



**exp.** Services Inc.  
*The new identity of*  
**Advanced Environmental**  
15701 Robin's Hill Road,  
Unit 2 London, ON N5V 0A5

---

**DESIGNATED SUBSTANCES SURVEY**

**REASSESSMENT 2012**

**St. Christopher High School  
Sarnia, Ontario**

Prepared for:

St. Clair Catholic District School Board  
245 Tecumseh Street  
Sarnia, Ontario  
N7T 2L1

March 14, 2013

Project No.: 12-5738

## TABLE OF CONTENTS

<b>1.0</b>	<b>INTRODUCTION.....</b>	<b>1</b>
<b>2.0</b>	<b>SURVEY METHODOLOGY .....</b>	<b>1</b>
2.1	ASBESTOS .....	2
2.2	OTHER HAZARDOUS BUILDING MATERIALS AND DESIGNATED SUBSTANCES .....	2
<b>3.0</b>	<b>REGULATORY REQUIREMENTS .....</b>	<b>2</b>
<b>4.0</b>	<b>RESULTS .....</b>	<b>3</b>
4.1	LEAD.....	3
4.2	MERCURY .....	3
4.3	SILICA .....	3
4.4	ACRYLONITRILE, BENZENE, ISOCYANATES, ARSENIC, ETHYLENE OXIDE, VINYL CHLORIDE AND COKE OVEN EMISSIONS.....	3
4.5	MOULD .....	3
<b>5.0</b>	<b>RECOMMENDATIONS.....</b>	<b>4</b>
5.1	LEAD.....	4
5.2	MERCURY .....	5
5.3	SILICA .....	5
5.4	MOULD .....	5
<b>6.0</b>	<b>LIMITATIONS AND WARRANTY.....</b>	<b>7</b>

## APPENDICES

APPENDIX I      DRAWINGS

## 1.0 INTRODUCTION

Exp Services Inc. (exp) was retained by the St. Clair Catholic District School Board to conduct a visual inspection for mould at St. Christopher High School located at 1001 Rapids Parkway in Sarnia, Ontario.

The school is a two storey structure, with a total area of 141,000 square feet. The original building was constructed in 1996. In addition to the investigation for mould, the school was evaluated for the presence of any other designated substances.

Under the *Occupational Health & Safety Act* (OSHA), an owner must determine whether any Designated Substances are present at a site and is required to prepare a list of all Designated Substances that are present. These substances may require special handling procedures. The current OSHA regulation lists the following eleven (11) substances as Designated Substances in the workplace: acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride.

Based on the estimated construction date and the reported use of the building, the review undertaken by exp targeted lead, mercury, and silica which, in our experience, are most likely to be present on-site.

The following report explains our survey methodology and summarizes the hazardous building materials found at the Site.

## 2.0 SURVEY METHODOLOGY

During this investigation the surveyor inspected the building for construction materials suspected of containing Designated Substances.

Note:

- Repetitive testing was generally not performed. Items, which were visually similar to others tested, were considered to be of like material and were not sampled again. However, due to the variable nature of some products, several samples may have been collected of some materials.
- No destructive testing was performed. The inaccessible spaces within the building were not inspected. This includes areas above plaster or drywall ceilings (in the absence of access panels) as well as shafts, chases and bulkheads. Similarly, doors, motors and other equipment were not disassembled to determine composition.

There was no access to the roof at the time of the assessment.

## **2.1 Asbestos**

This school was constructed at a time when asbestos materials were not used in most construction. Asbestos may be present in some products such as gaskets, mastics, and caulking which were not sampled as a part of the survey

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

All other hazardous building materials or Designated Substances were identified based on visual assessment and historical usage.

## **3.0 REGULATORY REQUIREMENTS**

"Designated Substance" as defined by the Ontario *Occupational Health & Safety Act* (OHSa) means "a biological, chemical or physical agent or combination thereof prescribed as a Designated Substance to which the exposure of a worker is prohibited, regulated, restricted, limited or controlled." Under Section 30 of the OHSa an owner is required to determine whether any Designated Substances are present at a project site before beginning construction. If any portion of the project is tendered, the person issuing the tenders is required to list the Designated Substances present at the project site. The constructor is then required to ensure that every contractor and sub-contractor receives a copy of the list.

Effective as of July 1<sup>st</sup> 2010 in Ontario, all Designated Substances are regulated within a single amalgamated regulation, Ontario Regulation 490/09.

The MOL guideline for the control of lead exposures during the removal of lead on construction projects does not include criteria for categorizing lead paint. The Ontario Ministry of Labour (MOL) does not have a standard to state what percentage of lead a material must have to be considered lead-containing. However, the designated substance regulation (DSR) for lead, Regulation 843, specifies occupational exposure limits (OELs) for lead and, where necessary, requires implementation of a control program to ensure compliance with these OELs. The time-weighted average (TWA) OEL for lead (i.e., all lead except tetraethyl lead) is: 0.05 milligrams per cubic metre (mg/m<sup>3</sup>) of air. However, under Subsection 3(3) of the Regulation, construction projects are excluded from the OELs and most of the other requirements of the Regulation. This exclusion should not be interpreted as meaning nothing is to be done for construction workers who are exposed to lead. The OELs establish an Ontario standard for worker protection from lead. Procedures that provide an equivalent level of protection should, therefore, be implemented on construction projects where

exposure to lead is a hazard. Ensuring such procedures are in place would, in the words of clause 25(2)(h) of the *Occupational Health and Safety Act* (OHSA), be “taking reasonable precautions to protect the health and safety of workers”.

There are currently no regulations specifically covering exposure to mould or outlining mould remediation practices. In addition, there are no occupational exposure limits stating acceptable levels of exposure without adverse health effects.

However, Sections 25 and 27 of the Ontario *Occupational Health and Safety Act* states that an employer must take every reasonable precaution to ensure the health and safety of their workers. This includes exposure to moulds.

## **4.0 RESULTS**

### **4.1 Lead**

Painted finishes in the building were not sampled. Lead may be present in some finishes within the building.

### **4.2 Mercury**

Mercury is present within fluorescent light tubes and may be present in thermostats and located within the building.

### **4.3 Silica**

Common construction sand contains free crystalline silica and is present in concrete products, mortar, brick, etc. These construction products are typically found throughout building structures.

### **4.4 Acrylonitrile, Benzene, Isocyanates, Arsenic, Ethylene Oxide, Vinyl Chloride and Coke Oven Emissions**

Evidence suggesting the presence of acrylonitrile, benzene, isocyanates, arsenic, ethylene oxide, vinyl chloride monomer or coke oven emissions was not observed at St. Christopher High School.

### **4.5 Mould**

In recent years, contamination of buildings with mould has become a major concern. Mould growth will occur on any water damaged building material. Evidence does exist to support the relationship between exposure to mould in buildings and many health effects.

This re-assessment included the inspection of areas for visible mould growth. In the absence of occupants experiencing symptoms, the inspection for and remediation of visible mould present in the building will be an appropriate response to the issue. Where occupants are experiencing symptoms, in the absence of visible mould growth, some invasive inspection may be necessary to find potential sources of mould. In general this was beyond the scope of this assessment.

Although some evidence of water damage was present, visible mould was not evident in the course of this inspection. Locations where water stained/damaged tiles were identified are outlined in the following table:

Location	Quantity of Water Damaged Material
<b>Cafeteria</b>	2 stained ceiling tiles.
<b>Room 1404A</b>	1 stained ceiling tile.
<b>Room 2304</b>	2 stained ceiling tiles.
<b>Corridor 256</b>	2 stained ceiling tiles.
<b>Corridor at Room 1104</b>	2 stained ceiling tiles.

## 5.0 RECOMMENDATIONS

The following recommendations are made with respect to Designated Substances noted at St. Christopher High School:

### 5.1 Lead

Although samples were not collected, it should be assumed that lead is present within paint finishes at the site. As a result, the handling or disturbance of painted finishes should be evaluated to help ensure that workers are not adversely affected.

The lead-containing materials in the building will not generate airborne lead dust in the absence of disturbance. However, significant lead dust levels can result when uncontrolled work procedures are used on lead-based materials. The control of dust levels during the demolition of the buildings can be accomplished through proper work practises such as wetting the surface of the materials to

reduce overall dust levels and providing workers with washing facilities and proper respiratory protection.

The procedures outlined in the MOL document 'Guideline – Lead on Construction Projects' (2004) should provide an adequate standard for the handling or disturbance of the material.

The disposal of construction waste containing lead is controlled under Ontario Regulation 347, as amended by O. Reg. 102/07, and may be subject to Leachate Criteria (Schedule 4) of this regulation.

## **5.2 Mercury**

The presence of mercury in fluorescent light tubes and thermostats poses minimal risk to occupants or workers provided the equipment is handled properly and the mercury is not allowed to escape. In the event of future renovations, light tubes and thermostat tubes should be removed intact to prevent the mercury vapour from escaping.

It is good management practice to take precautions to prevent mercury vapours from becoming airborne during building demolition. Exposure to airborne mercury is regulated under Ontario Regulation 490/09 made under the *Occupational Health and Safety Act*. The current TWAEV for mercury vapour is 0.025 mg/m<sup>3</sup> (except alkyl compounds).

Mercury waste must be handled and disposed of according to Ontario Regulation 347, as amended by O. Reg. 102/07, and may be subject to Leachate Criteria (Schedule 4) of this regulation.

## **5.3 Silica**

Disturbance of materials containing silica will occur during demolition of walls and ceilings, saw cutting floor slabs and removal of lay-in acoustic ceiling tiles containing silica and is regulated under Ontario Regulation 490/09. The current TWAEV for amorphous fused silica is 0.1 mg/m<sup>3</sup> and is 0.05 mg/m<sup>3</sup> for crystalline silica (quartz). This can be accomplished through proper work practises such as wetting the surface of the materials to reduce overall dust levels and providing workers with washing facilities and proper respiratory protection.

## **5.4 Mould**

Mould growth on building materials was not observed during this investigation. At this time, no further action is required regarding conditions observed. However water damaged acoustic tiles were observed throughout the school,

exp recommends that this material be removed to reduce the potential for mould growth on the water impacted surface

Moisture issues are the only factor in the growth of mould that may be controlled by the building operator. Any existing moisture problems in the building must be addressed to prevent or control mould growth. The following general recommendations are made to reduce the potential for future mould growth within the building:

- Promptly respond to any water infiltration, including minor leaks.
- Where HVAC units permit, maintain relative humidity below 60%.
- Maintain caulking at sinks, bathrooms and at exterior locations.

In the event of a flood, remove water by pumping or vacuuming as soon as possible. Drying of construction and finishing materials must begin promptly (in less than 24 hours). It may be practical to remove and dispose of some wetted materials, (e.g. drywall and carpet) in some cases.



## 6.0 LIMITATIONS AND WARRANTY

Exp has prepared this report for the exclusive use of the Client in evaluating the Site at the time of exp's assessment. Exp will not be responsible for the use of this report by any third party, or reliance on or any decision to be made based on it without the prior written consent of exp. Exp accepts no responsibility for damages, if any, by any third party because of decisions or actions based on this report.

The findings and conclusions documented in this report have been prepared for specific application to this project and have been developed in a manner consistent with that level of care and skill normally exercised by qualified professionals currently practising in this area of environmental assessment. No other warranty, expressed or implied, is made.

The findings contained in this report are based upon conditions as they were observed at the time of investigation. No assurance is made regarding changes in conditions subsequent to the time of investigation.

If new information is developed in future work, exp should be contacted to re-evaluate the conclusions of this report and to provide amendments as required.

Respectfully submitted,

**Exp Services Inc.**

A handwritten signature in black ink, appearing to read 'K. Olson', with a long horizontal line extending to the right.

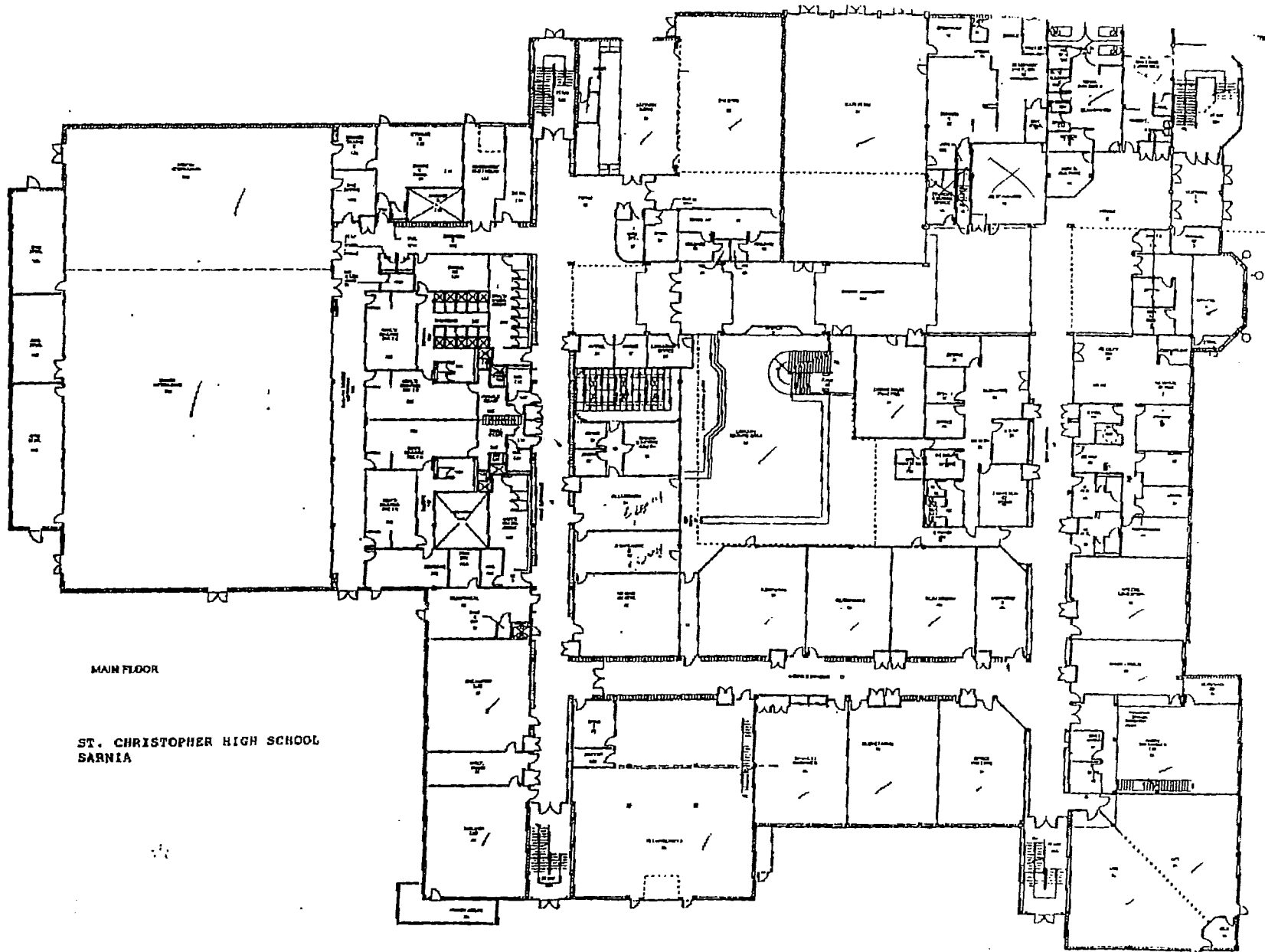
Kris Olson, P.Eng.  
Senior Project Manager

**APPENDIX I**

**DRAWINGS**

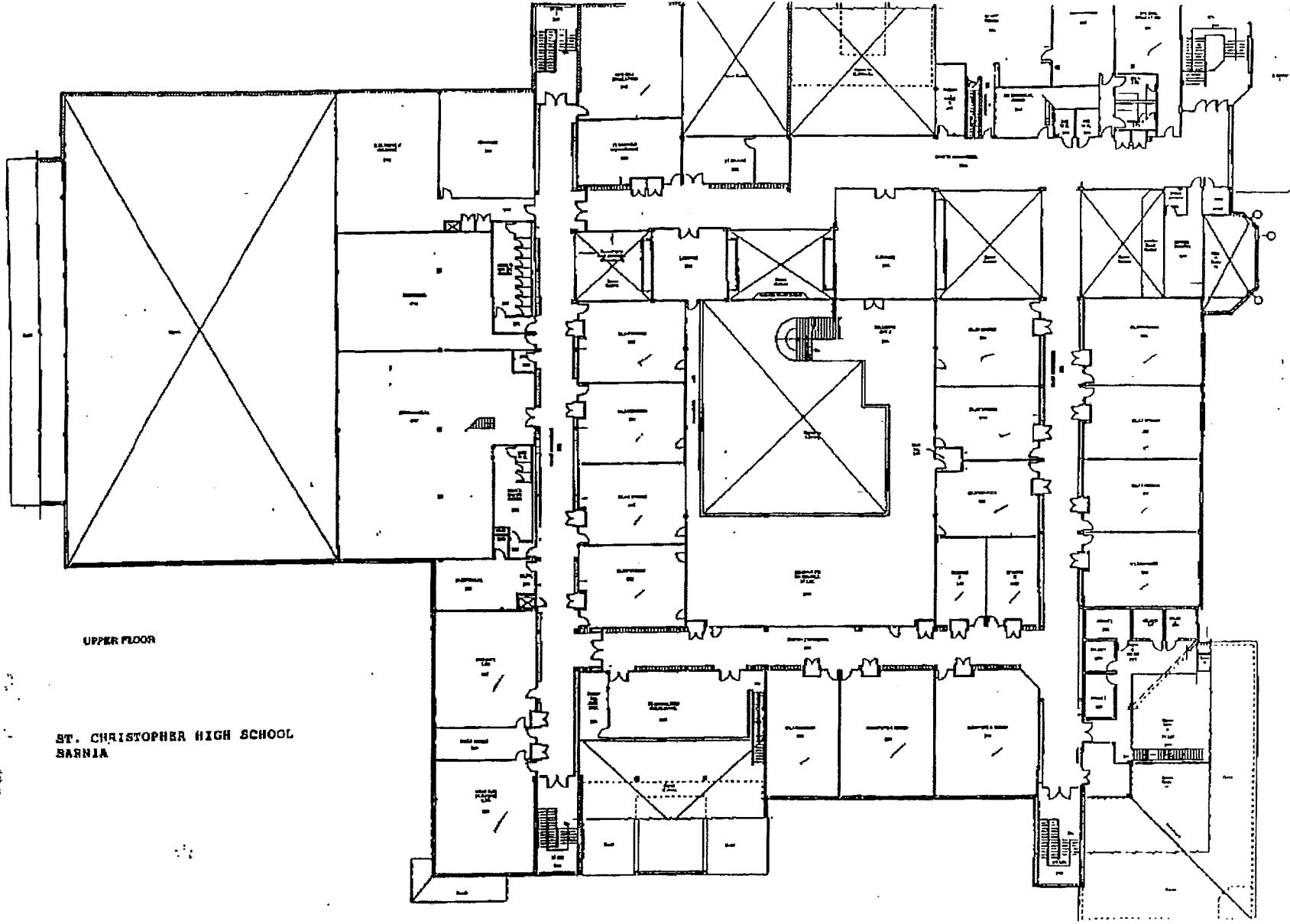
**APPENDIX I**

**DRAWINGS**



MAIN FLOOR

ST. CHRISTOPHER HIGH SCHOOL  
BARNIA



UPPER FLOOR

ST. CHRISTOPHER HIGH SCHOOL  
SARNIA