VIA Email: jjubinville@clarence-rockland.com

February 28, 2019

Our File Ref.: 190051

City of Clarence Rockland
1560 Laurier Street
Rockland, Ontario K4K 1P7

Attention: Jean-Luc Jubinville

Subject: Demolition of Jean-Marc Lalonde Arena
1450 Du Parc Ave, Rockland, Ontario

Dear Mr. Jubinville,

LRL Associates Ltd. (LRL) has been retained by the City of Clarence-Rockland (the City) to complete a Preliminary Engineering Services with respect to the proposed demolition of the Jean-Marc Lalonde Arena located at 1450 Du Parc Avenue in Rockland, Ontario (herein referred to as the "Site"). It is understood that the purpose of this work is to provide support to the client in making decisions with regards the proposed demolition of the arena. This letter provides a summary of the suggested scope of work for the demolition, assessment of possible environmental hazards, quantity estimates, estimated costs and other pertinent considerations.

1 SITE DESCRIPTION

The Rockland Arena and Community Center, located at 1450 Avenue Du Parc in Rockland, Ontario, is a one and two story slab on-grade building estimated to have been constructed in the early 1970's. The 1st floor (approximately 2,800 m^2) consists of a concrete slab (former ice rink surface), washrooms, various changing, storage, offices and mechanical rooms with a kitchen. The general interior finish of the 1st floor consists of drywall, wood and cement walls with ply-wood, wood, cement and drywall ceilings. The drywall ceiling on 1st floor has a textured finish. Suspended acoustic ceiling tiles are present at the south entrance to the facility. The flooring encountered consisted of vinyl floor tiles, ceramic floor tiles and cement flooring.

The 2nd storey consists of a banquet hall with associated facilities (515 m^2). The 2nd storey interior finishes generally consists of suspended acoustic ceiling tiles, ceramic and terrazzo flooring with cement and drywall walls. Above the suspended ceiling tiles is exposed metal framing. Overhead piping was insulted with fibreglass insulation with the exception to that in the press box at the southeast portion of the ice rink cement slab which is insulated with parging cement.

2 SCOPE OF WORK

The scope of work for this report generally included the following:

2.1 Designated Substance & Hazardous Material Review

- Complete a detailed review of available documents (i.e. asbestos management plan, lead abatement specifications) provided by the client with regards to designated substances & hazardous materials present at the site;
- Conduct a detailed visual inspection, using destructive and non-destructive means, of the building materials to confirm the findings in the previously prepared reports. Verify the conditions of previously identified designated substances, as well as confirm the presence of previously not addressed materials, namely lead based paints;
- Collect bulk samples of suspected asbestos containing material (ACM) if identified during the destructive means, and were not previously sampled, and lead based paint (LBP);
- Submit bulk samples to an NVLAP accredited laboratory for Polarized Light Microscopy (PLM) analysis. The minimum number of ACM samples collected and analysis will be as per O. Reg. 278/05. A “Stop Positive” approach will be conducted on the samples analysed where each sample in a visually identical group of samples are analysed in succession. Once a sample in the group is identified as being ACM the remaining samples are not analysed. Submit paint samples for lead analysis; and
- Summarize our findings and recommendations for handling of the building materials during proposed demolition activities.

2.2 Construction Material Waste Audit

- Conduct a detailed visual inspection of the building to establish the approximate quantities of the various building material compositions; and
- Prepare a summary, of the findings which will include the estimated quantities of the following building materials to be disposed of:
    - Concrete;
    - Asbestos Containing Materials; and
    - Other building materials, excluding concrete, such as wood or metal structures.

2.3 Demolition Scope of Work & Cost Estimates

- Present recommendations for preparatory work to be completed before the contractor begins the demolition and for what condition the site should be left in once the contractor leaves;
- Engage with industry partners to develop a proposed scope of work for demolition and Class D estimate;
- Outline other pertinent considerations;

3 DESIGNATED SUBSTANCE & HAZARDOUS MATERIAL REVIEW

According to Section 30 of the Ontario Occupational Health and Safety Act (OHSA), it is required that the owners of a project are to determine if Designated Substances are present on a project and inform all potential contractors prior to entering into a binding contract. Ontario Environmental Protection Act (EPA) set out regulations for the handling and disposal of hazardous materials. Prior to any construction or demolition activities at the Site, and to aid the client with decisions pertaining to the future of the Site, LRL has completed a review of available designated substance and hazardous material reports previously prepared, and provided by the City, in addition to a subsequent site visit to verify the presence of additional materials which may have since been brought to the Site, removed from the Site or over-looked at the time of the previous investigations.

According to the OHSA, the eleven (11) designated substances of concern are as follows:

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

The following hazardous materials were also included as part of this review:

- Ozone Depleting Substances (ODS);
- Polychlorinated Biphenyls (PCB);
- Urea Formaldehyde Foam Insulation (UFFI); and
- Microbial Contamination.

3.1 Previous Investigation Review

To identify known designated substances and hazardous material at the Site, the following reports and supporting information, provided to LRL by the City, were reviewed:

- Asbestos Containing Material Sampling and Analysis, Rockland Arena & Community Centre, Rockland, prepared for the City of Clarence-Rockland, by LRL Associates Ltd., dated April 5, 2012;

- Certificate of Analysis, Paracel Laboratories Ltd., City of Clarence-Rockland, Paracel ID 1709323-01 through 1709323-05, Lead analysis results for bulk paint samples, February 22, 2017; and
- Scope of Work Paint Remediation, Jean-Marc Lalonde Arena – 1450 Du Parc Avenue, Rockland, ON, prepared for the City of Clarence-Rockland, by CM3 environmental, dated June 18, 2018.

Based on the review of the above listed documents, it has been confirmed that select designated substances are present at the Site. These materials are as follows:

- Ceiling tiles encountered on the first floor of the Site were identified as containing 0.81% chysotile asbestos. The ceiling tiles on the second floor were not found to be asbestos containing;
- The parging cement encountered on the pipe fittings in the press box at the northwest portion of the arena was identified as containing 20% chysotile and 5% crocidolite asbestos. Parging was not identified at any remaining locations, however it may be present in concealed spaces;
- Both textured finishes encountered on the ceilings of the first floor in the lobby and the office were found to contain 1% chysotile asbestos;
- The Paracel Laboratory Certificate of Analysis revealed that the following paint finishes are lead containing, and exceed the federal maximum limit of 90 ppm (or 90 µg/g) as indicated in the Surface Coating Materials Regulation (SOR/2005-109):
    - Jean-Marc Lalonde Arena (upstairs hall wall) with a value of 371 µg/g;
    - Jean-Marc Lalonde Arena (stairway) with a value of 354 µg/g; and
    - Two (2) sampled identified as Jean-Marc Lalonde Arena (behind visitors bench) with values of 255 and 471 µg/g.

3.2 Detailed Visual Assessment

Subsequent to the review of the previously prepared reports, a detailed visual assessment was conducted by LRL on February 4th, 2019. Based on our inspection, the previously identified lead containing paint surfaces and asbestos containing materials remained at the Site. We also identified additional materials.

3.2.1 Asbestos

A summary of the samples and the analysis results are provided in the attached **Table 1** included in **Attachment A**.

3.2.1.1 Friable Asbestos Containing Materials

No potential friable ACM, in addition to those previously encountered at the time of the 2012 assessment, were identified during the detailed visual survey.

3.2.1.2 Non-Friable Asbestos Containing Materials

Potential non-friable ACM identified during this survey included:

3.2.1.2.1 Mortar

Two (2) visual different mortar materials were observed which was not included in the previous assessments. One (1) of which was a grey material observed between the masonry blocks that make up the majority of the building envelope and dividing walls throughout the Site (MO1). The second mortar material encountered was also grey, and was encountered between the ceramic floor tiles encountered in the southwestern stair well and throughout the second floor banquet area (MO2). At the time of our survey this material was considered to be in good condition with some areas of cracking, namely the masonry block wall mortar along the southwester wall. Seven (7) samples of MO1 and five (5) samples of MO2 were collected and submitted for PLM analysis. The analysis revealed that the both the mortar materials encountered did not have any asbestos fibres detected. Therefore, the mortar between the masonry block walls and the mortar between the ceramic floor tiles encountered are not considered ACM.

3.2.1.2.2 Mastic

A yellow mastic adhesive was observed on the underside of the rubber anti-slip strips on the stairs situated at the southwest stair well (MA1). At the time of our survey this material was considered to be in good condition. Three (3) samples of the mastic were collected and submitted for PLM analysis. The analysis revealed that the mastic material did not have any asbestos fibres detected. Therefore, the yellow mastic adhesive encountered is not considered ACM.

3.2.1.2.3 Caulking

A brown caulking was observed along the lower perimeter of the cement block walls of the rink portion of the Site (CA1). At the time of our survey this material was considered to be in poor condition with cracking. Three (3) samples of the caulking were collected and submitted for PLM analysis. The analysis revealed that the caulking did not have any asbestos fibres detected. Therefore, the brown caulking along the lower perimeter of the walls encompassing the rink is not considered ACM.

3.2.2 Lead

Nine (9) paint samples were collected from various locations included in this survey. The samples collected are summarized as follows:

- Green encountered on the exterior surfaces of the metal doors across the Site (PS1);
- White encountered on the walls and ceilings throughout the Site (PS2);
- Dark blue encountered on the walls throughout the main level of the Site (PS3);
- Burgundy encountered on the walls throughout the main level of the Site (PS4);
- Beige encountered on the walls in the stair wells and across second floor of the Site (PS5);
- Light brown encountered on the walls in the stair wells and across second floor of the Site (PS6);
- Blue encountered on the west wall of the banquet area of the second floor of the Site (PS7);
- Grey encountered on the cement floor around the rink (PS8); and

- Grey encountered on the door to the Women's washroom on the main floor of the Site (PS9).

Samples were collected from each distinct paint type encountered throughout the building. The paint samples represent the various colours or pigments encountered in these select areas. All samples collected were submitted for analysis of their lead content.

Laboratory analysis revealed that six (6) of the nine (9) the paint samples submitted for analysis of lead exceeded the federal standard of 90 ppm with reported values between 348 and 18000 µg/g. A summary of the samples collected and their respective laboratory analysis results are provided in the attached **Table 2** in **Attachment A**. The laboratory certificates of analysis are included in **Attachment B**.

Although six (6) of the paint samples submitted were found to exceed the 90 ppm federal standard, after calculating the TWA for lead using Ontario TWA for Particles Not Otherwise Specified (PNOS), the samples do not exceed the O. Reg. 490/09 regulation of 0.05 mg/m^3, provided appropriate dust control measures are implemented with the exception to sample PS1, collected from the exterior surfaces of the steel doors. Demolition activities should be carried out in accordance with Type 1 Operations outlined in MOL's "Guideline: Lead on Construction Projects" and ensure lead fumes do not exceed the Time Weighted Average Exposure Value (TWAEV) of 0.05 mg/m^3 for all areas where lead containing paint is encountered, with the exception to the areas where PS1 was encountered where Type 2 operations should be followed.

According to published information by Health Canada concerning lead-based paints, buildings constructed before 1960 were likely painted with lead based paints, and until 1980, lead based paint was more common to exterior applications. After 1980, there is little concern of lead levels in interior paints but lead could still be found in some exterior paints. However after 1992, all consumer paints produced in Canada and the U.S. were considered virtually lead free.

Based on the historical use of lead in construction, it may also be present in solder on copper domestic water pipes and drainpipe joint caulking. Lead in these materials is considered to be in a stable form and not expected to be of concern during the proposed demolition activities.

3.2.3 Silica

Silica in its crystalline form is present in concrete and cement based building products, such as concrete and cement, masonry blocks and mortar, hard plaster finishes, and acoustic ceiling tiles. Cement, hard plaster finishes (i.e. Joint Compound) and acoustic ceiling tiles were identified throughout the areas of concern. It is anticipated that the proposed work activities associated with renovation activities result in a moderate to high potential for silica containing materials being disturbed.

3.2.4 Mould

A visual inspection for the presence of mould or water damage was conducted. No evidence of water damage of potential mould growth was identified, however a dripping overhead pipe along the east side of the rink area was noted at the time of the survey. This may result in future microbial growth.

3.2.5 Mercury

Minor amounts of mercury are commonly found in a variety of building material including mercury vapour lamps, fluorescent light tubing and thermostats and other electrical control switches. Fluorescent lighting and thermostats was encountered in the areas surveyed which may potentially be mercury containing.

3.2.6 Polychlorinated Biphenyls (PCBs)

Use of PCBs in electrical equipment such as transformers and capacitors, including capacitors found in fluorescent lamp ballasts, was common up to the 1980's. Electrical equipment and fluorescent lighting was encountered throughout the survey area, which may potentially contain PCBs.

3.2.7 Ozone Depleting Substances

Ozone depleting substances are potentially present inside the building. These substances are likely to be encountered in refrigeration and air conditioning systems and fire extinguishers. Fire extinguishers were identified throughout the Site.

The following designated substances and hazardous materials were not identified:

- Acrylonitrile
- Arsenic
- Vinyl Chloride
- Coke Oven Emissions
- Ethylene Oxide
- Isocyanates

These substances were either not identified, presumed not to be present due to the Site's activities or are present but in a stable form within paints, plastics or adhesives.

3.3 Conclusions & Recommendations

3.3.1 Asbestos

Based on the findings, the following materials have been identified as being asbestos containing material:

- Ceiling tiles encountered on the first floor of the Site were identified as containing 0.81% chysotile asbestos;
- The parging cement encountered on the pipe fittings in the press box at the northwest portion of the arena was identified as containing 20% chysotile and 5% crocidolite asbestos; and
- Both textured finishes encountered on the ceilings of the first floor in the lobby and the office were found to contain 1% chysotile asbestos.

ACM may be present in concealed spaces such as in non-accessible areas and concealed spaces (i.e. wall and ceiling cavities). If any suspected ACM materials not discussed in the report are encountered, the material should be considered ACM and handled as such. Otherwise, LRL should be contacted to assess the material and collect samples of the material for laboratory testing, if warranted.

Disturbance of all asbestos is regulated by O. Reg. 490/09 and Reg. 278/05, which outline the construction practices involving asbestos containing materials. The MOL's Regulation: "Asbestos on Construction Projects and in Buildings and Repair Operations" (O. Reg. 278/05) sets out guidelines for the protection of workers and indicates that asbestos containing material must be removed to the extent practicable prior to any demolition. Disturbance or removal of all ACM should be carried out according to the O. Reg. 278/05.

An asbestos abatement contractor should be contracted to remove the identified ACM's prior to the proposed demolition activities of the Site. The removal of the ceiling tiles throughout the first floor should be carried out using Type 2 procedures, as outlined in the Ontario Ministry of Labour "*A Guideline to the Regulation Respecting Asbestos on Construction Projects and in Buildings and Repair Operations*", November 2007 reference document. The parging cement encountered on the pipe fitting in the press box should be removed using Type 2 glove bag techniques, and the textured finishes encountered on the ceilings of the first floor in the lobby and the office should be removed using Type 3 procedures as outlined in the previously referenced MOL reference document. Disposal of the ACM should be coordinated with the abatement contractor and the local municipal landfill site, to insure that the material is acceptable for disposal at their facility. Otherwise alternate disposal arrangements should be made by the abatement contractor.

3.3.2 Lead

Concentrations of lead exceeding provincial surface coating standards were encountered in six (6) paint samples submitted with reported values between 348 and 18000 µg/g. Demolition activities should be carried out in accordance with Type 1 Operations outlined in MOL's "Guideline: Lead on Construction Projects" and ensure lead fumes do not exceed the Time Weighted Average Exposure Value (TWAEV) of 0.05 mg/m3 for all areas where lead containing paint is encountered, with the exception to the areas where PS1 was encountered where Type 2 operations should be followed. Lead can potentially be present on building material such as solder on pipes and drainpipe joint caulking.

Procedures for lead-based paint removal are outlined under O.Reg. 490/09. The MOL's "*Guideline: Lead on Construction Projects*" does not require removal of lead-based materials unless work on these materials is likely to cause worker exposure to lead fumes or dust. Worker exposure can be caused by welding, cutting, grinding or sanding. If these activities are performed on lead-based materials, the procedures outlined in the guideline must be adhered to. Airborne lead should not exceed the maximum time weighted exposure value (TWAEV) of 0.05 mg/m^3, provided appropriate dust control measures are implemented.

Should the Site be demolished, it is anticipated that the concrete debris from the building structure would remain on site for use as backfill. The material would be pulverised and reused as backfill material on the subject property. Prior to the removal of any fixtures or components before demolition activities which may disturb lead containing paint coatings, the work should be carried out with reference to O. Reg. 490/09.

To confirm that the lead containing paint is suitable to be left on the concrete and cement surfaces and used as fill on the subject site, LRL returned to the Site on February 25th, 2019 to collect additional samples of paint for laboratory lead leachate analysis. The Ontario Ministry of the Environment, Conservation and Parks' Excess Soil Management Policy Framework document, December 2016, indicates that ""Inert fill" is defined as "earth or rock fill or waste of a similar nature that contains no putrescible materials or soluble or decomposable chemical substances" in Regulation 347 (General - Waste Management) under the Environmental Protection Act." The leachate test was performed to confirm the leachability of the paint if buried. The laboratory analysis results revealed levels of leachable lead ranging between <0.05 and 0.10 mg/L. The paint is not considered leachable. Therefore the paint coating can remain on the concrete and cement building surface for use as backfill. It should be noted that no metal waste or debris, including rebar, should be included in the material to be used as fill. A copy of the Laboratory Certificate of Analysis is included in **Appendix B**.

Workers should be supplied be supplied with appropriate dust control masks, gloves and eye protection during the work activities and be made aware of the potential lead hazard. Exposure levels should continue to be monitored regardless to insure the workers are not exposed to greater than the allowable TWAEV of 0.05 mg/m³.

3.3.3 Silica

Silica may be present in concrete and cement based products throughout the building. Precautions should be taken prior to and during work affecting concrete and cement based products to ensure that silica exposure levels to workers do not exceed the TWAEV of 0.05 mg/m^3 for cristobalite and 0.1 mg/m^3 for quartz and tripoli. This can be achieved by:

- Wetting the surface of the materials to prevent dust emissions;
- Providing workers with respiratory protection; and
- Providing workers with facilities to properly wash prior to exiting the work area.

These precautionary measures can be modified for a larger scale project involving demolition of a building by hosing the structure down during demolition. The contractor should insure that workers are supplied with appropriate dust control masks, gloves and eye protection and the workers should be made aware of the potential hazard. Exposure levels should continue to be monitored regardless to insure the workers are not exposed to greater than the allowable TWAEV of 0.05 mg/m³.

Silica occurs naturally as crystalline material in cement. Crystalline silica is significantly more hazardous than amorphous silica, therefore for health reasons; only crystalline varieties are regulated under O. Reg. 490/90 of the Occupational Health and Safety Act. The MOL's document "*Guideline – Silica on Construction Projects*" has become an industry standard for protecting workers from silica exposure. This document outlines method for controlling silica hazard and offers classification criteria and measures and procedures for different types of operations.

3.3.4 Mould

Mould is typically associated with wet building materials and was not observed during this assessment. Health effects related to inhalation of microbials are detailed in the report of the Federal-Provincial Advisory Committee on Environmental and Occupational Health entitled "*Indoor Air Quality in Office Buildings: A Technical Guide*". Chronic exposure to most fungi can induce allergic or asthmatic reactions in humans, and a very few species can cause diseases directly. Some individuals, classed as immuno-compromised, are very susceptible to some microbial exposures. The Canadian Construction Association's "*Mould Guidelines for the Canadian Construction Industry*" is one of a number of peer reviewed guidelines or standards recognized by the provincial and regulatory authorities for mould management.

3.3.5 Mercury

Mercury is governed by O. Reg. 490/09, under the Occupational Health and Safety Act. Regulations provide requirements for allowable exposure levels. In addition, mercury waste is considered a hazardous waste under R.R.O. 1990, Reg. 347 of the Ontario Environmental Protection Act. During renovation or demolition projects, mercury equipment and all suspected mercury-containing materials should be collected and properly stored. If they are not to be reused, they should be disposed of according to R.R.O. 1990, Reg. 347.

3.3.6 Polychlorinated Biphenyls (PCBs)

When removing the fluorescent light ballasts, they should be inspected for labelling indicating that they do not contain PCBs or cross referenced with manufacturer's information to confirm the presence or absence of PCBs. Lamp ballasts can be compared to Environment Canada's Environmental Protection Series Identification of Lamp Ballasts Containing PCBs, Report EPS 2/CC/2 (revised), August 1991. If the ballasts cannot be confirmed to be PCB free, they should be assumed to be PCBs containing and disposed as such in accordance to R.R.O. 1990, Reg. 347, as amended.

3.3.7 Ozone Depleting Substances

Regulations require that any equipment suspected of containing CFCs and HCFCs must be certified emptied before they can be disposed. Disposing of these substances should conform to the O. Reg. 463/10 – Ozone Depleting Substances and Other Halocarbons made under the Environmental Protection Act and Federal Halocarbon Regulations SOR/2003-289.

3.3.8 Waste Management

All generation, transportation and disposal of hazardous waste must be done in accordance with the *Ontario General Waste Regulations* R.R.O 1990, Reg. 347. Asbestos waste must be transported and disposed of in sealed double containers that are properly labelled and free of cuts and punctures. Waste must be disposed of at a licensed waste facility that has been properly notified of the presence of asbestos waste. Transportation of ACM waste is governed under the Transportation of Dangerous Goods Act.

4 CONSTRUCTION MATERIAL WASTE AUDIT

To provide the City with an estimate of the quantities of waste produced during demolition of the Site, LRL carried out a detailed walk through of the facility to verify the various building materials.

The estimated building material quantities were divided into the following categories:

- Cement and concrete;
- Metal;
- Asbestos containing materials; and
- Other (i.e. wood, plastic, glass).

The Site walk through was carried out on February 4th, 2019. Some areas of the Site were not accessible including the basement change rooms and mechanical rooms, and select storage rooms. Based on the observations at the time of the Site walk through, the following volumes were estimated of waste should the building be demolished.

The volumes were initially calculated into cubic meters, and by using a conversion factor of 8.1 for metals, 2.4 for cement and concrete, and 2.1 for the remainder of the materials encountered, the estimated metric tonnage was calculated.

Material	Estimated Volume (m3)	Estimated Weight (metric tonnes)
Cement & Concrete	3,160	7,587
Asbestos Containing Materials	11	23
Metal	220	1,794
Other (i.e. wood, plastic, roof membrane, etc.)	1,400	3,226

4.1 Limitations and Assumptions

As mentioned above, all areas of the Site were not accessible, therefore as a conservative approach to account for materials potentially not observed during the walk through, an additional 10% was added to the sum of each material encountered. Further details with respect to the cement foundation slab thickness was not available. It was inferred that the base slab had a thickness of 0.18 m (6 inches) and the second storey floor had a thickness of 0.12 m (4 inches).

The estimated quantities above generally does not include mechanical components (i.e. duct work and ventilation) as these structures were concealed above the ceiling and could not be represented accordingly.

5 RECOMMENDED DEMOLITION SCOPE OF WORK & COST ESTIMATES

5.1 Recommended Scope of Work

To permit effective planning and reduce uncertainty and risk, we recommend the following scope of work discussed in this section. Our understanding of the desired outcome and the responsibilities of the owner, the consultant and the contractor are described to help assure that the entire scope of work is well defined.

5.1.1 General Planning, Constraints and Requirements

The desired scope of the demolition is understood to include the entire building and all it's equipment. The parking area to the East and the asphalt and concrete sidewalk South of the main entrances are to remain. The contractors staging and work areas will be the West end of East parking lot and the unpaved area to the North (at the back of the building). Truck access will be through the parking area.

The demolition can occur during normal weekday working hours and that there will not be any particular time constraint for the contractor to return the site to the owner.

Since the future use of the site is unknown the demolition should entail only the minimum work required to leave the site unfenced and accessible to the public until some future construction or other re-development is undertaken. The foundations of the building will be removed entirely (down to bedrock) to facilitate future development.

It is understood that the City will provide a demolition permit at no cost to the contractor and accept all the debris generated by the demolition at the municipal dump approximately 20km from the site without changing tipping fees. This includes both normal and hazardous waste. The contractor will be responsible for all transportation costs.

The contractor will be permitted to salvage metal and other recyclable items rather than bringing them to the landfill. If desired quantities can be measured and documents recording the destination of all the material removed from the site can be provided. It this is desired it must be stated clearly in the tender documents.

5.1.2 Demolition Plans

In all cases the OBC requires that the plans for demolition be prepared by a Professional Engineer and that they also supervise the work. This Engineer could be retained by the Owner to prepare documents for tender, analyze bids, and supervise the work, or the contractor can retain an engineer to provided design, review and signoff services as part their scope of work. In general the risk and cost can be best managed by ensuring a single party (the contractor) carries the entire scope of work, including preparation of the demolition plan. In this case the tender would be based on a Request For Proposal (RFP) rather than tender demolition plans and specifications. Ensuring that the RFP is clear and comprehensive is essential. We can provide support for the preparation of any RPF if this contracting method is selected.

In any case the most appropriate demolition method will be deconstruction. First the roof will be removed, then the trusses will be removed using a crane. Then the block walls, concrete slabs and foundation will be brought to ground level by an excavator. Steel and all other items will be removed and all the block and concrete will be crushed. The estimated volume of material to remain is presented in section 4.

After demolition the building footprint will roughly leveled with material to fill any large depressions we expect that the crushed material remaining on site will be sufficient to re-grade the area. Placing top-soil and seeding the area, or other landscaping should not be included since the future use is not know.

5.1.3 Pre-Demolition and Preparatory Work

To reduce uncertainty, we recommend that the owner complete certain work before the contactors work begins;

1. The rink ice making equipment should be rendered inert and documentation to this effect be provided to the contractor in the RFP.
2. All the items which the owner wishes to retain should be removed from the site, or clearly listed in the tender documents.

3. The power, phone, water and other electrical services to the building should be disconnected. The availability of power and water should be clearly communicated in the RFP. It is assumed that power and water sufficient to support the early stages of the demolition will be provided to the contractor.
4. Natural gas or other utilities should be turned off and physically disconnected.
5. Notify the neighbours. We expect that the only impact on the neighbouring properties will be noise.

5.1.4 Demolition

The contractor's scope of work for the demolition will include;

1. Securing the site with perimeter fencing and traffic control for vehicles accessing the site.
2. Complete pre-excavation locates to identify all the underground services and connections.
3. Purge water and gas lines.
4. Abatement and removal of hazardous materials.
5. Removing select items for salvage and recycling. This includes all the mechanical systems, accessible piping, transformers and switchgear, air handlers, pumps, valves, lighting, wiring and other similar items. It would be left to the contractor to decide which item to remove before the general demolition.
6. Deconstruction of the building and separation and sorting of the various types of waste.
7. Dust suppression. Since the building water supply would be unable by this time, the availability of municipal water for this purpose should be clearly communicated in the contract document. For the moment we assume that the owner will supply the required water.
8. Measuring the quantity of each type of waste generated and submitting record documents.
9. Transportation of all waste material from the site to the landfill. We expect that all the steel will go to salvage and all the concrete and block will remain on site. So quantity of material to go to the landfill will be relatively small.
10. Capping of the water and sanitary lines near the building foundation. This is suggested rather than removing the services back to the street to reduce cost, risks, and impact on the asphalt area in the front to remain. The precise location of the abandon services should be surveyed.
11. Rough grading of the site using the crushed concrete and block.
12. Removing the fencing and demobilization.

5.2 Cost Estimate

Based on the recommended scope of work as described in this section, we estimate that the cost to complete the recommended scope of work will be $215,000, ±10%.

5.3 Next Steps

Upon deciding to proceed with the demolition, the next steps will be to prepare a comprehensive RFP to formalize the procedures to be used, constraints, timelines and all other items required to define the entire SOW and permit comparative bidding.

We estimate that it would take approximately 3 weeks to complete detailed coordination and prepare the necessary documents and we can provide a fee propose to undertake this work at your request.

We trust that this letter provides the necessary guidance to permit a decision regarding whether or not to proceed with the demolition. Should you have any questions, please do not hesitate to contact the undersigned.

Yours truly,

LRL Associates Ltd.

Jessica Arthurs
Senior Environmental Technician

Elliott Smith, B.Eng, EIT

Encl.

Attachment A Summary Tables
Attachment B Laboratory Certificates of Analysis

ATTACHMENT A

Summary Tables

Table 1
Summary of Potential Asbestos Containing Material Collected and Analysis Results
Designated Substance & Hazardous Material Survey Review - Jean Marc Lalonde Arena
1450 Du Parc Avenue, Rockland, Ontario
LRL File: 190051

Type of Material	Description	Location	Sample Number	Asbestos Content (%)
Mortar	Grey	Between the masonry blocks that make up the majority of the building envelope and dividing walls throughout the Site	MO1A-G	<0.5
	Grey	Between the ceramic floor tiles encountered in the southwestern stair well and throughout the second floor banquet area	MO1A-E	<0.5
Caulking	Brown	Lower perimeter of the cement block walls of the rink portion of the Site	CA1A-C	<0.5
Mastic	Yellow	Underside of the rubber anti-slip strips on the stairs situated at the southwest stair well	MA1A-C	<0.5

Notes

A, B,C… Replicate sample collected of homogeneous material

O. Reg. 278/05 defines asbestos-containing material as material containing 0.5% or more asbestos by weight.

Table 2
Summary of Potential Lead Containing Paint Samples and Analysis Results
Designated Substance & Hazardous Material Survey Review - Jean Marc Lalonde Arena
1450 Du Parc Avenue, Rockland, Ontario
LRL File: 190051

Location	Description	Sample Number	Lead Concentration (ppm)	*Est. Lead Fumes and Dust (mg/m3)	Mitigation Measures
Exterior surfaces of the metal doors across the Site	Green	PS1	**18000**	0.18	Demolition activities should be carried out in accordance with **Type 2** Operations outlined in MOL's "Guideline: Lead on Construction Projects" and ensure lead fumes do not exceed the Time Weighted Average Exposure Value (TWAEV) of 0.05 mg/m3.
Walls and ceilings throughout the Site	White	PS2	<20	<0.00020	Not Required
Walls throughout the main level of the Site	Dark Blue	PS3	**837**	0.00837	Demolition activities should be carried out in accordance with **Type 1** Operations outlined in MOL's "Guideline: Lead on Construction Projects" and ensure lead fumes do not exceed the Time Weighted Average Exposure Value (TWAEV) of 0.05 mg/m3.
walls throughout the main level of the Site	Burgundy	PS4	**1760**	0.0176	Not Required
Walls in the stair wells and across second floor	Beige	PS5	**424**	0.00424	Demolition activities should be carried out in accordance with **Type 1** Operations outlined in MOL's "Guideline: Lead on Construction Projects" and ensure lead fumes do not exceed the Time Weighted Average Exposure Value (TWAEV) of 0.05 mg/m3.
Walls in the stair wells and across second floor	Light Brosn	PS6	**406**	0.00406	Demolition activities should be carried out in accordance with **Type 1** Operations outlined in MOL's "Guideline: Lead on Construction Projects" and ensure lead fumes do not exceed the Time Weighted Average Exposure Value (TWAEV) of 0.05 mg/m3.
West wall of the banquet area of the second floor	Blue	PS7	<20	<0.00020	Not Required
Cement floor around the rink	Grey	PS8	**348**	0.00348	Demolition activities should be carried out in accordance with **Type 1** Operations outlined in MOL's "Guideline: Lead on Construction Projects" and ensure lead fumes do not exceed the Time Weighted Average Exposure Value (TWAEV) of 0.05 mg/m3.
Door to the Women's washroom on the main floor	Grey	PS9	<20	<0.00020	Not Required

Notes
BOLD Lead containing material above 90 ppm provincial standard
MOL Ministry of Labour

*Calculated based on the lead concentration (%) multiplied by Particles Not Otherwise Specified (PNOS) of 10 mg/m^3 (Ontario TWA) eg. (1000 ug/g or 0.1% or 0.001) * 10 mg/m^3 = 0.01 mg/m^3 (est. lead fumes and dust)

ATTACHMENT B

Laboratory Certificates of Analysis

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Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Jessica Arthurs

Client PO:
Project: 190051
Custody: 119246

Report Date: 8-Feb-2019
Order Date: 5-Feb-2019

Order #: 1906169

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

Paracel ID	Client ID
1906169-01	MO1A
1906169-02	MO1B
1906169-03	MO1C
1906169-04	MO1D
1906169-05	MO1E
1906169-06	MO1F
1906169-07	MO1G
1906169-08	MO2A
1906169-09	MO2B
1906169-10	MO2C
1906169-11	MO2D
1906169-12	MO2E
1906169-13	MA1A
1906169-14	MA1B
1906169-15	MA1C
1906169-16	CA1A
1906169-17	CA1B
1906169-18	CA1C

Approved By:

Heather S.H. McGregor, BSc

Laboratory Director - Microbiology

PARACEL LABORATORIES LTD.

Order #: 1906169

Certificate of Analysis
Client: LRL Associates Ltd.
Client PO:

Report Date: 08-Feb-2019
Order Date: 5-Feb-2019
Project Description: 190051

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1906169-01	04-Feb-19	Grey	Mortar	No	**Client ID: MO1A**	
					Non-Fibers	100
1906169-02	04-Feb-19	Grey	Mortar	No	**Client ID: MO1B**	
					Non-Fibers	100
1906169-03	04-Feb-19	Grey	Mortar	No	**Client ID: MO1C**	
					Non-Fibers	100
1906169-04	04-Feb-19	Grey	Mortar	No	**Client ID: MO1D**	
					Non-Fibers	100
1906169-05	04-Feb-19	Grey	Mortar	No	**Client ID: MO1E**	
					Non-Fibers	100
1906169-06	04-Feb-19	Grey	Mortar	No	**Client ID: MO1F**	
					Non-Fibers	100
1906169-07	04-Feb-19	Grey	Mortar	No	**Client ID: MO1G**	
					Non-Fibers	100
1906169-08	04-Feb-19	Grey	Mortar	No	**Client ID: MO2A**	
					Non-Fibers	100
1906169-09	04-Feb-19	Grey	Mortar	No	**Client ID: MO2B**	
					Non-Fibers	100
1906169-10	04-Feb-19	Grey	Mortar	No	**Client ID: MO2C**	
					Non-Fibers	100
1906169-11	04-Feb-19	Grey	Mortar	No	**Client ID: MO2D**	
					Non-Fibers	100
1906169-12	04-Feb-19	Grey	Mortar	No	**Client ID: MO2E**	
					Non-Fibers	100

PARACEL LABORATORIES LTD.

Order #: 1906169

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 08-Feb-2019

Order Date: 5-Feb-2019

Project Description: 190051

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1906169-13	04-Feb-19	Yellow	Mastic	No	**Client ID: MA1A** [AS-PRE]	
					Non-Fibers	100
1906169-14	04-Feb-19	Yellow	Mastic	No	**Client ID: MA1B** [AS-PRE]	
					Non-Fibers	100
1906169-15	04-Feb-19	Yellow	Mastic	No	**Client ID: MA1C** [AS-PRE]	
					Non-Fibers	100
1906169-16	04-Feb-19	Brown	Caulking	No	**Client ID: CA1A** [AS-PRE]	
					Non-Fibers	100
1906169-17	04-Feb-19	Brown	Caulking	No	**Client ID: CA1B** [AS-PRE]	
					Non-Fibers	100
1906169-18	04-Feb-19	Brown	Caulking	No	**Client ID: CA1C** [AS-PRE]	
					Non-Fibers	100

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	3 - Calgary	8-Feb-19

Qualifier Notes

Sample Qualifiers :

AS-PRE: Due to the difficult nature of the bulk sample (interfering fibers/binders), additional NOB preparation was required prior to analysis

Work Order Revisions | Comments

None

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Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Jessica Arthurs

Client PO:
Project: 190051
Custody: 119239

Report Date: 8-Feb-2019
Order Date: 5-Feb-2019

Order #: 1906151

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

Paracel ID	Client ID
1906151-01	PS1
1906151-02	PS2
1906151-03	PS3
1906151-04	PS4
1906151-05	PS5
1906151-06	PS6
1906151-07	PS7
1906151-08	PS8
1906151-09	PS9

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis
Client: LRL Associates Ltd.
Client PO:

Report Date: 08-Feb-2019
Order Date: 5-Feb-2019
Project Description: 190051

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	8-Feb-19	8-Feb-19

Sample and QC Qualifiers Notes

1- Gen-19 :Complete separation of paint from substrate not possible for this sample and a small amount of substrate has been included in the paint digestion.
2- QR-05 : Duplicate RPDs higher than normally accepted. Remaining batch QA\QC was acceptable. May be sample effect.

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: LRL Associates Ltd.
Client PO:

Report Date: 08-Feb-2019
Order Date: 5-Feb-2019
Project Description: 190051

Sample Results

Lead

Matrix: Paint
Sample Date: 04-Feb-19

Paracel ID	Client ID	Units	MDL	Result
1906151-01	PS1	ug/g	20	18000
1906151-02	PS2	ug/g	20	<20 [1]
1906151-03	PS3	ug/g	20	837
1906151-04	PS4	ug/g	20	1760
1906151-05	PS5	ug/g	20	424
1906151-06	PS6	ug/g	20	406
1906151-07	PS7	ug/g	20	<20
1906151-08	PS8	ug/g	20	348
1906151-09	PS9	ug/g	20	<20

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	**ND**	**20**	**ug/g**						
Matrix Duplicate									
Lead	**557**	**20**	**ug/g**	**319**			**54.4**	**30**	**QR-05**
Matrix Spike									
Lead	418		ug/L	159	103	70-130			

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Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Jessica Arthurs

Client PO:
Project: 190051
Custody: 46808

Report Date: 26-Feb-2019
Order Date: 25-Feb-2019

Order #: 1909102

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

Paracel ID	Client ID
1909102-01	S1-Grey
1909102-02	S2-Blue
1909102-03	S3-Brown
1909102-04	S4-Beige
1909102-05	S5-Burgundy
1909102-06	S6-White

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis
Client: LRL Associates Ltd.
Client PO:

Report Date: 26-Feb-2019
Order Date: 25-Feb-2019
Project Description: 190051

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	26-Feb-19	26-Feb-19
Solids, %	Gravimetric, calculation	26-Feb-19	26-Feb-19

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 26-Feb-2019

Order Date: 25-Feb-2019

Project Description: 190051

	Client ID:	S1-Grey	S2-Blue	S3-Brown	S4-Beige
	Sample Date:	02/25/2019 11:30	02/25/2019 11:30	02/25/2019 11:30	02/25/2019 11:30
	Sample ID:	1909102-01	1909102-02	1909102-03	1909102-04
	MDL/Units	Paint	Paint	Paint	Paint
Physical Characteristics					
% Solids	0.1 % by Wt.	100	100	100	100
EPA 1311 - TCLP Leachate Inorganics					
Lead	0.05 mg/L	0.06	0.06	<0.05	<0.05

	Client ID:	S5-Burgundy	S6-White	-	-
	Sample Date:	02/25/2019 11:30	02/25/2019 11:30	-	-
	Sample ID:	1909102-05	1909102-06	-	-
	MDL/Units	Paint	Paint	-	-
Physical Characteristics					
% Solids	0.1 % by Wt.	100	100	-	-
EPA 1311 - TCLP Leachate Inorganics					
Lead	0.05 mg/L	0.10	<0.05	-	-

Certificate of Analysis
Client: LRL Associates Ltd.
Client PO:

Report Date: 26-Feb-2019
Order Date: 25-Feb-2019
Project Description: 190051

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Lead	ND	0.05	mg/L						

Certificate of Analysis
Client: LRL Associates Ltd.
Client PO:

Report Date: 26-Feb-2019
Order Date: 25-Feb-2019
Project Description: 190051

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Lead	ND	0.05	mg/L	ND			0.0	32	
Physical Characteristics									
% Solids	92.5	0.1	% by Wt.	93.1			0.6	25	

Certificate of Analysis
Client: LRL Associates Ltd.
Client PO:

Report Date: 26-Feb-2019
Order Date: 25-Feb-2019
Project Description: 190051

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
EPA 1311 - TCLP Leachate Inorganics									
Lead	46.2		ug/L	0.974	90.4	77-126			

Qualifier Notes:

None

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.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.