

**Part 1 General****1.1 TAXES**

- .1 Pay all taxes properly levied by law (including Federal, Provincial and Municipal).

**1.2 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 that work conforms to requirements of Authority having jurisdiction.

**1.3 CONSTRUCTION PROGRESS SCHEDULE**

- .1 Schedule and execute work with least possible interference or disturbance to the normal use of premises and as follows:
  - .2 Ten days (10) from award of contract submit bar chart construction schedule for work, indicating anticipated progress stages within time of completion. When the Departmental Representative has reviewed schedule, take necessary measures to complete work within scheduled time. Do not change schedule without notifying Departmental Representative.
  - .3 Carry out work during "regular hour", Monday to Friday from 07:00 to 18:00 hours and on Saturdays, Sundays and statutory holidays from 09:00 to 17:00 hours.
  - .4 Carry out the following noise generating work during "off hours" Monday to Friday from 18:00 to 07:00 hours and on Saturdays, Sundays, and statutory holidays from 09:00 to 17:00 hours :
    - .1 Cutting and coring, drilling and hot works.
    - .2 Miscellaneous metals.
  - .5 Give the Departmental Representative 48 hours for review and approval for work to be carried out during "off hours".

**1.4 FIRE SAFETY REQUIREMENTS**

- .1 Comply with both the National Building Code of Canada 2015 and the National Fire Code of Canada 2015 for safety of persons in buildings in the event of a fire and the protection of buildings from the effects of fire, as follows;
  - .1 The National Building Code (NBC): for fire safety and fire protection features that are required to be incorporated in a building during construction.
  - .2 The National Fire Code (NFC):
    - .1 The on-going maintenance and use of the fire safety and fire protection features incorporated in buildings.
    - .2 The conduct of activities that might cause fire hazards in and around buildings.
    - .3 Limitations on hazardous contents in and around buildings.
    - .4 The establishment of fire safety plans.
    - .5 Fire safety at construction and demolition sites.
- .2 Welding and cutting:

- .1 At least 48 hours prior to commencing cutting, welding or soldering procedure, provide to Departmental Representative:
  - .1 Notice of intent, indicating devices affected, time and duration of isolation or bypass.
  - .2 Completed welding permit as defined in NFC.
  - .3 Return welding permit to Departmental Representative immediately upon completion of procedures for which permit was issued.
- .2 "Fire Watchers" as described in NFC shall be assigned when welding or cutting operations are carried out in areas where combustible materials within 10m may be ignited by conduction or radiation.
- .3 Where work requires interruption or cause activation of fire alarms or fire suppression, extinguishing or protection systems:
  - .1 Provide "Watchman Service" as described in NFC; In general, watchman service is defined as an individual conversant with "Fire Emergency Procedures", performing fire picket duty within an unprotected and unoccupied (no workers) area once per hour.
  - .2 Make all necessary arrangements with the Fire Alarm Operator identified by Departmental Representative, to isolate and protect all devices relating to:
    - .1 modification of fire alarms, fire suppression, extinguishing or protection systems; and/or
    - .2 cutting, welding, soldering or other construction activities that might activate fire protection systems.
  - .3 Immediately upon completion of work, restore fire protection systems to normal operation and verify that all devices are fully operational.
  - .4 Inform fire alarm system monitoring agency and local Fire Department immediately prior to isolation and immediately upon restoration of normal operation.

## **1.5 HAZARDOUS MATERIALS**

- .1 Hazardous Materials: product, substance, or organism that may cause adverse impact to environment or adversely affect health of persons, animals, or plant life when released into the environment.
- .2 Comply with the requirements of the Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and the provision of Material Safety Data Sheets (MSDS).
- .3 For work in occupied buildings, give the Department Representative 48 hours notice for work involving designated substances (Ontario Bill 208), hazardous substances (Canada Labour Code Part II Section 10), and before painting, caulking, installing carpet or using adhesives and other materials, that cause off gassing.

## **1.6 CONSTRUCTION FACILITIES**

- .1 Existing elevators: not to be used by construction personnel.
- .2 Site Storage:
  - .1 Do not unreasonably encumber site with materials or equipment.
  - .2 Move stored products or equipment that interfere with operations of Departmental Representative or other contractors.
  - .3 Obtain and pay for use of additional storage or work areas needed for operations.

- .4 Do not load or permit to load any part of work with weight or force that will endanger work.
- .3 Sanitary facilities: will be assigned for Contractor's personnel. Others shall not be used. Keep facilities clean.
- .4 Signage:
  - .1 Provide common-use signs related to traffic control, information, instruction, use of equipment, public safety devices, etcetera, in both official languages or by the use of commonly understood graphic symbols and to approval of the Departmental Representative.
  - .2 No advertising will be permitted on this project.
- .5 Access and Egress:
  - .1 The contractor shall agree to install proper site separation and identification to maintain "Time and Space" at all times throughout the life of the project between the construction site and the building occupants.
  - .2 When building operations staff, building staff or private sector maintenance personnel require access to operational equipment located in the construction area to operate the building, access shall be granted and proper coordination and communication must exist between all parties involved.

## **1.7 EXAMINATION and PREPARATION**

- .1 Examine site and conditions likely to affect work and be familiar and conversant with existing conditions.
- .2 Before commencing work, establish location and extent of services lines in area of work and notify Departmental Representative of findings.

## **1.8 SECURITY CHECK**

- .1 Personnel will be checked daily at start of work shift and given a pass, which must be worn at all times. Pass must be returned at end of work shift and personnel checked out.

## **1.9 COST BREAKDOWN**

- .1 Before submitting first progress claim, submit breakdown of Contract Amount in detail as directed by Departmental Representative and aggregating the Contract Amount. After approval by Departmental Representative cost breakdown will be used as the basis of progress payments.
- .2 Cost breakdown to identify the following;
  - .1 General Conditions
  - .2 Shop Drawings
  - .3 Permits.
  - .4 Site Mobilization.
  - .5 Demolition
  - .6 Partitions
  - .7 Acoustical Ceilings
  - .8 Metal Doors and Frames

- .9 Door Hardware
- .10 Painting
- .11 Resilient Sheet Flooring
- .12 Steel Laboratory Casework
- .13 Mechanical and Electrical installations (provide breakdown of installations)
- .14 Testing and Commissioning
- .15 Close out documentation, Operating & Maintenance Manuals

**1.10 WASTE MANAGEMENT**

- .1 Comply with Environmental Protection Act, Ontario Regulations: O. Reg. 102/94 – Waste Audits and Waste Reduction Work Plans; and O. Reg. 103/94 – Industrial, Commercial and Institutional Source Separation Programs; for waste management on construction and demolition projects.
- .2 Conduct "waste audit" to determine what waste will be generated during construction and demolition operations. Prepare written "waste reduction work plan" and implement the principles to reduce, reuse and recycle materials to the extent that is possible.
- .3 Submit complete records of all removals from site for both "materials designated for alternative disposal" and "general waste" including:
  - .1 Time and date of removal;
  - .2 Description of material and quantities; and
  - .3 Proof that materials have been received at an approved Waste Processing Site or certified Waste Disposal Site as required.

**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 SUMMARY**

- .1 CM3 Environmental Inc. (CM3) was retained by Agriculture and Agri-Food Canada (AAFC) to conduct a Designated Substance Survey (DSS) in rooms 1005 to 1024 of the Neatby Building at 960 Carling Avenue, Ottawa, Ontario. It is understood that the DSS was commissioned as a matter of due diligence prior to proposed renovations at the site. On December 19th, 2017 CM3 collected and submitted thirty-two (32) bulk samples from eight (8) distinct, suspect asbestos containing materials and four (4) bulk samples of suspect lead containing paint.

**1.2 REGULATORY REQUIREMENTS**

- .1 Federal Legislation
  - .1 Canada Labour Code, Part II, section 124 and 125.
    - .1 Canada Occupational Health and Safety Regulations
  - .2 Transportation of Dangerous Goods Act, 1992 (TDGA)
  - .3 Canada Consumer Product Safety Act
    - .1 Surface Coating Materials Regulations SOR/2016-193.
  - .4 Canadian Environmental Protection Act, 1999 (CEPA)
    - .1 PCB Regulations (SOR/2008-273)
    - .2 Federal Halocarbon Regulations, 2003 (SOR/2003-289)
- .2 Provincial Legislation
  - .1 Ontario Occupational Health and Safety Act, R.S.O. 1990, 2010 edition.
    - .1 Ontario Regulation 490/09 – Designated Substances (O.Reg. 490/09).
    - .2 Ontario Regulation 278/05 – Designated Substance - Asbestos on Construction Projects and in Buildings and Repair Operations, (O.Reg. 278/05).
    - .3 Ontario Regulation 213/91 for Construction Projects (O.Reg. 213/91)
  - .2 Ontario Environmental Protection Act, R.R.O. 1990,
    - .1 Ontario Regulation 347/09, General – Waste Management (O.Reg. 347).
    - .2 Ontario Regulations 362/90 – Waste Management, PCBs (O.Reg. 362)
    - .3 Ontario Regulation 463/10, Ozone Depleting Substances and Other Halocarbons (O.Reg. 463/10).
  - .3 Canadian Standards Association (CSA International) CAN/CSA-Z94.4-11 - Respiratory Protection

**1.3 VALIDITY DATE**

- .1 CM3 personnel conducted the site survey for this report on December 19<sup>th</sup>, 2017.
- .2 From the visual inspection suspect materials were sampled and analyzed, where appropriate, for asbestos content. On the basis of these inspections thirty-two (32) samples of potential asbestos containing materials were collected and submitted to EMSL located at 22 Antares Drive, unit 102, Ottawa, Ontario K2E 7Z6 and four (4) samples of potential lead containing paints were collected and submitted to Paracel Laboratories located at 25 Northside Road, Unit C Nepean, ON K2H 8S1.

**1.4 DEFINITIONS**

- .1 Asbestos-Containing Materials (ACMs): means material that contains 1 per cent or more asbestos by dry weight as per Canada Occupational Health and Safety Regulations or 0.5 per cent or more asbestos by dry weight as per Ontario Regulation 278/05. For the purpose of this project, Asbestos-Containing Material means a material that contains 0.5 per cent or more asbestos by dry weight.
- .2 Friable Material: material that when dry can be crumbled, pulverized or powdered by hand pressure and includes such material that is crumbled, pulverized or powdered.
- .3 Time-weighted average exposure limit (TWAE): the time-weighted average airborne concentration of a biological or chemical agent to which a worker may be exposed in a work day or work week as prescribed by Canada Occupational Health and Safety Regulations and by Ontario Regulation 490/09 Designated Substances, as amended.

**Part 2 Designated Substances****2.1 GENERAL**

- .1 Confirm with the Departmental Representative that no additional designated substances have been brought to the project area prior to beginning work.
- .2 Additional designated substances and hazardous materials may exist outside the accessible survey areas but are beyond the scope of this project.
- .3 Should any additional material, suspected to be a designated substance, be encountered within the project area, any disturbance of such material must be stopped, precautionary measures taken, and the Departmental Representative must be notified immediately. Do not proceed until written instructions have been received.

**2.2 ACRYLONITRILE: Not Identified****2.3 ARSENIC: Not Identified****2.4 ASBESTOS:**

- .1 The following table summarizes the samples collected and the analytical results

<b>Table 1 - Asbestos Sampling, December 19<sup>th</sup>, 2017 960 Carling Avenue, Ottawa, Ontario</b>		
	<b>Sample Description &amp; Sample Number Location</b>	<b>Asbestos Content</b>
ACT01 A-C	2'x4' Acoustic Ceiling Tiles (pinhole pattern), Throughout Rooms 1005-1024	None Detected – Acoustic Ceiling Tiles
ACT02 A-C	2'x4' acoustic ceiling tiles (pinhole and fleck pattern), throughout rooms 1005-1024	None Detected – Acoustic Ceiling Tiles
DM01 A-C	Duct Mastic, Room 1015	None Detected – Duct Mastic

Table 1 - Asbestos Sampling, December 19th, 2017 960 Carling Avenue, Ottawa, Ontario		
Sample Number	Sample Description & Sample Number Location	Asbestos Content
VFT01 A-C	12"x12" Vinyl Floor Tiles (white with blue flecks), Rooms 1007 and 1009	None Detected – Vinyl Floor Tiles
VFT02 A-C	9"x9" Vinyl Floor Tiles (Green), Rooms 1005, 1008, 1015A, 1015B, 1015, 1017, and 1024.	5% Chrysotile – Vinyl Floor Tiles
PC01 A-C	Parging Cement Insulation, Room 1011	55% Chrysotile – Parging Cement Insulation
P01 A-G	Plaster Walls, Throughout Rooms 1005-1024	None Detected – Plaster
P02 A-G	Plaster Ceilings, Throughout Rooms 1005-1024	None Detected – Plaster

- .2 Based on the analytical results asbestos was detected in the following materials:
- .1 9'x9' vinyl floor tiles
  - .2 Pipe insulation parging cement

## 2.5 BENZENE- Suspected

- .1 Wire coatings, plastic materials, or PVC

## 2.6 COKE OVEN EMISSIONS Not identified

## 2.7 ETHYLENE OXIDE: Not Identified

## 2.8 ISOCYANATES: Not Identified

## 2.9 LEAD- Identified

1. The following table summarizes the sample locations and analytical results of the paint sampling

Table 2 – Lead Paint Sampling, December 19 <sup>th</sup> , 2017 960 Carling Avenue, Ottawa, Ontario		
Sample Number	Sample Description & Location	Lead Content in Parts Per Million (ppm)
PB01	White Wall Paint, Room 1005	111
PB02	Black Wall Paint, Room 1011	6290
PB03	Light Pink Wall Paint, Room 1024	828
PB04	Beige Wall Paint, Room 1011	1430

- .2 All of the paints are confirmed to be lead containing. Sample PB02 Was reported to have a lead concentration exceeding 5000ppm and therefore is considered to be lead based.

**2.10 MERCURY- Identified**

1. Fluorescent light fixtures containing fluorescent light tubes were observed. Fluorescent light tubes contain mercury in a vapour form and in the phosphor coating on the lamp tube.

**2.11 SILICA- Identified**

1. Free crystalline silica is assumed to be present in the following materials:
  1. Concrete and cement products.
  2. Plaster.
  3. Ceiling Tiles.
  4. Vinyl Flooring

**2.12 VINYL CHLORIDE- Not Identified****2.13 POLYCHLORINATED BIPHENYLS- Not Identified****2.14 OZONE DEPLETING SUBSTANCES- Suspected**

1. Several refrigerators containing probable ozone depleting refrigerant were observed.

**Part 3 Recommendation****3.1 GENERAL**

1. Provide a copy of this report or applicable portions of this report to prospective bidders.

**3.2 ASBESTOS**

1. All work must be done in accordance with Canada Occupational Health and Safety Regulations (as amended), Public Services and Procurement Canada Asbestos Management Standard and O.Reg 278/05 (as amended). In the event of conflict between the federal and provincial regulations, the most stringent one will apply.
2. The disturbance of ACMs on construction and demolition projects is regulated by the *Canada Occupational Health and Safety Regulations*, *Public Services and Procurement Canada Asbestos Management Standard* and in the province of Ontario by *O.Reg 278/05*, as amended. These Regulations classify all asbestos disturbances as Low Risk (Type 1), Moderate Risk (Type 2), or High Risk (Type 3), each of which has defined precautionary measures. All asbestos materials are subject to specific handling and disposal precautions, and must be removed prior to demolition.
3. The asbestos abatement must be conducted by an experienced competent asbestos abatement contractor. The contractor should be able to show proof of adequate experience, employee training, workers compensation documentation, and asbestos liability insurance
4. The removal of the pipe insulation parging may be completed as a Type 2 Glove Bag removal Operation.
5. The removal of the vinyl floor tiles may be conducted as a Type 1 Operation.
6. Disposal of asbestos waste must be done in accordance with "General – Waste



Management” O.Reg 347/90 (as amended) under the Ontario Environmental Protection Act and the federal Transportation of Dangerous Goods Act. The waste must be disposed at a licensed waste disposal site. Proper notification must be issued to the Departmental Representative prior to transportation of waste.

### **3.2 BENZENE**

1. Excessive heat must not be used on wire coatings, plastic materials, or PVC as heat may release benzene. If these practices cannot be avoided, then implement control measures appropriate for the control of benzene prescribed in Ontario Regulation 490/09 – Designated Substances.

### **3.3 LEAD**

1. Follow recommendations provided in the Ontario Ministry of Labour (MoL) Guideline entitled “Guideline: Lead on Construction Projects”. This guideline classifies all lead disturbances as Type 1, Type 2a, Type 2b, Type 3a or Type 3b work, and assigns different levels of respiratory protection and work procedures for each classification.
2. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne lead levels that exceed the TWAEEL of 0.05 milligram per cubic metre (mg/m<sup>3</sup>) prescribed by O.Reg 490/09.
3. Even at low concentrations, there may be a potential for exposure to high concentrations of lead depending on the activities performed that disturb the lead-containing materials. At low lead concentrations, conducting a risk assessment to assess the potential for exposure is required to determine the need to follow precautionary measures.
4. Disposal of construction waste containing lead must be done in accordance with O.Reg 347/90 – General Waste Management, as amended, under the Ontario Environmental Protection Act and the federal Transportation of Dangerous Goods Act. The classification of the waste is dependent upon the result(s) of leachate test(s). The waste can be classified as “hazardous, “non-hazardous” or “registerable solid waste” depending on the results of the leachate test.

### **3.4 MERCURY**

1. All work involving disturbance of mercury-containing equipment must be done in accordance with O.Reg 490/09.
2. Follow recommendations provided in the MoL Guideline entitled “The Safe Handling of Mercury: A Guide for the Construction Industry”. This document provides advice on how to reduce the risk of mercury exposure, and outlines clean-up methods for spills.
3. When removal of fluorescent light tubes is required, the tubes should be removed intact from the fixtures. Other sources of liquid mercury should be removed intact to prevent worker exposure.
4. Disposal of waste containing mercury must be done in accordance with “General – Waste Management” O.Reg 347/90 (as amended) under the Ontario Environmental Protection Act and the federal Transportation of Dangerous Goods Act.

### **3.5 SILICA**

1. Comply with Ontario Regulations O.Reg. 490/09 when performing works that may disturb silica-containing materials. The regulation provides requirements for allowable exposure levels.
2. Silica dust can be generated through such processes as blasting, grinding, crushing, and sandblasting silica-containing material. Since silica is present in select materials within the project area, appropriate respiratory protection and ventilation must be donned during the demolition and modifications of these structures.
3. Follow recommendations provided in the MoL Guideline entitled "Guideline: Silica on Construction Projects". This document classifies all silica disturbances as Type 1, Type 2 or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. These work procedures shall be followed when performing work involving the disturbance of silica-containing materials.

### **3.6 OZONE DEPLETING SUBSTANCES**

1. When suspected halocarbon-containing equipment is taken out of service, the halocarbon refrigerants must be captured and reclaimed by a licensed technician. The presence of halocarbon refrigerants within unit's no longer in service should be verified. If halocarbon refrigerants are found to be present, they must be captured and reclaimed by a licensed technician. Appropriate records of equipment decommissioning must be maintained in accordance with requirements of the Federal Halocarbon Regulations, 2003.

**END OF SECTION**

**Part 1            General**

**1.1            DEFINITIONS**

- .1      Activity: element of Work performed during course of Project. Activity normally has expected duration, and expected cost and expected resource requirements. Activities can be subdivided into tasks.
- .2      Bar Chart (GANTT Chart): graphic display of schedule-related information. In typical bar chart, activities or other Project elements are listed down left side of chart, dates are shown across top, and activity durations are shown as date-placed horizontal bars. Generally Bar Chart should be derived from commercially available computerized project management system.
- .3      Baseline: original approved plan (for project, work package, or activity), plus or minus approved scope changes.
- .4      Master Plan: summary-level schedule that identifies major activities and key milestones.
- .5      Milestone: significant event in project, usually completion of major deliverable.
- .6      Project Schedule: planned dates for performing activities and the planned dates for meeting milestones. Dynamic, detailed record of tasks or activities that must be accomplished to satisfy Project objectives. Monitoring and control process involves using Project Schedule in executing and controlling activities and is used as basis for decision making throughout project life cycle.
- .7      Project Planning, Monitoring and Control System: overall system operated by Departmental Representative to enable monitoring of project work in relation to established milestones.

**1.2            REQUIREMENTS**

- .1      Ensure Master Plan and Detail Schedules are practical and remain within specified construction time.
- .2      Plan to complete Work in accordance with prescribed milestones and time frame.
- .3      Limit activity durations to maximum of approximately 20 working days, to allow for progress reporting.
- .4      Ensure that it is understood that Award of Contract or time of beginning, rate of progress, Interim Certificate and Final Certificate as defined times of completion are of essence of this contract.

**1.3            SUBMITTALS**

- .1      Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2      Submit to Departmental Representative within 5 working days of Award of Contract Bar (GANTT) Chart as Master Plan for planning, monitoring and reporting of project progress.
- .3      Submit Project Schedule to Departmental Representative within 5 working days of receipt of acceptance of Master Plan.

**1.4 MASTER PLAN**

- .1 Structure schedule to allow orderly planning, organizing and execution of Work as Bar Chart (GANTT).
- .2 Departmental Representative will review and return reviewed schedules within 10 working days.
- .3 Revise impractical schedule and resubmit within 5 working days.
- .4 Accepted revised schedule will become Master Plan and be used as baseline for updates.

**1.5 PROJECT SCHEDULE**

- .1 Develop detailed Project Schedule derived from Master Plan.
- .2 Ensure detailed Project Schedule includes as minimum milestone and activity types as follows:
  - .1 Award.
  - .2 Health and Safety plan: 4 weeks after award.
  - .3 Shop Drawings, Samples; 4 weeks after award.
  - .4 Permits.
  - .5 Equipment manufacture and delivery dates
  - .6 Site Mobilization
  - .7 Demolition
  - .8 Partitions
  - .9 Flooring
  - .10 Ceilings
  - .11 Steel Casework
  - .12 Plumbing
  - .13 Lighting
  - .14 Electrical
  - .15 Piping
  - .16 Controls
  - .17 Heating, Ventilating and Air Conditioning
  - .18 Fire Systems
  - .19 Project interim (substantial) completion; 17 weeks after award.
  - .20 Project final completion; 20 weeks after award.

**1.6 PROJECT SCHEDULE REPORTING**

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

**1.7 PROJECT MEETINGS**

- .1 Discuss Project Schedule at regular site meetings, identify activities that are behind schedule and provide measures to regain slippage. Activities considered behind

schedule are those with projected start or completion dates later than current approved dates shown on baseline schedule.

- .2 Weather related delays with their remedial measures will be discussed and negotiated.

**Part 2            Products**

**2.1                NOT USED**

- .1 Not used.

**Part 3            Execution**

**3.1                NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1 General****1.1 REFERENCES**

- .1 Section 01 78 00 - Closeout Submittals.

**1.2 ADMINISTRATIVE**

- .1 Submit to Departmental Representative submittals listed for review. Submit promptly and in orderly sequence to not cause delay in Work. Failure to submit in ample time is not considered sufficient reason for extension of Contract Time and no claim for extension by reason of such default will be allowed.
- .2 Do not proceed with Work affected by submittal until review is complete.
- .3 Present shop drawings, product data, samples and mock-ups in SI Metric units.
- .4 Where items or information is not produced in SI Metric units converted values are acceptable.
- .5 Review submittals prior to submission to Departmental Representative. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and considered rejected.
- .6 Notify Departmental Representative in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.
- .7 Verify field measurements and affected adjacent Work are co-ordinated.
- .8 Contractor's responsibility for errors and omissions in submission is not relieved by Departmental Representative's review of submittals.
- .9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Departmental Representative review.
- .10 Keep one reviewed copy of each submission on site.

**1.3 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 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario.
- .3 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been co-ordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

- .4 Allow fifteen (15) days for Departmental Representative's review of each submission.
- .5 Adjustments made on shop drawings by Departmental Representative are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Departmental Representative prior to proceeding with Work.
- .6 Make changes in shop drawings as Departmental Representative may require, consistent with Contract Documents. When resubmitting, notify Departmental Representative in writing of revisions other than those requested.
- .7 Accompany submissions with transmittal letter, containing:
  - .1 Date.
  - .2 Project title and number.
  - .3 Contractor's name and address.
  - .4 Identification and quantity of each shop drawing, product data and sample.
  - .5 Other pertinent data.
- .8 Submissions include:
  - .1 Date and revision dates.
  - .2 Project title and number.
  - .3 Name and address of:
    - .1 Subcontractor.
    - .2 Supplier.
    - .3 Manufacturer.
  - .4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
  - .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.
- .9 After Departmental Representative's review, distribute copies.
- .10 Submit 6 prints of shop drawings for each requirement requested in specification Sections and as Departmental Representative may reasonably request.
- .11 Submit 6 prints and electronic copies of product data sheets or brochures for requirements requested in specification Sections and as requested by Departmental Representative where shop drawings will not be prepared due to standardized manufacture of product.

- .12 Submit 6 prints and electronic copies of test reports for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Report signed by authorized official of testing laboratory that material, product or system identical to material, product or system to be provided has been tested in accord with specified requirements.
  - .2 Testing must have been within 3 years of date of contract award for project.
- .13 Submit 6 prints and electronic copies of certificates for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Statements printed on manufacturer's letterhead and signed by responsible officials of manufacturer of product, system or material attesting that product, system or material meets specification requirements.
  - .2 Certificates must be dated after award of project contract complete with project name.
- .14 Submit 6 prints and electronic copies of manufacturers instructions for requirements requested in specification Sections and as requested by Departmental Representative.
  - .1 Pre-printed material describing installation of product, system or material, including special notices and Material Safety Data Sheets concerning impedances, hazards and safety precautions.
- .15 Submit electronic copies of Manufacturer's Field Reports for requirements requested in specification Sections and as requested by Departmental Representative.
- .16 Documentation of the testing and verification actions taken by manufacturer's representative to confirm compliance with manufacturer's standards or instructions.
- .17 Submit 6 prints and electronic copies of Operation and Maintenance Data for requirements requested in specification Sections and as requested by Departmental Representative.
- .18 Delete information not applicable to project.
- .19 Supplement standard information to provide details applicable to project.
- .20 If upon review by Departmental Representative, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .21 The review of shop drawings by the Departmental Representative is for sole purpose of ascertaining conformance with general concept.
  - .1 This review shall not mean that the 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 triplicate as requested in respective specification Sections. Label samples with origin and intended use.
- .2 Deliver samples prepaid to Departmental Representative's business address or as directed.
- .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 in accordance with 01 45 00 - Quality Control.

**1.6 CERTIFICATES AND TRANSCRIPTS**

- .1 Immediately after award of Contract, submit Workplace Safety and Insurance Board (WSIB) status.
- .2 Provide notice of Project and Form 1000 (from the Ministry of Labour).
- .3 Provide emergency contact list or emergency procedures on site.

**Part 2 Products****2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution****3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General****1.1 REFERENCES**

- .1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
  - .1 Material Safety Data Sheets (MSDS).
- .2 Province of Ontario
  - .1 Occupational Health and Safety Act and Regulations for Construction Projects, R.S.O. 1990, c. 0.1, as amended and O. Reg. 213/91, as amended.

**1.2 SUBMITTALS**

- .1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit site-specific Health and Safety Plan and prior to commencement of Work. Health and Safety Plan must include:
  - .1 Results of site specific safety hazard assessment.
  - .2 Results of safety and health risk or hazard analysis for site tasks and operation found in work plan.
- .3 Submit electronic copies of Contractor's authorized representative's work site health and safety inspection reports to Departmental Representative and authority having jurisdiction, weekly.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit WHMIS MSDS - Material Safety Data Sheets. Submit MSDS minimum 5 working days prior to commencing the Work.
- .7 Departmental Representative will review Contractor's site-specific Health and Safety Plan and provide comments to Contractor within 10 days after receipt of plan. Revise plan as appropriate and resubmit plan to Departmental Representative within 5 days after receipt of comments from Departmental Representative.
- .8 Departmental Representative's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .9 Medical Surveillance: where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Departmental Representative.
- .10 On-site Contingency and Emergency Response Plan: address standard operating procedures to be implemented during emergency situations.
- .11 Submit to the Departmental Representative for review, one complete Hazard Assessment Site Specific Health and Safety Plan (HASSSP) in an indexed format, and in a three-ring binder. Once the Departmental Representative has reviewed and accepts the HASSSP binder the Departmental Representative will return to contractor for site use.

**1.3 FILING OF NOTICE**

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

**1.4 SAFETY ASSESSMENT**

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

**1.5 MEETINGS**

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

**1.6 REGULATORY REQUIREMENTS**

- .1 Do Work in accordance with Section 01 41 00 - Regulatory Requirements.

**1.7 GENERAL REQUIREMENTS**

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to beginning site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Departmental Representative will respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.

**1.8 RESPONSIBILITY**

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

**1.9 COMPLIANCE REQUIREMENTS**

- .1 Comply with Ontario Health and Safety Act, R.S.O.
- .2 Comply with Health and Safety requirements of CSA Z462 'Workplace Electrical Safety'.
- .3 Comply with the Health and Safety requirements of CSA Z460 Control of Hazardous Energy.

**1.10 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 Departmental Representative verbally and in writing.

**1.11 ACCIDENT AND INCIDENT REPORTS**

- .1 The contractor shall advise the Departmental Representative of any accident, injury, near-miss incident, fire, explosion or chemical spill occurring at the Work site and to any governmental official visiting the site.

- .2 The contractor shall provide a written report within 24 hours of any accident, injury, near-miss incident, fire explosion or chemical spill.

#### **1.12 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.

#### **1.13 CORRECTION OF NON-COMPLIANCE**

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

#### **1.14 BLASTING**

- .1 Blasting or other use of explosives is not permitted.

#### **1.15 POWDER ACTUATED DEVICES**

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

#### **1.16 WORK STOPPAGE**

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

### **Part 2 Products**

#### **2.1 NOT USED**

- .1 Not used.

### **Part 3 Execution**

#### **3.1 NOT USED**

- .1 Not used.

**END OF SECTION**

**Part 1 General****1.1 REFERENCES AND CODES**

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

**1.2 HAZARDOUS MATERIAL DISCOVERY**

- .1 Asbestos: demolition of spray or trowel-applied asbestos is hazardous to health. Stop work immediately when material resembling spray or trowel-applied asbestos is encountered during demolition work. Notify 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.

**1.3 BUILDING SMOKING ENVIRONMENT**

- .1 Comply with smoking restrictions and municipal by-laws.

**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            PROCEDURES**

- .1        Notify appropriate agency and Departmental Representative in advance of requirement for tests, in order that attendance arrangements can be made.
- .2        Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in orderly sequence to not cause delays in Work.
- .3        Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

**1.2            REPORTS**

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

**1.3            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 as specified in specific Section.
- .3        Prepare mock-ups for Departmental Representative review with reasonable promptness and in orderly sequence, to not cause delays in Work.
- .4        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.
- .5        If requested, Departmental Representative will assist in preparing schedule fixing dates for preparation.
- .6        Remove mock-up at conclusion of Work or when acceptable to Departmental Representative.
- .7        Mock-ups may remain as part of Work.
- .8        Specification section identifies whether mock-up may remain as part of Work or if it is to be removed and when.

**1.4            MILL TESTS**

- .1        Submit mill test certificates as requested.

**1.5            EQUIPMENT AND SYSTEMS**

- .1        Submit adjustment and balancing reports for mechanical, electrical, and building equipment systems.

**Part 2            Products**

**2.1            NOT USED**

.1            Not Used.

**Part 3            Execution**

**3.1            NOT USED**

.1            Not Used.

**END OF SECTION**

**Part 1 General****1.1 SUBMITTALS**

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

**1.2 INSTALLATION AND REMOVAL**

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Remove from site all such work after use.

**1.3 WATER SUPPLY**

- .1 Departmental Representative will provide continuous supply of potable water for construction use.
- .2 Arrange for connection with appropriate utility company and pay costs for installation, maintenance and removal.

**1.4 TEMPORARY HEATING AND VENTILATION**

- .1 Fuel burning heaters not acceptable for use on this project.
- .2 Provide temporary heat and ventilation in enclosed areas as required to:
  - .1 Facilitate progress of Work.
  - .2 Protect Work and products against dampness and cold.
  - .3 Prevent moisture condensation on surfaces.
  - .4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.
  - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .3 Maintain temperatures of minimum 15 degrees C in areas where construction is in progress.
- .4 Ventilating:
  - .1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
  - .2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
  - .3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
  - .4 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.
- .5 Permanent heating system of building, to be used when available. Be responsible for damage to heating system if use is permitted.
- .6 Departmental Representative will pay utility charges when temporary heat source is existing building equipment.



- .7 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
  - .1 Conform with applicable codes and standards.
  - .2 Enforce safe practices.
  - .3 Prevent abuse of services.
  - .4 Prevent damage to finishes.
  - .5 Vent direct-fired combustion units to outside.

## **1.5 TEMPORARY POWER AND LIGHT**

- .1 Departmental Representative will pay for temporary power during construction for temporary lighting and operating of power tools, to a maximum supply of 230 volts 30 amps.
- .2 Connect to existing power supply in accordance with Canadian Electrical Code.
- .3 Electrical power and lighting systems installed under this Contract may be used for construction requirements only with prior approval of Departmental Representative provided that guarantees are not affected. Make good damage to electrical system caused by use under this Contract. Replace lamps which have been used for more than 2 months.

## **1.6 TEMPORARY COMMUNICATION FACILITIES**

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

## **1.7 FIRE PROTECTION**

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.

## **Part 2 Products**

### **2.1 NOT USED**

- .1 Not Used.

## **Part 3 Execution**

### **3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General****1.1 INSTALLATION AND REMOVAL**

- .1 Provide temporary controls in order to execute Work expeditiously.
- .2 Remove from site all such work after use.

**1.2 DUST TIGHT SCREENS**

- .1 Provide dust tight screens or partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.
- .2 Maintain and relocate protection until such work is complete.

**1.3 PROTECTION OF BUILDING FINISHES**

- .1 Provide protection for finished and partially finished building finishes and equipment during performance of Work.
- .2 Provide necessary screens, covers, and hoardings.
- .3 Confirm with Departmental Representative locations and installation schedule 10 days prior to installation.
- .4 Be responsible for damage incurred due to lack of or improper protection.

**1.4 PROTECTION OF BUILDING OCCUPANTS**

- .1 Erect barricades, guardrails and hoarding to delineate the construction site and provide protection to building occupants.

**1.5 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling.

**Part 2 Products****2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution****3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General****1.1 REFERENCES**

- .1 Within text of each specifications section, reference may be made to reference standards. Conform to these reference standards, in whole or in part as specifically requested in specifications.

**1.2 QUALITY**

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

**1.3 STORAGE, HANDLING AND PROTECTION**

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

**1.4 MANUFACTURER'S INSTRUCTIONS**

- .1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.
- .2 Notify Departmental Representative in writing, of conflicts between specifications and manufacturer's instructions, so that Departmental Representative will establish course of action.

- .3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Departmental Representative to require removal and re-installation at no increase in Contract Price or Contract Time.

#### **1.5 QUALITY OF WORK**

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

#### **1.6 CONCEALMENT**

- .1 In finished areas conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.
- .2 Before installation inform Departmental Representative if there is interference. Install as directed by Departmental Representative.

#### **1.7 LOCATION OF FIXTURES**

- .1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.
- .2 Inform Departmental Representative of conflicting installation. Install as directed.

#### **1.8 FASTENINGS - EQUIPMENT**

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

#### **1.9 PROTECTION OF WORK IN PROGRESS**

- .1 Prevent overloading of parts of building. Do not cut, drill or sleeve load bearing structural member, unless specifically indicated without written approval of Departmental Representative.

#### **1.10 EXISTING UTILITIES**

- .1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and/or building occupants.
- .2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

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**Part 2            Products**

**2.1                NOT USED**

.1                Not Used.

**Part 3            Execution**

**3.1                NOT USED**

.1                Not Used.

**END OF SECTION**

**Part 1 General****1.1 SUBMITTALS**

- .1 Submittals: in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit written request in advance of cutting or alteration which affects:
  - .1 Structural integrity of elements of project.
  - .2 Integrity of weather-exposed or moisture-resistant elements.
  - .3 Efficiency, maintenance, or safety of operational elements.
  - .4 Visual qualities of sight-exposed elements.
  - .5 Work of Departmental Representative or separate contractor.
- .3 Include in request:
  - .1 Identification of project.
  - .2 Location and description of affected Work.
  - .3 Statement on necessity for cutting or alteration.
  - .4 Description of proposed Work, and products to be used.
  - .5 Alternatives to cutting and patching.
  - .6 Effect on Work of Departmental Representative or separate contractor.
  - .7 Written permission of affected separate contractor.
  - .8 Date and time work will be executed.

**1.2 MATERIALS**

- .1 Required for original installation.

**1.3 PREPARATION**

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

**1.4 EXECUTION**

- .1 Execute cutting, fitting, and patching to complete Work.
- .2 Fit several parts together, to integrate with other Work.
- .3 Uncover Work to install ill-timed Work.

- .4 Remove and replace defective and non-conforming Work.
- .5 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.
- .6 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.
- .7 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.
- .8 Restore work with new products in accordance with requirements of Contract Documents.
- .9 Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .10 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.
- .11 Refinish surfaces to match adjacent finishes: Refinish continuous surfaces to nearest intersection. Refinish assemblies by refinishing entire unit.
- .12 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

**Part 2 Products****2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution****3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General****1.1 PROJECT CLEANLINESS**

- .1 Maintain Work in tidy condition, free from accumulation of waste products and debris, other than that caused by Departmental Representative or other Contractors.
- .2 Remove waste materials from site at daily regularly scheduled times or dispose of as directed by Departmental Representative. Do not burn waste materials on site, unless approved by Departmental Representative.
- .3 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .4 Provide on-site containers for collection of waste materials and debris.
- .5 Provide and use marked separate bins for recycling.
- .6 Dispose of waste materials and off site.
- .7 Clean interior areas prior to start of finishing work, and maintain areas free of dust and other contaminants during finishing operations.
- .8 Store volatile waste in covered metal containers, and remove from premises at end of each working day.
- .9 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.
- .10 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

**1.2 FINAL CLEANING**

- .1 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .2 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.
- .3 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, and floors.
- .4 Clean lighting reflectors, lenses, and other lighting surfaces.
- .5 Vacuum clean and dust building interiors, behind grilles, louvres and screens.
- .6 Wax, seal, shampoo or prepare floor finishes, as recommended by manufacturer.



- .7 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.
- .8 Remove dirt and other disfiguration from exterior surfaces resulting from the work of this contract.
- .9 Clean equipment and fixtures to sanitary condition; clean or replace filters of mechanical equipment.
- .10 Remove debris and surplus materials from crawl areas and other accessible concealed spaces.

**1.3 WASTE MANAGEMENT AND DISPOSAL**

- .1 Separate waste materials for reuse and recycling.

**Part 2 Products**

**2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution**

**3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**

**Part 1 General****1.1 ADMINISTRATIVE REQUIREMENTS**

- .1 Pre-warranty Meeting:
  - .1 Convene meeting four weeks prior to contract completion with contractor's representative and Departmental Representative in accordance with Section 01 31 19 - Project Meetings to:
    - .1 Verify Project requirements.
    - .2 Review manufacturer's installation instructions and warranty requirements.
  - .2 Departmental Representative 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.
  - .4 Ensure contact is located within local service area of warranted construction, is continuously available, and is responsive to inquiries for warranty work action.

**1.2 ACTION AND INFORMATIONAL SUBMITTALS**

- .1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Two weeks prior to Interim (Substantial) Performance of the Work, submit to the Departmental Representative four final copies of operating and maintenance manuals in English and French.
- .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.

**1.3 FORMAT**

- .1 Organize data as instructional manual.
- .2 Binders and, CD/USB: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets, CD/USB.
- .3 When multiple binders and CD/USB, are used correlate data into related consistent groupings.
  - .1 Identify contents of each binder on spine.
- .4 Cover: identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .5 Arrange content by systems, under Section numbers and sequence of Table of Contents.

- .6 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .7 Text: manufacturer's printed data, or typewritten data.
- .8 Drawings: provide with reinforced punched binder tab.
  - .1 Bind in with text; fold larger drawings to size of text pages.
  - .2 Provide two sets of Drawings.

#### **1.4 CONTENTS - PROJECT RECORD DOCUMENTS**

- .1 Table of Contents for Each Volume: provide title of project;
  - .1 Date of submission; names.
  - .2 Addresses, and telephone numbers of Consultant and Contractor with name of responsible parties.
  - .3 Schedule of products and systems, indexed to content of volume.
- .2 For each product or system:
  - .1 List names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
- .3 Product Data: mark each sheet to identify specific products and component parts, and data applicable to installation; delete inapplicable information.
- .4 Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
- .5 Typewritten Text: as required to supplement product data.
  - .1 Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

#### **1.5 AS -BUILT DOCUMENTS AND SAMPLES**

- .1 Maintain, at site for Departmental Representative 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 Store record documents and samples in field office apart from documents used for construction.
  - .1 Provide files, racks, and secure storage.
- .3 Label record documents and file in accordance with Section number listings in List of Contents of this Project Manual.
  - .1 Label each document "PROJECT RECORD" in neat, large, printed letters.

- .4 Maintain record documents in clean, dry and legible condition.
  - .1 Do not use record documents for construction purposes.
- .5 Keep record documents and samples available for inspection by Departmental Representative.

## **1.6 RECORDING INFORMATION ON PROJECT RECORD DOCUMENTS**

- .1 Record information on set of opaque drawings, and in copy of Project Manual, provided by Departmental Representative.
- .2 Use felt tip marking pens, maintaining separate colours for each major system, for recording information.
- .3 Record information concurrently with construction progress.
  - .1 Do not conceal Work until required information is recorded.
- .4 Contract Drawings and shop drawings: mark each item to record actual construction, including:
  - .1 Measured depths of elements of foundation in relation to finish first floor datum.
  - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
  - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
  - .4 Field changes of dimension and detail.
  - .5 Changes made by change orders.
  - .6 Details not on original Contract Drawings.
  - .7 References to related shop drawings and modifications.
- .5 Specifications: mark each item to record actual construction, including:
  - .1 Manufacturer, trade name, and catalogue number of each product actually installed, particularly optional items and substitute items.
  - .2 Changes made by Addenda and change orders.
- .6 Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.
- .7 Provide digital photos, if requested, for site records.

## **1.7 EQUIPMENT AND SYSTEMS**

- .1 For each item of equipment and each system include description of unit or system, and component parts.
  - .1 Give function, normal operation characteristics and limiting conditions.
  - .2 Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.

- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences.
  - .1 Include regulation, control, stopping, shut-down, and emergency instructions.
  - .2 Include summer, winter, and any special operating instructions.
- .5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
- .6 Provide servicing and lubrication schedule, and list of lubricants required.
- .7 Include manufacturer's printed operation and maintenance instructions.
- .8 Include sequence of operation by controls manufacturer.
- .9 Provide original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
- .10 Provide installed control diagrams by controls manufacturer.
- .11 Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
- .12 Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
- .13 Provide list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
- .14 Include test and balancing reports as specified in Section 01 45 00 - Quality Control
- .15 Additional requirements: as specified in individual specification sections.

## **1.8 MATERIALS AND FINISHES**

- .1 Building products, applied materials, and finishes: include product data, with catalogue number, size, composition, and colour and texture designations.
- .2 Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .3 Moisture-protection and weather-exposed products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- .4 Additional requirements: as specified in individual specifications sections.

## **1.9 MAINTENANCE MATERIALS**

- .1 Spare Parts:
  - .1 Provide spare parts, in quantities specified in individual specification sections.
  - .2 Provide items of same manufacture and quality as items in Work.
  - .3 Deliver to Departmental Representative, place and store to location as directed.
  - .4 Receive and catalogue items.

- .1 Submit inventory listing to Departmental Representative.
    - .2 Include approved listings in Maintenance Manual.
  - .5 Obtain receipt for delivered products and submit prior to final payment.
- .2 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 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.
  - .5 Obtain receipt for delivered products and submit prior to final payment.
- .3 Special Tools:
  - .1 Provide special tools, in quantities specified in individual specification section.
  - .2 Provide items with tags identifying their associated function and equipment.
  - .3 Deliver to 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.

#### **1.10 DELIVERY, STORAGE AND HANDLING**

- .1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .2 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .3 Store components subject to damage from weather in weatherproof enclosures.
- .4 Store paints and freezable materials in a heated and ventilated room.
- .5 Remove and replace damaged products at own expense and for review by Departmental Representative.

#### **1.11 WARRANTIES AND BONDS**

- .1 Develop warranty management plan to contain information relevant to Warranties.
- .2 Submit warranty management plan, 30 days before planned pre-warranty conference, to Departmental Representative approval.
- .3 Warranty management plan to include required actions and documents to assure that Departmental Representative receives warranties to which it is entitled.
- .4 Provide plan in narrative form and contain sufficient detail to make it suitable for use by future maintenance and repair personnel.
- .5 Submit, warranty information made available during construction phase, to Departmental Representative for approval prior to each monthly pay estimate.

- .6 Assemble approved information in binder, submit upon acceptance of work and organize binder as follows:
  - .1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.
  - .2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.
  - .3 Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten (10) 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 and bonds until time specified for submittal.
- .7 Except for items put into use with Departmental Representatives permission, leave date of beginning of time of warranty until Date of Substantial Performance is determined.
- .8 Conduct joint 9 month warranty inspection, measured from time of acceptance, by Departmental Representative.
- .9 Include information contained in warranty management plan 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.
  - .2 Provide list for each warranted equipment, item, feature of construction or system indicating:
    - .1 Name of item.
    - .2 Model and serial numbers.
    - .3 Location where installed.
    - .4 Name and phone numbers of manufacturers or suppliers.
    - .5 Names, addresses and telephone numbers of sources of spare parts.
    - .6 Warranties and terms of warranty: include one-year overall warranty of construction. Indicate items that have extended warranties and show separate warranty expiration dates.
    - .7 Cross-reference to warranty certificates as applicable.
    - .8 Starting point and duration of warranty period.
    - .9 Summary of maintenance procedures required to continue warranty in force.
    - .10 Cross-Reference to specific pertinent Operation and Maintenance manuals.
    - .11 Organization, names and phone numbers of persons to call for warranty service.
    - .12 Typical response time and repair time expected for various warranted equipment.
  - .3 Contractor's plans for attendance at 9 month post-construction warranty inspections.
  - .4 Procedure and status of tagging of equipment covered by extended warranties.
  - .5 Post copies of instructions near selected pieces of equipment where operation is critical for warranty and/or safety reasons.

- .10 Respond in timely manner to oral or written notification of required construction warranty repair work.
- .11 Written verification to follow oral instructions.

**1.12 WARRANTY TAGS**

- .1 Tag, at time of installation, each warranted item. Provide durable, oil and water resistant tag approved by Departmental Representative.
- .2 Attach tags with copper wire and spray with waterproof silicone coating.
- .3 Leave date of acceptance until project is accepted for occupancy.
- .4 Indicate following information on tag:
  - .1 Type of product/material.
  - .2 Model number.
  - .3 Serial number.
  - .4 Contract number.
  - .5 Warranty period.
  - .6 Inspector's signature.
  - .7 Construction Contractor.

**Part 2 Products****2.1 NOT USED**

- .1 Not Used.

**Part 3 Execution****3.1 NOT USED**

- .1 Not Used.

**END OF SECTION**



# Designated Substance Report

Room 1005 - 1024

Neatby Building, Central Experimental Farm

**DESIGNATED SUBSTANCE REPORT**  
**ROOM 1005 - 1024**  
**NEATBY BUILDING- CENTRAL EXPERIMENTAL FARM**  
**OTTAWA, ONTARIO**

Prepared For:



**Agriculture and  
Agri-Food Canada**

Anthony Cesare  
960 Carling Avenue  
Ottawa, Ontario  
K1A 0C6

Prepared by:



5710 Akins Road  
Ottawa, Ontario  
K2S 1B8

A handwritten signature in blue ink, appearing to read 'A. Nguyen'.

Adam Nguyen  
Environmental Technician

A handwritten signature in blue ink, appearing to read 'Trent Windsor'.

Trent Windsor, C.E.T.  
Principal, Project Manager

January 2018  
CM3 Reference: TLW-1743

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## EXECUTIVE SUMMARY

CM3 Environmental Inc. (CM3) was retained by Agriculture and Agri-Food Canada (AAFC) to conduct a Designated Substance Survey (DSS) in rooms 1005 to 1024 of the Neatby Building located at 960 Carling Avenue in Ottawa, Ontario (Site). It is understood that the DSS was commissioned as a matter of due diligence prior to proposed renovations at the site.

The DSS is prepared to satisfy Section 30 of the Occupational Health and Safety Act and Ontario Regulation 278/05 "Regulation Respecting Asbestos on Construction Projects and in Building and Repair Operations" (O.Reg. 278/05) in order to provide an inventory of designated and hazardous materials that may be present at the site.

CM3 personnel completed the site reconnaissance on December 19<sup>th</sup>, 2017. Based on the findings of the visual inspection, suspect materials were documented, collected and subsequently submitted for analysis at a 3<sup>rd</sup> party analytical laboratory.

The following findings and recommendations are based on the DSS conducted by CM3.

## FINDINGS

### General

The Occupational Health and Safety Act requires building owners, managers and their agents to notify all employees, and contractors of the presence of designated substances at a project site.

### Asbestos

Confirmed Asbestos Containing Materials (ACMs) identified at the site include the following:

- 9" x 9" Vinyl Tiles (green) located in rooms 1005, 1008, 1015, 1015A, 1015B, 1017 and 1024; and
- Parging compound on the pipe fittings.

The following recommendations are based on the requirements of Ontario Regulation 278/05 – Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations:

1. Provide a copy of this report or applicable portions of this report to prospective bidders.
2. Remove all asbestos materials that may be disturbed during the renovations. The asbestos materials summary table in Appendix A lists the recommended/minimum abatement operation for each confirmed asbestos containing material identified.
3. The asbestos abatement must be conducted by an experienced competent asbestos abatement contractor. The contractor should be able to show proof of adequate experience, employee training, workers compensation documentation, and asbestos liability insurance.
4. All asbestos wastes generated by asbestos abatement operations must be packaged and disposed of in accordance with Waste Regulation 347/90 and O.Reg 278/05. Asbestos waste may be disposed of at any municipal landfill approved by the MOE to accept this type of waste pending notification to the landfill operator. Although a waste manifest is not

required for the transportation or disposal of asbestos waste, it is good management practice to keep a record of the amount removed and sent to landfill.

5. An asbestos waste management procedure should be prepared.

### **Benzene**

Excessive heat must not be used on wire coatings, plastic materials, or PVC as heat may release benzene. If these practices cannot be avoided, then implement control measures appropriate for the control of benzene prescribed in Ontario Regulation 490/09 – Designated Substances.

### **Lead**

Lead based paints and lead containing paints were observed at the site. Lead is likely present in the solder on copper fittings observed in the building. All painted surfaces are expected to contain some level of lead and such the following is recommended:

1. Measures must be implemented to control lead dust hazard during any construction or demolition activity that would result in the disturbance of any painted surface or solder. The measures implemented must be in accordance with the “Guideline – Lead on Construction Projects” (Ministry of Labour, September 2004).

### **Mercury**

Mercury vapour is present in fluorescent light tubes observed in the labs.

If the florescent light fixtures are to be replaced the mercury containing fluorescent light tubes must be carefully removed and containerized for disposal in accordance with Ontario Regulation 347/09 (as amended).

### **Ozone-Depleting Substances (ODS)**

If any ozone-depleting refrigerant containing equipment is to be disturbed the refrigerant must be removed by an individual, licensed to perform such work in accordance with the Federal Halocarbon Regulation, 2003 SOR/2003-289 under the Canadian Environmental Protection Act, prior to the removal and disposal of any ozone-depleting substance containing equipment.

### **Silica**

Based on CM3 observations silica is present in the plaster, vinyl floor tiles, drywall, drywall joint compound, and acoustic ceiling tiles at the site.

Measures prescribed in the Ministry of Labour’s Guideline titled “Silica on Construction Projects”, should be followed during the disturbance of any silica containing material.

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## **Vinyl Chloride**

Excessive heat must not be used on wire coatings, plastic materials, or PVC as heat may release vinyl chloride. If these practices cannot be avoided, then implement control measures appropriate for the control of vinyl chloride prescribed in Ontario Regulation 490/09 – Designated Substances.

## **Other Designated Substances and Hazardous Materials**

Arsenic, Acrylonitrile, Isocyanates, Coke Oven Emissions, Ethylene Oxide, PCBs, and, Urea Formaldehyde Foam Insulation (UFFI) were not observed at the site.

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Appendix A: Certificate of Laboratory Analysis

## **1.0 INTRODUCTION**

CM3 Environmental Inc. (CM3) was retained by Agriculture and Agri-Food Canada (AAFC) to conduct a Designated Substance Survey (DSS) in rooms 1005 to 1024 of the Neatby Building located at 960 Carling Avenue in Ottawa, Ontario (Site). It is understood that the DSS was commissioned as a matter of due diligence prior to proposed renovations at the site.

## **2.0 OBJECTIVE**

The DSS is prepared to satisfy Section 30 of the Occupational Health and Safety Act and Ontario Regulation 278/05 “Regulation Respecting Asbestos on Construction Projects and in Building and Repair Operations” (O.Reg. 278/05) in order to identify any designated and hazardous materials that may be present at the site prior to the planned renovations.

## **3.0 SCOPE OF WORK**

The scope of work included the following activities:

- Preparation of a Health and Safety Plan (HASP) prior to conducting the field work;
- Review existing asbestos survey reports for the site;
- Room by room inspection and sampling of potential hazardous materials within the building;
- Documenting the location of potential hazardous materials and estimating quantities;
- Submission of representative samples of potential hazardous materials for laboratory analysis; and
- Preparation of a report summarizing the designated substances survey.

## **4.0 DESIGNATED SUBSTANCE SURVEY METHODOLOGY AND RESULTS**

The field survey included the visual identification of potential designated substances and collection of samples for laboratory analysis to confirm the absence/presence of hazardous materials.

Designated substances in Ontario are defined in accordance with OHSA as a biological, chemical, or physical agent or combination thereof as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled. Under section 30 of OHSA – “Duty of Project Owners”, owners are required to determine if designated substances are present at a project site and disclose this information to project participants.

Designated substances that individuals are likely to be exposed to during construction projects include asbestos, lead and silica. The Ontario Ministry of Labour provides guidance regarding these substances during construction in the following documents:

1. Ontario Regulation 278/05 (O.Reg. 278/05) – Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations.
2. Guideline – Silica on Construction Projects, Ministry of Labour 2004.
3. Guideline – Lead on Construction Projects, Ministry of Labour 2004.

The following sections provide an overview of the regulated designated substances and the potential presence of such substances at the site.

#### **4.1 Acrylonitrile**

Acrylonitrile is a chemical compound that exists as a clear pungent smelling liquid. Acrylonitrile is an important compound used in the production of other chemicals and products.

Acrylonitrile is highly flammable and toxic. When burned it releases hazardous compounds into the air including hydrogen sulfide..

Based on CM3 observations Acrylonitrile was not identified at the site during the DSS.

#### **4.2 Arsenic**

Arsenic is chemical element that occurs in several different minerals in nature. Arsenic is used in a wide variety of applications including the strengthening of steel and cooper alloys, it is a valuable semiconductor, and has been used in the production of herbicides and pesticides.

Arsenic is a known human carcinogen and potent poison.

Based on CM3 observations arsenic was not identified at the site during the DSS however small quantities are likely present in the paint observed throughout the site.

#### **4.3 Asbestos**

Asbestos is a group of naturally occurring mineral silicates that has been used in the manufacture of building materials due to their desirable physical properties. Asbestos was used in a number of building materials such as roofing shingles, acoustic ceiling tile, vinyl flooring, cement products, insulation and other applications.

The association between the inhalation of asbestos fibres and various respiratory diseases is undisputed.

Asbestos containing material (ACM) survey was conducted by CM3 as part of this DSS. Details of the ACM survey are presented in section 5.0.

#### **4.4 Benzene**

Benzene is a natural compound found in petroleum based products such as gasoline and diesel fuels, asphalt and other hydrocarbon based products. It is used as a catalyst in various chemical processes including the production of plastics, rubber, drugs and pesticides.

Benzene is a known human carcinogen. Exposure to airborne benzene has been linked to various forms of leukemia.

Benzene was not observed at the site during the DSS.

#### **4.5 Coke Oven Emissions**

Coke oven emissions are the airborne by-product resulting from the distillation of low-ash and sulfur coal or coke. Coke is a useful fuel, chemical reducer, and is even used in the production of Scotch whisky.



Coke oven emissions potentially cause lung and skin cancers.

Based on CM3 observations coke oven emissions are not present at the site.

#### **4.6 Ethylene Oxide**

Ethylene oxide is a colourless gas with a faint sweet odour. This organic compound has various applications in the chemical engineering industry.

Ethylene oxide is a known human carcinogen and poison. Chronic exposure is known to cause genetic mutations (damage caused to DNA resulting in physical mutations).

Based on observations noted during the DSS and historical use of the site, ethylene oxide is not present.

#### **4.7 Isocyanates**

Isocyanates are any organic compound that contain a specific chemical functional group made up of a specific structure of one atom of nitrogen, carbon, and oxygen. The presence of this functional group gives chemical compounds unique properties that may be exploited in the production of polymers. Isocyanate containing polymers are used in the manufacture of paints, foams, and electrical insulation.

All isocyanates must be treated as highly hazardous with inhalation being the primary exposure pathway.

Based on observations noted during the DSS and historical use of the site, Isocyanates are not present.

#### **4.8 Lead**

Lead is a naturally occurring metal element and is the most common metal found in the environment. Pure metallic lead was primarily used to make products such as electric storage batteries, ammunition, solder, radiation shields, pipes and sheaths for electric cables. The most common organic lead compounds are tetraethyl (TEL) and tetra methyl (TML) lead that were used as anti-knock agents in gasoline. Inorganic lead compounds such as lead oxides, chromates, carbonates and nitrates are commonly found in insecticides, pigments, paints, frits, glasses, plastics and rubber compounds.

The Canadian Federal Government has been limiting the amount of lead in paint to 0.5 percent (5,000 ppm) since 1976. Paint used in buildings before 1960 probably contained elevated levels of lead. If the building was built after 1980, it is unlikely that interior paint contains elevated concentrations of lead; if it was built after 1992, exterior paint probably does not contain lead. The Surface Coating Materials Regulation (SOR/2010-224 dated March, 2011), pursuant to the 2005 Hazardous Products Act, limits the allowed concentration of lead in a paint applied to manufactured products to 0.009 percent (90 ppm) of lead. Any paint containing lead at a concentration of 0.5% by weight (i.e. 5,000ug/g, or 5,000ppm) or greater is considered to be a lead-based paint (LBP). These paints represent the greatest potential exposure if disturbed. Paints confirmed to contain lead at a concentration of at least 0.009% by weight (i.e. 90ug/g, or 90ppm) but less than 0.5% by weight are considered to be lead-containing paints (LCP). These paints may present an exposure hazard depending on the type of work activities

(i.e. degree of disturbance) and length of exposure. Paint with lead concentrations below 0.009% by weight are not considered to be lead-containing and represent little to no lead exposure hazard.

Four (4) paint samples were collected as part of this assessment. Sample c Pb02 was reported to have a lead content of 0.629 % and is therefore considered to be a lead based paint. The remaining samples (Pb01 , Pb03 and Pb04) were found to be lead containing paints.

**Table 1: Summary of Laboratory Analytical Results – Lead**

Sample ID	Sample		Results (ppm)
	Description	Location	
Pb01	White wall paint	Room 1005	111
Pb02	Black wall paint	Room 1011	6290
Pb03	Light pink wall paint	Room 1024	828
Pb04	Beige wall paint	Room 1011	1430

#### **4.9 Mercury**

Mercury is a chemical element that is the only metal that exists in the liquid state at standard temperature and pressure. Elemental mercury has been used in a number of scientific instruments such as thermometers and barometers. In buildings liquid mercury has been used widely in thermostats and switch gear. Mercury vapour is used to produce light in fluorescent light tubes.

Chronic and acute inhalation of mercury vapour has been shown to have profound effects on the central nervous system including impaired cognitive skills, tremors, hallucinations, delirium, and suicidal tendency.

Mercury vapour is present in the fluorescent light tubes and observed in the labs

#### **4.10 Silica**

Silica is the common name for the chemical compound silicon dioxide that occurs naturally as sand or quartz. Due to the hardness of silica it has been used as the primary raw material in products such as glass, ceramics, and cement.

Inhalation of silica is known to cause irreversible lung diseases including cancer and silicosis.

Based on CM3 observations silica is present in the plaster, vinyl floor tiles, drywall, drywall joint compound, and acoustic ceiling tiles present at the site. If the aforementioned materials are to be disturbed, appropriate precautions should be taken during disturbance.

#### **4.11 Vinyl Chloride**

Vinyl Chloride is a chemical compound that exists as a gas at standard temperature and pressure. It is used in the production of polyvinyl chloride (PVC) which is non-hazardous.

Vinyl chloride is a known human carcinogen and is known to cause liver damage.

Based on CM3 observations vinyl chloride is not present at the site; however, there is the potential that vinyl chloride could be released if PVC pipes, plastic, or wire coatings are burnt.

## 5.0 ASBESTOS CONTAINING MATERIALS SURVEY

### 5.1 General

The asbestos containing materials (ACMs) survey was conducted by CM3 to satisfy Section 30 of the Occupational Health and Safety Act of Ontario and Ontario Regulation 278/05: Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations (O.Reg.278/05).

The ACMs survey was carried out in accordance with the measures prescribed in O.Reg. 278/05.

### 5.2 Inspection and Sampling

CM3 personnel completed the site reconnaissance including a room by room visual inspection and sampling of potential ACMs on December 19<sup>th</sup>, 2017. As part of the asbestos inspection, CM3 collected thirty-two (32) samples from eight (8) distinct building materials, which were suspected to contain asbestos. Materials sampled by CM3 included plaster, vinyl floor tiles, pipe insulation, acoustic ceiling tiles and mastic. A summary of the samples collected along with the analytical results is presented in Table 1 below.

All potential ACM samples were submitted under chain of custody to EMSL Analytical Inc. laboratories (EMSL) in Ottawa, Ontario for analysis. The samples of potential asbestos were analyzed for type and percent fiber content using Polarized Light Microscopy (PLM). Copies of the laboratory analytical reports are included in Appendix A.

**Table 2: Summary of Laboratory Analytical Results – Asbestos**

Sample ID	Sample		% Asbestos
	Description	Location	
ACT-01A-C	2'x4' acoustic ceiling tiles (Pinholes)	Throughout rooms 1005-1024	None Detected
ACT-02A-C	2'x4' acoustic ceiling tiles (Pinholes and fleck)	Throughout rooms 1005-1024	None Detected
DM01A-C	Duct mastic	Room 1015	None Detected
VFT01A-C	12" x 12" Vinyl Tile (White with blue flecks)	Room 1007 and 1009	None Detected
VFT02A-C	9"x9" vinyl floor tiles (green)	Rooms 1005, 1008, 1015A, 1015B, 1015, 1017 and 1024	<b>5% Chrysotile</b>
PC01A-C	Parging cement insulation	Room 1011	<b>55% Chrysotile</b>
P01A-G	Plaster walls	Throughout rooms 1005-1024	None Detected
P02A-G	Plaster ceilings	Throughout rooms 1005-1024	None Detected

Results of the sample analysis indicate that asbestos was detected in the following materials at a concentration greater than 0.5% by dry weight:

- 9"x9" vinyl floor tiles observed throughout rooms 1005, 1008, 1015A, 1015B, 1015, 1017 and 1024;
- Parging compound on pipe fittings.

Pipes insulated with friable asbestos insulation may be present in inaccessible spaces such as above solid ceilings, in chases, in column enclosures and within shafts.

As such the above noted materials are considered to be asbestos containing and are subject to the procedures outlined in Ontario Regulation 278/05.

## **6.0 HAZARDOUS MATERIALS SURVEY**

### **6.1 General**

The field survey included the visual identification of materials that are potentially hazardous to site occupants, workers, and others.

The following sections provide an overview of the potential hazardous materials of interest and the potential presence of such substances at the site.

### **6.2 Ozone Depleting Substances**

#### **6.2.1 General**

Ozone Depleting Substances (ODSs) are a group of man-made halocarbon refrigerants. They were invented in the 1920's and were used widely as refrigerants and aerosol propellants before 1980. The removal and disposal of ODSs is governed by Federal Regulation SOR/2003-289, Federal Halocarbons Regulations, 2003 made under the Canadian Environmental Protection Act.

ODSs are the primary cause of man-made ozone layer depletion and therefore must be not released into the environment.

#### **6.2.2 Findings**

Non-base building ODS-containing equipment was observed at the Site. All equipment containing ozone depleting refrigerant is expected to be removed from the site prior to the renovations.

### **6.3 Polychlorinated Biphenyls**

#### **6.3.1 General**

Polychlorinated Biphenyls (PCBs) are a group of man-made organic compounds made up of a specific structure that includes two benzene rings or phenyl functional groups. Commercial production began in the 1920's and they were used primarily as coolants and insulating fluids used widely in transformers and capacitors. The removal and disposal of PCBs is governed by

Federal Regulation SOR/2010-273, PCBs Regulations, made under the Canadian Environmental Protection Act.

PCBs interfere with hormone production in people causing toxic and mutagenic effects. PCBs are a persistent pollutant and must not be released into the environment.

### 6.3.2 Findings

Potential PCB containing equipment was not observed at the Site during the PSDSS.

## 6.4 Urea Formaldehyde Foam Insulation

### 6.4.1 General

Urea Formaldehyde Foam Insulation (UFFI) is a foam insulation that contains a urea-formaldehyde resin. In the 1970's UFFI was installed in homes throughout Canada. For a short period of time the insulation would off-gas formaldehyde. Authorities became concerned about potential exposure to formaldehyde and the application was banned in 1980. It is unlikely that UFFI installed before the ban would produce a significant concentration of airborne formaldehyde.

### 6.4.2 Findings

Based on CM3 observations during the DSS, UFFI was not observed at the Site.

## 7.0 CONCLUSIONS AND RECOMMENDATIONS

The following recommendations are based on the DSS conducted by CM3 on December 19<sup>th</sup>, 2017.

### FINDINGS

#### General

In accordance with the Occupational Health and Safety Act regarding designated substances, the building owner must notify all employees and contractors of the presence of all designated substances present. A copy of this report should be made available to all prospective bidders and upon award to the general contractor and all subcontractors working in the project area.

#### Asbestos

Confirmed asbestos containing materials identified at the site include the following:

- 9" x 9" Vinyl Tiles (green) located in rooms 1005, 1008, 1015, 1015A, 1015B, 1017 and 1024; and
- Parging compound on the pipe fittings.

The following table provides a list of action items for the area:

**Table 3 – Summary of Asbestos Containing Materials**

<b>Material</b>	<b>Location</b>	<b>Approx. Quantity</b>	<b>Friable (Y/N)</b>	<b>Action</b>	<b>Asbestos Operation</b>
9" x 9" Vinyl tile (green)	Throughout rooms 1005, 1008, 1015, 1015A, 1015B, 1017 and 1024.	~1800 square feet total	No	Asbestos containing vinyl flooring to be removed prior to renovation activities.	Type 1
<b>Material</b>	<b>Location</b>	<b>Approx. Quantity</b>	<b>Friable (Y/N)</b>	<b>Action</b>	<b>Asbestos Operation</b>
Parging cement on pipe fittings	Room 1011	~8 fittings	Yes	Asbestos containing parging cement to be removed during the renovation activities.	Type 2 glove bag

The following recommendations are based on the requirements of Ontario Regulation 278/05 – Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations prior to the demolition of the building:

1. Provide a copy of this report or applicable portions of this report to prospective bidders.
2. Remove all asbestos materials that may be disturbed during the renovations. The asbestos materials summary table in Appendix A lists the recommended/minimum abatement operations.
3. The asbestos abatement must be conducted by an experienced competent asbestos abatement contractor. The contractor should be able to show proof of adequate experience, employee training, workers compensation documentation, and asbestos liability insurance.
4. All asbestos wastes generated by asbestos abatement operations must be packaged and disposed of in accordance with Waste Regulation 347/90 and O.Reg 278/05. Asbestos waste may be disposed of at any municipal landfill approved by the MOE to accept this type of waste pending notification to the landfill operator. Although a waste manifest is not required for the transportation or disposal of asbestos waste, it is good management practice to keep a record of the amount removed and sent to landfill.
5. An asbestos waste management procedure should be prepared.

### **Benzene**

Excessive heat must not be used on wire coatings, plastic materials, or PVC as heat may release benzene. If these practices cannot be avoided, then implement control measures appropriate for the control of benzene prescribed in Ontario Regulation 490/09 – Designated Substances.

### **Lead**

Lead was found to be present in the paints observed at the site. In addition, lead is likely present on all copper fittings located throughout the site and as such the following is recommended.

1. Measures must be implemented to control the lead dust hazard during any construction or demolition activity that would result in the disturbance of any painted surface. The measures implemented must be in accordance with the “Guideline – Lead on Construction Projects” (Ministry of Labour, September 2004).

### **Mercury**

If removed from service the mercury containing fluorescent light bulbs must be carefully removed and containerized for disposal in accordance with Ontario Regulation 347/09 (as amended) if they are to be disturbed as part of the renovation.

### **Ozone-Depleting Substances (ODS)**

If any ozone-depleting refrigerant containing equipment is to be disturbed the refrigerant must be removed by an individual, licensed to perform such work in accordance with the Federal Halocarbon Regulation, 2003 SOR/2003-289 under the Canadian Environmental Protection Act, prior to the removal and disposal of any ozone-depleting substance containing equipment.

### **Silica**

Measures prescribed in the Ministry of Labour’s Guideline titled “Silica on Construction Projects”, should be followed during the disturbance of any silica containing material.

### **Vinyl Chloride**

Excessive heat must not be used on wire coatings, plastic materials, or PVC as heat may release vinyl chloride. If these practices cannot be avoided, then implement control measures appropriate for the control of vinyl chloride prescribed in Ontario Regulation 490/09 – Designated Substances.

## **8.0 LIMITATIONS**

This report has been prepared and the work referred to in this report has been undertaken by CM3 Environmental Inc. for **Agriculture and Agri-Food Canada**. It is intended for the sole and exclusive use of **Agriculture and Agri-Food Canada and its authorized agents** for the purpose(s) set out in this report. Any use of, reliance on or decision made based on this report by any person other than **the co-operators** for any purpose, or by **Agriculture and Agri-Food Canada** for a purpose other than the purpose(s) set out in this report, is the sole responsibility of such other person or **the Agriculture and Agri-Food Canada**. **Agriculture and Agri-Food Canada** and CM3 Environmental Inc. make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

Any conclusions or recommendations made in this report reflect CM3 Environmental Inc.’s judgment based on the following limited investigations: visual site inspection(s) on the date(s) set out in this report; examination of public records; and interviews with individuals having information about the site. While efforts have been made to substantiate information provided



by third parties, CM3 Environmental Inc. makes no representation or warranty as to its completeness or accuracy.

This report has been prepared for specific application to this site. Unless otherwise stated, the findings cannot be extended to previous or future site conditions; portions of the site which were unavailable for direct investigation; subsurface locations which were not investigated directly; or chemical parameters, materials or analysis which were not addressed. Substances other than those addressed by the investigation described in this report may exist within the site; and substances addressed by the investigation may exist in areas of the site not investigated or in quantities not ascertained.

Nothing in this report is intended to constitute or provide a legal opinion. CM3 Environmental Inc. makes no representation as to the requirements of or compliance with environmental laws, rules, regulations or policies established by federal, provincial or local government bodies. Revisions to the regulatory standards referred to in this report may be expected over time. As a result, modifications to the findings, conclusions and recommendations in this report may be necessary.

Other than by **Agriculture and Agri-Food Canada and its authorized agents** and as set out herein, copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of CM3 Environmental Inc.



**Appendix A**  
**Certificate of Laboratory Analysis**

Designated Substances Survey  
Room 1005 – 1024 - Neatby Building  
Central Experimental Farm



# EMSL Canada Inc.

22 Antares Drive Suite 102 Ottawa, ON K2E 7Z6  
Phone/Fax: 343-882-6076 / (343) 882-6077  
<http://www.EMSL.com> / [ottawalab@EMSL.com](mailto:ottawalab@EMSL.com)

EMSL Canada Order 671702775  
Customer ID: 55CMTE42  
Customer PO:  
Project ID:

**Attn:** Adam Nguyen  
CM3 Environmental Inc.  
5710 Akins Rd  
Stittsville, ON K2S 1B8

**Phone:** (613) 820-4343  
**Fax:**  
**Collected:** 12/19/2017  
**Received:** 12/19/2017  
**Analyzed:** 12/27/2017

**Proj:** TLW Neatby Building

## Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

**Client Sample ID:** ACT01A **Lab Sample ID:** 671702775-0001

**Sample Description:** 2x4 Acoustic Ceiling tiles pinholes

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray	70%	30%	None Detected	

**Client Sample ID:** ACT01B **Lab Sample ID:** 671702775-0002

**Sample Description:** 2x4 Acoustic Ceiling tiles pinholes

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray	70%	30%	None Detected	

**Client Sample ID:** ACT01C **Lab Sample ID:** 671702775-0003

**Sample Description:** 2x4 Acoustic Ceiling tiles pinholes

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray	70%	30%	None Detected	

**Client Sample ID:** ACT02A **Lab Sample ID:** 671702775-0004

**Sample Description:** 2x4 Acoustic Ceiling tiles pinholes + fleck

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray	70%	30%	None Detected	

**Client Sample ID:** ACT02B **Lab Sample ID:** 671702775-0005

**Sample Description:** 2x4 Acoustic Ceiling tiles pinholes + fleck

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray	70%	30%	None Detected	

**Client Sample ID:** ACT02C **Lab Sample ID:** 671702775-0006

**Sample Description:** 2x4 Acoustic Ceiling tiles pinholes + fleck

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray	70%	30%	None Detected	

**Client Sample ID:** DM01A **Lab Sample ID:** 671702775-0007

**Sample Description:** Duct mastic

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray	0%	100%	None Detected	



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EMSL Canada Order 671702775  
Customer ID: 55CMTE42  
Customer PO:  
Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

**Client Sample ID:** DM01B **Lab Sample ID:** 671702775-0008  
**Sample Description:** Duct mastic

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray	0%	100%	None Detected	

**Client Sample ID:** DM01C **Lab Sample ID:** 671702775-0009  
**Sample Description:** Duct mastic

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray	0%	100%	None Detected	

**Client Sample ID:** VFT01A **Lab Sample ID:** 671702775-0010  
**Sample Description:** 12x12 floor tiles white w/ blue flecks

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** VFT01B **Lab Sample ID:** 671702775-0011  
**Sample Description:** 12x12 floor tiles white w/ blue flecks

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** VFT01C **Lab Sample ID:** 671702775-0012  
**Sample Description:** 12x12 floor tiles white w/ blue flecks

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** VFT02A-Vinyl Floor Tile **Lab Sample ID:** 671702775-0013  
**Sample Description:** 9x9 green floor tiles

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Green	0%	95%	5% Chrysotile	

**Client Sample ID:** VFT02A-Mastic **Lab Sample ID:** 671702775-0013A  
**Sample Description:** 9x9 green floor tiles

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017				Insufficient Material	

**Client Sample ID:** VFT02B-Vinyl Floor Tile **Lab Sample ID:** 671702775-0014  
**Sample Description:** 9x9 green floor tiles

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017					Positive Stop (Not Analyzed)



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EMSL Canada Order 671702775  
 Customer ID: 55CMTE42  
 Customer PO:  
 Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

Client Sample ID: VFT02C-Vinyl Floor Tile

Lab Sample ID: 671702775-0015

Sample Description: 9x9 green floor tiles

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017		Positive Stop (Not Analyzed)			

Client Sample ID: PC01A

Lab Sample ID: 671702775-0016

Sample Description: Parging cement elbows

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray	0%	45%	55% Chrysotile	

Client Sample ID: PC01B

Lab Sample ID: 671702775-0017

Sample Description: Parging cement elbows

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017		Positive Stop (Not Analyzed)			

Client Sample ID: PC01C

Lab Sample ID: 671702775-0018

Sample Description: Parging cement elbows

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017		Positive Stop (Not Analyzed)			

Client Sample ID: P01A-Skim Coat

Lab Sample ID: 671702775-0019

Sample Description: Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

Client Sample ID: P01A-Base Coat

Lab Sample ID: 671702775-0019A

Sample Description: Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.

Client Sample ID: P01B-Skim Coat

Lab Sample ID: 671702775-0020

Sample Description: Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

Client Sample ID: P01B-Base Coat

Lab Sample ID: 671702775-0020A

Sample Description: Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.



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EMSL Canada Order 671702775  
Customer ID: 55CMTE42  
Customer PO:  
Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

**Client Sample ID:** P01C-Skim Coat

**Lab Sample ID:** 671702775-0021

**Sample Description:** Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P01C-Base Coat

**Lab Sample ID:** 671702775-0021A

**Sample Description:** Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.

**Client Sample ID:** P01D-Skim Coat

**Lab Sample ID:** 671702775-0022

**Sample Description:** Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P01D-Base Coat

**Lab Sample ID:** 671702775-0022A

**Sample Description:** Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.

**Client Sample ID:** P01E-Skim Coat

**Lab Sample ID:** 671702775-0023

**Sample Description:** Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P01E-Base Coat

**Lab Sample ID:** 671702775-0023A

**Sample Description:** Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.

**Client Sample ID:** P01F-Skim Coat

**Lab Sample ID:** 671702775-0024

**Sample Description:** Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P01F-Base Coat

**Lab Sample ID:** 671702775-0024A

**Sample Description:** Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.



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## Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

**Client Sample ID:** P01G-Skim Coat

**Lab Sample ID:** 671702775-0025

**Sample Description:** Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P01G-Base Coat

**Lab Sample ID:** 671702775-0025A

**Sample Description:** Plaster walls

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.

**Client Sample ID:** P02A-Skim Coat

**Lab Sample ID:** 671702775-0026

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P02A-Base Coat

**Lab Sample ID:** 671702775-0026A

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.

**Client Sample ID:** P02B-Skim Coat

**Lab Sample ID:** 671702775-0027

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P02B-Base Coat

**Lab Sample ID:** 671702775-0027A

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.

**Client Sample ID:** P02C-Skim Coat

**Lab Sample ID:** 671702775-0028

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P02C-Base Coat

**Lab Sample ID:** 671702775-0028A

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.



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Customer ID: 55CMTE42  
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Project ID:

## Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

**Client Sample ID:** P02D-Skim Coat

**Lab Sample ID:** 671702775-0029

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P02D-Base Coat

**Lab Sample ID:** 671702775-0029A

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.

**Client Sample ID:** P02E-Skim Coat

**Lab Sample ID:** 671702775-0030

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P02E-Base Coat

**Lab Sample ID:** 671702775-0030A

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.

**Client Sample ID:** P02F-Skim Coat

**Lab Sample ID:** 671702775-0031

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P02F-Base Coat

**Lab Sample ID:** 671702775-0031A

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.

**Client Sample ID:** P02G-Skim Coat

**Lab Sample ID:** 671702775-0032

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	White	0%	100%	None Detected	

**Client Sample ID:** P02G-Base Coat

**Lab Sample ID:** 671702775-0032A

**Sample Description:** Plaster ceilings

TEST	Analyzed Date	Color	Non-Asbestos		Asbestos	Comment
			Fibrous	Non-Fibrous		
PLM	12/27/2017	Gray/Gold	0%	100%	None Detected	Sample contains vermiculite.



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EMSL Canada Order 671702775  
Customer ID: 55CMTE42  
Customer PO:  
Project ID:

### Test Report: Asbestos Analysis of Bulk Materials for Ontario Regulation 278/05 via EPA600/R-93/116 Method

---

#### Analyst(s):

Ewa Krupinska PLM (42)

#### Reviewed and approved by:

Simon Parent, Laboratory Manager  
or Other Approved Signatory

None Detected = <0.1%. EMSL maintains liability limited to cost of analysis. This report relates only to the samples reported above and may not be reproduced, except in full, without written approval by EMSL. EMSL bears no responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in good condition unless otherwise noted. This report must not be used to claim product endorsement by NVLAP of any agency of the U.S. Government.

Samples analyzed by EMSL Canada Inc. Ottawa, ON

Initial report from: 12/27/2017 09:02:17



## Certificate of Analysis

### CM3 Environmental Inc.

5710 Akins Road  
Ottawa, ON K2S 1B8  
Attn: Trent Windsor

Client PO: Neatby Building  
Project: TLW  
Custody: 40820

Report Date: 27-Dec-2017  
Order Date: 19-Dec-2017

**Order #: 1751212**

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1751212-01	Pb01 White Wall Paint
1751212-02	Pb02 Black Wall Paint
1751212-03	Pb03 Light Pink Wall Paint
1751212-04	Pb04 Beige Wall Paint

Approved By:



Dale Robertson, BSc  
Laboratory Director

Any use of these results implies your agreement that our total liability in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis  
Client: CM3 Environmental Inc.  
Client PO: Neatby Building

Report Date: 27-Dec-2017  
Order Date: 19-Dec-2017  
Project Description: TLW

### Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	27-Dec-17	27-Dec-17

### Sample Data Revisions

None

### Work Order Revisions/Comments:

None

### Other Report Notes:

n/a: not applicable  
ND: Not Detected  
MDL: Method Detection Limit  
Source Result: Data used as source for matrix and duplicate samples  
%REC: Percent recovery.  
RPD: Relative percent difference.

Certificate of Analysis  
 Client: CM3 Environmental Inc.  
 Client PO: Neatby Building

Report Date: 27-Dec-2017  
 Order Date: 19-Dec-2017  
 Project Description: TLW

## Sample Results

Lead				Matrix: Paint
				Sample Date: 19-Dec-17
Paracel ID	Client ID	Units	MDL	Result
1751212-01	Pb01 White Wall Paint	ug/g	20	111
1751212-02	Pb02 Black Wall Paint	ug/g	20	6290
1751212-03	Pb03 Light Pink Wall Paint	ug/g	20	828
1751212-04	Pb04 Beige Wall Paint	ug/g	20	1430

## Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
<b>Matrix Blank</b>									
Lead	ND	20	ug/g						
<b>Matrix Duplicate</b>									
Lead	1310	20	ug/g	1390			5.9	30	
<b>Matrix Spike</b>									
Lead	921		ug/L	694	90.9	70-130			