded by a change order.

.4 If specifically co-authorized by the contractor and Departmental Representative, clarifications can be issued for which is to proceed without delay and requires a change in contract amount. The cost of the work will be as submitted by the contractor upon completion, but less than the agreed ‘not to exceed’ amount stated on the clarifications. A Change order will be issued based on the final cost.

1.19 TAXES

.1 Pay all taxes properly levied by law (including federal, provincial and municipal), except as noted elsewhere.

1.20 FEES, PERMITS AND CERTIFICATES

.1 Pay all fees and obtain all permits. Provide authorities with plans and information for acceptance certificates. Provide inspection certificates as evidence the work conforms to the requirements of authority having jurisdiction.

1.21 CAMERAS

.1 Do not use camera or photographic equipment unless approved by the Departmental Representative.

1.22 REGULATORY REQUIREMENTS/ ENVIRONMENTAL

.1 Hazardous Material Discovery

.1 Demolition of spray or trowel-applied asbestos can be hazardous to health. Should material resembling spray or towel-applied asbestos be encountered in course demolition work stop and notify Departmental Representative immediately. Do not proceed until written instruction has been received from Departmental Representative.

.2 PCB: Polychlorinated Biphenyl: stop work immediately when material resembling Polychlorinated Biphenyl is encountered during demolition work. Notify Departmental Representative.
.3 Mould: stop work immediately when material-resembling mould is encountered during demolition work. Notify Departmental Representative.

.2 Fires
   .1 Fire and burning of rubbish on site are not permitted.
   .3 Disposal of waste:
      .1 Do not bury rubbish and waste materials on site.
      .2 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.

1.23 GUARANTEE / WARRANTY
   .1 The guarantee / warranty is include necessary materials, labour and clean-up for repair or replacement of work under this contract resulting from faulty materials or workmanship.
   .2 Where conflicting guarantee / warranty period exist, the longer period will supersede the shorter.
   .3 For any item that is found defective and it the rectified or replaced during the guarantee / warranty period, the contractor shall extend the guarantee / warranty period a further twelve months from the date of the Departmental Representative ’s written acceptance of the rectified work or new material or equipment.

1.24 BUILDING SMOKING ENVIRONMENT
   .1 Comply with smoking restrictions

1.25 SUBSURFACE CONDITIONS
   .1 Promptly notify Consultant in writing if subsurface conditions at Place of Work differ materially from those indicated in Contract Documents, or a reasonable assumption of probable conditions based thereon.
   .2 After prompt investigation, should Consultant determine that conditions do differ materially; instructions will be issued for changes in Work as provided in Changes and Change Orders.

1.26 HEALTH AND SAFETY REQUIREMENTS
   .1 References
      .1 CSA S269.1-1975 (R2003) Falsework for construction purposes
      .2 CAN/CSA-S269.2-M87 Access Scaffolding for Construction Purposes.
      .3 FC 301-2009-1-13 Standard for Construction operations
      .4 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations
      .5 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
      .6 Material Safety Data Sheets (MSDS).
      .7 Province of Ontario
   .2 Construction Safety measures
      .1 Observe construction safety measures of national building code, part 8, province or Ontario workers compensation board and municipal authority provided that in any case of conflict or discrepancy more stringent requirement shall apply.
.2 Comply with requirements of FC301 Standard for Construction Purposes.

.3 Overloading
.1 Ensure no part of work is subject to loading that will endanger its safety or will cause permanent damage.

.4 Minimum work practice for Asbestos-containing products.
.1 In view of fact that inhalation of asbestos fibres may be hazardous to health, but without in any way guaranteeing their effectiveness as protected against health hazards, the following practices shall apply.
.2 When working with asbestos-containing materials workers shall wear respirators acceptable to labour Canada or provincial labour department as suitable for asbestos exposure in work area. Workers shall also be educated as to risks, and be trained in safe practices. Power tools shall be equipped with efficiency particulate air-filtered vacuum equipment.
.3 When working in a enclosed area separate work area from rest of project by barrier capable of preventing spread of asbestos fibres outside work area.
.4 When working with asbestos-cement pipe comply with recommendations of asbestos-cement pipe producers association "recommended work practices for A/C pipe" subject to more stringent requirements of 6.2 above.
.5 Upon completion of work, clean work areas using wet methods or high efficiency particulate air-filtered vacuum equipment. Remove waste asbestos-containing materials in sealed containers labelled as to contents to disposal area acceptable to authorities having jurisdiction.
.6 In event of conflict between these requirements and those of provincial governments, labour Canada, or Heath Canada, more stringent requirements shall apply.

.5 WHMIS
.1 Comply with the requirements of workplace hazardous materials information system (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provisions of material safety data sheets acceptable to labour Canada and health Canada.
.2 Deliver copies of WHMIS data sheets to Departmental Representative on delivery of materials.

.6 Health and safety on site:
.1 Departmental Representative will provide a security agent for the duration of the work
.2 Comply with the security agents instructions and pay for corrective work.
.3 Meet with security and sub-contractors prior to starting on work on site an co-ordinate:
.1 Labour relationships policies
.2 Site access control measures
.3 Safety measures on site
.7 Comply with and pay all associated costs related to site access control measures:
.1 No cards issued. Escorts will be provided.
.2 Contractor limited to 2 parking spots.
.8 Inform all workers of site rules: labour relationship policies, site access control measures and safety measures on the site. Ensure workers respect the rules.
Inform the security agent of all modifications concerning the workers teams on the site.

The Departmental Representative reserves the right to verify all vehicle, parcels, etc. arriving or departing the site.

Health and Safety Submittals

1. Submit site-specific health and safety plan: Within 3 days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
   2. Results of site specific safety hazard assessment.
   3. Results of safety and health risk or hazard analysis for site tasks and operation.
   4. Submit 3 copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative.
   5. Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
   6. Submit copies of incident and accident reports.
   7. Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 2 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative.
   8. On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

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.

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.

Compliance Requirements

1. Comply with Ontario Health and Safety Act, R.S.O.

Unforseen Hazards

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

Health And Safety Coordinator

1. Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
   1. Have site related working experience specific to activities associated with demolition.
.2 Have working knowledge of occupational safety and health regulations.
.3 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.
.4 Be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan.

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

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

1.27 INSPECTION AND DECLARATION
.1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
.1 Notify Departmental Representative in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
.2 Request Departmental Representative 's Inspection.
.3 Departmental Representative 's Inspection: Departmental Representative and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.
.4 Completion: submit written certificate that following have been performed:
.5 Work has been completed and inspected for compliance with Contract Documents.
.6 Defects have been corrected and deficiencies have been completed.
.7 Equipment and systems have been tested, adjusted and balanced and are fully operational.
.8 Operation of systems have been demonstrated to Owner's personnel.
.9 Work is complete and ready for Final Inspection.
.10 Final Inspection: when items noted above are completed, request final inspection of Work by Departmental Representative, and Contractor. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.
.11 Declaration of Substantial Performance: when Departmental Representative considers deficiencies and defects have been corrected and it appears requirements of Contract have been substantially performed, make application for certificate of Substantial Performance.
.12 Commencement of Lien and Warranty Periods: date of Owner's acceptance of submitted declaration of Substantial Performance shall be date for commencement for warranty period and commencement of lien period unless required otherwise by lien statute of Place of Work.
.13 Final Payment: When Departmental Representative considers final deficiencies and defects have been corrected and it appears requirements of Contract have
been totally performed, make application for final payment. If Work is deemed incomplete by Departmental Representative, complete outstanding items and request re-inspection.

14 Payment of Holdback: After issuance of certificate of Substantial Performance of Work, submit an application for payment of holdback.

1.28 CONSTRUCTION PROGRESS DOCUMENTATION

.1 Construction Schedule.

.1 Completion Date

.2 Key Project Milestones and Partial completion dates.

.2 As-built records

.1 Maintain precise and accurate as-built progress records by annotating a set of drawings and specifications set aside for this purpose.

.2 Update records daily to note all deviations from indicated and specified requirements, including actual locations of service lines, hidden construction and services, and materials installed in the finish work.

.3 Transfer records to two sets of drawings and specifications obtained from Departmental Representative prior to Departmental Representative’s inspection for issuance of Final Certificate of Completion.

.3 Construction Progress Photographs

.1 At start of construction, Contractor to take detailed photos of all project areas, surfaces and affected site area and transmit to Departmental Representative for approval. Annotate a set of drawings set aside for this purpose, showing photographs locations and dates.

.2 During construction, Contractor to take a minimum 5 photographs per day, with additional as required for complex documentation.

.3 Contractor to maintain precise photographs records by organizing the photos by groupings and labelling the photos, showing photograph locations and dates.

.4 Photographs to be in digital format.

.5 Provide two hard copy photographs in three ring binder format and two binder format and two CD versions For Departmental Representative’s inspection for issuance of Final Certificate of Completion.

1.29 QUALITY ASSURANCE

.1 Regulatory Requirements: ensure Work is performed in compliance with CEPA, CEAA, TDGA, and applicable Provincial/Territorial regulations.

.2 Site Meetings.

.3 Convene pre-installation meeting one week prior to beginning work and on-site.

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Co-ordination with other building subtrades.

.4 Review manufacturer’s installation instructions and warranty requirements.

.4 Hold project meetings bi-week.

.5 Ensure key personnel, site supervisor, project manager and subcontractor representatives attend.

.6 General Contractor must provide written report on status of waste diversion activity at each meeting.
1.30 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 Departmental Representative as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good 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, Owner will deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which will be determined by Departmental Representative.

1.31 MOCK-UPS

.1 Prepare mock-ups for Work specifically requested in specifications. Include for Work of Sections required to provide mock-ups.

.2 Construct in locations acceptable to Departmental Representative.

.3 Mock-up will be used:
   .1 to judge workmanship, substrate preparation, operation of equipment and material application.
   .2 When accepted, mock-up will demonstrate minimum standard of quality required for this Work.

.4 Prepare mock-ups for Departmental Representative’s review with reasonable promptness and in orderly sequence, to not cause delays in Work.

.5 Failure to prepare mock-ups in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.

.6 Allow 2 days for inspection by Departmental Representative.

.7 Mock-up may remain as part of work.

.8 SNC-LAVALIN O&M project manager and SNC-LAVALIN O&M commissioning manager must be notified of all mock-ups, most be present for all review and approval of all mock-ups.

1.32 MAINTENANCE MATERIALS

.1 General
   .1 Specific requirements for maintenance materials, specified in individual sections of Divisions 02 to 43.
   .2 Deliver maintenance materials, to Departmental Representative.
   .3 Prepare list of maintenance materials, for inclusion in Operation and Maintenance manuals.

.2 Maintenance Materials
   .1 Deliver specified items packaged to prevent damage.
   .2 Identify, on carton or package, colour, room no., system or area as applicable where item is used.

1.33 OPERATION MAINTENANCE MANUALS

.1 Refer to Appendix for O&M manual client check list for acceptable format.

.2 Manual
   .1 An organized compilation of operating and maintenance data including detailed technical information, documents and records describing operation and maintenance of individual products or systems as specified in individual sections.
.3 General

.1 Assemble, coordinate, bind and index required data into operation and maintenance manual.
.2 Submit complete Operation and Maintenance Manual to Departmental Representative 6 weeks prior to application for interim certificate of completion of project.
.3 Submit 4 copies in English.
.4 Organize data in same numerical order as contract specification.
.5 Material: label each section with tabs protected with celluloid covers fastened to hard paper dividing sheets.
.6 Type lists and notes
.7 Drawings, diagrams and manufacturers literature must be legible.

.4 Binders:

.1 Binders: vinyl, hard covered, 3 “D” ring, loose leaf, sized for 215x280 mm paper with spine pocket.
.2 Identify contents of each binder on spine.

.5 Contents.

.1 Binder 1:

.1 Cover sheet containing:
.2 Data submitted.
.3 Project title, location and project number
.4 Names and address of contractor, and all sub-trades

.2 Table of content of all binders
.3 Warranties, guarantees
.4 Copies of approvals, and certificates

.6 Remaining binders:

.1 Cover sheet containing:
.1 Data submitted.
.2 Project title, location and project number

.2 Table of contents of individual binder
.3 Provide data as specified in individual sections of Divisions 02 to 43

.1 Installation details
.2 Maintenance instructions for equipment
.3 Maintenance instructions for finishes.

.7 Shop Drawings:

.1 Bind separately one complete set of reviewed final shop drawings and product data.

END OF SECTION
Part 1 General

1.1 Related Sections
   .1 Section 01 00 10 General Instructions

Part 2 Summary of Work

2.1 Work Covered By Contract Documents
   .1 Work of this Contract comprises of: complete renovation of first floor washrooms; washrooms on second through fifth floor are to receive new auto sensing fixtures/valves and accessories. All work is in Wing C at the Sir Charles Tupper Building, 2250 Riverside Drive, Ottawa, Ontario; and further identified in drawings.

2.2 Contract Method
   .1 Construct Work under single stipulated price contract.

2.3 Work By Others
   .1 Co-operate with other Contractors in carrying out their respective works and carry out instructions from Departmental Representative.

2.4 Work Sequence
   .1 Construct Work in stages to accommodate Owner's continued use of premises during construction for washroom located between second through fifth floors.
   .2 Provide barriers to enclose construction zone for first floor washrooms.

2.5 Contractor Use of Premises
   .1 Use of site: exclusive and complete for execution of work within the areas of work sequencing.
   .2 Obtain and pay for use of additional storage. No on site storage is provided.
   .3 Co-ordinate use of premises under direction of SNC-LAVALIN O&M project manager.
   .4 Remove or alter existing work to prevent injury or damage to portions of existing work which remain.
   .5 Repair or replace portions of existing work which have been altered during construction operations to match existing or adjoining work, as directed by Departmental Representative.
   .6 At completion of operations condition of existing work: equal to or better than that which existed before new work started.

2.6 Owner Occupancy
   .1 Owner will occupy premises during entire construction period for execution of normal operations.
.2 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage.

2.7 Contractor Responsibilities:

.1 Designate submittals and delivery date for each product in progress schedule.

.2 Review shop drawings, product data, samples, and other submittals. Submit to Departmental Representative notification of observed discrepancies or problems anticipated due to non-conformance with Contract Documents.

.3 Receive and unload products at site.

.4 Inspect deliveries jointly with Owner; record shortages, and damaged or defective items.

.5 Handle products at site, including uncrating and storage.

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

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

.8 Provide installation inspections required by public authorities.

.9 Repair or replace items damaged by Contractor or subcontractor on site (under his control).

2.8 Alterations, Additions Or Repairs To Existing Building

.1 Execute work with least possible interference or disturbance to building operations occupants, public and normal use of premises. Arrange with SNC-LAVALIN O&M project manager to facilitate execution of work.

2.9 Existing Services

.1 Where unknown services are encountered, immediately advise Departmental Representative and confirm findings in writing.

.2 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

Part 3 Work Restrictions

3.1 Access And Egress

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

3.2 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 Departmental Representative will assign sanitary facilities for use by Contractor's personnel. Keep facilities clean.

.5 Closures: protect work temporarily until permanent enclosures are completed.
3.3 Alterations, Additions Or Repairs To Existing Building
   .1 Execute work with least possible interference or disturbance to building operations occupants, public and normal use of premises. Arrange with Departmental Representative to facilitate execution of work.

3.4 Existing Services
   .1 Notify Departmental Representative and utility companies of intended interruption of services and obtain required permission.

3.5 Special Requirements
   .1 Work Monday to Friday from 18:00 to 06:00 hours and on Saturdays, Sundays and statutory holidays.
   .2 Submit schedule.
   .3 Ensure that Contractor personnel employed on site become familiar with and obey regulations including safety, fire, traffic and security regulations.
   .4 Keep within limits of work and avenues of ingress and egress.
   .5 Contractor vehicles at site are limited to 3 parking spaces.
   .6 Deliver materials outside of peak traffic hours; obtain approval from SNC-LAVALIN O&M project manager prior to any on site deliveries.

Part 4 Products

4.1 Not Used
   .1 Not used.

Part 5 Execution

5.1 Not Used
   .1 Not used.
Part 1  General

1.1 RELATED SECTIONS

.1 Not Used

1.2 ADMINISTRATIVE

.1 Submit to Departmental Representative submittals as indicated in corresponding specification sections. 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’s review.

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

1.3 SHOP DRAWINGS AND PRODUCT DATA

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

.2 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.

.3 Allow 5 business days for Departmental Representative’s review of each submission.
.4 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.

.5 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.

.6 Accompany submissions with transmittal letter, in PDF digital format by email or 4 printed copies, 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.

.7 Submissions include:

.1 Date and revision dates.
.2 Project title and number.
.3 Name and address of:
.4 Subcontractor.
.2 Supplier.
.3 Manufacturer.
.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.

.5 Details of appropriate portions of Work as applicable:

.1 Fabrication.
.2 Layout, showing dimensions, including identified field dimensions, and clearances.
.3 Setting or erection details.
.4 Capacities.
.5 Performance characteristics.
.6 Standards.
.7 Operating weight.
.8 Wiring diagrams.
.9 Single line and schematic diagrams.
.10 Relationship to adjacent work.

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

.9 Submit 4 printed copies or PDF electronic copy by email of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.

.10 Submit 4 printed copies or PDF electronic copy by email 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.
.11 Submit 4 printed copies or PDF electronic copy by email 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.

.12 Submit 4 printed copies or PDF electronic copy by email copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.

.13 Delete information not applicable to project.

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

.15 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, transparency copies or PDF digital 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.

.16 The review of shop drawings by Departmental Representative is for sole purpose of ascertaining conformance with general concept.

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

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

1.4 SAMPLES

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

.2 Deliver samples prepaid to Departmental Representative 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.
1.5 MOCK-UPS
   .1 Erect mock-ups as requested by Departmental Representative and in accordance with 01 00 10 – General 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  WASTE MANAGEMENT GOALS

.1 Prior to start of Work conduct meeting with Consultant to review and discuss Waste Management Plan and Goals.

.2 Waste Management Goal 75 percent of total Project Waste to be diverted from landfill sites. Provide Client Representative documentation certifying that waste management, recycling, reuse of recyclable and reusable materials have been extensively practiced.

.3 Accomplish maximum control of solid construction waste.

.4 Preserve environment and prevent pollution and environment damage.

1.2  RELATED SECTIONS

.1 Section 01 33 00 – Submittal Procedures.

1.3  PRECEDENCE

.1 For Federal Government projects, Division 1 sections take precedence over technical specifications in other Divisions.

1.4  DEFINITIONS

.1 Class III: non-hazardous waste - construction renovation and demolition waste.

.2 Cost/Revenue Analysis Workplan (CRAW): based on information from WRW, and intended as financial tracking tool for determining economic status of waste management practices.

.3 Demolition Waste Audit (DWA): relates to actual waste generated from project.

.4 Inert Fill: inert waste - exclusively asphalt and concrete.

.5 Materials Source Separation Program (MSSP): consists of series of ongoing activities to separate reusable and recyclable waste material into material categories from other types of waste at point of generation.

.6 Recyclable: ability of product or material to be recovered at end of its life cycle and re-manufactured into new product for reuse.

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

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

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

.1 Salvaging reusable materials from re-modelling projects, before demolition stage, for resale, reuse on current project or for storage for use on future projects.
.2 Returning reusable items including pallets or unused products to vendors.

.10 Salvage: removal of structural and non-structural materials from deconstruction/disassembly projects for purpose of reuse or recycling.

.11 Separate Condition: refers to waste sorted into individual types.

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

.13 Waste Audit (WA): detailed inventory of materials in building. Involves quantifying by volume/weight amounts of materials and wastes generated during construction, demolition, deconstruction, or renovation project. Indicates quantities of reuse, recycling and landfill. Refer to Schedule A.

.14 Waste Management Co-ordinator (WMC): contractor representative responsible for supervising waste management activities as well as coordinating related, required submittal and reporting requirements.

.15 Waste Reduction Workplan (WRW): written report which addresses opportunities for reduction, reuse, or recycling of materials. Refer to Schedule B. WRW is based on information acquired from WA (Schedule A).

1.5 DOCUMENTS:

.1 Maintain at job site, one copy of the following documents

.1 Waste Audit
.2 Waste Reduction Workplan
.3 Material Source Separation Plan
.4 Schedules A,B,C,D and E completed for project.

1.6 SUBMITTALS

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

.2 Prepare and submit following prior to project start-up:

.1 Submit 2 copies of completed Waste Audit (WA): Schedule A.
.2 Submit 2 copies of completed Waste reduction Workplan (WRW): Schedule B.
.3 Submit 2 Copies of completed Demolition Waste Audit (DWA) Schedule C:
.4 Submit 2 Copies of completed Cost/Revenue Analysis Workplan (CRAW): Schedule D.
.5 Submit 2 copies of Materials Source Separation Program (MSSP) description, Schedule E.
.6 For each of the above submit also electronically (email / CD-ROM).

.3 Submit before final payment summary of waste materials salvaged for reuse, recycling or disposal by project using the weigh bill receipts from certified waste management company.

.1 Failure to submit could result in hold back of final payment.
.2 Provide receipts, scale tickets, waybills, and show quantities and types of materials reused, recycled, co-mingled and separated off-site or disposed of.
.3 For each material reused, sold or recycled from project, include amount quantities by number, type and size of items and the destination.
.4 For each material land filled or incinerated from project, include amount in tonnes of material and identity of landfill, incinerator or transfer station.

1.7 WASTE AUDIT (WA)

.1 Conduct WA prior to project start-up.

.2 Prepare WA: Schedule A.

.3 Record on WA – Schedule A extent to which materials or products used consist of recycled materials or products used consist of recycled or reused materials of products.

1.8 WASTE REDUCTION WORKPLAN (WRW)

.1 Prepare WRW prior to project start-up.

.2 WRW should include but not limited to:

.1 Destination of materials listed.

.2 Deconstruction/disassembly techniques and sequencing.

.3 Schedule for deconstruction/disassembly.

.4 Location.

.5 Security.

.6 Protection.

.7 Clear labelling of storage areas.

.8 Details on materials handling and removal procedures.

.9 Quantities for materials to be salvaged for reuse or recycled and materials sent to landfill.

.3 Structure WRW to prioritize actions and follow 3R's hierarchy, with Reduction as first priority, followed by Reuse, then Recycle.

.4 Describe management of waste.

.5 Identify opportunities for reduction, reuse, and recycling of materials. Based on information acquired from WA.

.6 Post WRW or summary where workers at site are able to review content.

.7 Set realistic goals for waste reduction, recognize existing barriers and develop strategies to overcome these barriers.

.8 Monitor and report on waste reduction by documenting total volume and cost of actual waste removed from project.

1.9 DEMOLITION WASTE AUDIT (DWA)

.1 Prepare DWA prior to project start-up.

.2 Complete DWA: Schedule C.

.3 Provide inventory of quantities of materials to be salvaged for reuse, recycling, or disposal.
1.10 **COST / REVENUE ANALYSIS WORKPLAN (CRAW)**

.1 Prepare CRAW: Schedule D.

1.11 **MATERIALS SOURCE SEPARATION PROGRAM (MSSP)**

.1 Prepare MSSP and have ready for use prior to project start-up.

.2 Implement MSSP for waste generated on project in compliance with approved methods and as reviewed by Consultant.

.3 Provide on-site facilities for collection, handling, and storage of anticipated quantities of reusable and recyclable materials.

.4 Provide containers to deposit reusable and recyclable materials.

.5 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.6 Locate separated materials in areas which minimize material damage.

.7 Collect, handle, store on-site, and transport off-site, salvaged materials in separate condition. List to be provided for transport.

.1 Transport to approved and authorized recycling facility.

.8 Collect, handle, store on-site, and transport off-site, salvaged materials in combined condition.

.1 Ship materials to site operating under Certificate of Approval.

.2 Materials must be immediately separated into required categories for reuse or recycling.

1.12 **WASTE PROCESSING SITES;**

.1 Trail Waste Facility
   4475 Trail Road (Ottawa)
   311 /613-580-2401

.2 Tomlinson Springhill Landfill
   Hyw 31 Springhill Road (Ottawa)
   613-822-1867

.3 Waste Management Inc. Landfill
   2301 Carp Road (Ottawa)
   613-831-1281

.4 WSI Waste Services
   3354 Navan Road (Ottawa)
   613-824-7289

.5 Recuperation et recyclage de Outaouais
   15, Chemin Holmes (Cantley)
   819-457-2459

.6 Thibault demolition
   135, Chemin Sainte-Antonine (Val-des-Monts)
   819-671-4112
1.13 STORAGE, HANDLING AND PROTECTION

.1 Store, materials to be reused, recycled and salvaged in locations as directed by term Landlord.

.2 Unless specified otherwise, materials for removal become Contractor's property.

.3 Protect, stockpile, store and catalogue salvaged items.

.4 Separate non-salvageable materials from salvaged items. Transport and deliver non-salvageable items to licensed disposal facility.

.5 Protect structural components not removed for demolition from movement or damage.

.6 Support affected structures. If safety of building is endangered, cease operations and immediately notify term Landlord.

.7 Protect surface drainage, mechanical and electrical from damage and blockage.

.8 Separate and store materials produced during dismantling of structures in designated areas.

.9 Prevent contamination of materials to be salvaged and recycled and handle materials in accordance with requirements for acceptance by designated facilities.

.1 On-site source separation is recommended.

.2 Remove co-mingled materials to off-site processing facility for separation.

.3 Provide waybills for separated materials.

1.14 DISPOSAL OF WASTES

.1 Do not bury rubbish or waste materials.

.2 Do not dispose of waste, volatile materials, mineral spirits, oil, paint thinner into waterways, storm, or sanitary sewers.

.3 Divert unused caulking, sealants, surface coatings and adhesive materials from landfill through disposal at a special wastes depot.

.4 Keep records of construction waste including:

.1 Number and size of bins.

.2 Waste type of each bin.

.3 Total tonnage generated.

.4 Tonnage reused or recycled.

.5 Reused or recycled waste destination.

.5 Remove materials from deconstruction as deconstruction/disassembly Work progresses.

.6 Prepare project summary to verify destination and quantities on a material-by-material basis as identified in pre-demolition material audit.
1.15 USE OF SITE AND FACILITIES
   .1 Execute work with least possible interference or disturbance to normal use of premises.
   .2 Maintain security measures established by existing facility.

1.16 SCHEDULING
   .1 Co-ordinate Work with other activities at site to ensure timely and orderly progress of Work.

Part 2 Products

2.1 NOT USED
   .1 Not Used.

Part 3 Execution

3.1 APPLICATION
   .1 Do Work in compliance with WRW.
   .2 Handle waste materials not reused, salvaged, or recycled in accordance with appropriate regulations and codes.

3.2 CLEANING
   .1 Clean-up work area as work progresses.
   .2 Source separate materials to be reused/recycled into specified sort areas.

3.3 DIVERSION OF MATERIALS
   .1 From following list, separate materials from general waste stream and stockpile in separate piles or containers, as reviewed by Consultant, and consistent with applicable fire regulations.
      .1 Mark containers or stockpile areas.
      .2 Provide instruction on disposal practices.
   .2 On-site sale of salvaged, recovered, reusable, recyclable materials is permitted.
   .3 Demolition Waste:

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<thead>
<tr>
<th>Material Type</th>
<th>Recommended Diversion %</th>
<th>Actual Diversion %</th>
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<tbody>
<tr>
<td>Acoustic Tile</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Acoustical Insulation</td>
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<td></td>
</tr>
<tr>
<td>Carpet</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>De-mountable Partitions</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Doors and Frames</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Electrical Equipment</td>
<td>80</td>
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<tr>
<td>Furnishings</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>Marble Base</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Mechanical Equipment</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Metals</td>
<td>100</td>
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<tr>
<td>Rubble</td>
<td>100</td>
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<tr>
<td>Wood (uncontaminated)</td>
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</tr>
<tr>
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<td>.4 Construction Waste:</td>
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<th>Material Type</th>
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<th>Actual Diversion %</th>
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<td>Plastic Packaging</td>
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<td>Rubble</td>
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<td></td>
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<tr>
<td>Steel</td>
<td>100</td>
<td></td>
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<tr>
<td>Wood (uncontaminated)</td>
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</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3.4 WASTE AUDIT (WA)

.1 Schedule A: Waste Audit (WA)

3.5 WASTE REDUCTION WORKPLAN (WRW)

.1 Schedule B

3.6 DEMOLITION WASTE AUDIT (DWA)

.1 Schedule C – Demolition Waste Audit (DWA)

3.7 COST / REVENUE ANALYSIS WORKPLAN (CRAW)

.1 Schedule D- Cost / Revenue Analysis WorkPlan (CRAW)

3.8 CANADIAN GOVERNMENTAL DEPARTMENTS CHIEF RESPONSIBILITY FOR THE ENVIRONMENT

.1 Schedule E - Government Chief Responsibility for the Environment:

<table>
<thead>
<tr>
<th>Province</th>
<th>Address</th>
<th>General Inquiries</th>
<th>Fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ontario</td>
<td>Ministry of Environment and Energy, 135 St. Clair Avenue West Toronto ON M4V 1P5</td>
<td>416-323-4321</td>
<td>416-323-4682</td>
</tr>
<tr>
<td></td>
<td>Environment Canada Toronto ON</td>
<td>565-4923</td>
<td></td>
</tr>
<tr>
<td>Québec</td>
<td>Ministère de l'Environnement et de la Faune, Siège social 150, boul, René-Lévesque Est Québec QC G1R 4Y1</td>
<td>418-643-3127</td>
<td>800-418-646-5974</td>
</tr>
<tr>
<td></td>
<td>Conseil de la conservation et de l'environnement 800, place d'Youville, 19e étage Québec QC G1R 3P4</td>
<td>561-1616</td>
<td></td>
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</tbody>
</table>

END OF SECTION
Part 1 General

1.1 RELATED REQUIREMENTS

.1 Section 01 00 10 General Instructions

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Pre-warranty Meeting:

.1 Convene meeting one week prior to contract completion with contractor, SNC Lavalin Project Manager, SNC Lavalin O&M Commissioning Manager and Departmental Representative to:

.1 Verify Project requirements.
.2 Review manufacturer's installation instructions and warranty requirements.

.2 SNC Lavalin Project Manager to establish communication procedures for:

.1 Notifying construction warranty defects.
.2 Determine priorities for type of defects.
.3 Determine reasonable response time.

.3 Contact information for bonded and licensed company for warranty work action: provide name, telephone number and address of company authorized for construction warranty work action.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

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

.2 Two weeks prior to Substantial Performance of the Work, submit to the SNC Lavalin Project Manager, four final copies of operating and maintenance manuals in English.

.3 Provide spare parts, maintenance materials and special tools of same quality and manufacture as products provided in Work.

.4 Provide evidence, if requested, for type, source and quality of products supplied.

1.4 FORMAT

.1 As per 01 00 10 General Instructions 1.33 Operation Maintenance Manuals and SNC Lavalin O&M checklist.

1.5 AS-BUILT DOCUMENTS AND SAMPLES

.1 Maintain, in addition to requirements in General Conditions, at site for Owner one record copy of:

.1 Contract Drawings.
.2 Specifications.
.3 Addenda.
.4 Change Orders and other modifications to Contract.
.5 Reviewed shop drawings, product data, and samples.
.6 Field test records.
.7 Inspection certificates.
.8 Manufacturer's certificates.

.2 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.

.1 Label each document "PROJECT RECORD" in neat, large, printed letters.

.3 Maintain record documents in clean, dry and legible condition.

.1 Do not use record documents for construction purposes.

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

1.6 MATERIALS AND FINISHES

.1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.1 Provide information for re-ordering custom manufactured products.

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

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

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

1.7 MAINTENANCE MATERIALS

.1 Extra Stock Materials:

.1 Provide maintenance and extra materials, in quantities specified in individual specification sections.

.2 Provide items of same manufacture and quality as items in Work.

.3 Deliver to site location as directed; place and store.

.4 Receive and catalogue items.

.1 Submit inventory listing to Departmental Representative.

.2 Include approved listings in Maintenance Manual.

1.8 DELIVERY, STORAGE AND HANDLING

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

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

.3 Remove and replace damaged products at own expense and for review by Departmental Representative.

1.9 WARRANTIES

.1 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
.1 Separate each warranty 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, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of applicable item of work.
.4 Verify that documents are in proper form, contain full information, and are notarized.
.5 Co-execute submittals when required.
.6 Retain warranties until time specified for submittal.

.2 Conduct joint 4 month and 9 month warranty inspection, measured from time of acceptance, by SNC Lavalin O&M Project Manager.

.3 Include information contained in warranty as follows:

.1 Roles and responsibilities of personnel associated with warranty process, including points of contact and telephone numbers within the organizations of Contractors, subcontractors, manufacturers or suppliers involved.
.1 Name and phone numbers of manufacturers or suppliers.
.2 Names, addresses and telephone numbers of sources of spare parts.
.3 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
.4 Cross-reference to warranty certificates as applicable.
.5 Starting point and duration of warranty period.
.6 Summary of maintenance procedures required to continue warranty in force.
.7 Cross-Reference to specific pertinent Operation and Maintenance manuals.

.2 Contractor's plans for attendance at 4 and 9 month post-construction warranty inspections.

.4 Respond in timely manner to oral or written notification of required construction warranty repair work.

.5 Written verification to follow oral instructions.

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

Part 2    Products
2.1    NOT USED
.1    Not Used.

Part 3    Execution
3.1    NOT USED
.1    Not Used.

END OF SECTION
General

1.1 SUMMARY

.1 Comply with requirements of this Section when performing following Work:
  .1 Removal of asbestos containing material from piping.
  .2 Removal or disturbance of one square metre or less of friable asbestos containing material during the repair, alteration, maintenance or demolition of all or part of machinery or equipment, or of a building.
  .3 Enclosure of friable asbestos containing material as indicated.
  .4 Application of tape or sealant or other covering to pipe insulation containing asbestos.
  .5 Removing non-friable asbestos containing materials by breaking, cutting, drilling, abrading, grounding, sanding or vibrating at piping chase locations if the work is done by means of power tools that are attached to dust-collecting devices equipped with HEPA filters.
  .6 Removing of asbestos containing material from a pipe, duct or similar structure using a glove bag.

1.2 SECTION INCLUDES

.1 Requirements and procedures for asbestos abatement of asbestos containing materials of the type described within.

1.3 REFERENCES

.1 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-1.205-03, Sealer for Application of Asbestos Fibre Releasing Materials.
.2 Department of Justice Canada (Jus)
  .1 Canadian Environmental Protection Act, 1999 (CEPA).
.3 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  .1 Material Safety Data Sheets (MSDS).
.4 Transport Canada (TC)
.5 Underwriters' Laboratories of Canada (ULC)

1.4 DEFINITIONS

.1 Amended Water: water with non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.
.2 Asbestos Containing Materials (ACMs): materials that contain 0.5 per cent or more asbestos by dry weight and are identified under Existing Conditions including fallen materials and settled dust.
.3 Asbestos Work Area: area where work takes place which will, or may disturb ACMs.
.4 Authorized Visitors: Engineers, or designated representatives, and representatives of regulatory agencies.
.5 Competent worker person: in relation to specific work, means a worker who:
  .1 Is qualified because of knowledge, training and experience to perform the work.
  .2 Is familiar with the federal laws and with the provisions of the regulations that apply to the work.
  .3 Has knowledge of all potential or actual danger to health or safety in the work.
.6 Friable Materials: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.
.7 Glove Bag: prefabricated glove bag as follows:
  .1 Minimum thickness 0.25 mm (10 mil) polyvinyl-chloride bag.
  .2 Integral 0.25 mm (10 mil) thick polyvinyl-chloride gloves and elastic ports.
  .3 Equipped with reversible double pull double throw zipper on top and at approximately mid-section of the bag.
  .4 Straps for sealing ends around pipe.
HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with filter system capable of collecting and retaining fibres greater than 0.3 microns in any dimension at 99.97% efficiency.

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

Occupied Area: any area of building or work site that is outside Asbestos Work Area.

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.

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

### 1.5 SUBMITTALS

1. Submittals in accordance with Section 01 00 10 - General Instructions.
2. Submit proof satisfactory to Engineer that suitable arrangements have been made to dispose of asbestos containing waste in accordance with requirements of authority having jurisdiction.
3. Submit Provincial/Territorial and/or local requirements for Notice of Project Form.
4. Submit proof of Contractor's Asbestos Liability Insurance.
5. Submit to Engineer necessary permits for transportation and disposal of asbestos containing waste and proof that asbestos containing waste has been received and properly disposed.
6. Submit proof satisfactory to Engineer that all asbestos workers have received appropriate training and education by a competent person in the hazards of asbestos exposure, good personal hygiene, entry and exit from Asbestos Work Area, aspects of work procedures and protective measures while working in Asbestos Work Areas, and the use, cleaning and disposal of respirators and protective clothing.
7. Submit proof that supervisory personnel have attended asbestos abatement course, of not less than two days duration, approved by Engineer. Minimum of one supervisor for every ten workers.
8. Submit Worker's Compensation Board status and transcription of insurance.
9. Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including:
   1. Encapsulants;
   2. Amended water;
10. Submit proof satisfactory to Engineer that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.

### 1.6 QUALITY ASSURANCE

1. Regulatory Requirements: comply with Federal, Provincial/Territorial and local requirements pertaining to asbestos, provided that in case of conflict among these requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at the time work is performed.
2. Health and Safety:
   1. Do construction occupational health and safety in accordance with Section 01 00 10 - General Instructions.
   2. Safety Requirements: worker and visitor protection.
      1. Protective equipment and clothing to be worn by workers while in Asbestos Work Area include:
         1. Air purifying half-mask respirator with N-100, R-100 or P-100 particulate filter, personally issued to worker and marked as to efficiency and purpose, suitable for protection against asbestos and acceptable to Provincial Authority having jurisdiction. The respirator to be fitted so that there is an effective seal between the respirator and the worker's face, unless the respirator is equipped with a hood or helmet. The respirator to be cleaned, disinfected and inspected after use on each shift, or more often if necessary, when issued for the exclusive use of one worker, or
after each use when used by more than one worker. The respirator to have damaged or deteriorated parts replaced prior to being used by a worker; and, when not in use, to be stored in a convenient, clean and sanitary location. The employer to establish written procedures regarding the selection, use and care of respirators, and a copy of the procedures to be provided to and reviewed with each worker who is required to wear a respirator. A worker not to be assigned to an operation requiring the use of a respirator unless he or she is physically able to perform the operation while using the respirator.

.2 Disposable type protective clothing that does not readily retain or permit penetration of asbestos fibres. Protective clothing to be provided by the employer and worn by every worker who enters the work area, and the protective clothing to consist of a head covering and full body covering that fits snugly at the ankles, wrists and neck, in order to prevent asbestos fibres from reaching the garments and skin under the protective clothing. It includes suitable footwear, and it to be repaired or replaced if torn.

.3 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.

.4 Before leaving Asbestos Work Area, the worker can decontaminate his or her protective clothing by using a vacuum equipped with a HEPA filter, or by damp wiping, before removing the protective clothing, or, if the protective clothing will not be reused, place it in a container for dust and waste. The container to be dust tight, suitable for asbestos waste, impervious to asbestos, identified as asbestos waste, cleaned with a damp cloth or a vacuum equipped with a HEPA filter immediately before removal from the work area, and removed from the work area frequently and at regular intervals.

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

.6 Ensure that no person required to enter an Asbestos Work Area has facial hair that affects seal between respirator and face.

.7 Visitor Protection:

.1 Provide protective clothing and approved respirators to Authorized Visitors to work areas.

.2 Instruct Authorized Visitors in the use of protective clothing, respirators and procedures.

.3 Instruct Authorized Visitors in proper procedures to be followed in entering into and exiting from Asbestos Work Area.

1.7 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse in accordance with Section 01 00 10 - General Instructions.

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

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

.4 Separate for reuse and place in designated containers steel waste in accordance with Waste Management Plan.

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

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

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

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

.9 Provide manifests describing and listing waste created. Transport containers by approved means to licenced landfill for burial.
1.8 Existing Conditions

1. Reports and information pertaining to ACMS to be handled, removed, or otherwise disturbed and disposed of during this Project are available as part of this tender documentation.

2. Notify Engineer of friable material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by Engineer.

1.9 Scheduling

1. Hours of Work: perform work involving ACMs located at areas noted in the DSR outside of normal working hours. Include in Contract Sum additional costs due to this requirement.

1.10 Owner’s Instructions

1. Before beginning Work, provide Engineer satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene and work practices, in use of glove bag procedures, and in use, cleaning, and disposal of respirators and protective clothing.

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

   1. 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.

2 Products

2.1 Materials

1. Drop and Enclosure Sheets:

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

2. Wetting Agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with water in concentration to provide thorough wetting of asbestos containing material.


   1. Inner container: 0.15 mm thick sealable polyethylene bag or where glove bag method is used, glove bag itself.
   2. Outer container: sealable metal or fibre type where there are sharp objects included in waste material; otherwise outer container may be sealable metal or fibre type or second 0.15 mm thick sealable polyethylene bag.
   3. Labelling requirements: affix preprinted cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site.

4. Glove bag:

   1. Acceptable materials: safe-T-Strip products in configuration suitable for Work, or Alternative material approved by addendum during tendering period in accordance with Instructions to Tenderers.
   2. The glove bag to be equipped with:

      1. Sleeves and gloves that are permanently sealed to the body of the bag to allow the worker to access and deal with the insulation and maintain a sealed enclosure throughout the work period.
      2. Valves or openings to allow insertion of a vacuum hose and the nozzle of a water sprayer while maintaining the seal to the pipe, duct or similar structure.
      3. A tool pouch with a drain.
      4. A seamless bottom and a means of sealing off the lower portion of the bag.
      5. A high strength double throw zipper and removable straps, if the bag is to be
moved during the removal operation.

.5 Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.

.6 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 asbestos fibres.

.1 Sealer: flame spread and smoke developed rating less than 50 and be compatible with new fireproofing.

.7 Encapsulant: surface film forming type ULC listed.

3 Execution

3.1 SUPERVISION

.1 Minimum of one Supervisor for every ten workers is required.

.2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos-containing materials.

3.2 PROCEDURES

.1 Do construction occupational health and safety in accordance with Section 01 00 10 - General Instructions.

.2 Before beginning Work, at each access to Asbestos Work Area, install warning signs in both official languages in upper case 'Helvetica Medium' letters reading as follows, where number in parentheses indicates font size to be used: 'CAUTION ASBESTOS HAZARD AREA (25 mm) / NO UNAUTHORIZED ENTRY (19 mm) / WEAR ASSIGNED PROTECTIVE EQUIPMENT (19 mm) / BREATHING ASBESTOS DUST MAY CAUSE SERIOUS BODILY HARM (7 mm)'.

.3 Before beginning Work remove visible dust from surfaces in work area where dust is likely to be disturbed during course of work.

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

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

.4 Prevent spread of dust from Asbestos Work Area using measures appropriate to work to be done.

.1 Use FR polyethylene drop sheets over flooring such as carpeting that absorbs dust and over flooring in work areas where dust or contamination cannot otherwise be safely contained.

.2 When removing asbestos containing material from piping or equipment and "glove bag" method is not used erect enclosure of polyethylene sheeting around work area, shut off mechanical ventilation system serving work area and seal ventilation ducts to and from work area.

.5 Remove loose material by HEPA vacuum; thoroughly wet friable material containing asbestos to be removed or disturbed before and during Work unless wetting creates hazard or causes damage.

.1 Use garden reservoir type low - velocity sprayer or airless spray equipment capable of producing mist or fine spray.

.2 Perform Work in a manner to reduce dust creation to lowest levels practicable.

.6 Pipe Insulation Removal Using Glove Bag:

.1 A glove bag not to be used to remove insulation from a pipe, duct or similar structure if:

.1 It may not be possible to maintain a proper seal for any reason including, without limitation:

.1 The condition of the insulation.

.2 The temperature of the pipe, duct or similar structure.

.2 The bag could become damaged for any reason including, without limitation:

.1 The type of jacketing.

.2 The temperature of the pipe, duct or similar structure.

.2 Upon installation of the glove bag, inspect bag for any damage or defects. If any damage or defects are found, the glove bag is to be repaired or replaced. The glove bag to be
inspected at regular intervals for damage and defects, and repair or replaced, as appropriately. The asbestos containing contents of the damaged or defective glove bag found during removal are to be wetted and the glove bag and its contents are to be removed and disposed of in an appropriate waste disposal container. Any damaged or defective glove bags are not be reused.

.3 Place tools necessary to remove insulation in tool pouch. Wrap bag around pipe and close zippers. Seal bag to pipe with cloth straps.

.4 Place hands in gloves and use necessary tools to remove insulation. Arrange insulation in bag to obtain full capacity of bag.

.5 Insert nozzle of garden reservoir type sprayer into bag through valve and wash down pipe and interior of bag thoroughly. Wet surface of insulation in lower section of bag.

.6 To remove bag after completion of stripping, wash top section and tools thoroughly. Remove air from top section through elasticized valve using a HEPA vacuum. Pull polyethylene waste container over glove bag before removing from pipe. Release one strap and remove freshly washed tools. Place tools in water. Remove second strap and zipper. Fold over into waste container and seal.

.7 After removal of bag ensure that pipe is free of residue. Remove residue using HEPA vacuum or wet cloths. Ensure that surfaces are free of sludge which after drying could release asbestos dust into atmosphere. Seal exposed surfaces of pipe and ends of insulation with slow drying sealer to seal in any residual fibres.

.8 Upon completion of Work shift, cover exposed ends of remaining pipe insulation with polyethylene taped in place.

.7 Work is subject to visual inspection and air monitoring. Contamination of surrounding areas indicated by visual inspection or air monitoring will require complete enclosure and clean-up of affected areas.

.8 Cleanup:

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

.2 Place dust and asbestos containing waste in sealed dust tight waste bags. Treat drop sheets and disposable protective clothing as asbestos waste and wet and fold to contain dust and then place in waste bags.

.3 Immediately before their removal from Asbestos Work Area and disposal, clean each filled waste bag using damp cloths or HEPA vacuum and place in second clean waste bag.

.4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of Provincial/Territorial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and that guidelines and regulations for asbestos disposal are followed.

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

### 3.3 AIR MONITORING

.1 From beginning of Work until completion of cleaning operations, Engineer to take air samples on daily basis outside of Asbestos Work Area enclosures in accordance with PWGSC requirements.

.2 If air monitoring shows that areas outside Asbestos Work Area enclosures are contaminated, enclose, maintain and clean these areas in same manner as that applicable to Asbestos Work Area.

.3 Ensure that respiratory safety factors are not exceeded.

.4 During the course of Work, Engineer to measure fibre content of air outside Work areas by means of air samples analyzed by Phase Contrast Microscopy (PCM).

.1 Stop Work when PCM measurements exceed 0.05 f/cc and correct procedures.
Part 1  General

1.1 RELATED SECTIONS

.1 Section 01 33 00 - Submittal Procedures.
.2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.
.3 Section 01 78 00 - Closeout Submittals.

1.2 REFERENCES

.1 American National Standards Institute (ANSI)
  .2 American Society for Testing and Materials International, (ASTM)
    .1 ASTM G21 Fungal Resistance
    .2 ASTM G22 Bacterial Resistance
  .3 Canadian Standards Association (CSA International)
  .4 International Solid Surface Fabricators Association

1.3 SUBMITTALS

.1 Product Data:
  .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.
  .2 Submit two copies of WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOC's for adhesives, solvents and cleaners.

.2 Samples:
  .1 Submit two 51 mm x 51mm samples in accordance with Section 01 33 00- Submittal Procedures.
  .2 Submit duplicate samples of joints, edging, cutouts and postformed profiles.

.3 Manufacturer's Instructions:
  .1 Submit manufacturer's installation instructions.

.4 Closeout Submittals:
  .1 Provide maintenance data for laminate work for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 QUALITY ASSURANCE

.1 Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
.2 Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:

.1 Deliver, handle, store and protect materials of this section in accordance with Manufacturers recommendations.

1.6 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.

.2 Divert unused caulking, sealants, surface coatings and adhesive materials from landfill through disposal at a special wastes depot.

Part 2 Products

2.1 MATERIALS

.1 Solid Surfacing Materials: Homogeneous solid sheets of filled plastic resin complying with ISSFA-2

.1 Acceptable product: Solid Surfacing by Formica.

.1 Colour & Pattern as selected by SNC Lavalin O&M Project Manager from manufacturer's standard full range of the following series; Solid elements, Basic elements, Traditions, or Classics.

.2 Laboratory tops: 13 mm thick, solid surfacing, adhesively joined with no exposed seams, Edge details as indicated.

.2 Splashes, skirts, gable ends

.1 Install splashes, skirts and gable ends of counter top vanities of same material of counter top using silicone to back surface only. Install seam adhesive along edge where it seams similar material.

.2 Plywood core: to CSA O121 solid two sides, Grade G2S, 19 mm thick.

.3 Adhesives: For seams and drops edges:

.1 Formica solid surfacing seaming cartridges; colour to blend with sheet materials.

.4 Draw bolts and splines: as recommended by fabricator.

2.2 FABRICATION

.1 Comply with ISSFA-2

.2 Obtain governing dimensions before fabricating items which are to accommodate or abut fixtures, equipment and other materials.

.3 Ensure adjacent parts of continuous solid surfacing work match in colour and pattern.
Part 3 Execution

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

.1 Install work plumb, true and square, neatly scribed to adjoining surfaces.

.2 Make allowances around perimeter where fixed objects pass through or project into laminated plastic work to permit normal movement without restriction.

.3 Use draw bolts and splines in countertop joints. Maximum spacing 450 mm on centre, 75 mm from edge. Make flush hairline joints.

.4 Provide cutouts for plumbing fixtures and other penetrations. Round internal corners, chamfer edges and seal exposed core.

.5 At junction of laminated plastic counter back splash and adjacent wall finish, apply small bead of sealant.

.6 Site apply laminated plastic to units as indicated. Adhere laminated plastic over entire surface. Make corners with hairline joints. Use full sized laminate sheets. Make joints only where approved. Slightly bevel arrises.

.7 For site application, offset joints in plastic laminate facing from joints in core.

3.3 PROTECTION

.1 Cover finished solid surfacing surfaces with heavy kraft paper or put in cartons during shipment. Protect installed solid surfacing surfaces by approved means. Do not remove until immediately before final inspection.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean and polish fabrications in accordance with Manufacturer's instructions.

.3 Perform care and cleaning with ISSFA-2

.4 Promptly remove excessive mastic and seam adhesive.

.5 Remove traces of primer, caulking, epoxy and filler materials; clean doors and frames.

END OF SECTION
Part I  General

1.1 Related Sections

.1 Section 01 00 10 – General Instruction
.2 Section 01 33 00 - Submittal Procedures.
.3 Section 01 74 21 - Construction/Demolition Waste Management And Disposal
.4 Section 09 91 23 – Interior Painting

1.2 References

.1 Do work in accordance with CSA A82.31-M1980 except where specified otherwise.
.2 Aluminum Association
   .1 Designation for Aluminum Finishes-1997.
.3 American Society for Testing and Materials International, (ASTM)
   .2 ASTM C79/C79M-01, Standard Specification for Treated Core and Non-treated Core Gypsum Sheathing Board.
   .3 ASTM C475-01, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
   .4 ASTM C514-01, Specification for Nails for the Application of Gypsum Board.
   .5 ASTM C630/C630M-01, Specification for Water-Resistant Gypsum Backing Board.
   .6 ASTM C840-01, Specification for Application and Finishing of Gypsum Board.
   .7 ASTM C954-00, Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Steel Studs From 0.033 in. (0.84 mm) to 0.112 in. (2.84 mm) in Thickness.
   .8 ASTM C1002-01, Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
   .9 ASTM C1178/C1178M-01, Specification for Glass Mat Water-Resistant Gypsum Backing Board.
.4 Association of the Wall and Ceilings Industries International (AWEI)
.5 Canadian General Standards Board (CGSB)
.6 Underwriters' Laboratories of Canada (ULC)

1.3 Delivery, Storage And Handling

.1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.
.2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.4 Site Environmental Requirements

.1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.

.2 Apply board and joint treatment to dry, frost free surfaces.

.3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.5 Samples

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

1.6 Waste Management And Disposal

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

Part 2 Products

2.1 MATERIALS

.1 Water-resistant board: to ASTM C630/C630M regular, 15.9 mm thick x 1200 mm wide x maximum practical length.

.2 Glass mat water-resistant gypsum backing board: to ASTM C1178/C1178M, 15.9 mm thick, 1200 mm wide x maximum practical length.

.3 Nails, screws and staples: to CSA A82.31 M1980

.4 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, ABS PVC zinc-coated by hot-dip process, 0.5 mm base thickness, perforated flanges, one piece length per location.

.1 Basis of Design for all washrooms, ‘woven glass-fibre mesh’.

.5 Sealants: silicone for washroom areas, low VOC.

.6 Polyethylene: to CAN/CGSB-51.34, Type 2.

.7 Insulating strip: rubberized, moisture resistant, 3 mm thick closed cell neoprene strip, 12 mm wide, with self sticking permanent adhesive on one face, lengths as required.

.8 Joint compound: to CSA A82.31-M 1980, asbestos-free.

2.2 Finishes

.1 Paint finish: in accordance with Section 09 91 23 Interior Painting.
.2 Porcelain/Ceramic: in accordance with Section 09 30 13 Ceramic Tiling.

Part 3 Execution

3.1 Erection

.1 Do application and finishing of gypsum board in accordance with CSA A82.31-M1980 unless where specified otherwise.

.2 Do application of gypsum sheathing in accordance with CSA A82.31-M1980

.3 Furr duct shafts, beams, columns, pipes and exposed services unless indicated otherwise.

.4 Support light fixtures by providing additional ceiling suspension hangers within 150 mm of each corner and at maximum 600 mm around perimeter of fixture.

.5 Install work level to tolerance of 1:1200.

.6 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.

.7 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.

.8 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.

.9 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.

.10 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

3.2 Application

.1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.

.2 Apply single layer gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300 mm on centre.

.3 Apply single layer gypsum board to sheet using screw fasteners into pre-drilled holes. Maximum spacing of screws 200 o/c.

.1 Single-Layer Application:

.1 Apply gypsum board on ceilings prior to application of walls in accordance with CSA A82.31-M1980.

.2 Apply gypsum board horizontally, providing sheet lengths that will minimize end joints.

.4 Apply water-resistant gypsum board where wall tiles to be applied. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Apply water resistant joint treatment on areas to receive tile finish.

.5 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.
.6 Install gypsum board with face side out.

.7 Do not install damaged or damp boards.

.8 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.3 Installation

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre using contact adhesive for full length.

.2 Install casing beads around perimeter of suspended ceilings.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

.4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

.5 Construct control joints of preformed units two back-to-back casing beads set in gypsum board facing and supported independently on both sides of joint.

.6 Provide continuous polyethylene dust barrier behind and across control joints.

.7 Locate control joints where indicated at changes in substrate construction at approximate 10 m spacing on long corridor runs at approximate 15 m spacing on ceilings.

.8 Install control joints straight and true.

.9 Construct expansion joints as detailed, at building expansion and construction joints. Provide continuous dust barrier.

.10 Install expansion joint straight and true.

.11 Splice corners and intersections together and secure to each member with 3 screws.

.12 Install access doors to electrical and mechanical fixtures specified in respective sections.

.13 Rigidly secure frames to furring or framing systems.

.14 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

.15 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:

.1 Level of finish:

.1 Level 4: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.
.15 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.16 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.

.17 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.18 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

.19 Mix joint compound slightly thinner than for joint taping.

.20 Apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.

.21 Allow skim coat to dry completely.

.22 Remove ridges by light sanding or wiping with damp cloth.

.23 Provide protection that ensures gypsum drywall work will remain without damage or deterioration at time of substantial completion.

END OF SECTION
Part 1  General

1.1  REFERENCES

1.1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)

1.1 ANSI A108.1-99, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1A-C, 108.4-.13, A118.1-.10, ANSI A136.1).

1.2 CTI A118.3-92, Specification for Chemical Resistant, Water Cleanable Tile Setting and Grouting Epoxy and Water Cleanable Tile Setting Epoxy Adhesive (included in ANSI A108.1).

1.3 CTI A118.4-92, Specification for Latex Cement Mortar (included in ANSI A108.1).

1.4 CTI A118.5-92, Specification for Chemical Resistant Furan Resin Mortars and Grouts for Tile Installation (included in ANSI A108.1).

1.5 CTI A118.6-92, Specification for Ceramic Tile Grouts (included in ANSI A108.1).

1.2 Canadian General Standards Board (CGSB)

1.1 CAN/CGSB-51.34-M86(R1988), Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

1.2 CGSB 71-GP-22M-78(AMEND.), Adhesive, Organic, for Installation of Ceramic Wall Tile.

1.3 CAN/CGSB-75.1-M88, Tile, Ceramic.

1.4 CAN/CGSB-25.20-95, Surface Sealer for Floors.

1.3 Canadian Standards Association (CSA International)

1.1 CSA A123.3-05, Asphalt Saturated Organic Roofing Felt.

1.2 CAN/CSA-A3000-03(R2006), Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

1.4 Terrazzo Tile and Marble Association of Canada (TTMAC)


1.2 SUBMITTALS

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

1.2 Provide product data in accordance with Section 01 33 00 - Submittal Procedures.

1.1 Include manufacturer’s information on:

1.1 Porcelain tile, marked to show each type, size, and shape required.

1.2 Chemical resistant mortar and grout (Epoxy and Furan).

1.3 Cementitious backer unit.

1.4 Dry-set cement mortar and grout.

1.5 Divider strip.

1.6 Elastomeric membrane and bond coat.

1.7 Reinforcing tape.

1.8 Levelling compound.

1.9 Latex cement mortar and grout.

1.10 Commercial cement grout.
.11 Organic adhesive.
.12 Slip resistant tile.
.13 Waterproofing isolation membrane.
.14 Fasteners.

.3 Provide samples in accordance with Section 01 33 00 - Submittal Procedures.

.1 Base tile: submit duplicate, 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
.2 Floor tile: submit duplicate, 300 x 300 mm sample panels of each colour, texture, size, and pattern of tile.
.3 Trim shapes, bullnose cap and cove including bullnose cap and base pieces at internal and external corners of vertical surfaces, each type, colour, and size.
.4 Adhere tile samples to 11 mm thick plywood and grout joints to represent project installation.

1.3 QUALITY ASSURANCE

.1 Quality Assurance Submittals:

.1 Manufacturer's Instructions: manufacturer's installation instructions.
.2 Manufacturer's Field Reports: manufacturer's field reports specified.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:

.1 Deliver, store and handle materials in accordance with Section 01 00 10 – General Instructions.

.2 Waste Management and Disposal:

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

1.5 AMBIENT CONDITIONS

.1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 degrees C for 48 hours before, during, and 48 hours after, installation.

.2 Do not install tiles at temperatures less than 12 degrees C or above 38 degrees C.

.3 Do not apply epoxy mortar and grouts at temperatures below 15 degrees C or above 25 degrees C.

1.6 MAINTENANCE

.1 Extra Materials:

.1 Provide maintenance materials in accordance with Section 01 00 10 – General Instructions.
.2 Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.
.3 Maintenance material same production run as installed material.
Part 2 Products

2.1 FLOOR AND WALL TILE

.1 Porcelain floor tile for entry areas: to CAN/CGSB-75.1 ANSI A118.4, Class MR (02 -3.0%), 300 x 600 x 9 mm size, straight edges, smooth surface, matte finish, colour to be selected by Consultant.

.2 Ceramic wall tile for wall areas: to CAN/CGSB-75.1, Type 3 or 5, Class MR 1, 100 x 400 x 6 mm size, straight edges, matt glazed surface, colour as selected by Consultant.

2.2 TRIM SHAPES

.1 Conform to applicable requirements of adjoining floor and wall tile.

.2 Use slip resistant trim shapes for horizontal surfaces of showers, overflow ledges, recessed steps, shower curbs, drying area curbs, and stools.

.3 Use trim shapes sizes conforming to size of adjoining field wall tile, including existing spaces, unless specified otherwise.

.4 External Corners: provide trim shapes as follows where indicated.

.1 Coved shapes for internal corners.

2.3 MORTAR AND ADHESIVE MATERIALS

.1 Cement: to CSA-A5, type 10.

.2 Sand: to ASTM C144, passing 16 mesh.

.3 Latex additive: formulated for use in cement mortar and thin set bond coat.

.4 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

.5 Adhesives:

.1 Maximum VOC limit 65 g/L to SCAQMD Rule 1168.

2.4 BOND COAT

.1 Dry set cement mortar: to ANSI A108.1.

.2 Organic adhesive: to CGSB 71-GP-22M, Type 1 ANSI A136.1.

.1 Maximum VOC limit 65 g/L to SCAQMD Rule 1168.

.3 Latex Cement mortar: to ANSI A108.1, two-component universal dry-set mortar.

.4 Epoxy bond coat: non-toxic, non-flammable, non-hazardous during storage, mixing, application, and when cured. To produce shock and chemical resistant mortars having the following physical characteristics:

.1 Compressive Strength: 246 kg/cm\(^2\).

.2 Bond Strength: 53 kg/cm\(^2\).

.3 Water Absorption: 4.0% Max.

.4 Ozone Resistance, 200 hours @ 200 ppm: no loss of strength.
.5 Smoke Contribution Factor: 0.
.6 Flame Contribution Factor: 0.
.7 Finished mortar and grout to be resistant to urine, dilute acid, dilute alkali, sugar, brine and food waste products, petroleum distillates, oil and aromatic solvents.
.8 Bond Coat: maximum VOC limit 65 g/L to SCAQMD Rule 1168.

.5 Chemical-Resistant Bond Coat:
.1 Epoxy Resin Type: CTI A118.3.
.2 Furan Resin Type: CTI A118.5.
.3 Bond Coat: maximum VOC limit 65 g/L to SCAQMD Rule 1168.

2.5 GROUT

.1 Colouring Pigments:
.1 Pure mineral pigments, limeproof and nonfading, complying with ASTM C979.
.2 Colouring pigments to be added to grout by manufacturer.
.3 Job coloured grout are not acceptable.
.4 Use in Commercial Cement Grout, Dry-Set Grout, and Latex Cement Grout.

.2 Cement Grout: to ANSI A108.1.
.1 Use one part white cement to one part white sand passing a number 30 screen.

.3 Commercial Cement Grout: to CTI A118.6.

.4 Dry-Set Grout: to CTI A118.6.

.5 Latex Cement Grout: to ANSI A108.1, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for walls and floors with polished tiles commercial tile grout.

.6 Chemical-Resistant Grout:
.1 Epoxy grout: to ANSI A108.1, having quality, colour and characteristics to match epoxy bond coat. Adhesive and grout by same manufacturer.
.2 Furan grout: to CTI A118.5.

2.6 ACCESSORIES

.1 Reinforcing mesh: 50 x 50 x 1.6 x 1.6 mm galvanized steel wire mesh, welded fabric design, in flat sheets.

.2 Divider strips:
.1 Laminated strips, core 32 x 3 mm black neoprene, outsides (both sides) brass 32 x 1.29 mm complete with anchors, both sides spaced at 150 mm on centre.
.2 Plastic colour to match adjacent tile, complete with anchors, both sides spaced at 150 mm on centre.

.3 Cleavage plane: polyethylene film to CGSB 51-34.

.4 Metal lath: to ASTM C847 painted finish, 10 mm rib at 2.17 kg/m².

.5 Transition Strips: purpose made metal extrusion; anodized aluminum type.
.6 Reducer Strips: purpose made metal extrusion; anodized aluminum type; maximum slope of 1:2.

.7 Prefabricated Movement Joints: purpose made, having a Shore A Hardness not less than 60 and elasticity of plus or minus 40 percent when used in accordance to TTMAC Detail 301EJ.

.8 Sealant: as recommended by tile manufacture.

.9 Floor sealer and protective coating: to CAN/CGSB-25.20, Type to tile and grout manufacturers recommendations.

.10 Thresholds: size to suit door opening and frame width.

2.7 MIXES

.1 Cement:

.1 Scratch coat: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand, 1 part water, and latex additive where required. Adjust water volume depending on water content of sand.

.2 Slurry bond coat: cement and water mixed to creamy paste. Latex additive may be included.

.3 Mortar bed for floors: 1 part cement, 4 parts sand, 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.

.4 Mortar bed for walls and ceilings: 1 part cement, 1/5 to 1/2 parts hydrated lime to suit job conditions, 4 parts sand and 1 part water. Adjust water volume depending on water content of sand. Latex additive may be included.

.5 Levelling coat: 1 part cement, 4 parts sand, minimum 1/10 part latex additive, 1 part water including latex additive.

.6 Bond or setting coat: 1 part cement, 1/3 part hydrated lime, 1 part water.

.7 Measure mortar ingredients by volume.

.2 Dry set mortar: mix to manufacturer's instructions.

.3 Organic adhesive: pre-mixed.

.1 Adhesives: maximum VOC limit 65 g/L to SCAQMD Rule 1168.

.4 Mix bond and levelling coats, and grout to manufacturer's instructions.

.5 Adjust water volumes to suit water content of sand.

2.8 PATCHING AND LEVELLING COMPOUND

.1 Cement base, acrylic polymer compound, manufactured specifically for resurfacing and leveling concrete floors. Products containing gypsum are not acceptable.

.2 Have not less than the following physical properties:

.1 Compressive strength - 25 MPa.

.2 Tensile strength - 7 MPa.

.3 Flexural strength - 7 MPa.

.4 Density - 1.9.
.3 Capable of being applied in layers up to 50 mm thick, being brought to feather edge, and being trowelled to smooth finish.

.4 Ready for use in 48 hours after application.

2.9 CLEANING COMPOUNDS

.1 Specifically designed for cleaning masonry and concrete and which will not prevent bond of subsequent tile setting materials including patching and leveling compounds and elastomeric waterproofing membrane and coat.

.2 Materials containing acid or caustic material are not acceptable.

Part 3 Execution

3.1 MANUFACTURER’S INSTRUCTIONS

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

3.2 WORKMANSHIP


.2 Apply tile or backing coats to clean and sound surfaces.

.3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.

.4 Maximum surface tolerance 1:800.

.5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.

.6 Lay out tiles so perimeter tiles are minimum 1/2 size.

.7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

.8 Make internal angles square, external angles rounded.

.9 Use round edged tiles at termination of wall tile panels, except where panel abuts projecting surface or differing plane.

.10 Install divider strips at junction of tile flooring and dissimilar materials.

.11 Allow minimum 24 hours after installation of tiles, before grouting.

.12 Clean installed tile surfaces after installation and grouting cured.

.13 Make control joints where indicated. Make joint width same as tile joints. Fill control joints with sealant in accordance with manufactures recommendation. Keep building expansion joints free of mortar and grout.
3.3 WALL TILE
   .1 Install in accordance with TTMAC detail 306W-2006.

3.4 FLOOR TILE
   .1 Install in accordance with TTMAC detail 310F-2006 for washrooms and shower areas.

3.5 FLOOR SEALER AND PROTECTIVE COATING
   .1 Apply in accordance with manufacturer's instructions.

3.6 FIELD QUALITY CONTROL
   .1 Manufacturer's Field Services:
      .1 Provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.7 CLEANING
   .1 Proceed in accordance with Section 01 00 10 – General Instruction.

END OF SECTION
Part 1  General

1.1  SUMMARY

1.1 Section Includes:

1.1 Material and installation of site applied paint finishes to new interior surfaces, including site painting of shop primed surfaces.

1.2 Related Sections:

1.2 Section 01 33 00 – Submittal Procedures.
1.2 Section 01 00 10 – General Instructions.
1.2 Section 01 74 21 – Construction/Demolition Waste Management and Disposal.

1.2 REFERENCES

1.2 Department of Justice Canada (Jus)

1.2 Canadian Environmental Protection Act (CEPA), 1999, c. 33

1.2 Environmental Protection Agency (EPA)


1.2 Health Canada / Workplace Hazardous Materials Information System (WHMIS)

1.2 Material Safety Data Sheets (MSDS).

1.2 Master Painters Institute (MPI)


1.2 National Fire Code of Canada - 1995

1.2 Society for Protective Coatings (SSPC)


1.2 Transport Canada (TC)

1.2 Transportation of Dangerous Goods Act (TDGA), 1992, c. 34.

1.3 QUALITY ASSURANCE

1.3 Qualifications:

1.3 Contractor: minimum of five years proven satisfactory experience. Provide list of last three comparable jobs including, job name and location, specifying authority, and project manager.

1.3 Journeymen: qualified journeymen who have "Tradesman Qualification Certificate of Proficiency" engaged in painting work.
.3 Apprentices: working under direct supervision of qualified trades person in accordance with trade regulations.

.2 Mock-Ups:

.1 Construct mock-ups in accordance with Section 01 00 10 – General Instructions.

.1 Provide 300 mm x 300 mm mock-up. Prepare and paint designated surface, area, room or item (in each colour scheme) to specified requirements, with specified paint or coating showing selected colours, gloss/sheen, textures.

.2 Mock-up will be used:

.1 To judge workmanship, substrate preparation, operation of equipment and material application and workmanship to MPI Architectural Painting Specification Manual standards.

.3 Locate where indicated.

.4 Allow 24 hours for inspection of mock-up before proceeding with work.

.5 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

.3 Pre-Installation Meeting:

.1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installations in accordance with Section 01 00 10 – General Instructions.

.1 Verify project requirements.

.2 Review installation and substrate conditions.

.3 Coordination with other building subtrades.

.4 Review manufacturer's installation instructions and warranty requirements.

1.4 SCHEDULING

.1 Submit work schedule for various stages of painting to Consultant for review. Submit schedule minimum of 48 hours in advance of proposed operations.

.2 Obtain written authorization from Consultant for changes in work schedule.

.3 Schedule painting operations to prevent disruption of occupants.

1.5 SUBMITTALS

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

.2 Product Data:

.1 Submit product data and instructions for each paint and coating product to be used.

.2 Submit product data for the use and application of paint thinner.
.3 Submit two copies of Workplace Hazardous Materials Information System (WHMIS) Material Safety Data Sheets (MSDS) in accordance with Section 01 33 00 - Submittal Procedures. Indicate VOCs during application and curing.

.3 Samples:

.1 Submit full range colour sample chips to indicate where colour availability is restricted.

.2 Submit duplicate 200 x 300mm sample panels of each paint, special finish with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:

.1 3 mm plate steel for finishes over metal surfaces.

.2 50 mm concrete block for finishes over concrete or concrete masonry surfaces.

.3 13 mm gypsum board for finishes over gypsum board and other smooth surfaces.

.4 10 mm plywood for finishes over wood surfaces.

.3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.

.4 Test reports: submit certified test reports for paint from approved independent testing laboratories, indicating compliance with specifications for specified performance characteristics and physical properties.

.1 Lead, cadmium and chromium: presence of and amounts.

.2 Mercury: presence of and amounts.

.3 Organochlorines and PCBs: presence of and amounts.

.5 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.

.6 Manufacturer's Instructions:

.1 Submit manufacturer's installation and application instructions.

.7 Closeout Submittals: submit maintenance data for incorporation into manual specified in Section 01 00 10 – General Instructions include following:

.1 Product name, type and use.

.2 Manufacturer's product number.

.3 Colour numbers.

.4 MPI Environmentally Friendly classification system rating.

1.6 MAINTENANCE

.1 Extra Materials:

.1 Deliver to extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 00 10 – General Instructions.
.2 Quantity: provide one - four litre can of each type and colour of primer, finish coating. Identify colour and paint type in relation to established colour schedule and finish system.

.3 Delivery, storage and protection: comply with Consultant requirements for delivery and storage of extra materials.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Packing, Shipping, Handling and Unloading:

.1 Pack, ship, handle and unload materials in accordance with and manufacturer's written instructions.

.2 Acceptance at Site:

.1 Identify products and materials with labels indicating:
   .1 Manufacturer's name and address.
   .2 Type of paint or coating.
   .3 Compliance with applicable standard.
   .4 Colour number in accordance with established colour schedule.

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

.4 Storage and Protection:

.1 Provide and maintain dry, temperature controlled, secure storage.
.2 Store materials and supplies away from heat generating devices.
.3 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.

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

.6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.

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

.8 Fire Safety Requirements:

.1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
.3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

.9 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 19 - Construction/Demolition Waste Management and Disposal.
2. Remove from site and dispose of packaging materials at appropriate recycling facilities.

3. Collect and separate for disposal paper, plastic, polystyrene, corrugated cardboard packaging material in appropriate on-site bins for recycling.

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

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

6. Ensure emptied containers are sealed and stored safely.

7. Unused paint coating materials must be disposed of at official hazardous material collections site as approved by Consultant.

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

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

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

11. To reduce the amount of contaminants entering waterways, sanitary/storm drain systems or into ground follow these procedures:

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

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

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

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

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

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

1.8 SITE CONDITIONS

1. Heating, Ventilation and Lighting:

   1. Ventilate enclosed spaces.

   2. Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.

   3. Provide continuous ventilation for seven days after completion of application of paint.

   4. Coordinate use of existing ventilation system with Consultant and ensure its operation during and after application of paint as required.
.5 Provide temporary ventilating and heating equipment where permanent facilities are not available or supplemental ventilating and heating equipment if ventilation and heating from existing system is inadequate to meet minimum requirements.

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

.2 Temperature, Humidity and Substrate Moisture Content Levels:

.1 Unless pre-approved written approval by Specifying body Paint Inspection Agency Authority and product manufacturer, perform no painting when:

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

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

.3 Substrate and ambient air temperatures are not expected to fall within MPI or paint manufacturer's prescribed limits.

.4 The relative humidity is under 85% or when the dew point is more than 3 degrees C variance between the air/surface temperature. Paint should not be applied if the dew point is less than 3 degrees C below the ambient or surface temperature. Use sling psychrometer to establish the relative humidity before beginning paint work.

.5 Rain or snow are forecast to occur before paint has thoroughly cured or when it is foggy, misty, raining or snowing at site.

.6 Ensure that conditions are within specified limits during drying or curing process, until newly applied coating can itself withstand 'normal' adverse environmental factors.

.2 Perform painting work when maximum moisture content of the substrate is below:

.1 Allow new concrete and masonry to cure minimum of 28 days.

.2 15% for wood.

.3 12% for plaster and gypsum board.

.3 Test for moisture using calibrated electronic Moisture Meter. Test concrete floors for moisture using "cover patch test".

.4 Test concrete, masonry and plaster surfaces for alkalinity as required.

.3 Surface and Environmental Conditions:

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

.2 Apply paint to adequately prepared surfaces and to surfaces within moisture limits.

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

.4 Additional interior application requirements:

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

.2 Apply paint in occupied facilities during silent hours only. Schedule operations to approval of Consultant such that painted surfaces will have dried and cured sufficiently before occupants are affected.
Part 2 Products

2.1 MATERIALS

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

.2 Provide paint materials for paint systems from single manufacturer.

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

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

.5 Materials (primers, paints, coatings, varnishes, stains, lacquers, fillers, thinners, solvents, etc.) in accordance with MPI Architectural Painting Specification Manual "Approved Product" listing.

.6 Linseed oil, shellac, and turpentine: highest quality product from approved manufacturer listed in MPI Architectural Painting Specification Manual, compatible with other coating materials as required.

.7 Provide paint products meeting MPI "Environmentally Friendly" E2 ratings based on VOC (EPA Method 24) content levels.

.8 Use MPI listed materials having minimum E2 rating where indoor air quality (odour) requirements exist.

.9 Paints, coatings, adhesives, solvents, cleaners, lubricants, and other fluids:

   .1 Non-flammable

   .2 Manufactured without compounds which contribute to ozone depletion in the upper atmosphere.

   .3 Manufactured without compounds which contribute to smog in the lower atmosphere.

   .4 Do not contain methylene chloride, chlorinated hydrocarbons, toxic metal pigments.

.10 Formulate and manufacture water-borne surface coatings with no aromatic solvents, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium or their compounds.

.11 Flash point: 61.0 degrees C or greater for water-borne surface coatings and recycled water-borne surface coatings.

.12 Ensure manufacture and process of both water-borne surface coatings and recycled water-borne surface coatings does not release:

   .1 Matter in undiluted production plant effluent generating 'Biochemical Oxygen Demand' (BOD) in excess of 15 mg/L to natural watercourse or sewage treatment facility lacking secondary treatment.
.2 Total Suspended Solids (TSS) in undiluted production plant effluent in excess of 15 mg/L to natural watercourse or a sewage treatment facility lacking secondary treatment.

.13 Water-borne paints and stains, recycled water-borne surface coatings and water borne varnishes to meet minimum "Environmentally Friendly" E2 rating.

.14 Recycled water-borne surface coatings to contain 50% post-consumer material by volume.

.15 Recycled water-borne surface coatings must not contain:

.1 Lead in excess of 600.0ppm weight/weight total solids.
.2 Mercury in excess of 50.0ppm weight/weight total product.
.3 Cadmium in excess of 1.0ppm weight/weight total product.
.4 Hexavelant chromium in excess of 3.0ppm weight/weight total product.
.5 Organochlorines or polychlorinated biphenyls (PCBS) in excess of 1.0ppm weight/weight total product.

2.2 COLOURS

.1 Consultant will provide Colour Schedule after Contract award.

.2 Colour schedule will be based upon selection of three base colours and one accent colours. No more than four colours will be selected for entire project and no more than three colours will be selected in each area.

.3 Selection of colours from manufacturers full range of colours.

.4 Where specific products are available in restricted range of colours, selection based on limited range.

.5 Second coat in three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site. Obtain written approval from Consultant for tinting of painting materials.

.2 Mix paste, powder or catalyzed paint mixes in accordance with manufacturer's written instructions.

.3 Use and add thinner in accordance with paint manufacturer's recommendations. Do not use kerosene or similar organic solvents to thin water-based paints.

.4 Thin paint for spraying in accordance with paint manufacturer's instructions.

.5 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.
2.4 **GLOSS/SHEEN RATINGS**

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

<table>
<thead>
<tr>
<th>Gloss Level</th>
<th>Gloss @ 60 degrees</th>
<th>Sheen @ 85 degrees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matte Finish (flat)</td>
<td>Max. 5</td>
<td>Max. 10</td>
</tr>
<tr>
<td>Velvet-Like Finish</td>
<td>Max. 10</td>
<td>10 to 35</td>
</tr>
<tr>
<td>Eggshell Finish</td>
<td>10 to 25</td>
<td>10 to 35</td>
</tr>
<tr>
<td>Satin-Like Finish</td>
<td>20 to 35</td>
<td>Min. 35</td>
</tr>
<tr>
<td>Traditional Semi-Gloss Finish</td>
<td>35 to 70</td>
<td></td>
</tr>
<tr>
<td>Traditional Gloss</td>
<td>70 to 85</td>
<td></td>
</tr>
<tr>
<td>High Gloss Finish</td>
<td>More than 85</td>
<td></td>
</tr>
</tbody>
</table>

.2 Gloss level ratings of painted surfaces as indicated and as noted on Finish Schedule.

2.5 **INTERIOR PAINTING SYSTEMS**

.1 Plaster and gypsum board: gypsum wallboard, drywall, "sheet rock type material", and textured finishes:

.1 INT 9.2M - Institutional low odour/low VOC G4 finish.

2.6 **SOURCE QUALITY CONTROL**

.1 Perform following tests on each batch of consolidated post-consumer material before surface coating is reformulated and canned. Testing by laboratory or facility which has been accredited by Standards Council of Canada.

.1 Lead, cadmium and chromium are to be determined using ICP-AES (Inductively Coupled Plasma - Atomic Emission Spectroscopy) technique no. 6010 as defined in EPA SW-846.

.2 Mercury is to be determined by Cold Vapour Atomic Absorption Spectroscopy using Technique no. 7471 as defined in EPA SW-846.

.3 Organochlorines and PCBs are to be determined by Gas Chromatography using Technique no. 8081 as defined in EPA SW-846.

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**Part 3 Execution**

3.1 **MANUFACTURER'S INSTRUCTIONS**

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

3.2 **GENERAL**

.1 Perform preparation and operations for interior painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.
.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

3.3 EXAMINATION

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant 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 Maximum moisture content as follows:
   .1 Stucco, plaster and gypsum board: 12%.
   .2 Concrete: 12%.
   .3 Clay and Concrete Block/Brick: 12%.
   .4 Wood: 15%.

3.4 PREPARATION

.1 Protection:
   .1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking. If damaged, clean and restore surfaces as directed by Consultant.
   .2 Protect items that are permanently attached such as Fire Labels on doors and frames.
   .3 Protect factory finished products and equipment.
   .4 Protect passing pedestrians, building occupants and general public in and about the building.

.2 Surface Preparation:
   .1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
   .2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
   .3 Place "WET PAINT" signs in occupied areas as painting operations progress. Signs to approval of Department Representative.

.3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
   .1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
.2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.

.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.4 Allow surfaces to drain completely and allow to dry thoroughly.

.5 Prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.6 Use trigger operated spray nozzles for water hoses.

.7 Many water-based paints cannot be removed with water once dried. Minimize use of mineral spirits or organic solvents to clean up water-based paints.

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

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

.6 Do not apply paint until prepared surfaces have been accepted by Department Representative.

3.5 APPLICATION

.1 Method of application to be as approved by Department Representative. Apply paint by brush and roller. Conform to manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:

.1 Apply paint in uniform layer using brush and/or roller type suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.

.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Spray application:

.1 Provide and maintain equipment that is suitable for intended purpose, capable of atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.

.2 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
3.3 Apply paint in uniform layer, with overlapping at edges of spray pattern. Back roll first coat application.

3.4 Brush out immediately all runs and sags.

3.5 Use brushes and rollers to work paint into cracks, crevices and places which are not adequately painted by spray.

3.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access.

3.5 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

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

3.7 Sand and dust between coats to remove visible defects.

3.8 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.

3.9 Finish inside of cupboards and cabinets as specified for outside surfaces.

3.10 Finish closets and alcoves as specified for adjoining rooms.

3.11 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.6 MECHANICAL/ELECTRICAL EQUIPMENT

3.1 Do not paint over nameplates.

3.2 Keep sprinkler heads free of paint.

3.3 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.

3.7 SITE TOLERANCES

3.1 Walls: no defects visible from a distance of 1000mm at 90 degrees to surface.

3.2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.

3.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.8 FIELD QUALITY CONTROL

3.1 Standard of Acceptance:
.1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Ceilings: no defects visible from floor at 45 degrees degrees to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

.2 Field inspection of painting operations to be carried out be independent inspection firm as designated by Department Representative.

.3 Advise Department Representative when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.4 Cooperate with inspection firm and provide access to areas of work.

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

3.9 RESTORATION

.1 Clean and re-install hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

.4 Protect freshly completed surfaces from paint droppings and dust to approval of Department Representative. Avoid scuffing newly applied paint.

.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Department Representative.

END OF SECTION
Part 1  General

1.1  RELATED SECTIONS
   .1  Section 01 00 10 – General Instructions – Submittal Procedures,
   .2  Section 01 00 10 – General Instructions – Quality Control,
   .3  Section 01 74 21 - Construction/Demolition Waste Management and Disposal

1.2  REFERENCES
          Steel Plate, Sheet, and Strip.
      .2  ASTM A240/A240M-02, Specification for Chromium and Chromium-Nickel
          Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General
          Applications.
      .3  ASTM A480/A480M-03, Specification for General Requirements for Flat-Rolled
          Stainless and Heat Resisting Steel Plate, Sheet, and Strip.
      .4  ASTM A653 GR33/A653M-02a, Specification for Steel Sheet, Zinc-Coated
          (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
   .2  Canadian General Standards Board (CGSB).
      .1  CAN/CGSB-1.81-M90, Air Drying and Baking Alkyd Primer for Vehicles and
          Equipment.
      .2  CAN/CGSB-1.88-92, Gloss Alkyd Enamel Air Drying and Baking.
      .3  CAN/CGSB-1.104M-91, Semigloss Alkyd, Air Drying and Baking Enamel.
   .3  Canadian Standards Association (CSA International).
      .1  CAN/CSA-B651-95(R2001), Barrier-Free Design.

1.3  SUBMITTALS
   .1  Product Data:
   .2  Submit manufacturer's printed product literature, specifications and data sheet in
       accordance with Section 01 00 10 – General Instructions – Submittal Procedures,
   .3  Shop Drawings:
      .1  Submit shop drawings in accordance with Section 01 00 10 – General
          Instructions – Submittal Procedures, for approval by Departmental
          Representative prior to placing order with manufacturer,
      .2  Indicate fabrication details, plans, elevations, hardware, and installation details.
   .4  Samples:
      .1  Submit samples in accordance with Section 01 00 10 – General Instructions –
          Submittal Procedures,
      .2  Submit duplicate 300 x 300 mm sample of panel showing finished edge and
          corner construction and core construction.
.3 Submit duplicate representative samples of hardware items, including brackets, fastenings and trim.

.5 Manufacturer's Instructions:

.1 Submit manufacturer's installation instructions.

.6 Manufacturers' Field Reports: submit copies of manufacturers' field reports.

1.4 QUALITY ASSURANCE

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

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

.3 Pre-Installation Meetings: conduct pre-installation meeting to verify project requirements, manufacturer's installation instructions and manufacturer's warranty requirements.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 – Construction / Demolition Waste Management, and with Waste Reduction Workplan.

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

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

Part 2 Products

2.1 MATERIALS

.1 Metal toilet partitions & urinal privacy screens.

.1 Basis of design: Hovik Industries CH Series Ceiling Hung Model or approved equivalent, system to include ‘D’-grips, latches, and coat hooks, as required to meet CSA B651-04.

.2 Sheet steel: commercial quality tension levelled zinc coated steel galvanneal ASTM A653 GR33 formed and cemented under pressure to a structural 32psisound deadening core with waterproof thermal setting adhesive. Formed edges of doors, panels, and pilasters shall be welded at intervals around the entire perimeter to construct a rigid one-piece integral unit. Edges to be capped with a rolled form locking clip moulding. Corner is to be welded and ground smooth for a clean appearance.

.3 Minimum base steel thickness:

.1 Panels and doors shall be 25mm thick with cover sheets to be not less than 0.8mm (22ga),

.4 Steel sheet metal: zinc coated steel galvanneal ASTM A653 GR33.

.5 Headrails to be extruded aluminum 6063-T5 with a clear anodized finish and anti-grip profile, chrome plated die cast brackets,
.6 Pilasters shall be 32mm thick with cover sheets to be not less than 0.9mm (20ga),

.7 Attachment: chrome plated tamperproof type screws and bolts.

2.2 COMPONENTS

.1 Hinges:
  .1 Heavy duty, wrap around type,
  .2 Material/finish: to be stainless steel,
  .3 Swing: Standard stalls to have in-swinging doors. Barrier-free stall to have out-
  swinging door, to meet CSA B651-04,
  .4 Return movement: Top hinge secured by threaded locking pin. Bottom hinge
  being equipped with gravity threaded locking pivot. This is adjustable to permit
  the door to come to the desired set position when not latched, to meet CSA B651-
  04.

.2 Latch set: Barrier-free concealed door latch with emergency entry slot.

.3 Wall and connecting brackets: chrome plated non-ferrous die-casting.

.4 Coat hook: Barrier-free combination hook and rubber door bumper to meet CSA B651-04.

.5 Door pull: Barrier-free type suited for out swinging doors, finish to be approved
  by Departmental Representative.

2.3 FABRICATION

.1 Doors, panels and screens: 25 mm thick, two steel sheets faces pressure bonded to a
  structural 32 psi sound deadening honeycomb core, sizes to match existing.

.2 Pilasters: 32 mm thick, constructed same as door, sizes to match existing.

.3 Provide formed and closed edges for doors, panels and pilasters. Weld corners and grind
  smooth.

.4 Provide insert castings formed into doors at time of assembly for maximum strength.

.5 Provide 0.8 mm thick stainless steel protective shields on urinal side of toilet partition
  panels next to urinals and on urinal screens. Make protective shields 1000 mm high with
  top of shield 1200 mm above finished floor. Make shields to full width of partition or screen
  panel. Fasten with stainless steel screws.

2.4 FINISHES

.1 Clean, degrease and neutralize steel components with phosphate or chromate treatment.

.2 Apply primer electrostatically to CAN/CGSB-1.81, 1 coat.

.3 Protective finish: high-performance hybrid powder epoxy, applied electrostatically and
  cured at 375 degrees for 10 minutes to achieve a uniform smooth protective finish.
  Thickness of coating shall be min. 1.5mm. Submit colour samples from manufacturer’s full
  range, to be approved Departmental Representative.
3.1 MANUFACTURER’S INSTRUCTIONS

.1 Compliance: comply with manufacturer’s written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Compliance: all barrier-free stalls are to comply with CSA B651-04 with respect to standard dimensions requirements for clear space, clear areas, and mounting of barrier-free stall accessories.

3.2 INSTALLATION

.1 Installation is to match existing with respect to configuration and locations. Partitions are to be hung in existing locations, employ existing suspended partition supports. Ensure supplementary anchorage, if required, is in place. If existing supporting structure is not present, or appears inadequate notify Departmental Representative immediately before proceeding.

.2 Do work in accordance with CAN/CSA-B651.

3.3 ERECTION

.1 Partition erection:

.1 Install partitions secure, plumb and square.

.2 Leave 12 mm space between wall and panel or end pilaster.

.3 Anchor mounting brackets to masonry/concrete surfaces using screws and shields: if not present blocking/backing must be provided to hollow walls using bolts and toggle type anchors, to steel supports with threaded rods nuts and washers, or with bolts in threaded holes.

.4 Attach panel and pilaster to brackets with through type sleeve bolt and nut.

.5 Provide for adjustment of ceiling variations with screw jack through steel saddles made integral with pilaster. Conceal ceiling fixings with stainless steel shoes.

.6 Provide templates for locating existing overhead structural support locations.

.7 Equip doors with hinges, latch set, and coat hook mounted on side wall of new barrier-free stall, mounting height 1200mm max. Adjust and align hardware for easy, proper function. Adjust barrier-free out-swinging door to protrude no more than 50mm when at rest.

.8 Equip barrier-free out-swinging doors with door pulls on inside and outside of door in accordance with CAN/CSA-B651.

.2 Ceiling hung partition erection.

.1 Secure pilasters to existing supporting structural framing using pilaster hangers.

.2 Ensure pilaster hangers do not transmit load to finished ceiling.

.3 Secure pilaster shoe in position.

.4 Set bottoms of doors level with bottom of pilasters when doors are in closed position.

.3 Floor supported and overhead braced partition erection.

.1 Screens erection:
.1 Provide urinal stall privacy screens consisting of panel only. Anchor wall-hung urinal privacy screen panels to walls with 3 panel brackets, bracket locations are to match existing.

3.4 FIELD QUALITY CONTROL

.1 Have manufacturer of products supplied under this Section review Work involved in handling, installation/application, protection and cleaning of its products, and submit written reports in acceptable format to verify compliance of Work with Contract.

.2 Manufacturer's field services: provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

.3 Schedule site visits to review Work at stages listed:

   .1 After delivery and storage of products, and when preparatory Work on which Work of this Section depends is complete, but before installation begins.
   .2 Twice during progress of Work, at 25% and 60% complete.
   .3 Upon completion of Work, after cleaning is carried out.

.4 Obtain reports within three days of review and submit.

3.5 ADJUSTING

.1 Adjust doors and locks for optimum, smooth operating condition.

.2 Lubricate hardware and other moving parts.

3.6 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean surfaces after installation using manufacturer's recommended cleaning procedures.

.3 Clean aluminum with damp rag and approved non-abrasive cleaner.

.4 Clean and polish hardware and stainless components.

.5 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION
Part 1  General

1.1 RELATED SECTIONS
.1 Section 01 33 00 - Submittal Procedures.
.2 Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

1.2 REFERENCES
.1 American Society for Testing and Materials (ASTM)
.2 Canadian General Standards Board (CGSB)
   .1 CAN/CGSB-1.81-M90, Air Drying and Baking Alkyd Primer for Vehicles and Equipment.
   .2 CAN/CGSB-1.88-92, Gloss Alkyd Enamel, Air Drying and Baking.
   .3 CAN/CGSB-12.5-M86, Mirrors, Silvered.
   .4 CGSB 31-GP-107Ma-90, Non-inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.
.3 Canadian Standards Association (CSA)
   .1 CAN/CSA-B651-95, Barrier-Free Design.
   .2 CAN/CSA-G164-M92, Hot Dip Galvanizing of Irregularly Shaped Articles.

1.3 SHOP DRAWINGS
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Indicate size and description of components, base material, surface finish inside and out, hardware and locks, attachment devices, description of rough-in-frame, building-in details of anchors for grab bars.

1.4 SAMPLES
.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Samples to be returned for inclusion into work.

1.5 CLOSEOUT SUBMITTALS
.1 Provide maintenance data for toilet and bath accessories for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.
1.6 **WASTE MANAGEMENT AND DISPOSAL**

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

1.7 **EXTRA MATERIALS**

.1 Provide special tools required for accessing, assembly/disassembly or removal for toilet and bath accessories in accordance with requirements specified in Section 01 78 00 - Closeout Submittals.

.2 Deliver special tools to SNC-Lavalin O&M Project Manager.

**Part 2 Products**

2.1 **MATERIALS**

.1 Sheet steel: to ASTM A653/A653M with ZF001 designation zinc coating.

.2 Stainless steel sheet metal: to ASTM A167, Type , with finish.

.3 Stainless steel tubing: Type , commercial grade, seamless welded, 1.2 mm wall thickness.

.4 Fasteners: concealed screws and bolts hot dip galvanized, exposed fasteners to match face of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.

2.2 **COMPONENTS**

.1 Toilet tissue dispenser: double fold tissue, stainless steel cabinet, hinged front panel, refill indicator slot, lock and key.

.1 Acceptable material: B-2892 Surface-Mounted Twin Jumbo-Roll Toilet tissue dispenser by Bobrick.

.2 Combination towel dispenser/waste receptacle: recessed and semi-recessed wall unit. Suitable for dispensing folded paper towels.

.1 Acceptable material: Paper towel dispenser and waste receptacle, Bobrick Contura Series Model B-43949 (Surface-mounted) for Washrooms second to fifth floor.

.2 Acceptable material: Paper towel dispenser and waste receptacle, Bobrick Contura Series Model B-43944 (Recessed) for Washrooms first floor washrooms.

.3 Soap dispenser: liquid

.1 Liquid Mate liquid soap dispensers, Bobrick B-155 chrome-plated bracket, wall mounted for washrooms second to fifth floors.

.2 Acceptable material: Lavatory-mounted dispenser for commercially marketed all purpose hand soaps, Bobrick Contura Series Model B-82216.

.4 Feminine napkin disposal bin: stainless steel, surface unit including rough-in frame, continuous hinged door, self closing, embossed with "napkin disposal" "receptacle de
serviette-sanitaire " universally accepted symbol, removable stainless steel receptacles fitted with spring clip for deodorizer block.

.1 Acceptable material: Surface-mounted sanitary napkin disposal, Bobrick Contura Series, Model B-270

.2 Acceptable material:

.5 Grab bars: 30/32 mm dia x 1.6 mm wall 38 mm dia x 1.6 mm wall tubing of chrome plated stainless steel, 38 mm diameter wall flanges, exposed concealed screw attachment, flanges welded to tubular bar, provided with steel back plates and all accessories. Knurl bar at area of hand grips. Grab bar material and anchorage to withstand downward pull of 2.2 kN.

.6 Robe Hook: stainless steel with 50 mm projection.

.1 Acceptable material: Surface mounted robe hook B-671 by Bobrick

.7 Mirror: wall mounted unit, fixed framed mirror 6 mm to CAN/CGSB-12.5, stainless steel frame

.1 Acceptable material: Mirror with stainless steel channel frame B-165 by Bobrick.

.8 Shelf recessed surface mounted, 150 deep, 455 wide, stainless steel.

.1 Acceptable material: Stainless steel shelf B-296 by Bobrick

2.3 FABRICATION

.1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.

.2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.

.3 Brake form sheet metal work with 1.5 mm radius bends.

.4 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.

.5 Back paint components where contact is made with building finishes to prevent electrolysis.

.6 Hot dip galvanize concealed ferrous metal anchors and fastening devices to CSA G164.

.7 Shop assemble components and package complete with anchors and fittings.

.8 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.

.9 Provide steel anchor plates and components for installation on studding and building framing.

2.4 FINISHES

.1 Stainless Steel, as indicated in acceptable products.

.2 Manufacturer's or brand names on face of units not acceptable.
Part 3  Execution

3.1  INSTALLATION

.1 Install and secure accessories rigidly in place as follows:
   .1 Stud walls: install steel back-plate to stud prior to plaster or drywall finish. Provide plate with threaded studs or plugs.
   .2 Hollow masonry units or existing plaster/drywall: use toggle bolts drilled into cell/wall cavity.
   .3 Solid masonry, marble, stone or concrete: use bolt with lead expansion sleeve set into drilled hole.
   .4 Toilet/shower compartments: use male/female through bolts.

.2 Install grab bars on built-in anchors provided by bar manufacturer.

.3 Use tamper proof screws/bolts for fasteners.

.4 Fill units with necessary supplies shortly before final acceptance of building.

.5 Install mirrors in accordance with CSA B651-04 Accessible design for the built environment and as indicated on drawings.

3.2  SCHEDULE

.1 Locate accessories where indicated and as follows. Exact locations determined by Departmental representative Consultant.

.2 Toilet tissue dispenser: one in each toilet compartment mounting height as indicated in CSA B651-04 Accessible design for the built environment.

.3 Combination towel dispenser/waste receptacles: one in each public washroom where indicated. Maximum height of dispenser and operable part from floor 1200 mm.

.4 Soap dispenser: one at each wash basin

.5 Feminine napkin disposal bin: one in each female toilet compartment mounting height as indicated in CSA B651-04 Accessible design for the built environment.

.6 Towel bar: one adjacent to each bathtub shower unit mounting height mm F.F.F.

.7 Grab bar: two in each handicapped toilet compartment Height of grab bar from floor 750 mm. Side grab bar: maximum distance from rear wall 300 mm, minimum distance passed front edge of toilet 450 mm.

.8 Deodorant block holders: one for each two urinals.

.9 Robe hook: one in each toilet stall mounting height 1000 mm F.F.F.

.10 Waste receptacle: one for each towel dispensers, adjacent to wash basin area. Maximum height of dispenser and operable part from floor 1200 mm.
.11 Medicine cabinets: where indicated. Maximum height of dispenser and operable part from floor 1200 mm.

.12 Mirror: one at each wash basin, height of bottom edge of mirror from floor 1000 mm.

.13 Shelf: one in each washroom, mounting height from floor 1000 mm.

END OF SECTION
SNC-LAVALIN OPERATIONS & MAINTENANCE INC.

ANNUAL REASSESSMENT OF
ASBESTOS-CONTAINING MATERIALS
SIR CHARLES TUPPER BUILDING
2720 RIVERSIDE DRIVE
OTTAWA, ONTARIO

Project No. 25484
PROJECT NO. 25484

REPORT TO

SNC-LAVALIN OPERATIONS & MAINTENANCE INC.

MS. MANON BRAZEAU
FACILITY MANAGER

ON

ANNUAL REASSESSMENT OF
ASBESTOS-CONTAINING MATERIALS

SIR CHARLES TUPPER BUILDING
2720 RIVERSIDE DRIVE
OTTAWA, ONTARIO

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JULY 2010
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EXECUTIVE SUMMARY

Greenough Environmental Consulting Inc. (GEC) was commissioned by SNC-Lavalin Operations and Maintenance Inc. (contract NCA 07-18) to conduct the annual reassessment of asbestos-containing materials (ACMs) within the Sir Charles Tupper Building located at 2720 Riverside Drive in Ottawa, Ontario.

The annual reassessment of ACMs is conducted to determine the condition of those previously identified in the Asbestos Assessment to meet Ontario Regulations conducted by GEC in October 2007 and to meet the requirements of the PWGSC Departmental Policy on Asbestos Management for government owned or leased buildings and facilities, as well as Section 8 of Ontario Regulation 278/05 “Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations” made under the Occupational Health and Safety Act.

Mr. Brad Wilson, Environmental Technician for GEC, performed the site visit on June 15, 2010. Based on the site inspection, damaged ACMs in the form of mechanical pipe insulation (fittings and straights) as well as ACM debris were observed in various locations throughout the Sir Charles Tupper Building located at 2720 Riverside Drive in Ottawa, Ontario.

Based on the observations and subsequent identification of damaged ACMs, the subject building does not meet the requirements of Section 8 of Ontario Regulation 278/05 as well as the PWGSC Departmental Policy on Asbestos Management and is therefore not in compliance.
1.0 INTRODUCTION

Greenough Environmental Consulting Inc. (GEC) was commissioned by SNC-Lavalin Operations and Maintenance Inc. (contract NCA 07-18) to conduct the annual reassessment of asbestos-containing materials (ACMs) within the Sir Charles Tupper Building located at 272C Riverside Drive in Ottawa, Ontario.

The annual reassessment of ACMs is conducted to determine the condition of those previously identified in the Designated Substance Survey conducted by GEC in October 2007 and to meet the requirements of the PWGSC Departmental Policy on Asbestos Management for government owned or leased buildings and facilities, as well as Section 8 of Ontario Regulation 278/05 “Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations” made under the Occupational Health and Safety Act.

The reassessment of the ACMs was based on those identified in the Asbestos Assessment to meet Ontario Regulations conducted by GEC in October 2007. The purpose of the reassessment is as follows:

- Ensure building occupants and maintenance workers are not exposed to friable asbestos-containing materials,
- Meet the requirements of the PWGSC Departmental Policy on Asbestos Management for government owned or leased buildings and facilities, which requires a reassessment of friable ACMs on an annual basis,
- Meet the requirements of Section 8 of Ontario Regulation 278/05 “Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations” made under the Occupational Health and Safety Act.
- Ensure the subject building remains, or is brought into compliance with provincial and federal asbestos regulations,
- Maintain a pro-active management system that records the condition of friable asbestos-containing materials, and identify areas that require repair and/or removal of ACMs.

2.0 SCOPE AND METHODOLOGY

Mr. Brad Wilson, Environmental Technician, of GEC performed the site visit on June 15, 2010. ACMs previously identified were visually inspected to determine their condition. Our evaluation criteria in determining the condition of the ACMs are based on the subject materials having damaged coverings
which allow for exposed ACMs.

3.0 LIMITATIONS OF THE ASSESSMENT

The field observations are considered sufficient in detail and scope to form a reasonable basis for the reassessment and general asbestos hazard assessment of this property.

The evaluation is based only on accessible areas. The methods of evaluation have been developed to provide the client with information regarding apparent indications of existing or potentially hazardous conditions relating to the asbestos-containing materials previously identified, and are limited to the conditions observed and information available at the time of the site visit. For the basis of this assessment, GEC relied on the ACMs identified in a previous Asbestos Assessment conducted by GEC in October 2007.

No access or limited access was obtained to the following locations within the subject building:

- Main Hydro Vault;
- Within Door Assemblies;
- Various Offices & Pipe Chases;
- Metal Pan Ceilings; and
- Concealed Wall & Ceiling Cavities.

There is a distinct possibility that conditions may exist which could not be reasonably identified within the scope of the assessment or which were not apparent during the site visit. However, GEC cannot warrant or guarantee that the information provided is absolutely complete or accurate beyond the current asbestos consulting industry standards. No other warranties are implied or expressed.

4.0 FINDINGS

During the reassessment, ACMs in fair and poor condition (mechanical pipe fittings and straights) as well as ACM debris were observed within the Sir Charles Tupper Building located at 2720 Riverside Drive in Ottawa, Ontario. The building currently does not meet the applicable Provincial and Federal requirements regarding asbestos and is therefore not in compliance.
A summary of the damaged ACMs is presented in Table 1 below.

<table>
<thead>
<tr>
<th>Floor</th>
<th>Location(s)</th>
<th>Item</th>
<th>Quantity</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 0 (B-Wing)</td>
<td>Main Sprinkler Piping Area</td>
<td>Pipe Straight (Parging Cement)</td>
<td>&lt; 0.50LM</td>
<td>Type 2 Encapsulation</td>
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<tr>
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<td>Storage Locker A-3</td>
<td>Pipe Fitting (Parging Cement)</td>
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<td>Type 2 Encapsulation</td>
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<td>Storage Locker A-7</td>
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<td>Storage Locker A-8</td>
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<td></td>
<td>Corridor Space (Metal Floor Grates to Sub Level)</td>
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<tr>
<td>Level 1 (A-Wing)</td>
<td>Men's Washroom (Adjacent to A114)</td>
<td>Pipe Fittings (Parging Cement)</td>
<td>3 ea</td>
<td>Type 2 Encapsulation</td>
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<tr>
<td></td>
<td>Mechanical Room</td>
<td>Pipe Straight (Mag-Block)</td>
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<tr>
<td></td>
<td>Storage Locker</td>
<td>Pipe Fitting (Parging Cement)</td>
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<td>Type 2 Encapsulation</td>
</tr>
<tr>
<td></td>
<td>Men's Washroom (Adjacent to Cafeteria)</td>
<td>Pipe Fittings (Parging Cement)</td>
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<td>Level 2 (A-Wing)</td>
<td>Men's Washroom &amp; Pipe Chase (Adjacent to A214)</td>
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<td></td>
<td>Pipe Fittings (Parging Cement)</td>
<td>15 ea</td>
<td>Type 2 Encapsulation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Debris (Parging Cement)</td>
<td>&lt; 0.05 m²</td>
<td>Type 2 Removal</td>
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<tr>
<td></td>
<td>Women's Washroom (Adjacent to A214)</td>
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<tr>
<td>Level 2 (B-Wing)</td>
<td>Men's Washroom (Novus Side)</td>
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<tr>
<td>Level 2 (C-Wing)</td>
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<td>Floor</td>
<td>Location(s)</td>
<td>Item</td>
<td>Quantity</td>
<td>Recommendations</td>
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<td>Men's Washroom &amp; Pipe Chase (Adjacent to Profac Office)</td>
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<tr>
<td></td>
<td></td>
<td>Pipe Fittings (Ends of Aircell)</td>
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<td>12 ea</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Debris (Mag-Block)</td>
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<tr>
<td></td>
<td>Women's Washroom (Above Solid Ceiling)</td>
<td>Pipe Fittings (Parging Cement)</td>
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<td>Pipe Fitting (Parging Cement)</td>
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<tr>
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<td>Electrical Room Pipe Chase</td>
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<td>1 ea</td>
<td>Type 2 Encapsulation</td>
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<tr>
<td>Level 3 (D-Wing)</td>
<td>Men's Washroom &amp; Pipe Chase</td>
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<td></td>
<td>Debris (Parging Cement)</td>
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<tr>
<td></td>
<td>Janitor's Closet</td>
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<td>Debris (Parging Cement)</td>
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<td>Floor</td>
<td>Location(s)</td>
<td>Item</td>
<td>Quantity</td>
<td>Recommendations</td>
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<tr>
<td>Level 4 (B-Wing)</td>
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<tr>
<td>Level 4 (D-Wing)</td>
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<td>Level 4 (E-Wing)</td>
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<td>Pipe Fittings (Parging Cement)</td>
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<td>Type 2 Encapsulation</td>
</tr>
<tr>
<td></td>
<td>(Adjacent to E1-4)</td>
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<td></td>
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<tr>
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<td>Men’s Washroom</td>
<td>Pipe Fittings (Parging Cement)</td>
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<td>(Adjacent to E458)</td>
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<td>Pipe Chase E2-4</td>
<td>Debris (Parging Cement)</td>
<td>&lt; 0.05 m²</td>
<td>Type 2 Removal</td>
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<tr>
<td>Level 5 (C-Wing)</td>
<td>Pipe Chase C2-5</td>
<td>Debris (Parging Cement)</td>
<td>&lt; 0.25 m²</td>
<td>Type 2 Removal</td>
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<td>West Electrical Room</td>
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<tr>
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<td>Pipe Chase</td>
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<td>Pipe Straight (Aircell)</td>
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<tr>
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<td>Electrical Room</td>
<td>Pipe Straight (Aircell)</td>
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<tr>
<td></td>
<td>Pipe Chase</td>
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<td>Level 5 (E-Wing)</td>
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<td>Pipe Fittings (Parging Cement)</td>
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<td>Type 2 Encapsulation</td>
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<tr>
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<td>(Adjacent to E562)</td>
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<tr>
<td></td>
<td>Women’s Washroom</td>
<td>Pipe Fittings (Parging Cement)</td>
<td>4 ea</td>
<td>Type 2 Encapsulation</td>
</tr>
<tr>
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<td>(Adjacent to E1-5)</td>
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<td>Pipe Chase E1-5</td>
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<td>Level 6 (C-Wing)</td>
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<td>Debris (Aircell)</td>
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<td>Type 2 Encapsulation</td>
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<tr>
<td></td>
<td>(Adjacent to E2-6)</td>
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<td></td>
<td></td>
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<tr>
<td>Floor</td>
<td>Location(s)</td>
<td>Item</td>
<td>Quantity</td>
<td>Recommendations</td>
</tr>
<tr>
<td>----------------------</td>
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<td>----------</td>
<td>------------------</td>
</tr>
<tr>
<td>Level 7 (C-Wing)</td>
<td>C1-7</td>
<td>Pipe Fittings</td>
<td>2 ea</td>
<td>Type 2 Encapsulation</td>
</tr>
<tr>
<td></td>
<td>Central Women's Washroom (Adjacent to Kitchen)</td>
<td>Pipe Fitting</td>
<td>1 ea</td>
<td>Type 2 Encapsulation</td>
</tr>
</tbody>
</table>

LM = linear metres  
ea = each  
m² = square metre

It should be noted that additional asbestos-containing materials or debris may be present in concealed or inaccessible locations throughout the subject building. Quantities cannot be provided without conducting a destructive investigation.

5.0 ABATEMENT STRATEGY AND ASSOCIATED COST

ACMs in fair or poor condition were observed in random locations as indicated in Table 1. GEC recommends the repair and/or removal of these materials be completed by following Type 2 procedures. The required work necessary to bring the subject facility into compliance comprises of encapsulating and repairing mechanical pipe insulation as well as the removal of asbestos-containing debris found in various locations within the subject building.

The cost associated with the repairs of mechanical insulations observed to be in fair and poor condition, (excluding consulting fees) as listed in Table 1 is as follows:

- Asbestos Compliance Work $26,500.00

6.0 RECOMMENDATIONS

Ontario Regulation 278/05 of the Occupation Health and Safety Act require the removal of any ACMs that have the potential to be disturbed during renovations. In addition, ACMs in fair and poor condition must be repaired or removed to comply with Ontario Regulation 278/05 of the Occupational Health and Safety Act.

In order to bring the subject facility into compliance with applicable regulations, GEC recommends repair and/or removal of damaged ACMs identified in this document following appropriate procedures.
as outlined in Ontario Regulation 278/05 as well as PWGSC Departmental Policy 057.

GEC recommends that the Asbestos Management Program for the Sir Charles Tupper Building be updated to reflect the abatement of the ACMs conducted since the last reassessment. An annual reassessment of ACMs is recommended to ensure all applicable regulations and directives are addressed.

7.0 CLOSURE

This report was prepared by Greenough Environmental Consulting Inc. (GEC) for SNC-Lavalin Operations and Maintenance Inc. and its intended use. This report may not be relied upon by any other person or entity without the written consent of Greenough Environmental Consulting Inc (GEC) and SNC-Lavalin Operations and Maintenance Inc.

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 statements made in this report were based on visual inspections made on June 15, 2010 and reflect the best judgement of the Assessor on this date. Limiting factors are presented within this document. All cost estimates provided are to be used for budget purposes only.

We trust this report meets your present requirements. If you have any questions please do not hesitate to contact the undersigned.

Yours truly,

GREENOUGH ENVIRONMENTAL CONSULTING INC.

Brad Wilson
Environmental Technician

Michael P. Buller, B.A. (Hons), AMRT, CRSP
Vice President of Operations
**Operations and Maintenance Manual Checklist**

**Building Name:** ____________________      **Project #:** _________________

**Project Name:** _________________________________

*Initial Review of O&M manuals must take place 2 weeks prior to Substantial Completion or training*

- Must be in a **1” binder** labeled on the front cover and on the binder edge with the following information: Building Name and address, project name, project number, completed date (ex. October 2006).

- **Title Page:** O&M manual for building name, address, date, general contractor information: name address & phone numbers, consultant: name address & phone numbers.

- **Index:** sections as follows
  - **A** – Signed ‘Letter of warranty’ : dated, identifying project by name, project number, location as well as warranty period. Any extended warranty of equipment only must be identified also.
  - **B** - Contact information for all sub-contractors & suppliers.
  - **C** - Reports: copy of all TAB reports, pre-functional tests, startup reports, functional test reports, completed performance verification forms, cabling verifications, ESA certification, TSSA certification, fire alarm certifications and all other required certifications required by National Building Code.
  - **D** – As built drawings – changes marked in ‘Red ink’
  - **E** - Sequence of operation: outline how the system is designed to work.
  - **F** – CMMS Data Sheets: All equipment which is to be deleted, removed, added or replaced from site is to have a CMMS inventory sheet completed and included in the O&M manual. If this equipment is a pressure vessel and is included in the annual inspect with TSSA the orange tag that is attached to the equipment must be removed prior to demolition and forwarded to the commissioning manager.
  - **G, H…** – Tab for each piece of new equipment to include:
    - Copy of approved shop drawing
    - Copy of Specific Service and Maintenance manual for each.
  - **Last Tab :** misc.