



CCI GROUP

SCIENCE • ENGINEERING • SOLUTIONS

7900 KEELE STREET SUITE 200 CONCORD ON L4K 2A3

DESIGNATED SUBSTANCE SURVEY

at

**Bill Bolton Arena
40 Rossmore Road
Toronto, Ontario**

Prepared for

**City of Toronto
Parks, Forestry, and Recreation**

CCI Project No: 135121

November 17, 2014

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EXECUTIVE SUMMARY

Material	Yes	No	Likely
Acrylonitrile		X	
Arsenic		X	
Asbestos		X	
Benzene			X
Coke Oven Emissions		X	
Ethylene Oxide		X	
Isocyanates			X
Lead	X		
Mercury	X		
Silica			X
Vinyl Chloride			X
PCBs		X	
Ozone Depleting Substances	X		
Mould		X	

1.0 INTRODUCTION

In conjunction with the State-of-Good-Repair Audits, RFP 9117-13-5040, CCI Group Inc. carried out a Hazardous Materials Survey of the Bill Bolton Arena located at 40 Rossmore Road, Toronto.

The purpose of the survey was to determine the presence of building materials containing certain materials referred to as Designated Substances throughout the location, prior to any scheduled renovations and/or demolition work. Designated Substances are defined as any biological, chemical, or physical agent or combination thereof prescribed as a Designated Substance to which exposure of a worker is prohibited, regulated, restricted, limited or controlled.

2.0 REGULATORY REQUIREMENTS

In Ontario, there are a total of eleven Designated Substances. These substances have been regulated under Ontario Regulation 490/09 — *Designated Substances*, made under the Ontario Health and Safety Act, which applies to controlling designated substances in the work place.

The Occupational Health and Safety Act (OHSA), R.S.O. 1990, c.0.1, s.30 (1) specifies that:

“Before beginning a project, the owner shall determine whether any Designated Substances are present at the project site and shall prepare a list of all Designated Substances that are present at the site”.

Designated Substances are defined as any biological, chemical, or physical agent or combination thereof prescribed as a Designated Substance to which exposure of a worker is prohibited, regulated, restricted, limited or controlled.

Section 30 of The Act requires that the list of Designated Substances be provided to prospective contractors and subcontractors who may do work on a site and come into contact at the site with Designated Substances.

The Ministry of Labour has designated the following substances:

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

Ontario Regulation 278/05 (O. Reg. 278/05), the Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations, made under the Occupational Health and Safety Act (OHSA), requires owners of a building to identify Asbestos-containing Materials (ACMs) prior to potential disturbance of the materials.

In addition, an owner of a building is required to have an Asbestos Management Plan (AMP) if ACMs (friable or non-friable) are present in the building and are to remain in place. An inventory of ACMs must be kept on site. All ACMs must be routinely inspected to ensure no damage has occurred, and the inventory must be updated once in each 12-month period and as may be required based on expected changing site conditions, abatement and/or renovation activities. Removal of all asbestos containing materials is required prior to building demolition.

In addition to the Designated Substances, the building was also surveyed for the presence of other hazardous materials such as polychlorinated biphenyls (PCBs), radioactive materials, ozone depleting substances (ODSs), and mould.

We understand that this survey has been conducted to comply with the regulatory requirements of Ontario Regulation 278/05.

3.0 SURVEY METHODOLOGY

Samples may have been obtained to determine the presence of asbestos in building materials and/or lead in paint. Samples were obtained in typically inconspicuous locations so as not to reduce aesthetic qualities. Samples were not taken of materials which would damage the building envelope, such as window sealants and roof materials. When inaccessible areas were encountered during the survey (i.e. wall cavities) inferences were made based upon findings in adjacent spaces. Equipment such as motors, electrical panels, fire doors etc., were not de-energized or disassembled to examine internal components or materials. These items should be considered to contain hazardous materials until proven otherwise.

The survey included a visual assessment for the presence of asbestos, lead, mercury, other Designated Substances and Hazardous Materials. Photographs are included throughout the report.

4.0 SCOPE OF WORK

The Designated Substance survey entailed the following:

- Visual review of the building to identify materials which could contain Designated Substances,
- Recommendations for appropriate action where required.

This report details the hazardous substances found within the building, and was prepared for City of Toronto (the client). The assessment was directed on both the interior and exterior structure and finishes of the building. It does not report on possible contaminants in the soil under and surrounding the building, or contents of vessels, drums, etc. that may be concealed.

The survey was conducted on March 31, 2014. After that time, hazardous substances may have been removed from or added to the location. It is the owner's responsibility to disclose whether any hazardous substances have been added to or removed from the building.

This report should be made available to contractors tendering on any renovation or demolition work. In turn, all contractors requesting tenders from subcontractors shall furnish this report to subcontractors.

5.0 FIELD WORK AND FINDINGS

Property Description



The Survey Area consisted of a single (1) storey hockey arena with mezzanine office area, which was constructed in 1972 and renovated in 1991. The building does not include a basement. Floor finishes throughout the building include exposed poured concrete, rubber, ceramic tiles, and hardwood. Wall finishes include exposed and painted concrete block, ceramic tile, and painted gypsum wall board. Ceiling finishes include painted steel structure, lay-in ceiling tiles, plaster and painted gypsum wall board. All domestic hot and cold water lines throughout the Survey Area appeared to be either uninsulated metal or PVC, or wrapped with fibreglass insulation and covered in PVC or canvas.

The following subsections detail our findings:

Asbestos

Background Information on Asbestos

Asbestos is a generic name that has been given to a group of naturally occurring fibrous minerals. In the past, asbestos was commonly used as a component in building materials such as insulation, fireproofing and acoustic or decorative panels. Although there are many types of asbestos, the three main forms of commercial importance in Ontario are chrysotile, amosite and crocidolite.

An Asbestos-Containing Material (ACM) is defined by O. Reg. 278/05 as a material that contains 0.5 % or more asbestos by dry weight. ACMs are placed into two general classes, “friable” and “non-friable” ACMs. Friable ACMs are those materials that when dry can be crumbled, pulverized and reduced to powder by hand pressure. Typical friable ACMs include acoustical or decorative texture coats, fireproofing, some ceiling tiles and thermal insulation. Non-friable ACMs are much more durable as they are held together by a binder such as cement, vinyl or asphalt. Typical non-friable ACMs include floor tiles, fire blankets, roofing materials and cementitious products such as wallboards, pipes or siding.

It has been recognized that hazardous situations may exist in buildings where asbestos-containing materials are found. This is especially true where asbestos fibres may become airborne as a result of material ageing, physical damage, and water damage or air movement.

In contrast, there is little reason for concern if the asbestos is in good condition, has not been damaged and is not in a location where it is likely to be disturbed.

Asbestos Survey Methodology

The asbestos survey included the identification of potential friable and non-friable asbestos-containing materials within the facility.

The likelihood of ACMs being present in inaccessible areas such as behind chases and bulkheads was determined by assessing the presence of asbestos-containing systems in adjacent areas.

Fiberglass insulation was not submitted for analysis as it can be identified visually as non-asbestos material.

Past Designated Substance Surveys (DSS) completed by Kleinfeldt Consultants Limited were referenced during this survey. Additional samples were taken where necessary to comply with O. Reg. 287/05. Past results are included in Appendix A where applicable.

Asbestos Survey Findings

No suspected ACMs were found during the survey. Suspected materials were tested in the previous report. Additional samples were not taken as the material was either removed (plaster in Men's Washroom) or is not expected to contain asbestos due to age; it is unlikely that ACMs would be found.

- Mechanical Piping Insulation

Mechanical pipe straight and fitting insulation was observed throughout the Survey Area and was observed to contain fibre glass material. Fibre glass is a non-asbestos containing material and thus was not sampled.



- Drywall Joint Compound

Plaster ceiling at Men's Washroom was replaced by a gypsum board ceiling. Gypsum texture ceiling at the Mezzanine's Office were sampled in the previous report and found not to contain asbestos. Additional samples were not taken as the material is not expected to contain asbestos, due to the age.



- Exterior Door Caulking

Exterior door caulking was not sampled as it is not expected to contain asbestos.

- Roofing Material

To avoid damage and compromising the integrity of roofing material, no bulk samples of the roofing materials from roof sections were collected. The roofing materials are unlikely to contain asbestos.

- Storm Drainage Piping

Transite piping, which can contain asbestos, is frequently used in modern construction. The cementitious piping is often used for storm drainage piping. Visible storm drainage piping throughout the building is cast iron.

Lead

Background Information on Lead

Lead was a common additive in exterior and hard wearing paint applications. Lead was used to prolong shelf life of paint and to increase its flexibility and durability to wear and weather. Acute exposure to lead by inhalation or ingestion may cause headaches, fatigue, nausea, abdominal cramps and joint pain. Chronic exposures can cause reduced haemoglobin production and reduced lifespan. It has also been known to impact the body's central and peripheral nervous systems and brain function and has been linked to learning disabilities in children.

Currently in Ontario, there is no regulatory limit that determines what concentration of lead constitutes a "lead containing material". On October 21, 2010, Health Canada, under the *Hazardous Products Act*, stated that the lead content in surface-coating materials, furniture, toys and other articles for children, should not exceed 90mg/kg (0.009%, 90ppm). However, this is intended for the importation or sale of products within Canada. Therefore, this is not to be misconstrued as a limit established to define a lead-containing material or a limit with respect to lead on construction projects.

Exposure to lead-containing materials is regulated under Ontario Regulation 490/09, *Designated Substances* - made under the Occupational Health and Safety Act. Care must be taken to prevent lead-containing particles from becoming airborne during the disturbance of lead-containing surfaces (i.e., during renovation or demolition projects). All lead abatement work must follow procedures outlined in the Guideline Lead on Construction Projects, issued in September 2004 (amended in April 2011) by the Occupational Health and Safety branch of the Ministry of Labour.

Lead is known to have been used in solder on copper plumbing fixtures, in lead conduit pipes, in lead-calcium battery plates, ammunition, and in nuclear and X-ray shielding devices. However, these materials were not sampled during this investigation, but were noted where applicable.

Lead Findings

Lead was found in the paint sample taken from the Zamboni Room. Lead may also be present in the soldered joints of copper piping found within this building.



Mercury

Mercury is known to cause poisoning in humans through the inhalation of vapours, ingestion of contaminated materials or skin absorption through direct contact with the liquid.

Precautions must be taken to prevent mercury vapours from becoming airborne during renovations or demolition of the building. Exposure to airborne mercury is regulated under the Revised O. Reg. 490/09 as amended – Regulation respecting Mercury – made under the Occupational Health and Safety Act; and under O. Reg. 558, which amended O. Reg. 347/90 (General - Waste Management), mercury is classified as a Schedule 2(b) Hazardous Waste Chemical. Its hazardous waste number is U151.

Mercury is found in products such as thermostats, temperature and pressure gauges, fluorescent lamps and batteries. Mercury in products can be released to the environment through breakage, or disposal at the end of a product's useful life. Improper disposal of these mercury products poses a health and environmental risk to everyone. In addition, the disposal of mercury-containing products can create wastes that are often classified as hazardous. Wastes that leach mercury in concentrations exceeding Ontario Regulation 347/90 (General - Waste Management) limits are also considered hazardous.

Thermostat Switches

The mercury in thermostats switch contains approximately 3-4 grams of mercury in a glass ampoule, typically attached to a metal coil. Mercury-containing switches have been used in thermostats for over 40 years.

CCI Group identified mercury-containing thermostat switches within the Survey Area.

Fluorescent Light Tubes

Mercury is an essential component in fluorescent lamps and HID lamps. The mercury is in a vapour form and in the phosphor coating on the lamp tube. Estimates of the mercury content contained in compact, 4 foot, and 8-foot lamps are 10 mg and 23 mg respectively.

Most fluorescent lamps qualify as hazardous waste when removed from service and are therefore prohibited from disposal in the solid waste stream. Fluorescent lamps would be classified as 146T on your facility Generator Registration Report under O. Reg. 347/90 - General Waste Management, as amended by O. Reg. 558/00. Under this regulation, if the leachate results exceed 0.1 milligrams of mercury per litre for a given waste, then the facility must treat the waste as hazardous waste. Most fluorescent and HID lamps will exceed the leachate toxicity limit; therefore these wastes must be registered and treated as hazardous waste or sent for recycling.

CCI Group identified numerous fluorescent light fixtures with tubes throughout the Survey Area. Mercury is likely to be present in vapor form in the fluorescent light tubes.

Silica

Silica is expected to be present in building materials such as concrete, brick, mortar and ceramic tiles located throughout the structures.

Precautions must be taken to prevent silica-containing particles from becoming airborne during the disturbance of silica-containing surfaces, such as during renovation or demolition projects. Exposure to airborne silica is regulated under Ontario Regulation 490/09, *Designated Substances* - made under the Occupational Health and Safety Act. All work being carried with silica containing materials should be conducted following the Guide Silica on Construction Projects issued September 2004 by the Occupational Health and Safety branch of the Ministry of Labour.

Vinyl Chloride

Vinyl chloride (monomer) is likely to be present in stable form within poly vinyl-chloride (PVC) piping and conduits and as a component of interior finishes.

Acrylonitrile

Acrylonitrile was not noted and would not be expected to be present in the Survey Area.

Arsenic

Arsenic or arsenic compounds were not noted and are not expected to be present in the Survey Area.

Benzene

Benzene may be present in stable form in roofing materials, paints and adhesives located throughout the subject facility.

Coke Oven Emissions

Coke oven emissions were not noted and would not be expected to be present in the Survey Area.

Ethylene Oxides

Ethylene oxide was not noted, and would not be expected to be present in the Survey Area.

Isocyanates

Isocyanates compounds may be present in stable form in paint finishes, varnishes, and polyurethane plastics, synthetic rubbers, foams and adhesives.

Polychlorinated Biphenyls (PCBs)

Polychlorinated Biphenyls (PCBs) were commonly used as dielectric insulating fluid in electrical equipment such as transformers and capacitors, and in the fluorescent and HID lamp ballasts. The production of PCBs in the North America started in 1929 and was banned at the beginning of 1979. After 1981, no manufacturers produced fluorescent and HID lamps with PCB-containing ballasts.

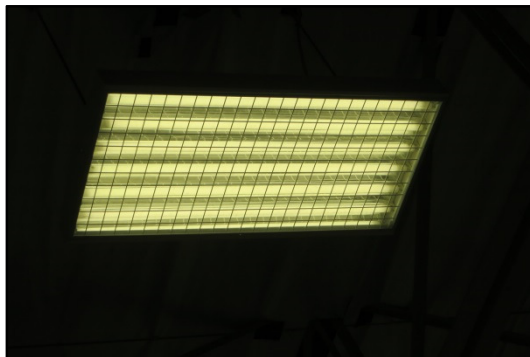
PCBs are not a designated substance under the Occupational Health and Safety Act.

PCB Regulations (SOR/2008-273)

The *PCB Regulations* (the Regulations) set specific deadlines for ending the use of PCBs in concentrations at or above 50 mg/kg; eliminating all PCBs and equipment containing PCBs currently in storage and limiting the period of time PCBs can be stored before being destroyed. The Regulations also establish sound practices for the better management of the remaining PCBs in use (i.e. those with content of less than 50 mg/kg), until their eventual elimination, to prevent contamination of dielectric fluids and dispersion of PCBs in small quantities into other liquids.

- Light Ballasts/Transformers

The building is illuminated using T-8 fluorescent and compact fluorescent bulbs. The ballasts are not expected to contain PCBs. The transformers are non-PCB type ballasts.



Ozone Depleting Substances (ODS)

Within Ontario, the general use of ozone depleting substances (ODS) is controlled through Regulation 463/10 of the Environmental Protection Act. Production of ODS in the form of hydro chlorofluorocarbons (HCFCs) and chlorofluorocarbons (CFCs) ceased in Canada in 1993 as a result of their ozone-depleting characteristics. Importation of CFCs into Canada ceased in 1997 and total ban on their use from 2010. The use of these materials is still permitted in existing equipment, but equipment must be serviced by a licensed contractor such that CFCs are contained and not released to the environment during servicing or operation.

A visual assessment for equipment potentially containing ozone-depleting substances was conducted. **CCI Group** observed rooftop unit which contain R-22 refrigerant (chlorodifluoromethane), currently regulated as ozone depleting substance, however strict controls over their manufacture and supply are in place. Under the management of a licensed contractor, equipment containing R-22 does not represent a significant threat to human health or the environment. The refrigerants R-410A, R-404A, and R507 are non-ozone depleting substances.

No other ODS-content equipment was observed in the subject units at the time of site visit.

Mould

CCI Group did not observe any signs of mould in the Survey Area.

6.0 CONCLUSIONS AND RECOMMENDATIONS

On the basis of our investigations, representative sampling and laboratory analysis of suspected asbestos and lead containing materials, as well as mould-affected materials; the following conclusions and recommendations are presented:

Lead

Maintain paint finishes in good condition. Provide water testing to confirm the presence of lead from copper solder in the water.

Mercury

Maintain HID and fluorescent fixtures and mercury based thermostats and dispose of as per Ontario Regulations 844 and 347.

Silica

Precautions should be taken as required during major renovations and demolition projects on concrete (i.e. coring through concrete slabs, demolition of masonry, etc.) to ensure that workers' exposure levels to airborne silica does not exceed 0.05 mg/m³.

This can be achieved by:

- providing the workers with respiratory protection;
- wetting the surface of the materials to prevent dust emissions; and,
- Providing workers with facilities to properly wash prior to exiting the work area.
- Demolition work that is likely to impact silica-containing materials should be carried out in accordance with the requirement detailed in the Ontario Ministry of Labour document entitled "Guideline: Silica on Construction Projects", dated September 2004.

Ozone Depleting Substances (ODS)

A visual assessment for equipment potentially containing ozone-depleting substances was conducted. **CCI Group** observed one (1) rooftop unit which was labelled to contain R-22 refrigerant. Under the management of a licensed contractor, equipment containing R-22 does not represent a significant threat to human health or the environment.

- Prior to the demolition/alteration/renovation of the units, all equipment containing ODS must be decommissioned by a licensed contractor such that ozone depleting substances are contained and not released to the environment during decommissioning

Other Designated Substances

Other Designated Substances (acrylonitrile, arsenic, coke oven emissions, ethylene oxide, isocyanates, benzene or vinyl chloride) are not expected to be present in the building in matrix or in sufficient quantities to cause an exceedence of Ministry of Labour exposure guidelines.

7.0 GENERAL CONSIDERATIONS AND LIMITATIONS

The information presented in this report is based on information provided by others, direct visual observation made by personnel with **CCI**, and the results of laboratory testing as identified herein.

It should be noted that there might be hazardous materials in locations not visible during our investigation. Prior to any demolition/dismantling of materials additional testing is recommended as a means of worker and occupant protection.

The findings detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of our conclusions and recommendations.

CCI does not certify or warrant the environmental status of the property nor the building on the property.

Please note that the passage of time affects the information provided in the report. Environmental conditions of a site can change. Opinions relating to the site conditions are based upon information that existed at the time that the conclusions were formulated.

The client expressly agrees that it has entered into this agreement with **CCI**, both on its own behalf and as agent on behalf of its employees and principals.

The client expressly agrees that **CCI's** employees and principals shall have no personal liability to the client in respect of a claim, whether in contract, tort and/or any other cause of action in law. Accordingly, the client expressly agrees that it will bring no proceedings and take no action in any court of law against any of **CCI's** employees or principals in their personal capacity.

We trust that we have detailed our findings clearly and that we have satisfactorily addressed the scope of work you require at this time. In the event you wish us to review our findings with you, or require our services further in this regard, please do not hesitate to contact our office.

Sincerely,
CCI GROUP INC.

Prepared by:

Zack Salman, M. Eng., BSSO
Senior Project Manager
Corporate Projects

APPENDIX A – LAB ANALYSIS



EMSL Analytical, Inc.

208 Stone Hinge Lane, Carle Place, NY 11514

Phone: (516) 997-7251 Fax: (516) 997-7528 Email: carleplacelab@emsl.com

Attn: **Adrian Cwietkow**
Kleinfeldt Consulting
2400 Meadowpine Blvd.
Suite 102
Mississauga, ON L5N 6S2

Customer ID: KLE180
 Customer PO:
 Received: 04/21/08 8:45 AM
 EMSL Order: 080838862

Fax: (905) 542-2729 Phone: (905) 542-1600
 Project: Job/Project Name: City of Toronto, Job/Project No: 3025

EMSL Proj:
 Analysis Date: 4/28/2008
 Report Date: 5/2/2008

Asbestos Analysis of Bulk Materials via EPA 600/R-93/116 Method using Polarized Light Microscopy

Sample	Location	Appearance	Non-Asbestos		Asbestos
			% Fibrous	% Non-Fibrous	% Type
208.1 080838862-004	Plaster ceiling @ men's wc	White Non-Fibrous Homogeneous		50% Ca Carbonate 50% Non-fibrous (other)	None Detected
208.2 080838862-005	GWB ceiling @ mezzanine (never stipple)	Gray Non-Fibrous Homogeneous		20% Mica 80% Non-fibrous (other)	None Detected

Analyst(s)

Jonathan Teda (2)

Michelle McGowan, Laboratory Manager
 or other approved signatory

Due to magnification limitations inherent in PLM, asbestos fibers in dimensions below the resolution capability of PLM may not be detected. The limit of detection, as stated in the method is 1%. The above test report relates only to the fibers tested and may not be reproduced in any form without the express written approval of EMSL Analytical, Inc. EMSL's liability is limited to the cost of analysis. EMSL does not accept responsibility for sample collection activities or analytical method limitations. Interpretation and use of test results are the responsibility of the client. Samples received in glass containers without alteration noted. This report must not be used to make product endorsement by NVLAP or any agency of the U.S. Government.

ALPA (HLA) 102354, NVLAP Lab Code 107048-46, CMA HLA# 2339, CT HLA# 0348, NY HLA# 14486, WA AASHTO233, UELAP 04444

PLM-1

THIS IS THE LAST PAGE OF THE REPORT.

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CERTIFICATE OF ANALYSIS

Client:	CCI Group Inc	Report Date:	4/23/2014
	7900 Keele Street, Suite 200	Report Number:	331778
	Concord ON L4K 2A3	Project:	CityOfTorontoSGR-BillBoltonAre
		Project No.:	135121

LEAD PAINT SAMPLE ANALYSIS SUMMARY

<u>Lab No.</u>	<u>Client No.</u>	<u>Location / Description</u>	<u>Concentration Lead By Weight (%)</u>
5292138	Pb-01	Lead Paint	0.11
		Zamboni Overhead Door	
5292139	Pb-02	Lead Paint	<0.0079
		Ext Siding At Roof Level	

Accreditations:

NATIONAL LEAD LABORATORY ACCREDITATION PROGRAM (NLLAP)

AIHA-LAP, LLC No. 100188

NYSDOH-ELAP No. 11021

Analytical Methods: ASTM D3335-85A "Standard Method To Test For Low Concentrations Of Lead In Paint By Atomic Absorption Spectrophotometry"
EPA SW846-(3050B:7000B) "Standard Method To Test For Low Concentrations Of Lead In Soils, Sludges and Sediments By AAS"

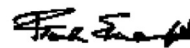
Comments: Regulatory limit is 0.5% lead by weight (EPA/HUD guidelines). Recommend multiple sampling for all samples less than regulatory limit for confirmation. All results are based on the samples as received at the lab. IATL assumes that appropriate sampling methods have been used and the data upon which these results are based have been accurately supplied by the client. Method Detection Limit (MDL) per EPA Method 40CFR Part 136 Appendix B. Reporting Limit (RL) based upon Lowest Standard Determined (LSD) in accordance with AIHA-ELLAP policies. LSD=0.2 ppm MDL=0.0044% by weight. RL= 0.010% by weight (based upon 100 mg sampled). * Insufficient sample provided to perform QC reanalysis (<200 mg) ** Not enough sample provided to analyze (<50 mg) *** Matrix / substrate interference possible. Sample results are not corrected for contamination by field or analytical blanks. This confidential report relates only to those item(s) tested and does not represent an endorsement by NIST-NVLAP, AIHA or any government agency. This report shall not be reproduced except in full, without written approval of the laboratory.

Date Received: 4/17/2014

Date Analyzed: 4/23/2014

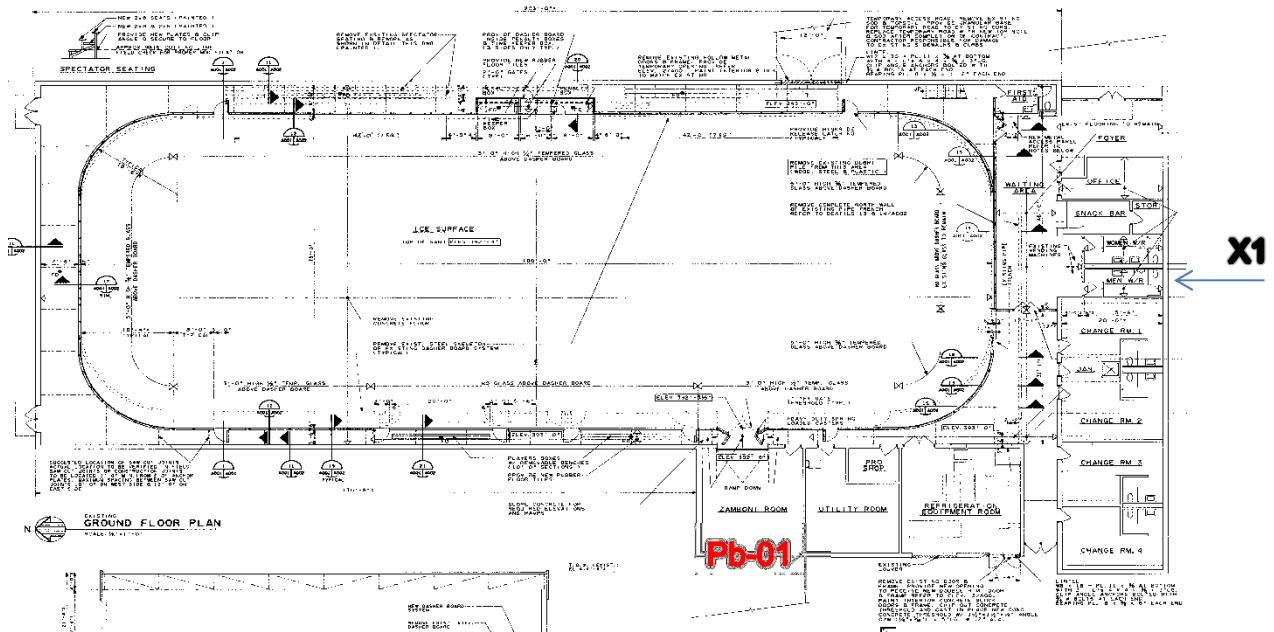
Analyst: C. Shaffer

Approved By:

Frank E. Ehrenfeld, III
Laboratory Director

APPENDIX B – LOCATION PLAN

X2 (at Mezzanine)



Pb-02(siding at roof level)