

**SPECIFICATIONS:**

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## **Part 1      General**

### **1.1            DESCRIPTION OF THE WORK**

- .1      Work includes all labour, services, materials, products, construction machinery and equipment necessary for the work in accordance with or reasonably inferable from the Contract Documents.
- .2      Work generally consists of, but is not limited to, the selective demolition and hazardous material abatement of wall and ceiling finishes and flooring and subfloor. And provision of some concrete and gypsum board work and sprinkler modifications.

### **1.2            BIDDERS BRIEFING AND SITE EXAMINATION**

- .1      Parties submitting tenders for the work shall attend a Bidders Briefing and Site Examination organized by the NCC and during the visit obtain the information they believe to be pertinent regarding existing conditions affecting the proper execution and completion of the work.
- .2      The submission of a tender shall be deemed as proof that the bidder and its subtrades have complied with this requirement. Claims for additional compensation will not be entertained for any items of labour or material required to complete the work that could have been reasonably ascertained by the Site Examination.

### **1.3            PRE-CONTRACT AWARD CONDITIONS**

- .1      Prior to the award of Contract, the Contractor must submit within 10 days of receiving the letter of notification: a site specific health and safety plan, corporate health and safety policy, and all other documents required by the letter of notification (Performance and Labour & Material bonds, insurance certificate, WSIB certificate), and information required for security access application.
- .2      If the requested documentation is not received within 10 business days of receiving the letter of notification, the NCC reserves the right to proceed on to the next lowest compliant bidder.

### **1.4            ADDENDA**

- .1      Answers to questions directed to the NCC Representative and all amendments to the drawings or specifications during the tender period shall be issued in the form of addenda.
- .2      Addenda form part of the Contract Documents.

### **1.5            CONTRACT METHOD**

- .1      Construct the Work under a single stipulated sum construction contract.

## **Part 2 Contract Administration**

### **2.1 CONTRACT DOCUMENTS**

- .1 All contract documents are complementary. Items indicated in one and not in the other are deemed to be included in the contract work.
- .2 Drawings are intended to convey the scope of work and to indicate general arrangements. Obtain NCC Representative's approval of exact locations before installation.
- .3 Obtain direction from NCC Representative before proceeding if a possible obstacle or interference with an indicated installation is identified.
- .4 When the Contractor encounters an obstacle or interference that could have been reasonably foreseen and the Contractor failed to obtain direction from the NCC Representative in the matter, the NCC Representative may require that the work of the Contractor be modified in whole or part in response to the obstacle or interference. The Contractor shall assume the costs of additional work arising from such work.

### **2.2 CODES, STANDARDS AND CONTRACT DOCUMENT CONFLICTS**

- .1 Unless otherwise specified or indicated, perform work in accordance with the National Building Code of Canada, current addition, and all applicable provincial or local building codes.
- .2 In the instance of a conflict among building codes, referenced standards and contract documents, the more stringent requirement shall apply.

### **2.3 TAXES**

- .1 Pay all applicable federal, provincial and municipal taxes.

### **2.4 FEES, PERMITS, CERTIFICATES AND BY-LAWS**

- .1 Provide all authorities having jurisdiction with information appropriate to the exercise of their authority to review, approve and inspect. Assume cost of such submissions.
- .2 Pay all applicable fees and obtain all applicable permits and certificates.
- .3 The NCC will obtain and pay for the municipal building permit.
- .4 Upon request by the NCC Representative, provide inspection certificates to evidence that work conforms to requirements of the authorities having jurisdiction.

### **2.5 SUBMITTALS**

- .1 Administrative
  - .1 Submit to NCC Representative submittals listed for review. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in the Work.

- .2 Work affected by submittal shall not proceed until review is complete.
  - .3 Review submittals and stamp all submittals with Contractor's shop drawing stamp prior to submission to NCC Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and coordinated with requirements of the Work and Contract Documents.
  - .4 Verify field measurements and affected adjacent Work are coordinated.
- .2 Shop drawings and product data
- .1 "Shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data that are to be provided by Contractor to illustrate details of a portion of the Work.
  - .2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connection, explanatory notes and other information necessary for completion of Work.
  - .3 Adjustments made on shop drawings by NCC Representative are not intended to change Contract Price.
  - .4 Make changes in shop drawings as NCC Representative may require.
  - .5 Submit four (4) copies, unless indicated otherwise, of shop drawings for each requirement requested in specification Sections and as NCC Representative may reasonably request
  - .6 Submit four (4) copies, unless indicated otherwise, of product data sheets or brochures for requirements requested in Specification Sections and as NCC Representative may reasonably request where shop drawings will not be prepared due to standardized manufacture of product.
- .3 Samples
- .1 Submit for review, samples as requested in respective Specification Sections and as indicated on the drawings.
  - .2 Deliver samples prepaid to NCC Representative's business address.

## **2.6 SCHEDULE**

- .1 Submit a schedule of work for approval, in a form acceptable to NCC Representative and within five (5) days of award of contract. Show in schedule dates for:
  - .1 shop drawing, material lists and samples submissions;
  - .2 equipment and material delivery;
  - .3 work commencement and completion for each trade as corresponds to each trade section of the Specification;
  - .4 Substantial and final completion date within time period required by Contract Documents.
  - .5 submit updated schedules at each progress meeting and as reasonably requested by the NCC Representative.

## **2.7 COST BREAKDOWN**

- .1 Submit to NCC Representative breakdown of Contract price in detail as directed by NCC Representative. Obtain NCC Representative's approval of same prior to first progress claim submission.
- .2 Approved cost breakdown will be used as basis for progress claim payments.

## **2.8 PROJECT MEETINGS**

- .1 Administrative

- .1 NCC Representative will schedule and administer regular progress meetings throughout the progress of work, at times, frequency and locations set by the NCC Representative.
- .2 The NCC Representative will distribute written notice of each meeting in advance of meeting date to Contractor, Consultant, and all other affected parties.
- .3 The Contractor shall attend.
- .4 The Contractor shall ensure affected Subcontractors attend.
- .5 The NCC Representative will record minutes and include significant proceedings and decisions and identify 'action by' parties.
- .6 The NCC Representative will reproduce and distribute copies of minutes to meeting participants and affected parties not in attendance.

## **2.9 AS-BUILT DRAWINGS**

- .1 NCC Representative will provide two sets of white prints for record drawing purposes.
- .2 Maintain project record drawings and record accurately all deviations from Contract documents as project progresses. Maintain on-going as-built records on site, ready for inspection during the course of the construction.
- .3 Update these drawings daily.
- .4 Record changes in red. Mark on one set of prints and at completion of project and prior to final inspection, neatly transfer notations to second set and submit both sets to NCC Representative.
- .5 Provide a cost for the As-Built Drawings in the Contractor cost breakdown.

## **2.10 DOCUMENTS REQUIRED ON-SITE**

- .1 Maintain at job site, one copy each of following:
  - .1 Contract drawings,
  - .2 Specifications,
  - .3 Addenda,
  - .4 Change orders,
  - .5 Other modifications to Contract,
  - .6 Approved work schedule,
  - .7 Permits,
  - .8 Field test reports,
  - .9 Reviewed shop drawings.
  - .10 As-built drawings.

## **2.11 QUALITY OF EQUIPMENT, MATERIALS AND WORKMANSHIP**

- .1 Use only new materials, unless indicated otherwise.
- .2 Exceed or meet the minimum requirements of standards referenced in the specifications, such as the Canadian Standards Association (CSA), and the National Building Code of Canada (current edition), and of all applicable federal, provincial, and municipal codes. In the case of conflict or discrepancy between these requirements, the most stringent applies.
- .3 Workmanship
  - .1 Workmanship shall be best quality, executed by workers experienced and skilled in respective duties for which they are employed.
  - .2 Employ persons fit for and skilled in their required duties.

- .3 Assume the costs of redoing work that, in the NCC Representative's opinion, does not meet the specified quality of workmanship.
- .4 Alternatives
  - .1 The NCC Representative will only consider Alternatives
    - .1 for materials, products or processes specified with the term "and/or approved equivalent" applied and;
    - .2 submitted in accordance with the "General Instructions for Tendering"-
  - .2 The NCC Representative will approve alternatives that are in his opinion equal in material content, workmanship and quality to the materials, products or processes identified and at least conformant to the standards specified.
  - .3 Assume the cost of additional work or modifications to the design due to the use of NCC Representative approved alternatives.

## **2.12 SECURITY CLEARANCE**

- .1 In accordance with the Security Policy of the Government of Canada, all persons undertaking work or services at the property covered by this contract must have met the requirements of a Site Access Security Assessment. The Site Access Security Assessment requires disclosure of information concerning:
  - .1 financial information (credit check),
  - .2 education,
  - .3 employment history,
  - .4 personal history and relatives, and
  - .5 criminal record (if any) for which a pardon has not been granted. (Fingerprint impressions may be necessary).
- .2 The NCC reserves the right to refuse access to personnel not passing a Site Access Security Assessment.
- .3 Unless otherwise indicated, access to site (employees, deliveries, visitors, and pick-ups of material etc.) must be coordinated with, and approved by the designated NCC Representative.

## **2.13 SITE SECURITY**

- .1 Where security has been reduced by work of the Contract, provide temporary means to maintain security.
- .2 Cooperate with NCC and Security staff in maintenance of security.

## **2.14 SECURITY AND CONFIDENTIALITY**

- .1 Exercise utmost care to ensure the security of any material prepared or received in handling this project.
- .2 Without the prior written permission of the NCC Representative, do not distribute, publish, display or reproduce any documents, photographs, site plans, maps or information related to the project (or collected during the project), in any medium, including the internet.
- .3 Without the prior written permission of the NCC Representative, do not disclose any documents, photographs, site plans, maps or information related to the project unless such disclosure:

- .1 Is reasonably required to obtain necessary permits and approvals to perform the work;
- .2 Is reasonably required to facilitate the contracting and performance of sub-contractors, consultants and other parties involved in completing the contracted work;
- .3 Is required by law.
- .4 When requested by the NCC, return to the NCC all copies of all site photographs and construction documents, site plans and maps related to the project.
- .5 All the above restrictions apply to all sub-contracts for work and services related to the project.

## **2.15 RELICS AND ANTIQUITIES**

- .1 Protect relics and antiquities, items of historical or scientific interest and similar objects found during the course of work.
- .2 Immediately notify NCC Representative of any findings and await NCC Representative's written instructions before proceeding with work adjacent to findings.
- .3 If any vestiges of early human occupancy of the land are uncovered during construction, suspend construction activity and notify the NCC Representative.
- .4 Relics, antiquities and items of historical or scientific interest shall remain the property of the Crown.

## **2.16 ENVIRONMENTAL PROTECTION**

- .1 Fires
  - .1 Fires and burning of rubbish on site not permitted.
- .2 Disposal of Wastes
  - .1 Do not dispose of waste or volatile materials, such as mineral spirits, oil or paint thinner into waterways, storm or sanitary sewers.
- .3 Drainage
  - .1 Do not pump water containing suspended materials into waterways, sewer or drainage system.
- .4 Tree and Plant Protection
  - .1 Protect trees and plants on site.
- .5 Pollution Control
  - .1 Control emissions from equipment and plant to local authorities emission requirements.
  - .2 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.
- .6 Spills Reporting
  - .1 Prepare an environmental emergency measure plan and post at the place of work indicating:
    - .1 The site's refuelling area.
    - .2 The NCC Environmental Emergency Service telephone number (613) 239-5353. Call immediately in the event of accidental spill of fuel or other pollutant.
  - .2 Assume financial responsibility to clean up effects of spill.

## **2.17 WASTE DISPOSAL**

- .1 Unless otherwise indicated or specified, materials indicated for removal become the Contractor's property and shall be taken from site.
  - .1 Dispose of waste materials in accordance with requirements of authorities having jurisdiction and as described in the Contract Documents.

## **Part 3 On-site Activities**

### **3.1 SIGNS**

- .1 Site boards and other advertising are prohibited on this project.
- .2 All signage shall be bilingual in French and English.
- .3 Proposed wording and signage shall be submitted for review and approval by NCC Representative.
- .4 Provide warning signage to clearly identify area under construction and access restrictions (protective gear, sign-in, etc.).

### **3.2 OWNER OCCUPANCY**

- .1 The site and the building will remain occupied during the implementation of the work of this contract. Areas above and adjacent the work will be occupied during the entire construction period.
- .2 Cooperate and cooperate with NCC so as to minimize conflict and impacts to other activities in building.

### **3.3 CONTRACTOR'S USE OF SITE AND FACILITIES**

- .1 NCC Representative will arrange with the Contractor a work schedule and procedures for entry to the property. Do not commence work until these requirements have been confirmed and approved by NCC Representative.
- .2 Do not unreasonably encumber exterior of site with materials or equipment.
- .3 Execute the work with least possible disturbance to the normal use of the site.
- .4 Protect grass, trees and other surfaces on the ground from damage in areas not directly affected by the work. Refer to the "DAMAGES" article below.
- .5 Move stored products or equipment as directed by NCC Representative to ensure public pedestrian access around property.
- .6 Provide for personnel and vehicle access. Maintain safe exiting routes from the site and building at all times.

- .7 Provide 14 days notice to and obtain requisite permissions from the NCC Representative and utility companies of any intended interruption of services. Keep duration of these interruptions to a minimum.
- .8 Park in area designated for Contractor's use unless NCC Representative specifically authorizes other parking arrangements.
- .9 Smoking is prohibited within 50 feet of buildings. A designated smoking area will be identified by the NCC Representative. The Contractor shall ensure adequate sealed cigarette butt disposal.

### **3.4 PROJECT COORDINATION**

- .1 Coordinate progress of the Work, progress schedules, submittals, use of the site, temporary utilities and construction facilities and controls.

### **3.5 SETTING-OUT OF WORK**

- .1 Provide devices needed to lay out and carry out the work. Supply such devices as required to facilitate NCC Representative's inspection of work.

### **3.6 FIRE SAFETY**

- .1 Provide fire extinguishers to protect the work in progress.
- .2 Advise NCC Representative of any work that would impede fire apparatus / personnel response.
- .3 Know the location of nearest fire alarm box and telephone, including the emergency phone number.
- .4 Observe at all times smoking regulations. There is no-smoking in or near the Work. The NCC Representative will designate a smoking area.

### **3.7 CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

- .1 Installation/Removal
  - .1 Provide construction facilities and temporary controls in order to execute work efficiently.
  - .2 Remove from site all such work after use.
- .2 Hoarding
  - .1 Erect hoarding indicated and as necessary to protect building occupants, the public, workers and property from injury or damage.
- .3 Weather Enclosures
  - .1 Provide weathertight closures at openings in floors and roofs where required to protect building components as the work proceeds.
  - .2 Design enclosures to withstand wind pressure.
- .4 Dust Tight Screens
  - .1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, building occupants and public.
  - .2 Maintain and relocate protection until such Work is complete.
- .5 Dewatering

- .1 Provide temporary drainage and pumping facilities to keep excavations, building and site free from water.
- .6 Site Storage/Loading
  - .1 Confine the Work and operations of employees to limits indicated by Contract Documents and as directed by the NCC Representative. Do not unreasonably encumber premises with Products.
  - .2 Do not load or permit to be loaded any part of the Work with a weight or force that will endanger the Work.
- .7 Ventilation
  - .1 Provide ventilation to prevent accumulation of dust, fumes, mists, vapours, or gases in areas of Work.
  - .2 Provide ventilation through portable fan(s) exhausted to the out of doors to prevent migration of dust and debris within the building.
  - .3 Dispose of exhaust materials in manner that does not contaminate adjacent areas.
  - .4 Continue operation of ventilation and exhaust systems for sufficient time after cessation of operations to ensure removal of pollutants.
- .8 Temporary Telephone
  - .1 Provide and pay for temporary telephone necessary for own use.
- .9 Electricity and Water
  - .1 Existing services required for the work may be used by the Contractor without charge. Ensure capacity is adequate prior to imposing loads. Connect, use, and disconnect at own expense and responsibility. Coordinate with NCC Representative.
  - .2 Provide and pay for temporary service where existing services are unsuitable. Connect, use, and disconnect at own expense and responsibility. Coordinate with NCC Representative.
- .10 Access Equipment
  - .1 Provide all scaffolding, ladders and lifting equipment required for the work.
- .11 Signage
  - .1 Meet with NCC Representative prior to commencement of work to prepare list of signs and other devices required for the project. Signs and notices for safety and instruction shall be in both official languages. Do not post any sign without prior permission of the NCC Representative.
- .12 Temporary Heating
  - .1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.
  - .2 Building electrical supply may be used. Ensure capacity is adequate prior to imposing loads. Connect, use and disconnect at own expense and responsibility. Coordinate with NCC Representative. Owner will pay for Electrical Utility usage costs.

### **3.8 POWER/EXPLOSIVE ACTUATED FASTENING DEVICES**

- .1 Do not employ power guns using explosives without prior written permission of NCC Representative.

### **3.9 PROTECTION OF WORK AND SITE**

- .1 Protect finished work against damage until take-over.
- .2 Protect hard and soft landscaping adjacent to the work from damage unless indicated or described otherwise.
- .3 Protect adjacent building spaces and occupants against spread of dust, harmful vapours, hazardous materials and dirt. Use devices and methods that minimize inconvenience and risk to the occupants.

### **3.10 CUTTING AND PATCHING**

- .1 Do cutting and patching as indicated and as specified.
- .2 In the absence of explicit indication or specification, and as directed by the NCC Representative, do cutting and patching as follows:
  - .1 Perform cutting, fitting, and patching to complete the Work.
  - .2 Remove and replace defective and non-conforming work that is to form the base or substrate for new work.
  - .3 Perform work to avoid damage to other work.
  - .4 Prepare surfaces to receive patching and finishing.
  - .5 Refinish surfaces to match adjacent finishes; for continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit, unless indicated otherwise.
  - .6 Make cuts with clean, true, smooth edges.

### **3.11 LOCATION OF EQUIPMENT AND FIXTURES**

- .1 Location of equipment, fixtures, outlets and distribution systems indicated or specified are to be considered as approximate.
- .2 Locate equipment, fixtures, outlets and distribution systems to minimize interference between systems, to allow access for maintenance and to maximize the usable space.
- .3 Inform the NCC Representative of a conflicting installation. Install as directed
- .4 Inform NCC Representative of impending installation and obtain approval for actual location

### **3.12 EXISTING SERVICES**

- .1 Where work involves disruption of existing services:
  - .1 Execute work at times directed by NCC Representative,
  - .2 Submit schedule to and obtain approval from NCC Representative for any shutdown or closure of active services,
  - .3 Notify NCC Representative at least 14 days before service disruption,
  - .4 Adhere to approved schedule.
- .2 Immediately advise NCC Representative when unknown services encountered.

**3.13 DAMAGES**

- .1 Restore or replace to their original condition existing public and/or privately owned property, structures, finishes, services, and/or utilities damaged during the execution of the work of this contract, or make adequate compensation to affected parties.
- .2 The terms "restore" and "replace" include labour, equipment and material costs.

**3.14 CLEAN-UP**

- .1 Provide on-site waste containers for collection of waste materials and debris and locate as directed by NCC Representative. Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .2 At the end of each work period, and more often if directed by the NCC Representative, remove debris from site, neatly stack material for use, and clean up generally. Conduct disposal operations to comply with municipal and site ordinances, anti-pollution laws and as required by the Contract Documents.
- .3 Upon completion, remove temporary protections installed under this contract and remove surplus materials. Make good defects noted at this stage.
- .4 Cleaning during construction
  - .1 Clean-up work area as the work progresses in order to prevent migration of dust and debris.
  - .2 Clean as directed by the NCC Representative.
- .5 Final clean-up
  - .1 For site, broom clean hard landscaped surfaces. Rake clean other landscaped areas. Hose down with water and wash hard landscaped surfaces as directed by NCC Representative.
  - .2 Broom clean all interiors before inspection process.
  - .3 Clean as directed by the NCC Representative.

**END OF SECTION**

**Part 1          General**

**1.1            CASH ALLOWANCES**

- .1      The Contract Price includes cash allowance amounts stated in the Contract Documents.
- .2      Provide invoices, time sheets and other such documentation as may be necessary to substantiate expenditure of cash allowances.
- .3      Include overhead and profit for cash allowance amounts in the Contract Price. No overhead and profit will be paid on the cash allowance amounts.
- .4      When costs under a cash allowance exceed the amount of the allowance, the Contractor will be compensated for any excess incurred and substantiated plus an allowance for overhead and profit as set out in the Contract Documents.
- .5      Include the following cash allowance amounts in the Contract Price:
  - .1      Cost to modify sprinkler system heads: \$10,000

**Part 2          Products (not applicable)**

**Part 3          Execution (not applicable)**

**END OF SECTION**

**Part 1 General**

**1.1 SECTION INCLUDES**

- .1 Health and safety considerations required to ensure that the NCC shows due diligence towards health and safety on construction sites, and meets the requirements laid out in the NCC's *Policy - Occupational Health and Safety for Construction*.

**1.2 RELATED SECTIONS**

- .1 Section 01 00 01 – General Requirements.

**1.3 REFERENCES**

- .1 Canada Labour Code, Part 2, Canada Occupational Safety and Health Regulations.
- .2 Health Canada/Workplace Hazardous Materials Information System (WHMIS).
  - .1 Material Safety Data Sheets (MSDS).
- .3 Province of Ontario
  - .1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. [1990 June 2002].

**1.4 SUBMITTALS**

- .1 Make submittals in accordance with Section 01 00 01 – General Requirements.
- .2 Submit site-specific Health and Safety Plan prior to Award of Contract. Plan shall include:
  - .1 Results of site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for site tasks and operation.
- .3 Submit 2 copies of Contractor's authorized representative's work site health and safety inspection reports to the NCC Representative weekly.
- .4 Submit copies of reports or directions issued by Federal or Provincial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 00 01 – General Requirements.
- .7 The NCC Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor prior to Award of Contract. Revise Plan as appropriate and resubmit prior to Award of Contract.
- .8 The NCC Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.

## **1.5 FILING OF NOTICE**

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

## **1.6 SAFETY ASSESSMENT**

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

## **1.7 MEETINGS**

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

## **1.8 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 The NCC Representative may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

## **1.9 RESPONSIBILITY**

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

## **1.10 COMPLIANCE REQUIREMENTS**

- .1 Comply with Ontario Health and Safety Act and Regulations for Construction Projects, R.S.O..

## **1.11 UNFORSEEN HAZARDS**

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

## **1.12 HEALTH AND SAFETY CO-ORDINATOR**

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Co-ordinator. Health and Safety Co-ordinator must:
  - .1 Have minimum 2 years' site-related working experience specific to activities associated with similar projects.
  - .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.
- .5 Be on site during execution of Work and report directly to and be under direction of site supervisor.

**1.13 POSTING OF DOCUMENTS**

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

**1.14 CORRECTION OF NON-COMPLIANCE**

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

**1.15 POWDER ACTUATED DEVICES**

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

**1.16 WORK STOPPAGE**

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

**1.17 DESIGNATED SUBSTANCES, VOLATILE COMPOUNDS, UNFORESEEN HAZARDS**

- .1 Notify NCC Representative 48 hours in advance of work in occupied areas involving designated substances (under applicable provincial legislation), hazardous substances (Canada Labour Code Part II Section 10), and before painting, installing carpet, or using volatile compounds.
- .2 Asbestos: Stop work and notify NCC Representative immediately if a material resembling asbestos is encountered. Do not proceed at such locations without written instructions from the NCC Representative.
- .3 Silica: Use appropriate respiratory protection and ventilation during the demolition and/or modification of structures with products that contain silica. Silica is a crystalline component of concrete and cement. Silica dust is created by blasting, grinding, crushing and sandblasting silica-containing materials.

**1.18 BUILDING SMOKING ENVIRONMENT**

- .1 Smoking is not permitted in the Building. Obey smoking restrictions on building property.

**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. Project Summary**

The work program consists of the removal of wall, flooring and ceiling material within rooms 322, 326 and 330 (located to the north of the basement hallway) and rooms 324, 328, 332, 336 and 340 (located to the south of the basement hallway).

It is understood that the current condition of the construction materials within the basement rooms is in disrepair and that materials need to be replaced. Based on the existing information, asbestos is considered to be present within the wall / ceiling plaster in the basement, which needs to be removed. The walls are generally suspected to consist of white textured plaster on a grey coarse plaster adhered to masonry and/or brick walls. The ceiling material is anticipated to consist of a white textured plaster on grey coarse plaster applied to wooden lath. The majority of mechanical equipment (i.e. electrical / mechanical conduits) is to be removed prior to the work program.

In addition, floors were noted to be very soft in some rooms and are suspected of being water damaged. As such, mould is likely present under the floors as some of the floors sit on a sand / dirt base. These floors are to be removed.

These rooms are to be demolished / renovated until reaching the original stone walls and the native ground / cement below

### **2. Preparatory Work Program**

The abatement contractor is responsible for removing electrical and/or mechanical equipment that is attached to wall / ceiling prior to the abatement program. In addition, ceiling tiles / ceiling systems, carpets and other non-asbestos materials are to be removed, where applicable prior to the asbestos abatement.

### **3. General Work Program**

The work program will consist of completing two Type 3 removals. One enclosure is to encompass room 322, 326 and 330 (referred to as Northern Enclosure) while the other enclosure is to encompass rooms 324, 328, 332, 336 and 340 (referred to as Southern Enclosure). The abatement work is to be separated into two separate enclosures to not impede access through the main basement hallway.

The entrance to the Northern enclosure is to be located in the center courtyard with access being provided through one of the larger windows.

The entrance to the southern enclosure is currently proposed to be located in shared entranceway to room 340 and 336.

To ensure that number of Type 3 operations is limited to two main enclosures, it is being specified that the abatement contractor facilitate access through the walls of the respective rooms within both the Northern and Southern Enclosures, respectively. Once all windows / tarps / seals / negative air are in place, cuts through the respective walls to form larger enclosures can proceed under "asbestos conditions". The use of the main hallway will be limited to a small "Type 3" hallway to go from room 338 to room 332.

The plaster is to be removed from the stone wall and it is anticipated that mechanical chipping / mechanical means will be required within select locations. Other suitable means can be used by contractor, if presented. The contractor will work with the site

representatives to assess the level of plaster removal required (depending on site conditions). The contractor is to pay special attention to minimize disturbance to the stone wall to minimize impact to its structural integrity while trying to exposed the maximum amount of stone.

Asbestos plaster ceilings are also to be removed. All other ceiling materials to be removed are also to be disposed of as asbestos-containing.

Following the asbestos abatement program and the rooms are considered “clean to enter”, it is understood that other trades will access the site to re-instate the fire-rating of the rooms (adhere drywall). Following the completion of the drywall installation, the abatement company can re-enter the site to remove the flooring under Type 3 (>100 m<sup>2</sup>) mould conditions.

All materials anticipated to be “contaminated with asbestos” (i.e. insulation, porous material, loose cementitious material) is to be considered and disposed of as asbestos for this job. In addition, some non-asbestos materials (i.e. drywall walls, flooring) are to be removed as part of this program as well.

Refer to the architectural drawing A1 for the anticipated wall, ceiling and floor construction breakdown.

**Based on the above workplan, the following are the asbestos-containing materials observed within the building that are to be removed using Type 3 procedures:**

- .1 Asbestos-containing white textured on grey coarse ceiling / wall plaster that forms the entire interior surface of all rooms to be abated;
- .2 Potential asbestos-containing floor tiles that may be present in select rooms;
- .3 Asbestos-containing pipe elbows and potential pipe wraps may be present in some of ceiling spaces;

**Based on the above workplan, the following are the materials that are suspected mouldy materials that may be present.**

- .1 Floor boards and potential floor supports throughout various rooms.

## 1.2 SUMMARY

- .1 Comply with requirements of this Section when performing following Work:
  - .1 Removal or disturbance as specified of more than one square metre of friable asbestos containing material during the repair, alteration, maintenance or demolition of a building or any machinery or equipment located on the site.
  - .2 The scope of work for this project is to remove the asbestos identified within the Monck Wing basement storage rooms identified within a Designated Substance Survey completed by DST Consulting Engineers in 2011.
  - .3 Additional information is identified within a subsequent letter entitled “Monck Wing Basement, Exploratory Opening,” completed by DST Consulting Engineers in March, 2014

The aforementioned reports confirm the presence of asbestos within wall plasters within wall and ceiling materials in nearby rooms, constructed at the same vintage.

## 1.3 REFERENCES

Asbestos

- .1 Canadian General Standards Board (CGSB)
  - .1 CAN/CGSB-1.205-[94], Sealer for Application to Asbestos-Fibre-Releasing Materials.
- .2 Canadian Standards Association (CSA International)
- .3 Department of Justice Canada
  - .1 Canadian Environmental Protection Act (CEPA), 1999.
- .4 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .5 Transport Canada (TC)
  - .1 Transportation of Dangerous Goods Act, 1992 (TDGA).
- .6 U.S. Department of Health and Human Services/Centers for Disease Control and Prevention (CDC)/National Institute for Occupational Safety and Health (NIOSH)
  - .1 NIOSH 94-113, NIOSH Manual of Analytical Methods (NMAM), 4th Edition.
- .7 U.S. Department of Labour - Occupational Safety and Health Administration - Toxic and Hazardous Substances
  - .1 29 CFR 1910.1001, Asbestos Regulations.
- .8 Ontario Ministry of Labour, Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations (O.Reg. 278/05).
- .9 American Conference of Governmental Industrial Hygienists (ACGIH), Bioaerosols Assessment and Control [1999].  
Mould
- .10 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .11 New York City Department of Health - Bureau of Environmental and Occupational Disease Epidemiology's Guidelines on the Assessment and Remediation of Fungi in Indoor Environment [2000]
- .12 United States Department of Labor Occupational Safety and Health Administration (OSHA)
  - .1 29 CFR 1910.134 - Respiratory Protection.
  - .2 29 CFR 1910.1200 - Hazard Communication.
- .13 United States Environmental Protection Agency (EPA), Mould Remediation in Schools and Commercial Buildings, [2001].

## 1.4 DEFINITIONS

- .1 Airlock: system for permitting ingress or egress without permitting air movement between contaminated area and uncontaminated area, typically consisting of two curtained doorways at least 2 m apart.
- .2 Amended Water: water with a non-ionic surfactant wetting agent added to reduce water tension to allow wetting of fibres.

- .3 Asbestos Containing Materials (ACMs): materials that contain 0.5% or more asbestos by dry weight and are identified under Existing Conditions including fallen materials and settled dust.
- .4 Asbestos Work Areas: area where work takes place which will, or may disturb ACMs.
- .5 Authorized Visitors: Engineers, Consultants, NCC representatives, and representatives of regulatory agencies.
- .6 Ceiling tile system: Ceiling tiles system which includes drop ceiling tiles, metal framing and metal hangers that tie the system to the plaster ceiling.
- .7 Cleaning solution: detergent solution
- .8 Competent worker: 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 provincial 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.
  - .4 Can demonstrate that mould remediation training has been obtained, is capable of identifying existing microbial hazards in workplace and selecting appropriate control strategy for microbial exposure
- .9 Curtained doorway: arrangement of closures to allow ingress and egress from one room to another while permitting minimal air movement between rooms, typically constructed as follows:
  - .1 Place two overlapping sheets of polyethylene over existing or temporarily framed doorway, secure each along top of doorway, secure vertical edge of one sheet along one vertical side of doorway, and secure vertical edge of other sheet along opposite vertical side of doorway.
  - .2 Reinforce free edges of polyethylene with duct tape and weight bottom edge to ensure proper closing.
  - .3 Overlap each polyethylene sheet at openings not less than 1.5 m on each side.
- .10 DOP Test: testing method used to determine integrity of Negative Pressure unit using dioctyl phthalate (DOP) HEPA-filter leak test.
- .11 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.
- .12 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.
- .13 HEPA vacuum: High Efficiency Particulate Air filtered vacuum equipment with a filter system capable of collecting and retaining fibres greater than 0.3 microns in any direction at 99.97% efficiency.
- .14 Mould contaminated work area: specific area or location where actual work is being performed or other areas of facility where it has been determined that it may be hazardous to public health as a result of mould remediation.

- .15 Negative pressure: system that extracts air directly from work area, filters such extracted air through High Efficiency Particulate Air filtering system, and discharges this air directly outside work area to exterior of building.
- .16 Non-Friable Materials: material that when dry cannot be crumbled, pulverized or powdered by hand pressure.
- .17 Occupied Areas: any area of building or work site that is outside Asbestos Work Area.
- .18 Polyethylene sheeting sealed with tape: polyethylene sheeting of type and thickness specified sealed with tape along edges, around penetrating objects, over cuts and tears, and elsewhere as required to provide continuous polyethylene membrane to protect underlying surfaces from water damage or damage by sealants, and to prevent escape of asbestos fibres through sheeting into clean area.
- .19 Sprayer: garden reservoir type sprayer or airless spray equipment capable of producing mist or fine spray. Must be appropriate capacity for scope of work.

## 1.5 SUBMITTALS

- .1 Before beginning work:
  - .1 Obtain from appropriate agency and submit to NCC representative / Consultant necessary permits for transportation and disposal of asbestos waste. Ensure that dump operator is fully aware of hazardous nature of material being dumped, and proper methods of disposal. Submit proof satisfactory to NCC representative / Consultant suitable arrangements have been made to receive and properly dispose of asbestos waste.
  - .2 Submit proof satisfactory to NCC representative / Consultant that all asbestos / mould workers have received appropriate training and education by a competent person on hazards of asbestos / mould 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. Submit proof of attendance in form of certificate.
  - .3 In anticipation of suspected mould within the floor, before commencing flooring removal, provide NCC representative / Consultant proof that worker had instruction and training in potential health hazards of mould exposure, handling of hazardous materials, in personal hygiene including protective clothing, in entry and exit from Mould Contaminated Work Area, and in use of disposal procedures including building materials. This training can be performed as part of a program to comply with requirements of the OHS Act Hazard Communication Standard (29 CFR 1910.1200) or equivalent.
  - .4 Ensure supervisory personnel have attended asbestos /mould abatement course, of not less than two days duration, approved by NCC representative / Consultant. Submit proof of attendance in form of certificate. Ensure that each supervisor has a minimum of ten years experience in the asbestos and mould related fields. Minimum of one Supervisor for every ten workers.
  - .5 Provide layout of proposed enclosures and decontamination facilities to NCC representative / Consultant for review. Can be done during pre-abatement meeting.
  - .6 Submit documentation including test results for sealer proposed for use.
  - .7 Submit Provincial and/or local requirements for Notice of Project form.
  - .8 Submit proof of Contractor's Asbestos Liability Insurance.

- .9 Submit proof satisfactory to NCC representative / Consultant that employees have respirator fitting and testing. Workers must be fit tested (irritant smoke test) with respirator that is personally issued.
- .10 Submit Worker's Compensation Board status and transcription of insurance.
- .11 Submit documentation including test results, fire and flammability data, and Material Safety Data Sheets (MSDS) for chemicals or materials including but not limited to following:
  - .1 Encapsulants.
  - .2 Amended water.
  - .3 Slow drying sealer.

## 1.6 QUALITY ASSURANCE

- .1 Regulatory Requirements: comply with Federal, Provincial and local requirements pertaining to asbestos / mould, provided that in case of conflict among those requirements or with these specifications more stringent requirement applies. Comply with regulations in effect at time work is performed.
- .2 Health and Safety:
  - .1 Do construction occupational health and safety in accordance with Section 01 35 29 - Health and Safety Requirements.
  - .2 Safety Requirements: worker and visitor protection.
    - .1 Protective equipment and clothing to be worn by workers while in Asbestos / Mould Work Area includes:
      - .1 Air purifying full face-mask respirator powered air purifying respirator (PAPR) or Supplied air 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 is to be repaired or replaced if torn.

Requirements for each worker:

- .1 Remove street clothes in clean change room and put on respirator with new filters or reusable filters that have been tested as satisfactory, clean coveralls and head covers before entering Equipment and Access Rooms or Asbestos Work Area. Store street clothes, uncontaminated footwear, towels, and similar uncontaminated articles in clean change room.
  - .2 Remove gross contamination from clothing before leaving work area then proceed to Equipment and Access Room and remove clothing except respirators. Place contaminated work suits in receptacles for disposal with other asbestos - contaminated materials. Leave reusable items except respirator in Equipment and Access Room. Still wearing the respirator, proceed naked to showers. Using soap and water wash body and hair thoroughly. Clean outside of respirator with soap and water while showering; remove respirator; remove filters and wet them and dispose of filters in container provided for that purpose; and wash and rinse inside of respirator. When not in use in work area, store work footwear in Equipment and Access Room. Upon completion of asbestos abatement, dispose of footwear as contaminated waste or clean thoroughly inside and out using soap and water before removing from work area or from Equipment and Access Room.
  - .3 After showering and drying off, proceed to clean change room and dress in street clothes at end of each day's work, or in clean coveralls before eating, smoking, or drinking. If re-entering work area, follow procedures outlined in paragraphs above.
  - .4 Enter unloading room from outside dressed in clean coveralls to remove waste containers and equipment from Holding Room of Container and Equipment Decontamination Enclosure system. Workers must not use this system as means to leave or enter work area.
- .2 Eating, drinking, chewing, and smoking are not permitted in Asbestos Work Area.
  - .3 Ensure workers are fully protected with respirators and protective clothing during preparation of system of enclosures prior to commencing actual asbestos abatement.
  - .4 Provide and post in Clean Change Room and in Equipment and Access Room the procedures described in this Section, in both official languages.
  - .5 Ensure that no person required to enter an Asbestos / Mould Work Area has facial hair that affects seal between respirator and face.
  - .6 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 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .2 Place materials defined as hazardous or toxic in designated containers.
- .3 Handle and dispose of hazardous materials in accordance with the CEPA, TDGA, Regional and Municipal regulations.
- .4 Fold up metal banding, flatten and place in designated area for recycling.
- .5 Disposal of asbestos waste generated by removal activities must comply with Federal, Provincial and Municipal regulations. Dispose of asbestos waste in sealed double thickness 6 ml bags or leak proof drums. Label containers with appropriate warning labels.
- .6 Provide manifests describing and listing waste created. Transport containers by approved means to licensed landfill for burial.

## **1.8 EXISTING CONDITIONS**

- .1 Testing results of asbestos containing materials to be handled, removed, or otherwise disturbed and disposed of during this Project are available with this specification. These are representative of asbestos containing materials covered within scope of this Project.
- .2 Notify NCC representative / Consultant of suspect asbestos containing material discovered during Work and not apparent from drawings, specifications, or report pertaining to Work. Do not disturb such material until instructed by NCC representative / Consultant.
- .3 Immediately stop work and notify NCC representative / Consultant if brick and/or stone is damaged/removed during the chipping / plaster removal process.

## **1.9 SCHEDULING**

- .1 Before beginning Work on this Project, notify following in writing:
  - .1 Provincial Department of Labour.
  - .2 Disposal Authority.
- .2 Inform sub-trades of presence of asbestos containing materials identified in Existing Conditions.
- .3 Submit to NCC representative / Consultant copy of notifications prior to start of Work.
- .4 Hours of Work: perform work involving asbestos removal or any site preparation located at site during normal working hours (7 am to 5 pm). It is noted that hours may have to be altered with short notice in the event on site constraints/security/visitors.

## **1.10 OWNER'S INSTRUCTIONS**

- .1 Before beginning Work, provide to NCC representative / Consultant satisfactory proof that every worker has had instruction and training in hazards of asbestos exposure, in personal hygiene including dress and showers, in entry and exit from Asbestos Work

Area, in aspects of work procedures including 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 Proper fitting of equipment.
  - .2 Inspection and maintenance of equipment.
  - .3 Disinfecting of equipment.
  - .4 Limitations of equipment.
- .3 Instruction and training must be provided by competent, qualified person.
- .4 Supervisory personnel to complete required training and have minimum 10 years experience in the field.

## **Part 2 Products**

### **2.1 MATERIALS**

- .1 Polyethylene: minimum 0.15 mm thick unless otherwise specified; in sheet size to minimize joints.
- .2 FR polyethylene: minimum 0.15 mm thick, woven fibre reinforced fabric bonded both sides with polyethylene.
- .3 Tape: fibreglass - reinforced duct tape suitable for sealing polyethylene under both dry conditions and wet conditions using amended water.
- .4 Wetting agent: 50% polyoxyethylene ester and 50% polyoxyethylene ether, or other material approved by NCC representative / Consultant, mixed with water in concentration to provide adequate penetration and wetting of asbestos containing material.
- .5 Waste Containers: contain waste in two separate containers.
  - .1 Inner container: 0.15 mm thick sealable polyethylene bag 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 pre-printed cautionary asbestos warning, in both official languages, that is visible when ready for removal to disposal site. Label containers in accordance with Asbestos Regulations. Label in both official languages.
- .6 Tape: tape suitable for sealing polyethylene to surfaces under both dry and wet conditions using amended water.
- .7 Slow - drying sealer: non-staining, clear, water - dispersible type that remains tacky on surface for at least 8 hours and designed for purpose of trapping residual asbestos fibres.
- .8 Sealer: flame spread and smoke developed rating less than 50.

## **Part 3 Execution**

### **3.1 PREPARATION**

- .1 Do construction occupational health and safety in accordance with Section 01 35 29 - Health and Safety Requirements.

- .2 Work Areas:
  - .1 Pre-clean moveable furniture still present within proposed work areas (not previously removed by NCC) using HEPA vacuum and remove from work areas to temporary location outside of such areas. Note that the NCC is to move all furniture out of the work area prior to the arrival of the abatement crew.
  - .2 Pre-clean fixed casework, plant, and equipment within proposed work areas, using HEPA vacuum and cover with polyethylene sheeting sealed with tape.
  - .3 Clean proposed work areas using, where practicable, HEPA vacuum cleaning equipment. If not practicable, use wet cleaning method. Do not use methods that raise dust, such as dry sweeping, or vacuuming using other than HEPA vacuum equipment.
  - .4 The spread of dust from the work area to be prevented by:
    - .1 Using enclosures of polyethylene or other suitable material that is impervious to asbestos (including, if the enclosure material is opaque, one or more transparent window areas to allow observation of the entire work area from outside the enclosure).
    - .2 Using curtains of polyethylene sheeting or other suitable material that is impervious to asbestos, fitted on each side of each entrance or exit from the work area.
      - .1 North Enclosure: The entrance to the work area is currently proposed to be in the courtyard and allow for access through a large window into room 322, 326 or 330.
      - South Enclosure: The entrance to the work area is currently proposed to be at the joint entrance of rooms 336 and 340 and then provide main entrance into room 336. Polyethylene sheet and drywall/pressboard hallway to be created to provide access to room 332. Hallway to be a maximum of 1m to still allow for public access through main hallway.
    - .2 Once the entrances to the North and South Enclosure are created or being created (i.e. public separated from work area), the larger North and South Enclosures can be created.
    - .3 Fill in void spaces around pipe conduits and/or within the small openings with duct tapes, foam or other suitable materials that will prevent migration of dust within South Enclosure (between Room 324 and 320 as well as between the rooms and the hallway) and North Enclosure (between 318 and 322, between 330 and 334, and between rooms and hallway);
    - .4 Use polyethylene sheeting to seal doorways and windows. Polyethylene sheeting to be sealed at the door / window using spray adhesive and duct tape. Doors to hallways to be kept installed to serve as secondary barrier.
  - .5 Install negative pressure system and operate continuously from time first polyethylene (i.e. prior to cutting doorways/openings in the wall to increase the size of the Type 3) is installed to seal openings until final completion of work including final cleanup and appropriate clearance inspections. Provide continuous monitoring of pressure difference using automatic recording instrument. The system is to maintain a negative air pressure of 0.02 inches of water, relative to the area outside the enclosed area. The system is to be

inspected and maintained by a competent person prior to each use. To ensure negative pressure within each room prior to cutting the walls to provide access to additional rooms, an individual negative air-unit is to draw air from each respective room.

- .6 Seal off openings such as windows, ducts, grilles, and diffusers in the asbestos work area, with polyethylene sheeting sealed with tape.
  - .1 Seal-off doorways and entrances to corridors with two layers of polyethylene sheeting.
- .7 Build airlocks at entrances to and exits from work area so that work areas are always closed off by one curtained doorway when workers enter or exit.
- .8 At each access to work areas 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)".
- .9 Install a loose overlapping tarp at the entrance to the common access room which provides access to the washroom (room 340) and room 336. A construction worker sign is to be posted on the loose overlapping tarp to prevent any contact or visual evidence of an asbestos work zone. The loose tarp is to allow space between the asbestos work area and the public space.
- .10 After work area isolation and prior to cutting through walls,
  - .1 Remove heating, ventilating, and air conditioning filters, pack in sealed plastic bags 0.15 mm minimum thick and treat as contaminated asbestos waste.
  - .2 Remove existing non-asbestos ceiling systems (ceiling tiles, grid and hangers) in applicable rooms.
  - .3 Remove / displace all electrical equipment and conduits that are fastened to the existing wall system and would impact asbestos plaster removal. Fasten and place electrical equipment/switch/conduit in a manner that would protect equipment and workers. For electrical equipment left hanging from ceiling, ensure that the equipment is wrapped and/or kept in a safe manner to prevent workers from regularly coming in contact with it during work program.
  - .4 Following the work program, re-instate electrical equipment / switches / conduits that are required for building operation. Licensed electrician to displace / re-fasten electrical equipment, as required.
  - .5 Remove / displace all mechanical equipment that may interfere with the asbestos plaster / mouldy floor removal program. Following the work program, re-instated mechanical equipment that is required for building operations.
  - .6 Following the work program, licensed electrician to displace / re-fasten mechanical equipment, as required.
  - .7 Remove remaining ceiling - mounted objects such as lights, partitions, other fixtures not previously sealed off or removed by NCC staff, and other objects that interfere with asbestos removal, as directed by NCC representative / Consultant. Use localized water spraying during fixture removal to reduce fibre dispersal.
  - .8 The NCC will remove the existing fan coil systems.

- .11 Maintain emergency and fire exits from work areas, or establish alternative exits.
- .12 Where application of water is required for wetting asbestos containing materials, shut off electrical power, provide 24 volt safety lighting and ground fault interrupter circuits on power source for electrical tools, in accordance with applicable CSA Standard. Ensure safe installation of electrical lines and equipment.
- .13 After preparation of work area and Decontamination Enclosure Systems based on approval from the NCC representative / Consultant, abatement contractor to commence with creating openings,
  - .1 North Enclosure: create opening (0.6 to 0.9 m wide) between room 322 / 326 as well as 326 / 330. Walls are currently anticipated to consist of asbestos plaster on masonry.
  - .2 South Enclosure: create opening (0.6 to 0.9 m wide) between room 324/328, 328/332. Walls are currently anticipated to consist of asbestos plaster on masonry.

It is understood that wet-saws and/or similar equipment may be required to cut through walls. Walls removed to allow for entrance to other rooms is to be disposed of as asbestos waste.

Wall openings are to be completed as per design requirements (refer to drawing SK-1).
- .14 After preparation of work areas and Decontamination Enclosure Systems, for the removal of all other asbestos containing materials, remove asbestos within work area and dispose of as contaminated waste in specified containers. Spray asbestos debris and immediate work area with amended water to reduce dust, as work progresses.
- .3 Worker Decontamination Enclosure System:
  - .1 This enclosure system is currently proposed to be located in:

North Enclosure: within the courtyard and provide for access through a window to one of rooms 322, 326 or 330. Stairs / step ladder or appropriate to be placed at window to allow for safe exit and entry to enclosure.

South Enclosure: within the joint entrance room to 336 and 340. Access is to be provided to room 336 and 340. Room 336 to be sealed off from asbestos work areas as there is no known asbestos in room 336. All removal work in room 336 is non-asbestos removals.
  - .2 Worker Decontamination Enclosure System includes Equipment and Access Room, Shower Room, and Clean Room, as follows (one facility for North Enclosure and one facility to South Enclosure):
    - .1 Equipment and Access Room: build Equipment and Access Room between Shower Room and work area, with three curtained doorways to Shower Room. Install waste receptor, and storage facilities for workers' shoes and protective clothing to be re-worn in work area. Build Equipment and Access Room large enough to accommodate specified facilities, other equipment needed, and at least one worker allowing him / her sufficient space to undress comfortably.
    - .2 Shower Room: build Shower Room between Clean Room and Equipment and Access Room, with two curtained doorways, one to Clean Room and one to Equipment and Access Room. Provide constant supply of hot and cold or warm water. Drains to common sewers are available at drain. Provide piping and connect to water sources and

drains. Pump waste water through 5 micrometre filter system acceptable to NCC representative / Consultant before directing into drains. Provide soap, clean towels, and appropriate containers for disposal of used respirator filters.

- .3 Clean Room: build Clean Room between Shower Room and clean areas outside of enclosures, with two curtained doorways, one to outside of enclosures and one to Shower Room. Provide lockers or hangers and hooks for workers' street clothes and personal belongings. Provide storage for clean protective clothing and respiratory equipment. Install mirror to permit workers to fit respiratory equipment properly. Clean room is to be sealed directly to the entrance from the hallway to the change room. To be constructed in a manner to allow for door to be standard to be opened.
- .4 Worker Decontamination Enclosure within the courtyard is to be structurally secured with pressboard / chipboard or other suitable material to prevent the polyethylene sheeting from ripping during weather events. As such, the plywood (or suitable) is placed on the exterior of the enclosure.
- .4 Container and Equipment Decontamination Enclosure System:
  - .1 Container and Equipment Decontamination Enclosure System consists of Staging Area within work area, Holding Room, and Unloading Room. Purpose of system is to provide means to decontaminate waste containers, waste and material containers, vacuum and spray equipment, and other tools and equipment for which Worker Decontamination Enclosure System is not suitable. This area is to be constructed at the middle courtyard window.
    - .1 Staging Area: designate Staging Area in work area for gross removal of dust and debris from waste containers and equipment, labelling and sealing of waste containers, and temporary storage pending removal to unloading room. This is to be constructed adjacent to worker decontamination enclosure.
    - .2 Holding Room: equivalent to worker decontamination room and serves as location where waste is vacuumed before passing through showers. One staff to be present in the holding / decontamination room to pass vacuumed asbestos waste bag to the shower.
    - .3 Waste is then transported through the showers where the bag is rinsed and wiped with a wet rag.
    - .4 Waste is then double bagged in the clean room. One staff to be present within clean room to grab bag from shower and then double bag and carry to waste bin.
    - .5 All removal of garbage is to be conducted at the end of the work day
- .5 Construction of Decontamination Enclosures:
  - .1 Build suitable framing for enclosures and line with polyethylene sheeting sealed with tape. Use two layers of FR polyethylene on floors that are carpeted, if not carpeted not removed. Alternatively, removed carpeting down to concrete and/or impervious layer.
  - .2 Build curtained doorways between enclosures so that when people move through or when waste containers and equipment are moved through doorway, one of two closures comprising doorway always remains closed.

- .3 Reinforce the decontamination enclosure system with plywood or suitable in:
  - .1 Southern Enclosure (within the shared entrance) to ensure that material removals to occur above the enclosure will not damage the enclosure (in the event that the shared entrance to room 336 and 340) remains part of the abatement area.
  - .2 Northern Enclosure within the courtyard to protect against weather damage.
- .6 Separation of Work Areas from Occupied Areas:
  - .1 Separate parts of building required to remain in use from parts of building used for asbestos abatement by means of airtight barrier system constructed as follows:
    - .1 Build suitable floor to ceiling lumber or metal stud framing, cover with polyethylene sheeting sealed with tape, and apply 9 mm minimum thick plywood. Seal joints between plywood sheets and between plywood and adjacent materials with surface film forming type sealer, to create airtight barrier.
    - .2 Cover plywood barrier with polyethylene sealed with tape, as specified for work areas.
- .7 Maintenance of Enclosures:
  - .1 Maintain enclosures in tidy condition.
  - .2 Ensure that barriers and polyethylene linings are effectively sealed and taped. Repair damaged barriers and remedy defects immediately upon discovery.
  - .3 Visually inspect enclosures at beginning of each working period.
  - .4 Use smoke methods to test effectiveness of barriers when directed by NCC representative / Consultant.
- .8 Do not begin Asbestos Abatement work until:
  - .1 Arrangements have been made for disposal of waste.
  - .2 For wet stripping techniques, arrangements have been made for containing, filtering, and disposal of waste water.
  - .3 Work areas and decontamination enclosures are effectively segregated.
  - .4 Tools, equipment, and materials waste containers are on hand.
  - .5 Arrangements have been made for building security.
  - .6 Warning signs are displayed where access to contaminated areas is possible.
  - .7 Notifications have been completed and other preparatory steps have been taken
  - .8 Enclosures have been inspected by NCC representative/Consultant.

### **3.2 SUPERVISION**

- .1 Minimum of one Supervisor for every ten workers is required. Supervisor to have a minimum of 10 years of relevant experience.
- .2 Approved Supervisor must remain within Asbestos Work Area during disturbance, removal, or other handling of asbestos containing materials.

### **3.3 ASBESTOS REMOVAL**

- .1 Before removing asbestos:

- .1 Prepare site.
- .2 Spray asbestos material with water containing specified wetting agent, using airless spray equipment capable of providing "mist" application to prevent release of fibres. Saturate asbestos material sufficiently to wet it to substrate without causing excess dripping. Spray asbestos material repeatedly during work process to maintain saturation and to minimize asbestos fibre dispersion.
- .2 Remove saturated asbestos material in small sections (floor tiles, plaster on laths, asbestos contaminated materials). Do not allow saturated asbestos to dry out. As it is being removed, pack material in sealable plastic bags 0.15 mm minimum thick and place in labelled containers for transport.
- .3 Asbestos plaster may have to be chipped / removed with mechanical means from the suspected stone walls specified in Architectural drawing A-1. Walls consist of a variety of plaster on wood lath, plaster on wood framing and plaster adhered directly to stone. Chipping / removal work to be done in a method to minimize removal of suspected stone wall removal.
  - .1 Consultant / NCC representative to review the chipping process and the impact to the structural integrity to the walls, as required.
  - .2 NCC Representative to provide comment / review the quality of the chipping process for the purpose of aesthetics/design.
- .4 Seal filled containers. Clean external surfaces thoroughly by wet sponging. Remove from immediate working area to Staging Area. Clean external surfaces thoroughly again by wet sponging before moving containers to decontamination Washroom. Wash containers thoroughly in decontamination Washroom, and store in Holding Room pending removal to Unloading Room and outside. Ensure that containers are removed from Holding Room by workers who have entered from uncontaminated areas dressed in clean coveralls.
- .5 After completion of stripping work, wire brushed and wet sponged surfaces from which asbestos has been removed to remove visible material. During this work, keep surfaces wet.
- .6 After wire brushing and wet sponging to remove visible asbestos, wet clean entire work area including Equipment and Access Room, and equipment used in process. After inspection by NCC representative / Consultant, apply continuous coat of slow drying sealer to surfaces of work area. Allow at least 16 hours with no entry, activity, ventilation, or disturbance other than operation of negative pressure units during this period.
- .7 Work is subject to visual inspection and potential 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 dispose 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. Remove the waste from the asbestos work area at the end of each work day through the following locations:

- .1 Northern enclosure: through the courtyard decontamination zone
- .2 Southern enclosure: through the decontamination room in the shared entrance to 336/340 and through hallway listed as 374.
- .4 Seal and remove double bagged waste from site. Dispose of in accordance with requirements of Provincial and Federal authority having jurisdiction. Supervise dumping and ensure that dump operator is fully aware of hazardous nature of material to be dumped and 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.

### **3.4 MICROBIAL REMEDIATION (For Flooring Surface)**

- .1 Suspected mouldy flooring to be conducted once asbestos work program (i.e. removal of plaster walls and ceiling) and subsequent installation of drywall for fire protection. Enclosures that were used during the asbestos abatement program are to be maintained and used for the purpose of the mould abatement.
- .2 The removal of all floors is to be conducted as a mould removal operation (similar to asbestos removal operations mentioned above).
- .3 Use sprayer (low-velocity, fine-mist) to mist (not wet) materials containing mould to be removed. Perform work to reduce dust creation to lowest levels practicable.
- .4 All floors and soft / stained / water damaged wood floor supports / joists are to be removed as suspected mould impacted materials
- .5 Dispose of contaminated building materials as specified.
- .6 During mould remediation, should NCC representative / Consultant suspect contamination of areas outside enclosed Mould Contaminated Work Area, contractor to stop remediation work and immediately decontaminate affected areas. Eliminate causes of such contamination. Prohibit unprotected individuals from entering the contaminated area until a visual inspection determines area is free from contamination. Air testing may be conducted if deemed necessary.
- .7 Mouldy flooring (joist, sections of floor) to be “tootsie rolled” within a polyethylene sheeting and wrapped / duct taped at the ends for subsequent disposal. Flooring materials (understanding that all asbestos-containing materials were removed) are to be disposed of as construction waste.
- .8 Following removal of mould flooring, cover dirt floor surface in respective rooms with suitable vapour barrier to minimize the potential for moisture building and vermin. The vapour barrier is to be a minimum thickness of 12 mil and is to be fastened on to the existing wall.

### **3.5 FINAL CLEANUP**

- .1 Following the specified cleaning, and approval by NCC representative / Consultant, proceed with final cleanup.
- .2 Remove polyethylene sheet by rolling it away from walls to centre of work area. Vacuum visible asbestos containing particles observed during cleanup, immediately, using HEPA vacuum equipment.
- .3 Place polyethylene seals, tape, cleaning material, clothing, and other contaminated waste in plastic bags and sealed labelled waste containers for transport.

- .4 Include in clean-up Work areas, Equipment and Access Room, Washroom, Shower Room, and other contaminated enclosures.
- .5 Include in clean-up sealed waste containers and equipment used in Work and remove from work areas, via Container and Equipment Decontamination Enclosure System, at appropriate time in cleaning sequence.
- .6 Conduct final check to ensure that no dust or debris remains on surfaces as result of dismantling operations. Repeat cleaning using HEPA vacuum equipment, or wet cleaning methods where feasible, in conjunction with sampling until levels meet this criteria.
- .7 As asbestos / mould removal work progresses, and to prevent exceeding available storage capacity on site, remove sealed and labelled containers containing asbestos and/or mould waste and dispose of to authorized disposal area in accordance with requirements of disposal authority. Ensure that each shipment of containers transported to dump is done in accordance with governing regulations.
- .8 Following the removal of all contaminated tarps, re-instate polyethylene tarps at doorways to form barriers for proposed construction work

### 3.6 AIR MONITORING

- .1 From beginning of Work until completion of cleaning operations, NCC representative / Consultant to take air samples on regular basis outside of work area enclosure.
  - .1 If air monitoring shows that areas outside work area enclosures are contaminated, enclose, maintain and clean these areas, in same manner as that applicable to work areas.
- .2 During course of Work, NCC representative / Consultant to measure fibre content of air outside work areas by means air samples analyzed by Phase Contrast Microscopy (PCM).
  - .1 Stop Work when PCM measurements exceed 0.05 f/cc and correct procedures.
- .3 Final air monitoring to be conducted as follows: After Asbestos Work Area has passed visual inspection and acceptable coat of lock-down agent has been applied to surfaces within enclosure, and appropriate setting period has passed, NCC representative / Consultant will perform air monitoring within Asbestos Work Area.
  - .1 Final air monitoring results must show fibre levels of less than 0.01 f/cc.
  - .2 If air monitoring results show fibre levels in excess of 0.01 f/cc, re-clean work area and apply another acceptable coat of lock-down agent to surfaces.
  - .3 Repeat as necessary until fibre levels are less than 0.01 f/cc.
- .4 During the course of Work, NCC representative / Consultant may measure mould levels outside of the enclosure, if requested by client. There is no criteria for mould, therefore, exceedences or concerns regarding mould will be based on NCC representative / Consultant discretion.
- .5 For mould removal, **exp** may perform final air monitoring of Mould Contaminated Work Area depending on the extent of the mould removal program and provided area has passed visual inspection and an appropriate settling period of 12 hours has passed. If air monitoring results are deemed unacceptable by NCC representative / Consultant, areas are to be re-cleaned with HEPA vacuum and damp wiped until levels are found to be acceptable by NCC representative / Consultant.

**3.7 INSPECTION**

- .1 Perform inspection of Asbestos / Mould Work Area to confirm compliance with specification and governing authority requirements. Deviations from these requirements that have not been approved in writing by NCC representative / Consultant may result in Work stoppage, at no cost to Owner.
- .2 NCC representative / Consultant will inspect Work for:
  - .1 Adherence to specific procedures and materials.
  - .2 Final cleanliness and completion.
  - .3 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.
- .3 When asbestos / mould leakage from Asbestos Work Area has occurred or is likely to occur NCC representative / Consultant may order Work shutdown.
  - .1 No additional costs will be allowed by Contractor for additional labour or materials required to provide specified performance level.

**END OF SECTION**