APPENDIX F

SPECIFICATIONS

PROJECT:	**PORT CREDIT SECONDARY SCHOOL** **BARRIER FREE ENTRANCES** **ALTERATIONS 2021** **MISSISSAUGA, ONTARIO**
OWNER:	**PEEL DISTRICT SCHOOL BOARD**
CONSULTANT:	**MG ARCHITECTS INC.** **18 KUHL AVENUE** **TORONTO, ONTARIO M9B 5X9** **TEL 416-239-1933**
MECHANICAL AND ELECTRICAL SUBCONSULTANT:	**ELLARD-WILLSON ENGINEERING LTD.** **270 TOWN CENTRE BOULEVARD SUITE 202** **MARKHAM, ONTARIO L3R 8H8** **TEL 905-940-3100**
STRUCTURAL SUBCONSULTANT:	**RAVENS ENGINEERING INC.** **106 EGLINTON AVENUE WEST** **SUITE 201** **TORONTO, ON M6C 2C9** **TEL: 416-977-5335**
OWNER'S TENDER NUMBER:	**RFTMA 21-4604**
CONSULTANT'S PROJECT NUMBER:	**1902**
DATE:	**MAY, 2021**

DOCUMENT 00 01 07 - SEALS

CATEGORY	SEAL & SIGNATURE
ARCHITECTURAL This seal governs all Documents and Sections of these Specifications except for Section 00 31 00 Available Project Information, and all Sections/Divisions listed below.	
STRUCTURAL This seal governs: Section 03 10 00 – Concrete Forming _____ _____ _____ Section 03 20 00 – Concrete/Masonry Reinforcement Section 03 30 00 – Cast-in-Place concrete	

END

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OHE CONSULTANTS
Occupational Hygiene & Environment

HAZARDOUS BUILDINGS MATERIALS SURVEY

Accessibility Entrances
Port Credit Secondary School
70 Mineola Road East
Mississauga, Ontario
L5G 2E5

Presented to:

Peel District School Board
933 Central Parkway West
Mississauga, Ontario
L5C 2T9

May 2021

OHE Project No.: 25736

Submitted by:

OHE Consultants
Occupational Hygiene & Environment
311 Matheson Blvd. East
Mississauga, Ontario
L4Z 1X8

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OHE Consultants (OHE) was retained by the Peel District School Board (PDSB) to perform a Pre-Renovation Hazardous Building Materials Survey at Port Credit Secondary School located at 70 Mineola Road East, Mississauga, Ontario (the "Subject Location").

The initial field work was carried out on June 26 and July 15, 2020 by Mr. Viraj Daruwala, Project Specialist and Mr. Huntly Xiao, Junior Project Specialist with OHE. The additional field work was carried out on May 25, 2021 by Mr. Darren Kim, Project Manager with OHE. The survey consisted of a review of existing environmental reports (where available), visual inspection for the presence of hazardous building materials and testing and sampling of materials suspected to contain asbestos and lead.

A summary of hazardous building materials identified during the survey is presented below:

Asbestos

- Asbestos-containing cladding panel (cement board) was identified above the window of Entrance 11 at the Subject Location.
- Asbestos-containing drywall joint compound was identified on the walls, ceiling and bulkhead at the Subject Location.

Lead

- Lead-containing paint was identified in the surveyed area at the Subject Location. A detailed description of the colours and locations is reported in Table B.2 presented in Appendix B. It is assumed that the results presented apply to all paint(s) of the same colour.
- Lead is often present in ceramic building products such as floor or wall tiles, in wiring connectors and electric cable sheathing, in solder joints on copper piping or in lead piping.

Mercury

- Mercury-containing thermostats were not identified in the surveyed area at the Subject Location during the survey.
- Mercury is suspected to be present as a vapour in fluorescent light bulbs, and as a component in electrical equipment, such as silent, position dependent switches.

Silica

- Silica is presumed to be present in materials such as fillers for paints and mastic and in bricks, ceramics, masonry, concrete, and mortar.

This hazardous building materials survey was limited to the areas associated with the renovation area highlighted in the drawing provided by client.

Hazardous building materials may be present in areas not accessible for view and identification. In situations where the hazardous building materials extend into a non-accessible area, the materials were assumed to also be present in those areas and have been reported as such. Contractors and maintenance personnel must be warned of the possibility of undisclosed suspect building materials when breaking into enclosed areas. All suspected hazardous building materials discovered in these areas must be treated as hazardous until proven otherwise through bulk sampling and analysis.

OHE's recommendations, based on the findings of the survey, are as follows:

- Provide a copy of this report to contractors bidding on or performing work within the Subject Location.

- Remove all Asbestos-Containing Materials (ACMs) that are likely to be disturbed during planned renovations or demolition in accordance with all applicable guidelines and regulations.

- Removal of asbestos-containing cladding panel (cement board) will require removal operation procedures as specified in Ontario Regulation 278/05 (Type 1 Operations).

- Removal of drywall with asbestos-containing drywall joint compound will require removal operation procedures as specified in Ontario Regulation 278/05 (Type 1 Operations for <1 m^2 and Type 2 Operations for ≥ 1 m^2).

- Remove all lead-containing materials that are likely to be disturbed during planned renovations or demolition.

- Removal of lead-containing materials shall be carried out in accordance with the following requirements:
  - Guideline: Lead on Construction Projects (issued by Ontario Ministry of Labour);
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Renovations and/or demolition operations that are likely to generate silica-containing dust shall be carried out in accordance with the following requirements:
  - Guideline: Silica on Construction Projects (issued by Ontario Ministry of Labour);
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Remove all mercury-containing equipment that is likely to be disturbed during planned renovations or demolition.

- Removal of mercury-containing equipment or components shall be carried out in a manner that will eliminate the potential for spills in accordance with the following regulations:
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Should previously unidentified suspect hazardous materials be discovered during any demolition or renovation work in the above mentioned location, the contractor shall stop all work in the vicinity of the suspected hazardous material and immediately notify personnel from both PDSB and OHE.

This executive summary provides a brief overview of the survey findings. It is not intended to substitute for the complete survey report, nor does it discuss specific issues documented in the report. The executive summary should not be used as a substitute to reading the complete report.

This report is not a scope of work/specifications document for the abatement/remediation of hazardous materials and shall not be used for such purposes.

1. INTRODUCTION AND REGULATORY REQUIREMENTS

1.1 Introduction and Scope

OHE Consultants (OHE) was retained by the Peel District School Board (PDSB) to perform a Pre-Renovation Hazardous Building Materials Survey at Port Credit Secondary School located at 70 Mineola Road East, Mississauga, Ontario (the "Subject Location").

In accordance with Sections 25 and 30 of the Ontario Occupational Health and Safety Act, Designated Substances and other potentially hazardous building materials must be identified prior to construction or demolition that may disturb such materials.

Designated Substances are a group of eleven (11) substances that are known to be hazardous for which the Ontario Ministry of Labour (MOL) has developed specific guidelines and regulations regarding their handling to minimize exposure and human health and safety concerns. The 11 Designated Substances include:

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

Regarding designated substances, this survey focused on the identification of asbestos, lead, mercury, and silica. The remaining seven (7) designated substances, Isocyanates, Vinyl Chloride, Benzene, Acrylonitrile, Coke Oven Emissions, Arsenic, and Ethylene Oxide, are not commonly found in buildings of this type and no potential sources were reported to OHE by the client prior to the survey. As such, they were not included in this survey.

The survey was limited to the areas renovation areas highlighted on the drawing provided by PDSB.

This report is not a scope of work/specifications document for the abatement/remediation of hazardous materials and shall not be used for such purposes.

1.2 Applicable Regulations and Guidelines

1.2.1 Designated Substances

A Designated Substances report is completed to fulfil the Owner's requirements under Section 30 of the Ontario Occupational Health and Safety Act. A copy of the report must be provided to the general contractor who in turn must submit the report to all subcontractors prior to the commencement of any demolition, construction or renovation work.

1.2.2 Asbestos

Ontario Regulation 278/05 (as amended) – "Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations" (O. Reg. 278/05) applies to buildings with regards to maintenance, renovations or demolition work where asbestos-containing materials are or may be disturbed.

When ACMs are present in a building, the owner must maintain an Asbestos Management Program (AMP). The major requirements of the AMP for the building owner include:

- Preparation and maintenance of a record of the location of asbestos-containing materials in the building;
- Notification of the building's tenants of the location of such material;
- Establishment of a training program for those employees of the owner who may work in close proximity to and disturb the material;
- Periodic inspection of the material to determine its condition;
- Remedial action on material that has deteriorated following the precautions and procedures prescribed by the regulation as Type 1, Type 2 and Type 3; and
- Removal of ACMs to the extent practicable prior to demolition of a building or part thereof.

O. Reg. 278/05 prescribes work to be conducted according to three (3) procedure types. The procedure to be followed depends on the type of material and the regulation provides instruction on how the work must be performed.

The following regulations govern the control, handling, transport and disposal of asbestos in Ontario:

- O. Reg. 278/05;

- Ontario Regulation 490/09 (as amended) – "Designated Substances" (O. Reg. 490/09); and
- Ontario Regulation 213/91 (as amended) – "Construction Projects" (O. Reg. 213/91);
- Ontario Regulation 347/90 (as amended) – "General – Waste Management" (O. Reg. 347/90);
- Regulations Respecting the Handling and Offering for Transport and Transporting of Dangerous Goods.

1.2.3 Lead

Ontario Ministry of Labour Guideline: Lead on Construction Projects (issued September 2004, updated April 2011) has been prepared to raise the awareness of employers and workers to the hazards posed by lead in construction and the measures and procedures that should be taken to control those hazards.

The document provides information on the following:

- Health effects associated with lead exposure;
- Methods for controlling the lead hazard;
- Classification of work; and,
- Measure and procedures for working with lead.

The MOL Guideline classifies operations involving lead-containing materials into three groups, Type 1, Type 2 and Type 3 operations. The procedure to be followed depends on the anticipated airborne concentration of lead generated during the operation, which is dependent on the type of work performed.

1.2.4 Silica

Guideline: Silica on Construction Projects (issued by Ontario Ministry of Labour) has been prepared to raise the awareness of employers and workers to the hazards posed by silica in construction and the measures and procedures that should be taken to control those hazards.

The document provides information on the following:

- Health effects associated with silica exposure;
- Methods for controlling the silica hazard;
- Classification of work; and,

- Measure and procedures for working with silica.

The MOL Guideline classifies operations involving silica-containing materials into three groups, Type 1, Type 2 and Type 3 operations. The procedure to be followed depends on the anticipated airborne concentration of silica generated during the operation, which is dependent on the type of work performed. The guideline also provides instruction on how the work must be performed.

1.2.5 Remaining Designated Substances

There are no specific MOL guidelines or regulations for control of the other eight (8) designated substances on construction projects. However, the MOL actively enforces the general duty clause of the Health and Safety Act which protects workers and provides guidance on exposure monitoring, permissible exposure levels, medical monitoring, etc. for all designated substances in an industrial setting. O. Reg. 490/09 also provides guidance on the handling of designated substances.

2. METHODOLOGY

2.1 Survey Methodology

The initial fieldwork was conducted by Mr. Viraj Daruwala, Project Specialist and Mr. Huntly Xiao, Junior Project Specialist with OHE on June 26 and July 15, 2020. The additional fieldwork was conducted by Mr. Darren Kim, Project Manager with OHE on May 25, 2021. Identification of materials suspected of containing hazardous building materials was performed by the surveyors who, through their knowledge (from published literature and past experience), are able to identify the potential presence of such materials in buildings. The fieldwork consisted of surveying all accessible areas in order to obtain an overall representation of the hazardous materials present.

OHE followed the protocols outlined in O. Reg. 278/05 for collecting and analyzing bulk samples of materials suspected to contain asbestos. Visual assessment of the material was the primary method of identification with occasional physical contact for the purpose of collecting bulk samples or examining for underlying layers.

Representative bulk samples were collected of materials suspected of containing asbestos. The tools used by the investigator to collect the bulk samples were cleaned after each sample was collected to avoid cross contamination. Samples were placed in plastic sealable containers, marked with a unique sample number and transported to an independent accredited laboratory for analysis.

2.2 Methodology for Bulk Sample Analysis

Bulk samples of suspect ACMs were analyzed in accordance with a US EPA method for the determination of asbestos content in bulk materials, EPA Method 600/R-93/116. The EPA Method requires that the samples be analyzed using the Polarized Light Microscopy (PLM) technique. The percentage of asbestos in the sample is measured as perceived by the analyst in comparison to standard area projections and is greatly influenced by the analyst's experience. The method is useful for the qualitative identification of asbestos (type) and the semi-quantitative (% estimates) determination of asbestos content in bulk samples.

The asbestos bulk samples were analyzed by EMC Scientific Inc. (EMC), an independent and NVLAP accredited laboratory.

2.3 Methodology for Lead Analysis

Bulk samples of suspect lead-containing materials were analyzed in accordance with a US EPA method for the determination of lead content in bulk materials, EPA Method (SW 846 3050B/7000B). The EPA Method requires that the samples be analyzed using the Flame Atomic Absorption Spectrometry (SW 846 3050B/7000B) technique. This method may be used determine trace elements in solution.

The lead bulk samples were analyzed by EMSL Canada Inc. (EMSL), an independent and Environmental Lead Laboratory Accreditation Program (ELLAP) accredited laboratory.

3. RESULTS

The results of the survey for asbestos and lead are presented in Appendix B. The results are presented in the form of summary tables for each of the materials.

Locations of bulk samples for asbestos are shown on Drawing 1.1 presented in Appendix A.

Locations of bulk samples for lead are shown on Drawing 2.1 presented in Appendix A.

Location of identified non-friable ACM is shown on Drawing 3.1 presented in Appendix A.

Laboratory analysis reports (asbestos and lead) are presented in Appendix D.

Selected site photographs are presented in Appendix E.

4. FINDINGS

4.1 Asbestos-Containing Materials

4.1.1 Sprayed Fireproofing

Suspected asbestos-containing sprayed fireproofing was not observed in the surveyed area at the Subject Location.

4.1.2 Texture Finishes

Suspected asbestos-containing texture finishes were not observed in the surveyed area at the Subject Location.

4.1.3 Mechanical Systems Insulation

Mechanical systems insulation observed within the surveyed area at the Subject Location was visually identified as fibreglass, which is not suspected to contain asbestos.

4.1.4 Suspended Ceiling Tiles

Suspected asbestos-containing Suspended Ceiling Tiles (SCTs) were observed in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-1A to 25736-1C), of the SCTs was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

4.1.5 Plaster Material

Suspected asbestos-containing plaster was observed in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-12A to 25736-12C), of the plaster was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

4.1.6 Vinyl Floor Tiles

Suspected asbestos-containing vinyl floor tiles were not observed in the surveyed area at the Subject Location.

4.1.7 Vinyl Sheet Flooring

Suspected asbestos-containing vinyl sheet flooring was not observed in the surveyed area at the Subject Location.

4.1.8 Drywall Joint Compound

Suspected asbestos-containing Drywall Joint Compound (DJC) was observed at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-11A to 25736-11C), of the DJC was collected as part of the survey. OHE Samples 2573611A was determined to contain 1% Chrysotile asbestos. The remaining samples in the sample set were not analyzed as per O. Reg. 278/05.

4.1.9 Other ACM

Caulking

Suspected asbestos-containing grey caulking was observed between the window frame and the wall in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-3A to 25736-3C), of the grey caulking was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

Suspected asbestos-containing white caulking was observed between the glass and the window frame in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-5A to 25736-5C), of the white caulking was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

Suspected asbestos-containing black caulking was observed between the glass and the window frame in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-7A to 25736-7C), of the black caulking was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

Mortar

Suspected asbestos-containing mortar was observed between the bricks in the surveyed area at the Subject Location. One (1) sample set, consisting of two (2) samples (OHE Samples 25736-6A and 25736-6B), of the mortar was collected as part of the survey. Asbestos was not detected in the two (2) samples collected and analyzed.

Expansion Joint

Suspected asbestos-containing expansion joint was observed in the gaps between the bricks in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-2A to 25736-2C), of the expansion joint was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

Cladding Panel (Cement Board)

Suspected asbestos-containing cladding panel (cement board) was observed on the soffit and the exterior walls at the Subject Location. Two (2) sample sets, consisting of five (5) samples (OHE Samples 25736-4B to 25736-4C and 25736-10A to 25736-10C), of the cladding panel (cement board) were collected as part of the survey. OHE Sample 25736-4B, collected above the exterior window of Entrance 11, was determined to contain 10% Chrysotile asbestos. The remaining sample in the sample set was not analyzed as per O. Reg. 278/05. Asbestos was not detected in the remaining three (3) samples collected and analyzed.

4.2 Lead

Lead-containing paint was identified in the surveyed area at the Subject Location. A detailed description of the colours and locations is presented in Table B.2 found in Appendix B. It is assumed that the results presented apply to all paint(s) of the same colour.

Lead may also be present in ceramic building products such as floor or wall tiles, in wiring connectors and electric cable sheathing, in solder joints on copper piping, or in lead piping.

4.3 Mercury

Mercury-containing thermostats were not identified in the surveyed area at the Subject Location during the survey.

Mercury is suspected to be present as a vapour in fluorescent light bulbs, and as a component in electrical equipment, such as silent, position dependent switches.

4.4 Silica

Silica is presumed to be present in materials such as fillers for paints and mastic and in brick, concrete, and mortar.

4.5 Isocyanates

The material was not identified during the site visit and is not expected to be found.

4.6 Vinyl Chloride

The material was not identified during the site visit and is not expected to be found.

4.7 Benzene

The material was not identified during the site visit and is not expected to be found.

4.8 Acrylonitrile

The material was not identified during the site visit and is not expected to be found.

4.9 Coke Oven Emissions

The material was not identified during the site visit and is not expected to be found.

4.10 Arsenic

The material was not identified during the site visit and is not expected to be found.

4.11 Ethylene Oxide

The material was not identified during the site visit and is not expected to be found.

5. DISCUSSION

5.1 Asbestos

Prior to disturbance of asbestos-containing materials, the materials should be removed using the appropriate type of removal operation as per O. Reg. 278/05.

5.2 Lead

Prior to disturbance of lead-containing materials, the materials should be removed using the appropriate type of removal operation as specified in the applicable guidelines and regulations.

5.3 Mercury

Mercury-containing equipment and components should be handled using the appropriate type of procedures as specified in the applicable regulations and guidelines.

5.4 Silica

Silica-containing materials should be handled using the appropriate type of operation as specified in the applicable guidelines and regulations.

The hazardous building materials survey was limited to the areas associated with the renovation areas as highlighted in the drawing provided by the client.

Hazardous building materials may be present in areas not accessible for view and identification. In situations where hazardous building materials extend into a non-accessible area, the materials were assumed to also be present in those areas and have been reported as such. Contractors and maintenance personnel must be warned of the possibility of undisclosed hazardous building materials in enclosed areas. All previously unidentified suspected hazardous building materials discovered in these areas must be treated as hazardous until proven otherwise through bulk sampling and analysis.

6. RECOMMENDATIONS

OHE's recommendations, based on the findings of the survey, are as follows:

- Provide a copy of this report to contractors bidding on or performing work within the Subject Location.
- Remove all Asbestos-Containing Materials (ACMs) that are likely to be disturbed during planned renovations or demolition in accordance with all applicable guidelines and regulations.

- Removal of asbestos-containing cladding panel (cement board) will require removal operation procedures as specified in Ontario Regulation 278/05 (Type 1 Operations).

- Removal of drywall with asbestos-containing drywall joint compound will require removal operation procedures as specified in Ontario Regulation 278/05 (Type 1 Operations for <1 m^2 and Type 2 Operations for ≥ 1 m^2).

- Remove all lead-containing materials that are likely to be disturbed during planned renovations or demolition.

- Removal of lead-containing materials shall be carried out in accordance with the following requirements:
  - Guideline: Lead on Construction Projects (issued by Ontario Ministry of Labour);
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Renovations and/or demolition operations that are likely to generate silica-containing dust shall be carried out in accordance with the following requirements:
  - Guideline: Silica on Construction Projects (issued by Ontario Ministry of Labour);
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Remove all mercury-containing equipment that is likely to be disturbed during planned renovations or demolition.

- Removal of mercury-containing equipment or components shall be carried out in a manner that will eliminate the potential for spills in accordance with the following regulations:
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Should previously unidentified suspect hazardous materials be discovered during any demolition or renovation work in the above mentioned location, the contractor shall stop all work in the vicinity of the suspected hazardous material and immediately notify personnel from both PDSB and OHE.

7. GENERAL STATEMENT OF LIMITATIONS

The information and opinions rendered in this report are for use exclusively by **PDSB.** OHE reserves the right to review and comment on any interpretation of the data or conclusions derived by the **PDSB**. No other representation, either expressed or implied, is included in this report.

The survey did not consider current or past use of the property or occupant articles within the building (i.e. furniture, stock items, etc.), nor does it report on possible contaminants in the soil and groundwater of the site, vessels, drums, underground storage tanks, etc. The survey consisted of accessible areas only; samples were not collected if accessibility was restricted.

The field observations and analysis are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. OHE warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the survey.

It is possible, due to the nature of building construction, that conditions may exist which could not be reasonably identified within the scope of the sampling or which were not apparent during the site investigation. OHE believes that the information collected during the sampling period concerning the property is reliable. No other warranties are implied or expressed.

OHE Consultants
Occupational Hygiene & Environment

Prepared by:

Original signed by:

Viraj Daruwala, M. Eng.
Project Specialist

Original signed by:

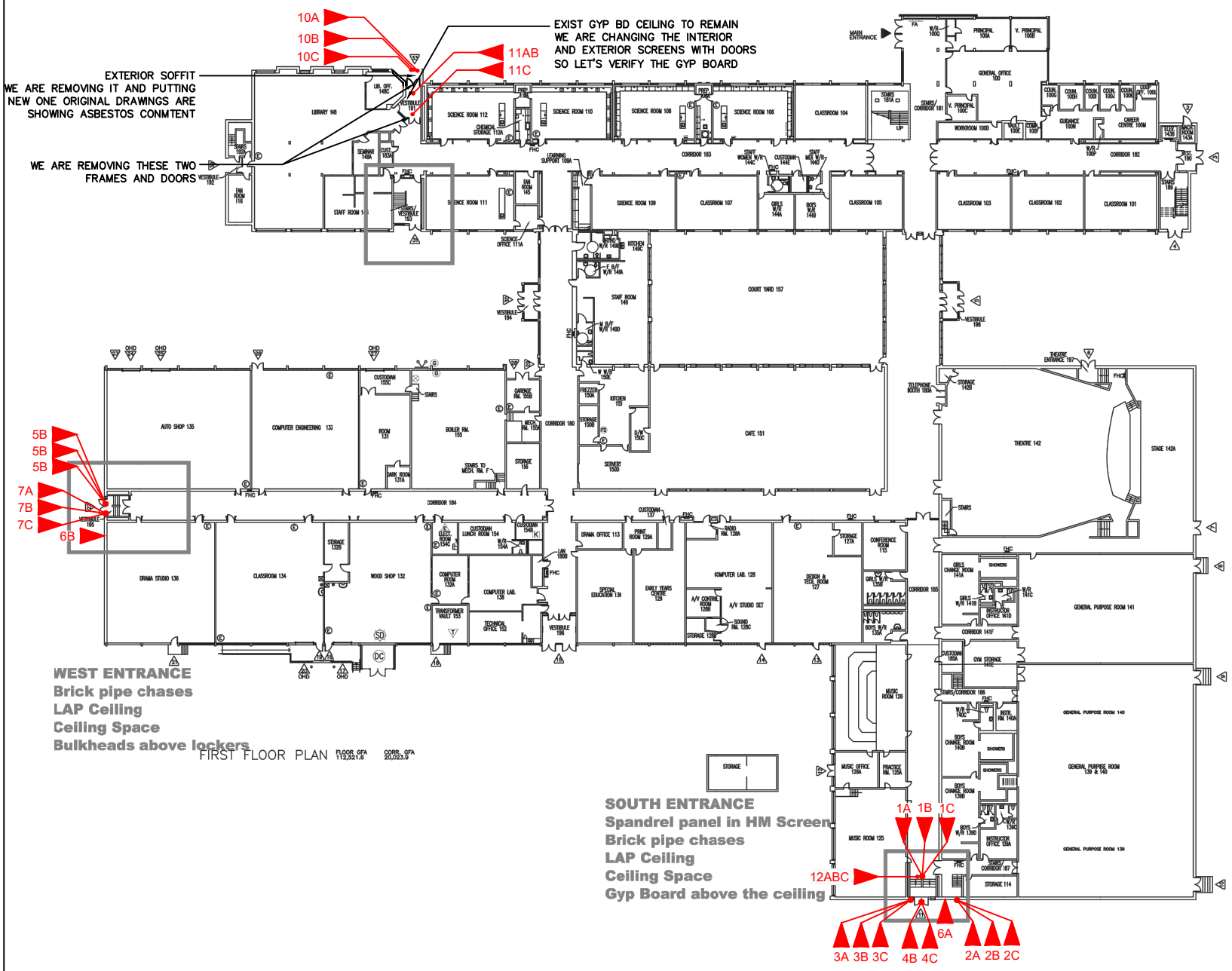
Michal Zitnik, M.H.Sc., ROH, CIH
Vice President

Reviewed by:

Original signed by:

Darren Kim
Project Manager

DRAWINGS



FIRST FLOOR PLAN FLOOR GFA 112,021.6 CORR. GFA 20,023.9

Legend:

xx Asbestos Bulk Sample Location

Notes:
Locations of site features are approximate and may vary from that shown.

Drawing Title:

Asbestos Bulk Sample Locations

Client Address:

Peel District School Board
933 Central Parkway West
Mississauga, Ontario

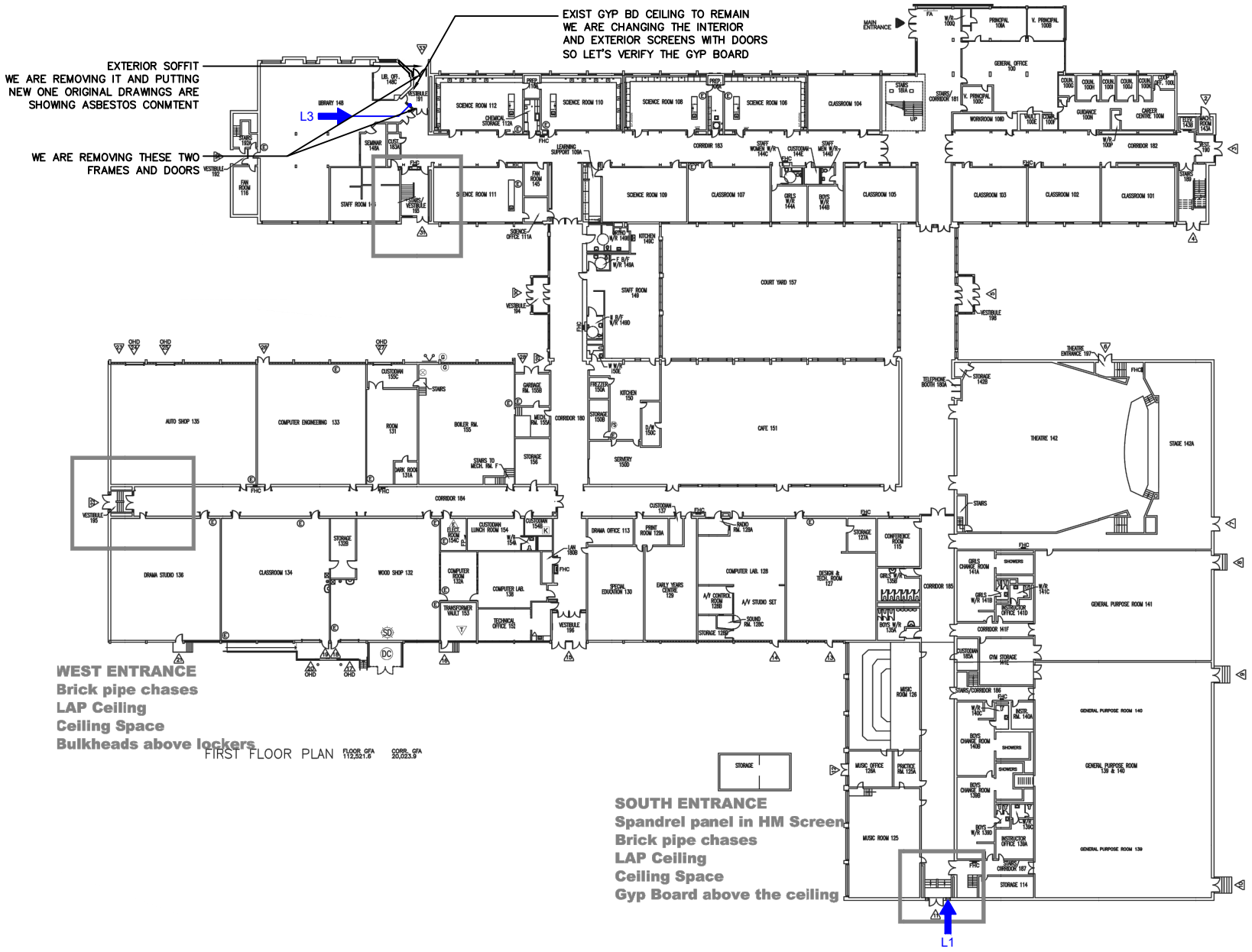
Project Location:

Main Floor
Port Credit Secondary School
70 Mineola Road East
Mississauga, Ontario

Project No: 25736

Date: Jun. 2021	Drawing No: 1.1
Scale: NTS	
Drawn By: SCJ	
Approved By: FA	

CONSULTANTS
Occupational Hygiene & Environment



Legend:

LX Lead Bulk Sample Location

Notes:
Locations of site features are approximate and may vary from that shown.

Drawing Title:

Lead Bulk Sample Locations

Client Address:

Peel District School Board
933 Central Parkway West
Mississauga, Ontario

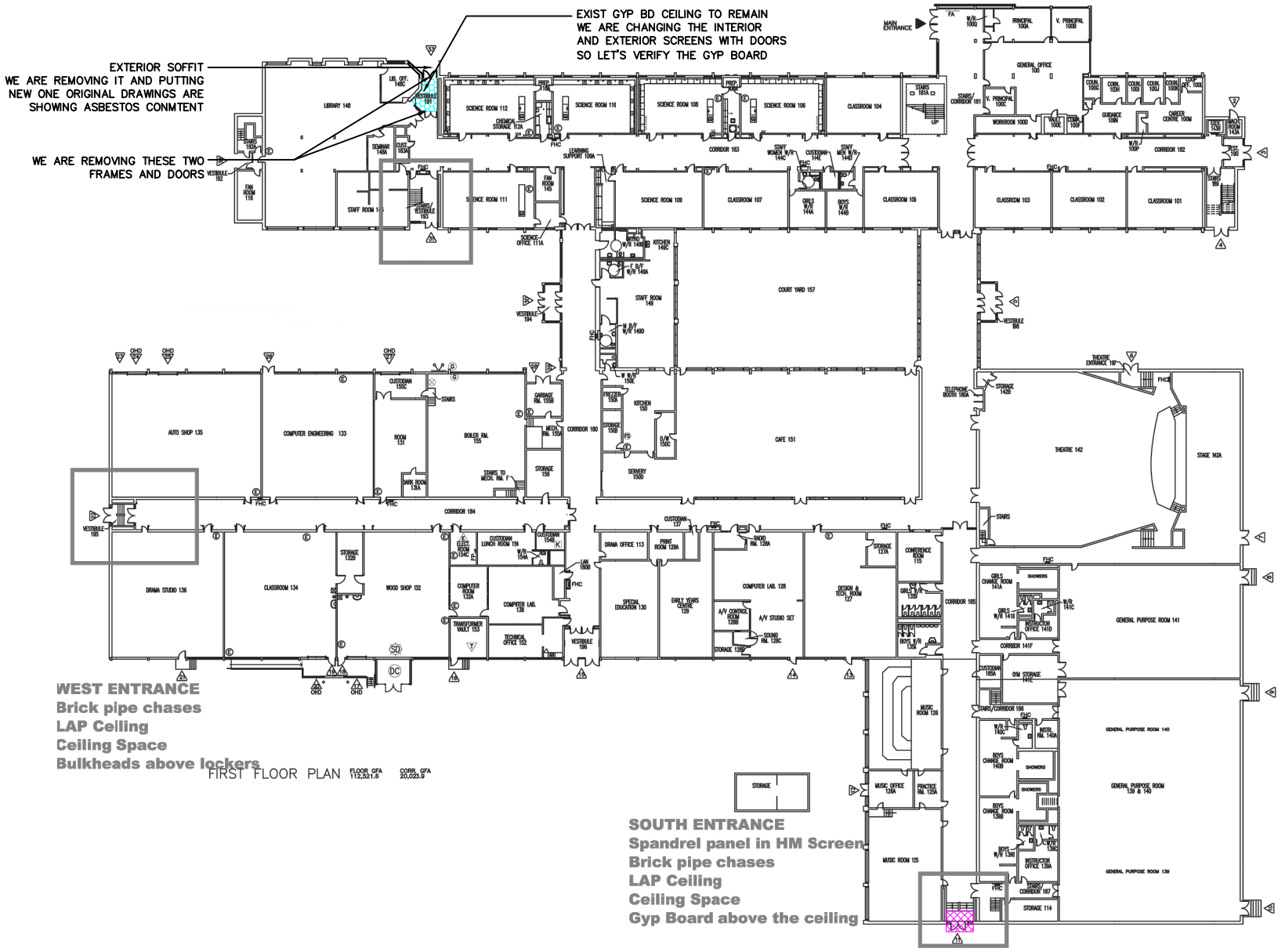
Project Location:

Main Floor
Port Credit Secondary School
70 Mineola Road East
Mississauga, Ontario

Project No: 25736

Date: Jun. 2021	Drawing No: 2.1
Scale: NTS	
Drawn By: SCJ	
Approved By: FA	

CONSULTANTS
Occupational Hygiene & Environment



Legend:

- Cladding Panel (Cement Board)
- Drywall Joint Compound

Notes:
Locations of site features are approximate and may vary from that shown.

Drawing Title:

Non-Friable Asbestos-Containing Materials

Client Address:

Peel District School Board
933 Central Parkway West
Mississauga, Ontario

Project Location:

Main Floor
Port Credit Secondary School
70 Mineola Road East
Mississauga, Ontario

Project No: 25736

Date: Jun. 2021	Drawing No: 3.1
Scale: NTS	
Drawn By: SCJ	
Approved By: FA	

CONSULTANTS
Occupational Hygiene & Environment

RESULTS OF SAMPLING AND TESTING FOR:

Asbestos
Lead

Table B.1

Summary of Bulk Sample Analysis Results for the Presence of Asbestos by Polarized Light Microscopy (PLM) with Dispersion Staining

Collected on June 26 and July 15, 2020

OHE Sample Number	Sample Description	Sample Location	Analysis Results (% and Type of Asbestos)
25736-1A	Suspended Ceiling Tiles (SCTs): 2'x4' with pinholes and fissures	Ceiling, Entrance 11	None Detected
25736-1B	SCTs: 2'x4' with pinholes and fissures	Ceiling, Entrance 11	None Detected
25736-1C	SCTs: 2'x4' with pinholes and fissures	Ceiling, Entrance 11	None Detected
25736-2A	Expansion joint	West exterior wall, Entrance 11	None Detected
25736-2B	Expansion joint	West exterior wall, Entrance 11	None Detected
25736-2C	Expansion joint	West exterior wall, Entrance 11	None Detected
25736-3A	Caulking: grey	Between window panel and wall, Entrance 11	None Detected
25736-3B	Caulking: grey	Between window panel and wall, Entrance 11	None Detected
25736-3C	Caulking: grey	Between window panel and wall, Entrance 11	None Detected
25736-4B	**Cladding panels**	**Exterior of Entrance 11**	**10% Chrysotile**
25736-4C	**Cladding panels**	**Exterior of Entrance 11**	**Not Analyzed (Stop Positive)**
25736-5A	Caulking: white	Between glass and window frame, Entrance 22	None Detected
25736-5B	Caulking: white	Between glass and window frame, Entrance 22	None Detected
25736-5C	Caulking: white	Between glass and window frame, Entrance 22	None Detected

Table B.1 (Continued)

Summary of Bulk Sample Analysis Results for the Presence of Asbestos by Polarized Light Microscopy (PLM) with Dispersion Staining

Collected on June 26 and July 15, 2020

OHE Sample Number	Sample Description	Sample Location	Analysis Results (% and Type of Asbestos)
25736-6A	Mortar	West wall outside Entrance 11	None Detected
25736-6B	Mortar	North wall outside Entrance 22	None Detected
25736-7A	Caulking: black	Between window frame and glass, Entrance 22	None Detected
25736-7B	Caulking: black	Between window frame and glass, Entrance 22	None Detected
25736-7C	Caulking: black	Between window frame and glass, Entrance 22	None Detected

Table B.2

Summary of Bulk Sample Analysis Results for the Presence of Asbestos by Polarized Light Microscopy (PLM) with Dispersion Staining

Collected on May 26, 2021

OHE Sample Number	Sample Description	Sample Location	Analysis Results (% and Type of Asbestos)
25736-10A	Cladding panel	Exterior Soffit, Entrance 33	None Detected
25736-10B	Cladding panel	Exterior Soffit, Entrance 33	None Detected
25736-10C	Cladding panel	Exterior Soffit, Entrance 33	None Detected
25736-11A	**DJC**	**Ceiling, Vestibule to entrance 33**	**1% Chrysotile**
25736-11B	**DJC**	**Ceiling, Vestibule to entrance 33**	**Not Analyzed (Stop Positive)**
25736-11C	**DJC**	**Ceiling, Vestibule to entrance 33**	**Not Analyzed (Stop Positive)**
25736-12A	Plaster, White	Wall above the ceiling tiles, Hallway by entrance 11	None Detected
	Plaster, Grey	Wall above the ceiling tiles, Hallway by entrance 11	None Detected
25736-12B	Plaster, White	Wall above the ceiling tiles, Hallway by entrance 11	None Detected
	Plaster, Grey	Wall above the ceiling tiles, Hallway by entrance 11	None Detected
25736-12C	Plaster, White	Wall above the ceiling tiles, Hallway by entrance 11	None Detected
	Plaster, Grey	Wall above the ceiling tiles, Hallway by entrance 11	None Detected

Table B.3

Summary of Bulk Samples Analysis Results for the Presence of Lead by Flame Atomic Absorption Spectrometry (AAS)

Collected on June 26 and July 15, 2020

OHE Sample Number	Sample Description	Sample Location	Contains Lead by Weight (%)
25736-L1	Blue paint	Door leading from outside to Entrance 11	0.011%

Table B.4

Summary of Bulk Samples Analysis Results for the Presence of Lead by Flame Atomic Absorption Spectrometry (AAS)

Collected on May 26, 2021

OHE Sample Number	Sample Description	Sample Location	Contains Lead by Weight (%)
25736-L3	Light blue paint	Door frame, Vestibule to Entrance 33	0.12%

BACKGROUND INFORMATION ON DESIGNATED SUBSTANCES

ASBESTOS

Asbestos is a naturally occurring mineral. Asbestos is divided into two mineral groups: Serpentine and Amphibole. The division between the two types of asbestos is based upon the crystalline structure. The fibers of asbestos are long and thin, easily distinguishable when compared with non-asbestos minerals. The construction industry has been using asbestos for many years because of the ability of asbestos to withstand high temperatures as well as its strength and resistance to corrosive chemicals.

When asbestos-containing material is disturbed dust is released into the air that contains asbestos fibers that have the potential to be inhaled into the lungs. Depending on the size of the individual fibers inhaled, some fibers can make their way deep into the air sacs (alveoli) of the lungs. Exposure to asbestos fibers may result in scarring of the lung tissue (asbestosis), cancer of the chest cavity (mesothelioma) or other asbestos related cancers.

ACRYLONITRILE

Acrylonitrile is explosive, flammable and toxic, found as a colorless or yellow clear liquid. It is used to produce a variety of products including plastics, adhesives, gaskets, seals and hoses. Health effects resulting in acute exposure to acrylonitrile vary from minor symptoms such as eye irritation, itching skin, blisters, headaches, sneezing and vomiting. Chronic exposure may cause cancers of the stomach, lymph system and brain.

ARSENIC

The common form of arsenic is grey in color with a metallic appearance. Arsenic has been used in the manufacturing of glass to eliminate the green color resulting from the impurities of iron compounds. It was also used in the productions of poisons. Arsenic is poisonous in doses significantly larger than 65 mg (1 grain), and poisoning can arise from a single large dose or from repeated small doses.

BENZENE

Benzene is an aromatic organic hydrocarbon existing either as a clear liquid or a vapour. Benzene is highly flammable and volatile material and was primarily a by-product in petroleum refineries. However, it has also been commonly used to produce styrene, synthetic rubbers, plastics, resins and solvents.

Serious health effects can occur from exposure to benzene, mainly as a result of inhalation of vapours and mists. Ingestion by swallowing and absorption through the skin are also possible routes of exposure. Health effects can result from ingesting food or drink contaminated with benzene. Symptoms can range from irritated eyes, red blistering skin, headaches, nausea and drowsiness. Benzene exposure can also induce blood and bone marrow toxicity.

COKE OVEN EMISSIONS

Coke oven emissions can be either in a condensed form as a brownish thick liquid, or uncondensed form as a vapour. Coke oven emissions are a mixture of coal tar, coal tar pitch, and creosote and contain chemicals such as benzo(a)pyrene, benzanthracene, chrysene, and phenanthrene.

Chronic (long-term) exposure to coke oven emissions in humans results in conjunctivitis, severe dermatitis, and lesions of the respiratory and digestive systems. Epidemiologic studies of coke oven workers have reported an increase in cancer of the lung, trachea, bronchus, kidney, prostate, and other sites.

ETHYLENE OXIDE

Sources of ethylene oxide emissions into the air include uncontrolled emissions or venting with other gases in industrial settings. Other sources of ethylene oxide air emissions include automobile exhaust and its release from commodity-fumigated materials. Individuals may be exposed to ethylene oxide through breathing contaminated air or from smoking tobacco or being in the proximity to someone who is smoking.

Ethylene Oxide has been linked to reproductive damage, including spontaneous abortions; cytogenetic damage; neurological effects ranging from nausea and dizziness to peripheral paralysis; and tissue irritation.

ISOCYANATES

Isocyanates are compounds that contain a group of atoms consisting of Nitrogen (N), Carbon (C), and Oxygen (O), which make isocyanates very useful in the manufacturing industry. Isocyanates are commonly used in the production of plastics, foams, and coatings.

Health effects associated with exposure to isocyanates are: decreased lung function, cold and flu-like symptoms, fever and shortness of breath. Exposure to isocyanates can be through inhalation of vapour, mist or dust, or by direct contact.

LEAD

For thousands of years lead has been used industrially because of its poor conductive property. Lead has been commonly used for electric storage batteries, pigments, paints, and rubber compounds.

Health effects associated with lead exposure can result in damage to the kidneys, gastrointestinal system, nervous system and reproductive system. Symptoms range from vomiting, and abdominal cramps to pains in joints and muscles.

MERCURY

At room temperature mercury is in the form of a silver colored liquid. Mercury can exist in three forms: elemental, the pure form; organic, where mercury is bonded to a carbon molecule; or inorganic, where mercury is bonded to a molecule other than carbon.

Mercury can be absorbed into the body by inhalation, ingestion or absorption through the skin. As a health hazard mercury can affect the respiratory system resulting in coughing and chest pains. Mercury poisoning can also cause kidney damage, skin irritation and may even harm the nervous system.

SILICA

Silica can be found naturally in two forms, crystalline or amorphous material. Crystalline silica is regulated due to its significant toxicity over the amorphous silica. The three most common forms of crystalline silica in the workplace are: quartz, cristobalite and tridymite. The physical properties of silica make it a valuable substance for use in a variety of different industries and processes such as an abrasive and scouring compound, fillers for paint and mastic and optical equipment. Health effects resulting from exposure to crystalline silica range from eye and skin irritation, coughing and sneezing to silicosis a progressive lung disease.

VINYL CHLORIDE

Vinyl chloride is required in the manufacture of polyvinyl chloride (PVC) and at room temperature is present as a colorless, flammable gas. Vinyl chloride is also known as chloroethene, chloroethylene, and ethylene monochloride, and can result from the breakdown of other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene.

Common exposure is a result of inhaling vinyl chloride from industrial leaks, hazardous waste sites and landfills. Symptoms of breathing vinyl chloride are sleepiness, dizziness or labored breathing. Chronic exposure can cause liver and nerve damage or cancer.

LABORATORY ANALYSIS REPORTS

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Laboratory Analysis Report

To:

Fred Atrash
OHE Consultants Inc.
311 Matheson Boulevard East
Mississauga, Ontario
L4Z 1X8

EMC LAB REPORT NUMBER: A59695rr*
Job/Project Name:
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: Jun 29/20 **Date Analyzed:** Jul 6/20
Analyst: Jon Delos Santos, *Laboratory Supervisor*
Reviewed By: Malgorzata Sybydlo, *Laboratory Manager*

No. of Phases Analyzed: 18
Job No: 25736
Number of Samples: 19
Date Reported: Jun 4/21

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
25736-1A	A59695-1	Suspended ceiling tiles (SCTs):2'x4' with pinholes and fissures/ceiling, entrance 11	Grey, ceiling tile	**ND**		75	25
25736-1B	A59695-2	SCTs:2'x4' with pinholes and fissures/ceiling, entrance 11	Grey, ceiling tile	**ND**		75	25
25736-1C	A59695-3	SCTs:2'x4' with pinholes and fissures/ceiling, entrance 11	Grey, ceiling tile	**ND**		75	25
25736-2A	A59695-4	Expansion joint/west exterior wall, entrance 11	Black and grey, caulking	**ND**			100
25736-2B	A59695-5	Expansion joint/west exterior wall, entrance 11	Black and grey, caulking	**ND**			100
25736-2C	A59695-6	Expansion joint/west exterior wall, entrance 11	Black and grey, caulking	**ND**			100
25736-3A	A59695-7	Caulking: grey/between window panel and wall, entrance 11	Grey, caulking	**ND**			100
25736-3B	A59695-8	Caulking: grey/between window panel and wall, entrance 11	Grey, caulking	**ND**			100
25736-3C	A59695-9	Caulking: grey/between window panel and wall, entrance 11	Grey, caulking	**ND**			100
25736-4B	A59695-11	Cladding panels/above the window, exterior of entrance 11	Grey, cement sheet	**Chrysotile**	**10**		90

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Laboratory Analysis Report

EMC LAB REPORT NUMBER: A59695rr*
Client's Job/Project Name/No.: 25736
Analyst: Jon Delos Santos, *Laboratory Supervisor*

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
25736-4C	A59695-12	Cladding panels/above the window, exterior of entrance 11	NA	**NA**			
25736-5A	A59695-13	Caulking: white/between glass and window frame, entrance 22	Grey, caulking	**ND**			100
25736-5B	A59695-14	Caulking: white/between glass and window frame, entrance 22	Grey, caulking	**ND**			100
25736-5C	A59695-15	Caulking: white/between glass and window frame, entrance 22	Grey, caulking	**ND**			100
25736-6A	A59695-16	Mortar/west wall outside entrance 11	Grey, cementitious material	**ND**			100
25736-6B	A59695-17	Mortar/north wall outside entrance 22	Grey, cementitious material	**ND**			100
25736-7A	A59695-19	Caulking: black/between window frame and glass, entrance 22	Black, caulking	**ND**			100
25736-7B	A59695-20	Caulking: black/between window frame and glass, entrance 22	Black, caulking	**ND**			100
25736-7C	A59695-21	Caulking: black/between window frame and glass, entrance 22	Black, caulking	**ND**			100

Note:
1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

* This report has been revised as requested on June 4, 2021.

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Laboratory Analysis Report

To:

Fred Atrash
OHE Consultants Inc.
311 Matheson Boulevard East
Mississauga, Ontario
L4Z 1X8

EMC LAB REPORT NUMBER: A69198
Job/Project Name:
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: May 26/21 **Date Analyzed:** May 27/21
Analyst: Kathy Jin
Reviewed By: Fajun Chen, Ph.D., *Laboratory Director*

No. of Phases Analyzed: 10
Job No: 25736
Number of Samples: 9
Date Reported: May 27/21

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
25736-10A	A69198-1	Cladding panel / exterior soffit, entrance 33, 1st floor	Off white, cementitious material	**ND**			100
25736-10B	A69198-2	Cladding panel / exterior soffit, entrance 33, 1st floor	Off white, cementitious material	**ND**			100
25736-10C	A69198-3	Cladding panel / exterior soffit, entrance 33, 1st floor	Off white, cementitious material	**ND**			100
25736-11A	A69198-4	DJC / ceiling, vestibule to entrance 33, 1st floor	Beige, joint compound	**Chrysotile**	**1**		99
25736-11B	A69198-5	DJC / ceiling, vestibule to entrance 33, 1st floor	NA	**NA**			
25736-11C	A69198-6	DJC / wall above the interior door, vestibule to entrance 33, 1st floor	NA	**NA**			
25736-12A	A69198-7	Plaster / wall above the ceiling tiles, hallway by entrance 11, 1st floor	2 Phases: a) White, plaster b) Grey, plaster	 **ND** **ND**			 100 100
25736-12B	A69198-8	Plaster / wall above the ceiling tiles, hallway by entrance 11, 1st floor	2 Phases: a) White, plaster b) Grey, plaster	 **ND** **ND**			 100 100
25736-12C	A69198-9	Plaster / wall above the ceiling tiles, hallway by entrance 11, 1st floor	2 Phases: a) White, plaster b) Grey, plaster	 **ND** **ND**			 100 100

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Laboratory Analysis Report

EMC LAB REPORT NUMBER: A69198
Client's Job/Project Name/No.: 25736
Analyst: Kathy Jin

Note:
1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

EMSL Canada Inc.
2756 Slough Street, Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com torontolab@emsl.com

EMSL Canada Or	552007303
CustomerID:	55OHEI93
CustomerPO:	25736
ProjectID:	

Attn: **Fred Atrash**
OHE Consultants
311 Matheson Blvd. East
Mississauga, ON L4Z 1X8

Phone:	(905) 890-9000
Fax:	(905) 890-9005
Received:	6/29/2020 09:00 AM
Collected:	

Project: **25736**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client SampleDescription	Collected	Analyzed	Weight	RDL	Lead Concentration
25736-L1		6/29/2020	0.2483 g	0.0081 % wt	0.011 % wt
552007303-0001	Site: Blue paint, door leading from outside to entrance 11				

Rowena Fanto, Lead Supervisor
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. 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. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.
Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.
Samples analyzed by EMSL Canada Inc. Mississauga, ON AIHA-LAP, LLC - ELLAP #196142

Report Amended: 06/04/2021 15:54:11 Replaces the Inital Report 07/06/2020 08:10:10. Reason Code: Client-Change to Appearance

SITE PHOTOGRAPHS

Photograph 1: View of the asbestos-containing cladding panels (cement board) above the window at Entrance 11 at the Subject Location.

Photograph 2: View of the asbestos-containing drywall joint compound on the ceiling in the vestibule by Entrance 33 at Subject Location.

Photograph 3: View of the lead-containing blue paint on the door of Entrance 11 at the Subject Location.

Photograph 4: View of the lead-containing light blue paint on the door frame in the vestibule by Entrance 33 at the Subject Location.

SECTION 00 31 19 - EXISTING CONDITIONS

1. HAZARDOUS MATERIALS

.1 A hazardous materials survey has been carried out by OHE Consultants who have prepared the following report included hereinafter:

.1 "Hazardous Building Materials Survey, Accessibility Entrances, Port Credit Secondary School, 70 Mineola Road East, Mississauga, Ontario L5G 2E5", OHE Project No: 35736, Dated May 2021.

.2 This report is hereby offered in good faith for general information and guidance. The Consultant assumes no responsibility for accuracy and completeness of the information provided.

.3 Contractor shall not be entitled to extra payment and/or performance time for work which is required and which is reasonably inferable in soil reports as being necessary.

.4 In case of discrepancies between recommendations contained in soil report and requirements of Contract Documents, the latter shall govern. Advise Consultant in writing of any discrepancies discovered.

END

The Agreement between Board and Contractor, the Definitions and the Requirements of the Stipulated Price Contract of the Stipulated Price Contract PDSB – April 2011 (Rev. December 2018), as amended by these Supplementary Conditions, govern the Work of this Contract.

DEFINITIONS

3. Board:

add new sentence: "Elsewhere in the Contract Documents the term "Owner" may be used and for the purposes of this contract the terms "Board" and "Owner" shall be taken to mean the same.

THE REQUIREMENTS OF THE STIPULATED CONTRACT

4. DELAYS

add new paragraph

4.8 If the Contractor is responsible for a delay in the progress of the Work he shall, without additional cost to the Board, work such overtime, and acquire and use for the execution of the Work such additional labour and equipment as necessary, in the opinion of the Board and Consultant, to avoid delay in the final completion of the work.

13. APPLICATIONS FOR PAYMENT

add new paragraph

13.8 The Contractor shall, prior to making application for Substantial Performance of the Work ensure that:

13.8.1 Operating and maintenance instructions for equipment and apparatus furnished under the Contract and required by the Contract Documents have been received, reviewed and accepted by the Consultant and the Board and;

13.8.2 All permits, licenses, approvals, certificates and authorization required by any authority having jurisdiction over the Project or the Place of Work have been submitted to the Consultant and the Board.

23. HEALTH & SAFETY

paragraph 23.2, last line: change "Architect" to "Consultant".

38. REVIEW AND INSPECTION OF THE WORK

add new paragraph

38.6 The undertaking of periodic site review by the Consultant or Board's representative shall not be construed as supervision of actual construction, nor make them responsible for providing a safe place for work, visit, use, access, travel, or occupancy of the Consultant's or Board's employees or agents.

END

1.1 GENERAL REQUIREMENTS

.1 Division 1 requirements apply to all Sections of Work.

1.2 SUMMARY OF WORK

.1 Provide all items, articles, materials, services and incidentals, whether or not expressly specified or shown on Drawings, to make finished work complete and fully operational, consistent with the intent of the Contract Documents.

.2 Provide all work indicated in Contract Documents, regardless whether located within or outside Board's property lines.

.3 The following work is not included in this Contract:

.1 Work designated N.I.C.

1.3 DIVISION OF WORK

.1 Work specified in the Specification has been divided into technical Sections for the purpose of ready reference. Division of work among Subcontractors and suppliers is solely the Contractor's responsibility and Consultant assumes no responsibility to act as an arbiter to establish subcontract limits between Sections or Divisions of work.

1.4 METRIC PROJECT

.1 This project is based on The International System of Units (SI). Measurements are expressed in metric (SI) units and depending on the progress made in the various sectors of the industry are either hard or soft converted units.

.2 All metric units specified shall be taken to be the minimum acceptable unless otherwise noted.

.3 It is the Contractor's responsibility to check and verify with manufacturers and suppliers on the availability of materials and products in either metric or imperial sizes.

.4 Where a material or product cannot be obtained in the metric size specified, provide the next larger imperial size available.

.5 Where both metric and imperial sizes or dimensions are shown, the metric size or dimension shall govern.

1.5 SAFETY AND SECURITY

.1 Be responsible for security of all areas affected by work of this Contract until taken over by Board. Take steps to prevent entry to the Work by unauthorized persons and guard against theft, fire and damage by any cause.

.2 Provide suitable surveillance equipment and/or employ guard services, as required to adequately protect the Work.

.3 Maintain fire protection for work. Store paints and volatile substances in a separate and controlled location and inspect frequently. Inspect temporary wiring, drop cords, extension cables for defective insulation or connections frequently. Remove combustible wastes frequently. Prohibit smoking anywhere on site, inside building and outside.

.4 Do not cut, bore or sleeve through any loadbearing member, new or existing without Consultant's written authorization, unless specifically indicated on Drawings.

1.6 USE OF SITE

.1 Accept full responsibility for assigned work, staging and storage areas from the time of Contract award until Substantial Performance of the Work.

.2 Check means of access and egress, rights and interests which may be interfered with. Do not block lanes, roadways, entrances or exits. Direct construction traffic and locate access to site as directed by municipality.

.3 Where encroachment beyond property limits is necessary make arrangement with respective property owners.

END

SECTION 01 21 00 - ALLOWANCES

1.1 GENERAL

.1 Comply with GC 41 CASH ALLOWANCES and GC42 CONTINGENCY ALLOWANCE.

.2 Cash allowances are designated for additional work and services deemed to be necessary by Board, from time to time, throughout the execution of the Work. Where a cash allowance refers to an item or category of work already included in Contract Documents, it shall be assumed to cover work or services in addition to that indicated, unless specifically indicated otherwise.

.3 Contractor may be required from time to time to assist in tendering of certain items of work covered by allowance, as directed by Consultant.

1.2 AUTHORIZATION

.1 Expenditures from allowances included in the Contract must be authorized in writing by the Consultant.

.2 Work covered by allowances shall be performed for such amounts and by such persons as directed by the Consultant.

1.3 CASH ALLOWANCES

.1 Cash allowances include supply and installation unless specifically indicated otherwise.

.2 Supply only allowances shall include:

.1 Net cost of products

.2 Delivery to site

.3 Applicable taxes and duties (excluding HST)

.3 Supply and install allowances shall include:

.1 Net cost of products

.2 Delivery to site

.3 Unloading, storing, handling of products on site

.4 Installation, finishing and commissioning of products

.5 Applicable taxes and duties (excluding HST)

.4 Inspection and testing allowances shall include:

.1 Net costs of inspection / testing services

.2 Applicable taxes (excluding HST)

.5 Other costs related to work covered by allowances are not covered by the allowance but shall be included separately in Contract.

.6 Include in the Contract a total of thirty thousand dollars ($30,000.00) not including HST, for the following cash allowances:

.1 Independent testing and inspection

.2 Air and water testing and balancing

1.4 CONTINGENCY ALLOWANCE

.1 Include in the Contract a contingency allowance of fifty thousand dollars ($50,000.00), not including HST.

END

1.1 PRE-CONSTRUCTION MEETING

.1 Immediately prior to construction, upon notification attend at location of Board's choice, pre--construction meeting, along with authoritative representatives of certain key subcontractors as specifically indicated in the conference notice.

.2 Purpose of meeting is as follows:

.1 Review project communications procedures.

.2 Review contract administration requirements including submittals, payment and change order procedures.

.3 Identify all critical points on construction schedule for positive action.

.4 Identify any product availability problems and substitution requests.

.5 Establish site arrangements and temporary facilities.

.6 Review Consultant's inspection requirements.

.7 Review any points which, in Board's, Consultant's and Contractor's opinion, require clarification.

.3 The Consultant shall organize and chair the pre-construction meeting. Consultant shall record minutes of pre-construction meeting and distribute a copy to each participant within ten days of meeting.

1.2 SITE MEETINGS

.1 Prior to the commencement of the Work, the Contractor together with the Consultant shall mutually agree to a sequence for holding regular site meetings.

.2 Organize and chair site meetings. Ensure that persons, whose presence is required, are present and that relative information is available to allow meetings to be conducted efficiently.

.3 Once a month or more often if directed by Consultant include review with Consultant and Board of construction schedule and application for progress payment, during or immediately following site meeting.

.4 Record minutes of each meeting and promptly distribute copies to be received by all participants not later than seven days after meeting has been held. Distribute minutes of meetings to all Consultants, whether in attendance or not.

1.3 SUPERVISION

.1 Employ an experienced and qualified supervisor who shall be in complete charge of the Work from commencement to final completion of the Work and who shall be present at the site whenever work is being carried out. A working foreperson will not be acceptable. The supervisor shall not be changed after commencement of work without the Consultant's approval.

.2 Supervise, direct, manage and control the work of all forces carrying out the Work, including subcontractors and suppliers. Carry out daily inspections to ensure compliance with the Contract Documents and the maintenance of quality standards. Ensure that the supervisory staff includes personnel competent in supervising all Sections of Work required.

.3 Arrange for sufficient number of qualified assistants to the supervisor as required for the proper and efficient execution of the Work.

1.4 DOCUMENTS ON SITE

.1 Contractor's field office shall at all times contain a complete set of Contract Documents (Drawings,

Schedules and Specifications) with all addenda, site instructions, change orders, reviewed shop drawings and samples, colour schedule, paint materials schedules, hardware list, progress reports and meeting minutes.

1.5 INTERFERENCE AND COORDINATION DRAWINGS

.1 Prepare interference and equipment placing drawings to ensure that all components will be properly accommodated within the spaces provided.

.2 Prepare drawings to indicate coordination and methods of installation of a system with other systems where their relationship is critical. Ensure that all details of equipment apparatus, and connections are coordinated.

.3 Ensure that clearances required by jurisdictional authorities and clearances for proper maintenance are indicated on drawings.

.4 Within 4 weeks of Contract award submit interference drawings to Consultant for review.

1.6 SLEEVING AND INSERT SETTING DRAWINGS

.1 Prepare sleeving drawings for work of Divisions 21 to 28, showing size and location of all penetrations through load bearing elements. Submit sleeving drawings to Consultant for review not less than 15 days prior to construction of affected elements.

.2 Prepare insert setting drawings for work to be cast into concrete and / or mortared into masonry elements. Submit insert setting drawings in the form of a transparency and 4 prints to Consultant for review not less than 15 days prior to construction of affected elements.

END

SECTION 01 32 00 - PROJECT PROGRESS DOCUMENTATION

1.1 CONSTRUCTION SCHEDULE

.1 Within 14 days of Contract award, submit in format acceptable to Consultant, minimum four copies of Contractor's critical path construction schedule, using suitable computer scheduling software, such as “MS Project” or “Primavera”.

.2 Schedule proposed by the Contractor shall be based on the following assumptions:

.1 Critical path base line is considered by Contractor as reasonable and achievable.

.2 Schedule is based on resources which have been committed for this project by Contractor and will be readily available when needed.

.3 Schedule is based on normal range of weather conditions, as documented by official weather records.

.4 Float belongs to Project.

.3 Set up format to permit plotting of actual construction progress against scheduled progress.

.4 Schedule shall show:

.1 Commencement and completion dates of Contract.

.2 Commencement and completion dates of construction stages/phases, if any.

.3 Commencement and completion dates of each trade. Major trades shall be further broken down as directed by Consultant; generally follow Specification format.

.4 Order and delivery dates for major or critical equipment.

.5 Critical dates for shop drawing/sample submissions.

.6 Any other information relating to orderly progress of Contract, considered by Contractor or Consultant to be pertinent.

.5 Submit copy of schedule showing actual progress, to Consultant once a month, concurrently with application for payment. Consultant, together with Contractor, shall review construction progress once a month during or immediately following regular site meeting, or more often as directed by Consultant.

.6 Update construction schedule, whenever changes occur, in manner and at times acceptable to Consultant. Include with each update a written report of activity progress reflected in the revised critical path schedule, and the corrective actions which have been or are to be taken to maintain progress on the schedule in the future, anticipated delay, resource availability, schedule changes, and work to be completed in the next 2 month period.

.7 Plot actual construction progress on schedule at least once a week.

1.2 CASH FLOW CHART

.1 Within 7 days after award of Contract, submit, in form approved by Consultant, cash flow chart broken down on a monthly basis in an approved manner. Cash flow chart shall indicate anticipated Contractor's monthly progress billings from commencement of work until completion.

.2 Update cash flow chart whenever changes occur to scheduling and in manner and at times satisfactory to the Consultant.

1.3 PROGRESS RECORD

.1 Maintain on site, permanent written record of progress of work. Record shall be open to inspection by Consultant at all times and copy shall be furnished to Consultant upon request.

.2 This record shall show dates of commencement, progress and completion of various trades and items

of work. Particulars pertaining to installation of critical or major components as well as number of employees of various trades and type and quantity of equipment employed daily, shall be noted.

.3 Display a copy of the construction schedule in the site office from start of construction to completion. Superimpose actual progress of work on schedule at least once each week.

1.4 PRODUCT DELIVERY CONTROL

.1 It is the responsibility of the Contractor to ensure that the supplier or distributor of materials specified or alternatives accepted, which he intends to use, has materials on the site when required. The Contractor shall obtain confirmed delivery dates from the supplier.

.2 Provide equipment delivery schedule, coordinated with construction and submittals' schedule, showing delivery dates for major and/or critical equipment.

.3 The Contractor shall contact the Consultant immediately upon receipt of information indicating that any material or item, will not be available on time, in accordance with the original schedule, and similarly it shall be the responsibility of all subcontractors and suppliers to so inform the Contractor.

.4 The Consultant reserves the right to receive from the Contractor at any time, upon request, copies of actual purchase or work orders of any material or products to be supplied for the work.

.5 If materials and products have not been placed on order, the Consultant may instruct such items to be placed on order, if direct communication in writing from the manufacturer or prime suppliers is not available indicating that delivery of said material will be made in sufficient time for the orderly completion of the Work.

.6 The Consultant's review of purchase orders or other related documentation shall in no way release the Contractor, or his subcontractors and suppliers from their responsibility for ensuring the timely ordering of all materials and items required, including the necessary expediting, to complete the work as scheduled in accordance with the Contract Documents.

END

SECTION 01 33 00 - SUBMITTALS

1.1 GENERAL

.1 Unless specified or directed otherwise, make all submissions to the Consultant at the Consultant's office.

.2 Make all submissions required by the Contract Documents with reasonable promptness and in orderly sequence so as to cause no delay in the work.

.3 Arrange and pay for delivery to and return from Consultant of all submittals.

1.2 RELATED REQUIREMENTS

.1 Make the following submissions in accordance with requirements specified elsewhere:

.1	Applications for payment:	General Conditions
.2	WSIB certificates of clearance:	General Conditions
.3	Insurance certificates:	General Conditions
.4	Bonds:	General Conditions
.5	Interference drawings:	Section 01 31 13
.6	Sleeving and insert drawings:	Section 01 31 13
.7	Construction schedule:	Section 01 32 00
.8	Cash flow chart:	Section 01 32 00
.9	Equipment delivery schedule:	Section 01 32 00
.10	Purchase order documentation:	Section 01 32 00
.11	Waste audit and reduction plans:	Section 01 41 00
.12	Maintenance and operations data:	Section 01 77 00
.13	Maintenance materials:	Section 01 77 00

1.3 SCHEDULE OF VALUES

.1 Submit schedule of values in accordance with requirements of General Conditions.

.2 Follow specifications table of contents as basis for degree of breakdown required. Show breakdown for different construction phases/stages if required by Consultant.

.3 Break down cost for large items of work as directed by Consultant.

.4 Provide additional cost breakdown information if requested by Consultant.

1.4 SCHEDULE OF SUBMITTALS

.1 Within 15 days of submission of construction schedule submit a schedule of submittals for shop drawings, samples, lists of materials and other documentation requiring Consultant's review.

.2 For each item requiring submission and review show anticipated date of submission and critical date for return of reviewed submission.

.3 Design sequence of submissions to reflect requirements of construction schedule.

.4 Allow up to 15 days for Consultant's review for each submission/resubmission. Stagger submissions

as much as possible to permit adequate review time for each item submitted. If several submissions are made at the same time or within a short time of each other, indicate order of priority in which submissions should be reviewed.

.5 Include sufficient time to permit corrections and resubmission, if necessary, without affecting construction schedule.

1.5 PRODUCT DATA

.1 Submit product data sheets, required by Contract Documents, and others as may be reasonably required by Consutlant.

.2 Submit product data sheets in digital or printed hardcopy form and in accordance with the following requirements:

.1 Show detailed comprehensive information on products to be used.

.2 Clearly identify product/model number on data sheets containing multiple products.

.3 Supplement manufacturers/distributor's standard schematics, diagrams, brochures data sheets, catalogue sheers, charts and other descriptive data as required to give a clear understanding of the properties of the product and how product is to be incorporated into project.

1.6 SHOP DRAWINGS

.1 Submit shop drawings required by Contract Documents, in accordance with requirements of General Conditions.

.2 Prepare shop drawings in metric measurements only. Shop drawings containing imperial measurements will be rejected.

.3 Provide shop drawings bearing seal and signature of professional engineer licensed to practice in Ontario where required. Shop drawings submitted without required seal and signature will be rejected and returned to Contractor without review.

.4 Submit a digital copy or the following number of prints for each shop drawing required, unless otherwise directed by the Consultant:

.1 Architectural shop drawings: 5 prints

.2 Structural, mechanical, electrical shop drawings: 6 prints

.5 After review Consultant will return the marked up digital copy or prints to the Contractor. Contractor shall obtain and distribute the necessary number of copies for each shop drawing.

.6 Shop drawings which require the approval of a legally constituted authority having jurisdiction shall be submitted by Contractor to such authority for approval. Such shop drawings shall receive final approval of authority having jurisdiction before Consultant's final review.

.7 No work requiring a shop drawing submission shall be commenced until the submission has received Consultant's final review. Do not use any shop drawing, erection drawing or setting drawing which does not bear the stamp and signature of the Consultant.

.8 The Consultant's review is for the sole purpose of ascertaining conformance with the general design concept. This review shall not mean that the Consultant approves the detail design inherent in the shop drawings, responsibility for which shall remain with the Contractor submitting same, and this review shall not relieve the Contractor of his responsibility for meeting the requirements of the Contract Documents. The Contractor is responsible for dimensions to be confirmed and correlated at the job site for information that pertains solely to fabrication processes or to techniques of construction and installation and for coordination of the work of all subtrades.

1.7 SAMPLES

.1 Submit samples required by Contract Documents and as directed by the Consultant.

.2 Unless indicated otherwise submit samples in duplicate.

.3 Where colour selection is required submit manufacturer's full colour range for specified product line.

.4 Submit samples with identifying labels bearing material or component description, manufacturer`s name and brand name, Contractor's name, project name, location in which material or component is to be used, and date.

.5 Prepay any shipping charges involved for delivering samples to destination point and returning to point of origin if required.

.6 No work requiring a sample submission shall be commenced until the submission has received Consultant's final review.

1.8 REQUESTS FOR INFORMATION (RFI'S)

.1 Submit RFI's only after a thorough review has determined that the required information is not included in the Contract Documents.

.2 Submit RFI's in a timely manner so as not to cause any delay and leaving sufficient review time for the Consultant.

.3 The Consultant will identify each RFI with the time and date received and assign an anticipated review time of one to five working days depending on the complexity of the matter under review, applied consecutively.

.4 The Consultant will review RFI's in the order received, unless, upon Contractor's request, the Consultant agrees to prioritize the review of a particular RFI, adjusting the review time accordingly.

.5 The Consultant will advise the Contractor within the assigned review time with one of the following responses:

.1 Information requested is included in the Contract Documents.

.2 A site instruction will be issued.

.3 A change notice will be issued.

.4 A change directive will be issued.

END

1.1 OPERATIONAL LIMITATIONS

.1 Contractor's use of site is limited to areas indicated. Work on site may proceed regardless whether or not the school is occupied as long as noise levels ae kept low and spread of dust and odours are controlled.

.2 Access to each assigned work area shall be directly from the exterior and not through the school interior.

.3 At all times ensure that existing exits can be safely used, unless other provisions, acceptable to regulatory agencies, have been implemented.

.4 At all times restrict access, parking, material deliveries, execution of work, operations and procedures to agreed locations and times and do not deviate from agreed procedures without prior approval by Consultant.

.5 Periodically review proposed construction operations with the Board and Consultant and co-operate as required to ensure that the Board's interests and requirements are not unduly compromised.

.6 Do not execute work adjacent and/or above occupied areas except where it can be demonstrated that adequate protective devices are in place.

.7 Enclose assigned work, staging and storage areas as indicated below.

.1 Exterior locations: chain link or wire mesh fence.

.2 Interior location: fire rated, sound and dustproof partition.

.8 Do not use fuel powered machines and tools inside building.

.9 Do not carry out excessively noisy work during school hours. Stop and reschedule work when noise levels, in Owner’s opinion, interfere with school activities.

.10 Work causing discomfort to school occupants due to noxious fumes/odours, including but not necessarily limited to the following shall be carried out outside regular school hours, as directed by the Board.

.1 Hot bituminous substances

.2 Liquid applied coatings

.11 Prevent spread of dust and noxious fumes, odours to unassigned areas. Volatile substances shall not be used during regular school hours.

.12 Prevent disruption of existing life safety systems in occupied areas including fire detection and alarm systems, fire protection systems, exits, emergency lighting. Comply with "Guidelines for Maintaining Fire Safety During Construction in Existing Buildings" issued by the Office of the Fire Marshal, dated January 2003, attached hereinafter.

.13 Comply with requirements contained in “Site Safety Protocol for Occupied Buildings” by the Peel District School Board, attached hereinafter. In case of conflict between these requirements and other requirements contained in the Contract Documents, the more stringent requirements shall apply.

.14 Workers are not permitted inside unassigned school areas except by prior arrangement and with the approval of school.

.15 Where work is required to be carried out within unassigned spaces take the following action upon completion of each authorized work period:

.1 Restore disturbed surfaces by patching, covering, painting, finishing as directed by Consultant.

.2 Remove construction materials, equipment and tools.

1.2 SCHEDULING/PHASING

.1 Anticipated start of work n site: June 30, 2021.

.2 `Reach Substantial Performance on or before August 20, 2021.

.3 Complete all work of this Contract on or before September 30, 2021.

1.3 CUTTING NEW OPENINGS

.1 Prior to cutting any new openings into/through existing reinforced concrete elements, conduct radar survey, or other type of non-destructive survey, of areas to be cut, to locate presence of reinforcing steel, conduits and other embedded items. Make adjustment in locations to be cut, to avoid embedded items. Surveys employing x-ray technique may only be carried out when building is unoccupied.

.2 Provide minimum 72 hours' notice prior to scanning.

.3 After scanning and before coring submit a written review and approval of proposed coring by a professional engineer licensed to practice in Ontario.

1.4 ALTERATIONS, MATERIALS AND WORKMANSHIP

.1 Cut, alter, relocate, modify existing work as required to accommodate new work.

.2 Materials used in patching, making good and refinishing of existing construction and/or components shall be of a standard equal to that specified for new construction and if not specified, equal to or exceeding that of original existing work.

.3 Quality of workmanship employed in alterations work shall be equal to that specified for new work if not specified, equal to or exceeding original existing work.

.4 Existing materials and equipment which are to be used in new work shall be repaired and refinished as necessary or additional new materials and components required shall be provided to facilitate reinstallation of such existing materials and equipment.

.5 As part of the work of this Section, remove and relocate, or temporarily remove and reinstall, existing materials and equipment as required to complete work of the Contract.

.6 Make good by restoring to original condition, existing construction, equipment, materials, finishes, features, not scheduled for alterations but damaged or disturbed due to work of this Contract.

.7 Prepare existing surfaces scheduled to receive new finish by grinding, filling, overcoating, washing, etching, shot blasting or other chemical or mechanical means, as required to ensure satisfactory installation of new finish.

.8 Unless otherwise detailed finish new surfaces flush with existing surfaces. Make junctions between existing and new work, or at replaced or remedial work visually undetectable. Make surfaces adjacent to one another of the same material, unit sizes, colour, and texture. If this is impossible, make a proposal of intended method of making good for approval, before proceeding.

1.5 EXISTING SERVICES

.1 Ensure that existing services (including but not limited to hot and cold water, drainage, power, heating, ventilation, cooling, life safety and security systems) required for occupied areas are not damaged or interrupted. Reconfigure, relocate, extend, modify existing services as required, to maintain services.

.2 Should existing services be accidentally disrupted, make complete restoration immediately and ensure adequate protection to avoid future disruption.

.3 Where existing building security system is breached due to Contractor's negligence, Contractor shall

be responsible for any damage or theft of school property, regardless if area where damage or theft occurred is under Contractor's control or not.

.4 Schedule required disruptions of services to occupied areas during school holidays, weekends or nights. Notify the Board minimum 48 hours prior to executing any work which would disrupt services to occupied areas and obtain permission to proceed. Restore systems to their proper operating condition at the end of each interruption.

1.6 PROTECTION

.1 Keep area of work safe and secure at all times, denying access to unauthorized personnel.

.2 Protect existing work from damage. Make good any damage caused.

.3 Ensure that no part of the existing structure is overloaded due to work executed under this Contract.

.4 Take special measures when moving heavy loads or equipment. Protect floors, jambs and soffits of openings used as passageways or through which materials are moved. Use rubber tired conveyances only when moving materials and equipment inside building. Provide suitable coverings as required to protect existing work.

.5 Provide adequate guards, barricades and other temporary protection to prevent injury to persons.

.6 Separate exterior work, staging and storage areas from unassigned areas with 1.8 m high chain link or wire mesh fencing, complete with lockable access gates.

.7 Separate interior assigned work areas from unassigned areas with temporary dustproof partitions as follows:

.1 Framed with steel studs at max 600 mm o.c.

.2 Polyethylene dust barrier facing work area taped or sealed at joints and perimeter.

.3 Gypsum board facing unassigned area, minimum 12 mm thick.

.8 Protect existing building interiors from damage by weather, when executing work which affects integrity of exterior walls and roof. Schedule activities during dry periods and/or provide temporary weatherproof closures to protect openings made in exterior walls and roof. At no cost to the Board, replace interior finishes damaged by weather as a result of the Work of this Contract.

.9 Prevent spread of dust and noxious fumes, odours to unassigned areas. Comply with Consultant's directions concerning noise and dust control. Wrap ends of inactive exhaust/return air ducts in assigned work areas air tight. At active ducts install temporary HEPA filters to prevent dust from entering ducts.

1.7 TEMPORARY USE OF EXISTING FACILITIES

.1 Existing facilities such as water and electrical power may be utilized by Contractor for temporary use; make arrangements with the Board and follow Board's directions with regard to such use.

.2 Provide power cords, hoses and other devices as required to convey power/water from points where it

END

1.1 Description

.1 This Section outlines the mandatory minimum Health and Safety protocols for all renovation, addition and new school construction Projects where all or a portion of the existing school building remains occupied and in use.

.2 These Health and Safety protocols are mandatory minimum requirements, procedures and standards that the Peel District School Board insists are fully complied with by all parties involved with Peel District School Board Projects.

1.2 Related Sections

.1 These specifications apply to all Divisions of this Project specification. It is the responsibility of the Contractor to apply these provisions wherever practical within specification limits to all products and services used on this Project.

.2 The requirements of this Section supersede those of all other specification Sections and Drawings. Where conflicts exist in procedures, methods or materials, they shall immediately be brought to the attention of the Consultant and Board Project Manager. Where clarification is not immediately available, the Contractor shall assume the specifications contained in this Section are a minimum standard and the more stringent specification shall apply.

.3 The Contractor must receive approval from Board Project Manager for any deviations from this specification Section.

.4 The Contractor shall recognize that it is *he* who is the Constructor of the Project. The General Contractor shall also recognize that he is solely responsible for site safety at the Place of the Work and compliance with the requirements of this Section does not limit or remove his total responsibility for site safety as Constructor of the Project.

1.3 References

.1 Applicable related regulations, standards and laws related to safety include but are not limited to:

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

1.4 Compliance Specification

.1 Notwithstanding the requirements of this Section, the Contractor must comply with all applicable health, safety and environmental regulations and statutes.

1.5 Beyond Compliance Specification

.1 These specifications apply in addition to all applicable health, safety and environmental compliance regulations. They are incorporated here to reflect the Board's intention to develop a specification which provides the safest practical procedures and policies for construction project sites that are occupied and in use by staff, students and visitors during the execution of the Construction Contract.

.2 Beyond compliance specifications recognize that performance well beyond the minimum regulatory standard is often desirable, possible and affordable, often with no cost or low cost options. It also recognizes that application methods or protocols may be as important as the material specified. Therefore, these specifications cover both material and methods.

.3 These provisions apply to both indoor and outdoor applications equally.

1.6 Application of Compliance Requirements

.1 The articles setout herein are to be applied together as a set of related policies and procedures to achieve a comprehensive Health and Safety working protocol.

.2 The Contractor shall execute all of the procedures and meet all of the requirements set out herein and apply these protocols from the outset of the Construction Phase.

.3 These procedures or requirements are to be maintained for the duration of the Construction Phase. The Contractor shall not discontinue any of the individual procedures or requirements without the prior approval of the Board Project Manager.

1.7 Site Supervisor (Site Superintendent)

.1 A full-time Site Supervisor (Site Superintendent) is required for each site at any site, regardless of the number of active workers on site.

.2 Site Superintendent shall have as a minimum:

.1 Recent, previous experience with renovation or addition projects involving occupied buildings including (but not limited to) school construction, sites with students, tenants, employees, retail customers, pedestrian and vehicular traffic.

.2 Successful completion of a multi-session Supervisor's training course conducted by a recognised Construction Association in Ontario.

.3 Site Superintendent must carry a cell phone at all times during construction with the ability to be reached directly during all work hours and the ability to have voicemail recorded during all non-work hours including weekends and holidays.

.4 Site Superintendent must have means of live phone or walkie-talkie communication with the site Flagman during all work hours.

.5 Site Superintendent shall not be changed throughout project unless confirmed and approved by the Board Project Manager.

1.8 Ontario Occupational Health & Safety Act and Regulations for Construction Projects

.1 General Contractor to comply with the Ontario Occupational Health & Safety Act and Regulations for Construction Projects, latest edition– including all amendments.

.2 Beyond compliance in item .1 above, regardless of the number of labourers active on the Project, the Contractor shall form a contractors' Health & Safety Committee at the outset of construction. This Committee shall then follow the standard requirements for such a Committee as set out in the *Occupational Health & Safety Act and Regulations for Construction Projects.*

1.9 On-Site Communications

.1 At the outset of the project the General Contractor shall provide to the Board Project Manager all relevant contact information for the Site Superintendent, GC Project Manager and key sub-contractors including names and cell phone numbers.

.2 The General Contractor shall provide at least one "emergency contact" telephone number at which the Contractor's representative can be reached directly during all work hours and have the ability to have voicemail recorded during all non-work hours including weekends and holidays. As outlined below, this may be designated to the Site Superintendent's cell phone number.

.3 Regardless of compliance method for the emergency contact telephone number stated above, the Site Superintendent must carry a cell phone at all times during construction with the ability to be reached directly during all work hours and the ability to have voicemail recorded during all non-work hours including weekends and holidays.

.4 Site Superintendent must have means of live phone or walkie-talkie communication with the site Flagman during all work hours.

.5 The Contractor is to ensure that the Board Project Manager is immediately apprised of any safety issues as each arises and the related request and/or resolution. The Board Project Manager is responsible for any decisions that have an effect on the contract execution.

.6 Notwithstanding the reporting to the Project Manager noted above the Site Superintendent shall liaise with school principal or designate on all safety related matters as required on a daily basis.

.7 In the event of a safety issue requiring contractual clarification or action (i.e. Change Notice, etc.), the contractor shall ensure that, where applicable, the action is followed up with appropriate documentation.

1.10 Full-Time On-Site Flagmen

.1 A full-time, designated Flagman is required at all vehicular construction entrances when school is occupied (not required during summer vacation).
.2 In the event there is more than one entrance to the hoarded/fenced construction area, there must be a separate Flagman for each entrance.
.3 Flagman may not be same person as Site Superintendent or other construction worker.
.4 Flagman shall not be changed throughout the Project unless confirmed and approved by the Board Project Manager.
.5 Flagman must have means of phone communication with Site Superintendent (phone or walkie-talkie).
.6 The Flagman shall not be designated for any other duties than to act as a Flagman for safety purposes as described herein.
.7 The Flagman shall meet and escort any construction traffic from the site entrance into and out of the hoarded/fenced construction area (including through open site areas until entrances to hoarding.
.8 The Flagman shall only open hoarded areas when construction traffic moves through and immediately re-close gates.
.9 The Flagman shall control construction parking at the school site (including vehicles parking or traveling in unauthorized areas).
.10 The location of the Flagman shall be set to ensure the safe guarding of staff, student, and pedestrian traffic.
.11 If not designated on the Contract Documents, the location of the Flagman shall be confirmed with the Board Project Manager and Consultant at the outset of the project and before the placement of hoarding and fencing.
.12 Where the Contractor deems it necessary, in order for the Flagman to carry out the required full-time duties, the cost of a temporary shelter shall be included in the Tender Price.
.13 The Flagman shall be properly attired to carry out his duties, including the use of safety equipment (e.g. wear reflective vest, have appropriate traffic hand-held "Stop" sign and have a visible identification tag).

1.11 Site Safety Signage

.1 Standardised Safety Signage is required at all construction entrances. Refer to detail drawings for types and requirements.

.2 If not designated on the Contract Documents, the location of the Safety Signage shall be confirmed with the Board Project Manager and Consultant at the outset of the Project and before the placement of hoarding and fencing.
.3 Safety Signage is to be posted at all street entrances to school site and at each entrance to hoarded/fenced construction area.
.4 Total surface area of signage is to avoid exceeding municipal standards that would require a separate signage permit.
.5 Access signage text shall include cell phone contact number for Site Superintendent.
.6 Signage posted at gates shall state restrictions on hours of entry and egress as described in the Contract Documents and under no circumstances shall construction traffic be allowed within 30 minutes prior to school start, during recess, lunch break, and 30 minutes after dismissal periods.

1.12 Access/Egress Controls

.1 At the outset of the Contract, the General Contractor shall advise all suppliers and subcontractors of the protocols listed herein and of the requirement to contact the Site Superintendent by Cell phone prior to entering the site.
.2 The drivers of all construction vehicles entering the site, including delivery vehicle drivers, are to contact site Superintendent by cell phone prior to entering site; the Site Superintendent shall, in turn, give notice to the Flagman to be aware of the traffic and authorize the Flagman to allow entry of that vehicle.
.3 Vehicular Gates are only for entry and exit of for construction purposes such as construction personnel, Authorities performing inspections, Board representative, delivery personnel, and disposal pickup and ONLY under escort by the Flagman. As such vehicular gates must remain closed and locked at all times and only opened for access/egress under escort by the Flagman, then closed and locked again.
.4 Gates are to be lockable swing gates for vehicles and man gates at all access points to the hoarded/fenced construction area.

1.13 Contractor Parking

.1 Contractor parking shall be restricted to hoarded areas or designated parking areas only where pre-approved by Board Project Manager and Principal.
.2 Contractor parking is restricted from all off-site street areas that interfere with site specific parent drop-off and parking areas.

1.14 Required Preconstruction Meetings

.1 Meeting 1: Contractor shall receive approval from the Architect and the Board Project Manager for parking, vehicular movement, access/egress strategies at a Pre-construction meeting taking place in advance of mobilising on site.

.2 Meeting 2: Once hoarding and fencing is erected BEFORE site construction is fully active and vehicles or equipment is mobilised on site, an initial site meeting shall take place at which time the layout of trailers and staging, deliveries, storage of materials, parking areas and vehicular movement to be reviewed and approved by the Board Project Manager.

.3 See article *1.17- 'Site Meetings'* following.

1.15 Construction Fencing and Hoarding

.1 Construction hoarding requirements shall be a site based decision to be determined by the Architect and the Board Project Manager at the design stage and shown on Contract Documents.

.2 No fencing or hoarding shall be less than a continuous 1800 mm high.

.3 In portions of the site where chain link is approved, it shall be continuous 1800 mm high chain link fencing, wire-tied to staked iron 'tees' at max. 2400 mm on centre - OR - leased, modular 'quick fencing' if staked down and wire tied together.

.4 All fenced and hoarded areas to be gated with lockable vehicular and man gates- minimum construction to be steel rail and chain link construction.

.5 Plastic snow fencing is NOT permitted.

.6 All hoarding and fencing shall be maintained in a stable condition, for duration of construction period as part of the base contract price and to include Superintendent's inspection at the beginning and end of each work day.

.7 All Fire Routes to be outside all fenced and hoarded areas and maintained clear at all times.

.8 'Covered way' protection shall be provided when accesses or pathways are in proximity to construction, in accordance with Ministry of Labour *Occupational Health & Safety Act* Regulations.

1.16 Peel District School Board Health, Wellness & Safety Department Representative

.1 A representative of the Board's Health, Wellness & Safety Dept. ('Environment, Health and Safety Officer') may visit site at any anytime throughout the duration of the Contract to review the site, as it relates to the safety of the occupied areas of the site. Such site review shall neither constitute an inspection or approval for the Contractor.

.2 Concerns or issues identified by the representative from the Board's Health, Wellness & Safety Dept. shall be communicated through the Board Project Manager and the school Principal for corrective action.

.3 Contractor shall ensure full access to all site areas, at all times, for the Board's Health, Wellness & Safety Department Representative.

1.17 Site Meetings

.1 Initial site meeting to take place after erecting fencing and hoarding but prior to the mobilisation of any vehicles, equipment or start of Work.

.2 Contractor shall ensure that the Board Project Manager, School Principal and a representative of the Board's Health, Wellness & Safety Department and the School Principal attend the initial site meeting.

.3 The initial meeting shall review and approve a standardised agenda for all site meetings and a thorough review of the Site Safety Protocol.

.4 The standardised agenda shall include a Checklist and Report of Health and Safety items at the beginning of the agenda. This Checklist shall be included and each item reviewed at all site meetings for the duration of the project.

.5 The Checklist of Site Safety items shall include but not be limited to:

- .1 Contractor's report of site safety record and report of recent site activities, precautions or actions.
- .2 Review any visits to the site and actions required by Ministry of Labour or Board Health, Wellness & Safety representatives or other Authorities Having Jurisdiction.
- .3 Contractor's Health & Safety policy manual posted in site trailer.
- .4 Copy of Ministry of Labour *Occupational Health & Safety Act and Regulations for Construction Projects* in site trailer.
- .5 Name of General Contractor H&S representative.
- .6 Continuing compliance with Safety Signage.
- .7 Hoarding & fencing layout and condition.
- .8 Access and egress measures and any breaches of requirements.
- .9 Confirmation of communications link between Site Superintendent & Flagman.
- .10 Work that may produce any noxious odours and the containment measures, (*i.e.*: schedule, type, approvals required therefore).
- .11 Copies of Material Safety Data sheets in site trailer.
- .12 Complete meeting minutes including details of Safety Checklist shall be copied to Architect, Board Project Manager and Principal.

.6 Contractor to produce record of written Memorandum to all subtrades and suppliers detailing but not limited to: hours of delivery; site access procedures and restrictions; use of existing facilities.

.7 Contractor to prepare detailed and accurate written record of all meetings to be kept and issued to all parties.

1.18 Contractor's Health and Safety Committee Meetings

.1 As required in item 1.8, the Contractor shall form a Health and Safety Committee, hold meetings and record minutes of meetings for the duration of the Contract.

.2 Contractor to maintain a copy of Health & Safety Committee minutes on site for review by Ministry of Labour or Board representative(s).

END

Ministry of Public Safety and Security

Office of the
Fire Marshal

Place Nouveau Building
7th Floor
5775 Yonge Street
North York ON M2M 4J1
Telephone: (416) 325-3100
Facsimile: (416) 325-3213

Ministère de la Sûreté et de la Sécurité publique

Bureau du commissaire
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Ontario

GUIDELINES FOR MAINTAINING FIRE SAFETY DURING CONSTRUCTION IN EXISTING BUILDINGS

The following typical conditions usually arise during construction and could present serious unsafe conditions in case of a fire emergency.

1. Closing of Exits

All exits, including stairways and exterior doors to the outside, serving the existing building must be maintained. Where an exit is blocked off or deleted due to construction activities, an acceptable alternative exit must be provided. Where it is absolutely necessary for access to be gained through the construction area to an exit, the access must be clearly defined and protected so that it is separated from the construction area by a reasonable smoke tight fire separation equivalent to ¾ hour fire-resistance rating.

2. Intersecting Corridors – Existing Corridors on Occupied Floor Areas Exposed to New Corridors Under Construction

Temporary fire separations of steel studs and gypsum board construction equivalent to ¾-hour fire-resistance rating must be erected. Where access is desired, the opening must be protected by a door of solid core wood or hollow steel construction equipped with self-closing and latching hardware. Should such temporary fire separations cut off or eliminate required access to exits, alternative access must be provided.

3. Fire Department Access

The location of a building addition and the construction activities must not obstruct the access roadways designated for fire department equipment. If it is necessary that existing access be obstructed or deleted, alternative access, acceptable to the fire department, must be pre-planned and provided prior to commencement of construction. Sentence 3.2.5.2. (6) of the Ontario Building Code provides the design criteria for required access routes.

4. Control of Combustible Materials

The stockpiling of construction materials adjacent to the existing building must be carefully controlled. Article 2.4.2.1. of the Fire Code prohibits such storage where the materials create a fire hazard to the existing building or its occupants. Materials stored and equipment used in portion of the building under construction could create a fire hazard; for instance, the storage of excessive amounts of foam plastic insulation or the placement of open flame portable heating appliances. The control of combustibles on a construction site is also regulated under the *Occupational Health and Safety Act*.

5. Exposure of Construction in Progress to Existing Occupied Areas

Existing exterior walls with windows of plain glazing when exposed to construction in progress must be protected by ⅝" gypsum board on suitable framing for the duration of the construction. Other openings in the existing exterior walls such as doors, louvers, etc. must be similarly protected or replaced with doors of solid core wood or hollow steel construction.

6. Openings Created Through Floors or Other Fire Separations

Openings in existing floor assemblies and vertical fire separations necessitated by installation of equipment systems or construction in general must be temporarily sealed with fire barrier materials such as mineral wool or other noncombustible insulation.

7. Modification and Extension to Existing Fire Alarm Systems

Maintaining the fire alarm system in operating condition during the construction of the addition will require careful planning especially when the extension to the fire alarm system is carried out in phases.

A technical representative from the fire alarm manufacturer should be assigned to the project to coordinate the different stages of the extension. Whenever a changeover time occurs, which is an outage time of a least a portion of the fire alarm system, the municipal fire department must be notified of the temporary shutdown and alternative measure must be devised.

8. Shutdown of Fire Protection Systems

Where temporary shutdown of sprinkler systems, standpipe systems or other fire protection systems is necessary due to alterations, repairs or extensions, the appropriate requirements in the Fire Code must be observed. See Article 1.1.1.2., Clause 2.8.2.1.(1)(g), Subsections 6.4.1 and 6.5.2.

9. Fire Safety Plan

Depending on the nature of the construction, it may become necessary to modify the fire emergency procedures required under the Fire Safety Plan, subsection 2,8.2 of the Fire Code. Such changes may be of a temporary nature to accommodate revised exits, modifications to the fire alarm system operation, etc. in which case, the procedures must be returned to the original format at the completion of the project. In some cases, permanent revisions to the emergency procedures are required when the construction is completed.

Materials and closures in the temporary fire separations mentioned in the able are suggested examples only. Other materials acceptable to this Office may, of course, be sued. Should there be questions arising from any of the able situations, this Office sir to be informed and consulted to ensure that minimum life safety will be maintained. We would like to point out that partial occupancy of a building is regulated under Subsection 2.4.3. of the Building Code and comes under the authority of the Municipal Building Department.

January 2003

SECTION 01 41 00 - REGULATORY REQUIREMENTS

1.1 PERMITS, LICENCES, FEES

.1 Comply with requirements of General Conditions

.2 Where permits, licences and inspection fees are required by authorities having jurisdiction for specific trade functions, they shall be obtained by particular subtrade responsible for that work.

.3 Review building permit set with Consultant immediately following receipt of building permit and jointly determine whether or not changes to Contract are required.

.4 Be responsible for ensuring that no work is undertaken which is conditional on permits, approvals, reviews, licences, fees, until all applicable conditions are met. No time extension will be allowed for delay in obtaining necessary permits.

.5 Report to the Consultant in writing any condition which would prohibit granting of any permit or approval before work affecting such items is commenced.

.6 Give notice of completion of project prior to occupancy, as required by applicable legislation.

1.2 BUILDING CODE, BY-LAWS, REGULATIONS

.1 Carry out work in accordance with requirements of the Ontario Building Code, latest issue, including all amendments and revisions.

.2 Comply with requirements, regulations and ordinances of other jurisdictional authorities.

.3 Where it is necessary to carry out work outside property lines, such as sidewalks, paving or concrete curbs, comply with applicable municipal requirements.

.4 Promptly submit written notice to Consultant, of observed variance of Contract Documents from requirements of Building Code and authorities having jurisdiction. Assume responsibility for work known to be contrary to such requirements and performed without notifying Consultant.

1.3 CONSTRUCTION SAFETY

.1 Comply with requirements of General Conditions.

.2 Be governed by pertinent safety requirements of Federal or Provincial Governments and of municipal bodies having authority, particularly the Ontario Construction Safety Act, and regulations of Ontario Ministry of Labour, and work in conjunction with proper safety associations operating under the authority of Ontario Workplace Safety and Insurance Act.

.3 Do not, in the performance of the work, in any manner endanger the safety or unlawfully interfere with the convenience of the public.

.4 Notify the Ontario Ministry of Labour of intended work of this Contract as required by the Occupational Health and Safety Act. One copy of the "Notice of Project" shall be handed to Consultant.

.5 Comply with Construction Safety Requirements by Peel District School Board, attached hereinafter (2 pages). In case of conflict between these requirements and other requirements contained in the Contract Documents, the more stringent requirements shall apply.

1.4 FIRE PROTECTION

.1 Refer to technical Sections of Specifications and Drawings for fire protection requirements.

.2 Test methods used to determine fire hazard classification and fire endurance rating shall be as required by Ontario Building Code.

.3 Upon request, furnish Consultant with evidence of compliance with project fire protection requirements.

.4 Materials and components used to construct fire rated assemblies and materials requiring fire hazard classification shall be listed and labelled, or otherwise approved, by fire rating authority. Labelled materials and their packaging shall bear fire rating authorities label showing product classification.

.5 Fire rated door assemblies shall include doors, frame, anchors and hardware and shall bear label of fire rating authority showing opening classification and rating.

.6 Materials having a fire hazard classification shall be applied or installed in accordance with fire rating authority`s printed instructions.

.7 Fire rated assemblies shall be constructed in accordance with applicable fire test report information issued by fire rating authority. Deviation from fire test report will not be allowed.

.8 Construct fire separations as continuous, uninterrupted elements except for permitted openings. Extend fire rated walls and partitions from floor to underside of structural deck above.

.9 Fill and patch voids and gaps around openings and penetrations in and at perimeter of assemblies so as to maintain continuity and to produce a fire resistant smoke tight seal, acceptable to jurisdictional authorities and Consultant.

1.5 HAZARDOUS MATERIALS

.1 Comply with provisions of the Occupational Health and Safety Act as amended to include WHMIS (Workplace Hazardous Materials Information System).

.2 Ensure that Safety Data Sheets (SDS) are available on site prior to first delivery to site of any controlled material or substance, including but not necessarily limited to the following:

.1 Lead-free solder.

.2 Resilient flooring.

.3 Sealants/caulking materials.

.4 Painting and finish materials.

.5 Glues and adhesives.

.6 Any other products which may give off air borne particles during and/or after installation.

.3 Maintain on site for duration of Contract a hazardous materials log containing all required SDS.

.4 Log shall be open for inspection for Owner, Consultant and all personnel on site.

.5 Ensure that workers are instructed in the purpose and content of SDS.

.6 The following shall not be used in the work of this Contract:

.1 Asbestos and asbestos containing materials.

.2 Solder containing lead.

.3 Paint/coating materials containing lead and/or mercury.

.7 Refer to Section 01 77 00 for requirements on Certificates of Compliance.

1.6 WASTE MANAGEMENT

.1 Comply with regulatory requirements governing waste management.

.2 Prepare and submit waste audit, waste reduction and source separation plans in accordance with applicable regulatory requirements.

END

CONSTRUCTION SAFETY

.1 The Contractor and all his trades must observe and enforce construction safety measures required by Canadian Construction Safety Code, Workplace Safety & Insurance Board (formerly known as Worker's Compensation Board), and Municipal statutes. In particular, the Ontario Construction Safety Act, the regulations of the Ontario Department of Labour and Ontario Hydro Safety Requirements shall be strictly enforced. In the event of conflict between any provisions of above authorities the most stringent provisions will apply.

.2 The Contractor is reminded, once again, that it is he who is responsible for Occupational Health and Safety on this Project. The items listed below are only guidelines of the Board's expectations in this regard and not to be construed to be comprehensive or total in nature.

.3 The Board will take every reasonable precaution to prevent injury or illness to students, employees and the public, participating in Board activities, or performing their duties. This shall be accomplished by providing and maintaining a safe, health working environment by providing the education necessary to perform these activities or duties safely.

.4 The Board is vitally interested in the health and safety of all contractors and their workers performing work for the Board. Cooperation and support of the Contractor in the protection of workers from injury or occupational disease is a major, continuing object of the Board. To achieve these goals, the Board, in concert with the Contractor, will endeavour to make every effort to ensure that the Contractor provides a work site which is a safe and healthy work environment. The Board insists that the Contractor and its workers are dedicated to the continuing objective of reducing risk and injury.

.5 The Contractor covenants and agrees to comply with all statutory and other obligations, including, without limitation, the provisions of the Occupational Health and Safety Act (Ontario) and all Regulations thereto, and all amending and successor legislation, including without limitation, Bill 208 (the "Act") in connection with all work performed by either the Contractor, Subcontractors, or any Other Contractor on, or in connection with, the Project.

.6 Without limiting the foregoing, for the purposes of this Contract, the Contractor agrees that he shall be the "constructor" of the Project within the meaning of the Act, and as such, shall assume all the obligations and responsibilities, and observe all construction safety requirements and procedures, and duties of inspection imposed by the Act on the "constructor", as therein defined, for all work and services performed by the Contractor, Subcontractors and Other Contractors on or in connection with the Project.

.7 The Contractor further covenants and agrees that the Board and its existing and former officers, trustees, employees and agents, and their respective heirs, executors, administrators, successors and assigns (hereby collectively referred to as the "Board") shall be released from any obligations or liabilities otherwise imposed on the Board, or on any of them, pursuant to the Act in connection with the Project, and that the Contractor shall assume all liability and responsibility in connection with same.

.8 The Contractor agrees to save harmless and indemnify the Board from any losses, damages, costs and expenses of any kind, or nature whatsoever, including all legal expenses, and all defence costs and related expert or consulting fees, incurred by the Board, or any of them, arising in connection with the failure, default, or inability of the Contractor of the Board, or any of them, to comply with any of the aforementioned statutory, or other legal requirements, or arising in connection with any breach by the Contractor of any of its covenants, agreements and obligations under this Contract.

.9 The Contractor shall inform and instruct Other Contractors that they, while performing work on this project, are under the authority of the Contractor. Other Contractors are to discuss and co-ordinate with, and follow instructions from, the Contractor on all matters of site access, vehicles, deliveries, storage, temporary facilities, coordination with the work of other subcontractors, work methods, scheduling, labour conditions, construction

safety, environmental protection, security and all other matters which relate to the safe and proper execution of construction work.

.10 The Contractor shall ensure that all supervisory personnel on job site are fully aware of the procedures and requirements outlined above and comply with all requirements specified.

.11 The Contractor is responsible to ensure that all machinery and/or equipment are/is safe and that the workers perform their tasks in compliance with established safe work practices or procedures. Workers must receive adequate training in their specific work tasks to protect their health and safety.

.12 The Contractor shall be responsible for all persons and companies performing work, including Other Contractors, on this project, at all times, up to and including, the date of Substantial Performance of the Work. Authority for coordination and instructions relating to all matters which relate to the safe and proper execution of construction work shall rest with the Contractor. The Contract Price must include the Contractor's fees for the coordination and supervision of the work of all Other Contractors.

.13 In addition to the responsibility of all contractors as outlined above, Subcontractors will be held accountable for the health and safety of workers under their supervision.

.14 Every worker must protect his/her own health and safety by working in compliance with the law and with safe work practices and procedures established by the authorities having jurisdiction.

.15 All sections of the Occupational Health and Safety Act for Industrial Establishments, latest edition, and the Occupational Health and Safety Act for Construction projects, latest edition, shall be enforced, by the Contractor, in their entirety, throughout the duration of the construction project.

.16 The Contractor shall provide the Consultant with the telephone number where the Contractor or his representative can be reached at any time, day or night, for the duration of the contract.

.17 Where an accident, explosion, or fire causes a person injury at the work place, and the worker is disabled from performing the usual task, the Contractor shall prepare a written notice and shall forward same to the Ministry of Labour within four days of the occurrence with a copy to the Board's Representative, who shall copy and inform the Board's Supervisor of Health and Safety and/or the Board's Joint Health and Safety Committee, containing such information and particulars as may be described.

.18 Where a person is killed or critically injured from any cause at the work place, the Contractor shall immediately call the Ministry of Labour. A written notice from the Contractor within forty-eight hours after the occurrence, containing such information and particulars as may be prescribed, with copies to the Consultant and the Board's representative.

.19 The Contractor is advised that the accident scene is under the jurisdiction of the Ministry of Labour and no wreckage, articles, etc. shall be interred with, disturbed, destroyed, altered or carried away at the scene, or connected with the occurrence, until the Ministry of Labour has given permission.

END

SECTION 01 42 13 - ABBREVIATIONS

1.1 ABBREVIATIONS

.1 The abbreviations, acronyms, initialisms listed below, when used in the Contract Documents, shall have the meanings shown.

.2 See Drawing Abbreviations and Room Finish Schedule for additional abbreviations.

ABBREVIATION	MEANING
AA	ALUMINUM ASSOCIATION
AAMA	ARCHITECTURAL ALUMINUM MANUFACTURERS` ASSOCIATION
AASHO	AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS
ACI	AMERICAN CONCRETE INSTITUTE
AGA	AMERICAN GAS ASSOCIATION
AIA	AMERICAN INSTITUTE OF ARCHITECTS
AIMA	ACOUSTICAL & INSULATING MATERIALS ASSOCIATION
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
AISI	AMERICAN IRON AND STEEL INSTITUTE
AMCA	AIR MOVING AND CONDITIONING ASSOCIATION INC.
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ASHRAE	AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIRCONDITIONING ENGINEERS
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS
AWI	ARCHITECTURAL WOODWORK INSTITUTE (USA)
AWMAC	ARCHITECTURAL WOODWORK MANUFACTURERS ASSOCIATION OF CANADA
AWS	AMERICAN WELDING SOCIETY
CCA	CANADIAN CONSTRUCTION ASSOCIATION
CCRC	CANADIAN CODE FOR RESIDENTIAL CONSTRUCTION
CEC	CANADIAN ELECTRICAL CODE
CFUA	CANADIAN FIRE UNDERWRITERS ASSOCIATION
CGA	CANADIAN GAS ASSOCIATION
CGSB	CANADIAN GENERAL STANDARDS BOARD
CIQS	CANADIAN INSTITUTE OF QUANTITY SURVEYORS
CISC	CANADIAN INSTITUTE OF STEEL CONSTRUCTION
CITC	CANADIAN INSTITUTE OF TIMBER CONSTRUCTION
CLA	CANADIAN LUMBERMEN`S ASSOCIATION
CMHC	CANADA MORTGAGE & HOUSING CORPORATION
COFI	COUNCIL OF FOREST INDUSTRIES OF BRITISH COLUMBIA
CPCI	CANADIAN PRESTRESSED CONCRETE INSTITUTE
CRCA	CANADIAN ROOFING CONTRACTORS ASSOCIATION
CSA	CANADIAN STANDARDS ASSOCIATION
CSC	CONSTRUCTION SPECIFICATIONS CANADA
CSI	CONSTRUCTION SPECIFICATIONS INSTITUTE (USA)
CSPI	CORRUGATED STEEL PIPE INSTITUTE
CSSBI	CANADIAN SHEET STEEL BUILDING INSTITUTE
CUA	CANADIAN UNDERWRITERS` ASSOCIATION
CWB	CANADIAN WELDING BUREAU
CWC	CANADIAN WOOD COUNCIL
DND	DEPARTMENT OF NATIONAL DEFENCE, CANADA
FM	FACTORY MUTUAL ENGINEERING CORPORATION
FS	FEDERAL SPECIFICATION (USA)
IES	ILLUMINATING ENGINEERING SOCIETY
IGMAC	INSULATED GLASS MANUFACTURERS ASSOCIATION OF CANADA
LTIC	LAMINATED TIMBER INSTITUTE OF CANADA
MIA	MARBLE INSTITUTE OF AMERICA
MPI	MASTER PAINTERS INSTITUTE
MPMDD	MODIFIED PROCTOR MAXIMUM DRY DENSITY
NAAMM	NATIONAL ASSOCIATION OF ARCHITECTURAL METAL MANUFACTURERS (USA)
NBFU	NATIONAL BOARD OF FIRE UNDERWRITERS
NBC	NATIONAL BUILDING CODE OF CANADA
NBS	NATIONAL BUREAU OF STANDARDS (USDC)
NEMA	NATIONAL ELECTRICAL MANUFACTURERS' ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION

NHLA	NATIONAL HARDWOOD LUMBER ASSOCIATION (USA)
NLGA	NATIONAL LUMBER GRADES AUTHORITY
NRC	NATIONAL RESEARCH COUNCIL
OBC	ONTARIO BUILDING CODE
OHSA	OCCUPATIONAL HEALTH AND SAFETY ACT
OPSS	ONTARIO PROVINCIAL STANDARD SPECIFICATIONS
PCA	PORTLAND CEMENT ASSOCIATION
PCI	PRESTRESSED CONCRETE INSTITUTE
RAIC	ROYAL ARCHITECTURAL INSTITUTE OF CANADA
SDI	STEEL DECK INSTITUTE
SMACNA	SHEET METAL AND AIR CONDITIONING CONTRACTORS NATIONAL ASSOCIATION
SPMDD	STANDARD PROCTOR MAXIMUM DRY DENSITY
SSPC	STEEL STRUCTURES PAINTING COUNCIL
TTMAC	TERRAZZO, TILE & MARBLE ASSOCIATION OF CANADA
ULC	UNDERWRITERS' LABORATORIES OF CANADA
ULI	UNDERWRITERS' LABORATORIES, INC. (USA)
USAS	UNITED STATES OF AMERICA STANDARDS INSTITUTE
WSIB	WORKPLACE SAFETY AND INSURANCE BOARD

END

1.1 INDEPENDENT INSPECTION AND TESTING

.1 Requirements specified herein apply to independent inspection and testing specified under technical Specification Sections, Divisions 2 to 33. Board will pay out of cash allowance for independent inspection and testing services.

.2 Requirements specified herein do not apply to the following:

.1 Inspection and testing required by laws, ordinances, rules, regulations and orders of public authorities.

.2 Testing, adjustment and balancing of mechanical and electrical systems and equipment.

.3 Inspection and testing performed exclusively for Contractor`s convenience.

.4 Tests specified in Divisions 2 to 33 inclusive, to be included in Contract such as mill tests, certificates of compliance and testing to be carried out by Contractor under direction of Consultant.

.3 Failure by independent inspection and testing agency to detect defective work or materials shall not in any way prevent later rejection, when such defect is discovered, nor shall it obligate Consultant for final acceptance.

.4 Independent inspection and testing agency (hereinafter referred to as testing agency) is expected to do the following:

.1 Act on a professional and unprejudiced basis and carry out inspection and testing functions to establish compliance with requirements of Contract Documents.

.2 Check work as it progresses and prepare reports stating results of tests and conditions of work and state in each report whether specimens tested conform to requirements of Contract Documents, specifically noting deviations.

.3 Distribute reports via e-mail in pdf format to the following:
- .1 Board
- .2 Consultant
- .3 Subconsultants affected
- .4 Contractor
- .5 Building Department (if required by Building Department)

.5 Testing agency is not authorized to amend or release any requirements of Contract Documents, nor to approve or accept any portion of work.

.6 Contractor shall do the following:

.1 Notify testing agency minimum 48 hours in advance of operations to allow for assignment of personnel and scheduling of tests without causing delay in work.

.2 Provide testing agency with access to work at all times.

.3 Supply material samples for testing.

.4 Supply casual labour and other incidental services required by testing agency.

.5 Provide facilities for site storage of samples.

.6 Make good work disturbed by testing agency.

.7 When initial inspection and testing indicates non-compliance with Contract Documents, any subsequent reinspection and retesting occasioned by non-compliance shall be performed by same testing agency and cost thereof borne by Contractor.

1.2 MOCK UPS

.1 Where required by Contract Documents construct mock-ups of work on site, in size and at location directed by Consultant.

.2 Construct mock-ups prior to start of affected work. Allow sufficient time for Consultant's review. Work affected by mock-ups may not commence prior to acceptance of mock-up.

.3 Construct mock ups to include all related specified materials and workmanship. Make revisions as directed by Consultant, in accordance with intent of Contract Documents, until mock-ups are acceptable.

.4 Mock ups, reviewed and accepted by Consultant, shall become the standard of quality against which installed work will be measured.

.5 Mock ups, by prior arrangement, may be incorporated into finished work if approved by Consultant.

1.3 TOLERANCES

.1 Unless specific tolerances are required by a Section of the Specifications or a referenced standard, meet the following non-accumulative tolerances for installed work:

.1 "plumb" shall mean plumb within ± 3 mm in 3 m of true plumb.

.2 "level" shall mean level within ± 3 mm in 3 m of true level.

.3 "square" shall mean within ± 30 seconds of true 90°.

.4 "straight" shall mean within ± 3 mm in 3 m under a 3 m straightedge.

END

SECTION 01 50 00 - TEMPORARY FACILITIES

1.1 GENERAL

.1 Provide all temporary facilities and controls required for the proper execution of the work.

.2 Provide and maintain temporary systems in accordance with applicable regulations and requirements. Arrange for, obtain and pay for any permits required.

.3 Board will operate the existing building heating, cooling and ventilation systems throughout the construction period.

.4 Refer to Section 01 35 00 for temporary use of existing water and power.

1.2 TEMPORARY ELECTRICITY & LIGHTING

.1 Provide temporary electrical lighting and power system for use by all Sections.

.2 Install and maintain temporary electrical systems in accordance with the Ontario Electrical Code and other authorities having jurisdiction.

1.3 TEMPORARY HEATING

.1 Furnish equipment, labour and fuel to provide temporary heat as required for proper execution of work.

.2 Uniformly distribute heat to avoid hot and cold areas and to prevent excessive drying.

1.4 TEMPORARY VENTILATION

.1 Provide minimum 1 air change per hour for enclosed areas receiving architectural finishes.

.2 Prior to commencement of work where hazardous or volatile adhesives, coatings or substances are used, install adequate mechanical ventilation.

.3 Do not allow excessive build-up of moisture inside building.

1.5 TEMPORARY COMMUNICATIONS

.1 Provide site telephone service for duration of Contract until completion.

.2 Provide and maintain equipment on site to send and receive e-mails and other types of communications as well as provide access to the internet for duration of Contract.

1.6 TEMPORARY WATER

.1 Provide temporary water supply, for use by all Sections.

.2 Water shall be clean and non-staining.

1.7 TEMPORARY SANITARY FACILITIES

.1 Provide toilet facilities, including handwash facilities, for all personnel on site.

.2 Keep facilities clean and sanitary and provided with required supplies at all times.

.3 Except where temporary sanitary facilities are connected to municipal sewer system, periodically remove wastes from site.

1.8 TEMPORARY FIRST-AID FACILITIES

.1 Provide site equipment and medical facilities necessary to supply first-aid service to injured personnel in accordance with regulations of the Workers' Safety and Insurance Act. Maintain facilities for duration of Contract.

1.9 TEMPORARY FIRE PROTECTION

.1 Provide and maintain in proper working order at least two fire extinguishers in the assigned work area, prominently placed, until completion of work.

.2 Fire extinguishers shall be minimum 9 kg 4A 60BC type.

.3 Remove fire extinguishers from site, upon completion of work or when directed by Consultant.

.4 Where gas welding or cutting is to be done within 3 m or above combustible material, or above space that may be occupied by persons, interpose shields of noncombustible material. Tanks supplying gases for welding or cutting shall be placed at no greater distance from the work than is necessary and shall be securely fastened in an upright position. Such tanks shall be free from exposure to the sun or high temperature.

1.10 TEMPORARY USE OF NEW PERMANENT SERVICE & EQUIPMENT

.1 Do not use any new permanent service or equipment without Owner's written approval.

.2 Where permission is granted to use permanent services and equipment provide competent persons to operate services and equipment; inspect frequently and maintain facilities in proper operating condition at all times.

.3 Permanent services and equipment shall be turned over to Owner in "as new" and perfect operating condition.

.4 Use of permanent systems and equipment as temporary facilities shall not affect the warranty conditions and warranty period for such systems and equipment. Make due allowance to ensure that Owner will receive full benefits of equipment manufacturers warranty after project takeover.

1.11 CONSTRUCTION AIDS

.1 Provide temporary stairs, ladders, ramps required for movement and placing of materials, equipment and personnel.

.2 Provide mechanical hoisting equipment and fully qualified operators as required during construction.

.3 Erect required scaffolding independent of walls, arranged to avoid interference with work of other Sections as much as possible.

.4 The use of explosive power tools will not be permitted under any circumstances unless equipped with a device which positively prevents free flight of the stud.

1.12 BARRIERS

.1 Protect public and workmen from injury.

.2 Provide and maintain required hoardings, barricades, guardrails, and lights in accordance with applicable regulations.

.3 Unless otherwise indicated, provide around assigned exterior work, storage and staging areas 1.8 m high relocatable wire mesh fence, such as InstaFence.

1.13 TEMPORARY CONTROLS

.1 Provide protective coverings to protect work against damage caused by weather, including but not necessarily limited to rain, snow, ice, wind, frost and excessive heat.

.2 Provide wind breaks and sun shades to allow proper setting and curing of cementitious materials.

.3 Protect building materials from freezing. Protect built components from freezing until fully cured.

.4 Prevent sprayed materials from contaminating air beyond application area, by providing temporary enclosures.

.5 Cover or wet down dry materials and rubbish to prevent blowing dust and debris.

.6 Prevent tracking of mud and dirt from site onto paved roads. Maintain stabilized vehicle egress point (mud mat), constructed of coarse granular material. Place additional granular material as required to maintain access / egress points in proper working order. Clean mud and dirt from paved roads at end of each day by shovelling or sweeping and subsequent washing. Dispose of mud and dirt in a controlled disposal area.

1.14 PEST CONTROL

.1 Provide rodent control and other pest control programs during construction, in accordance with requirements of jurisdictional authorities.

1.15 TEMPORARY DRAINAGE

.1 Provide and maintain adequate temporary pumping and drainage systems to keep excavations and structures free of water. Prevent flow of surface water into excavations. Locate sumps away from foundations. Prevent pumped water from carrying soil in suspension in sufficient quantity to cause settlement of adjacent earth. Provide sufficient standby equipment to ensure continuity of pumping systems.

.2 Control drainage on site to prevent flooding, erosion and run-off onto adjacent properties as a result of construction operations.

.3 Dispose of water containing silt in suspension in accordance with requirements of jurisdictional authorities.

.4 Conform to sedimentation and erosion control requirements of the authority having jurisdiction. Maintain until completion of work or until directed by Consultant to be removed, sediment control devices at perimeter of site, catch basins, drainage courses and at other locations on site as directed.

1.16 SIGNS

.1 Except as specified here do not erect any signs unless approved by the Consultant.

.2 Erect signs relating to safety on the work, or mandatory regulation notices.

.3 Prior to commencement of work wherein hazardous or volatile cements, coatings, or substances are used, barricade entire area and post adequate number of warning signs.

1.17 FIELD OFFICE AND SHEDS

.1 Maintain, until completion of Contract, for Contractor's use, a temporary office as required for work, large enough to accommodate site administrative activities and site meetings, complete with light, heating and cooling equipment to maintain 21^{o}C, ventilation, equipment for sending and receiving electronic messages and providing access to internet, including printer. Provide table and chairs for site meetings. Do not store materials, tools, equipment in meeting area; keep clean and tidy.

.2 Provide temporary covers, sheds and platforms of weatherproof construction as may be required for protection and preservation of materials, small tools, equipment which may be susceptible to damage.

END

SECTION 01 60 00 - PRODUCT REQUIREMENTS

1.1 PRODUCT QUALITY

.1 Products supplied for work shall be new and as far as possible and unless otherwise specified, of Canadian manufacture.

.2 Materials used for temporary facilities are not required to be new, provided they are structurally sound and in suitable and safe operating condition.

1.2 STANDARDS AND TERMINOLOGY

.1 Where a standard has been adopted by these Specifications, incorporate minimum requirements of such standard into the work. Where requirements of Specifications are more stringent than those of the standard, follow more stringent requirements.

.2 Reference to standards, specifications, handbooks and manufacturer's catalogues refer to latest edition thereof and all amendments or revisions applicable at bid closing date, unless date suffix is included with document number.

.3 Wherever words "acceptable", "approved", "satisfactory", "selected", "directed", "designated", "permitted", "inspected", "instructed", "required", "submit", or similar words or phrases are used in standards or elsewhere in Contract Documents, it shall be understood, that "by (to) the Consultant" follow, unless context provides otherwise.

.4 Where the word "provide" is used in these Contract Documents, it shall be taken to mean "supply and install" unless specifically noted otherwise.

1.3 CERTIFICATION

.1 Building materials, components and elements specified without the use of trade or proprietary names shall meet requirements specified.

.2 If requested by Consultant, submit evidence of meeting requirements specified. Evidence shall consist of certification based on tests carried out by an independent testing agency.

.3 Certification based on previous tests for same materials, components or elements is acceptable. Certification shall be in form of written test reports prepared by testing agency.

1.4 AVAILABILITY AND SUBSTITUTIONS

.1 Products which are specified by their proprietary names or by part or catalogue number form the basis for Contract. No substitutes for these may be used without Consultant's approval in writing.

.2 Where it is found that specified materials have become unavailable for incorporating into work, notify Consultant immediately of proposed substitution.

.3 Proposed substitution shall be any top quality product considered by Consultant to be of equal quality and value to that specified, and suitable for purpose intended.

.4 Products proposed as substitutions, and which are considered by Consultant to be suitable for purpose intended, but which are in his opinion of lesser value and quality than those specified shall only be accepted as substitution if reasonable credits are allowed for their use.

.5 In order to substantiate equivalency of proposed materials, products or processes, submit samples, printed product descriptions, test data, installation instructions, standards, certification, sample, - guarantee/warranty forms, list of successful projects incorporating such proposals, and similar information requested by Consultant.

.6 Whenever a substitute is proposed, any change to contract price as a result of acceptance of proposed product shall include any adjustments to adjacent structure or space in order to accept minor differences in size or weight between proposed items and corresponding specified items.

.7 Prevent any substitution or request for substitution from delaying construction progress in any way.

.8 Requests for substitution resulting from failure to place orders in time will not be entertained. Be responsible for ordering products in time to ensure their required delivery; bear all costs for failure to comply with these requirements.

1.5 PRODUCT HANDLING AND STORAGE

.1 Suitably pack, crate and protect products during transportation to site to preserve their quality and fitness for the purpose intended.

.2 Store products in original, undamaged condition with manufacturer's labels and seals intact until they are being incorporated into completed work.

.3 Handle and store materials in accordance with manufacturer's and supplier`s recommendations and so as to ensure preservation of their quality, appearance and fitness for work.

.4 Arrange materials so as to facilitate prompt inspection, and remove faulty, damaged or rejected materials immediately from site.

1.6 PRODUCT DELIVERY SCHEDULE

.1 It is the responsibility of the Contractor to ensure that the supplier or distributor of materials specified or alternatives accepted, which he intends to use, has materials on the site when required. The Contractor shall obtain confirmed delivery dates from the supplier.

.2 The Contractor shall contact the Consultant immediately upon receipt of information indicating that any product, material, item, will not be available on time, in accordance with the original schedule, and similarly it shall be the responsibility of all subcontractors and suppliers to so inform the Contractor.

.3 The Consultant reserves the right to receive form the Contractor at any time, upon request, copies of actual purchase or work orders of any material or products to be supplied for the work.

.4 If materials and products have not been placed on order, the Consultant may instruct such items to be placed on order, unless direct communication in writing from the manufacturer or prime suppliers is available indicating that delivery will be made in sufficient time for the orderly completion of the Work.

.5 The Consultant’s review of purchase orders or other related documentation shall in no way release the Contractor, or his subcontractors and suppliers of their responsibility for ensuring the timely ordering of all materials and items required, including the necessary expediting, to complete the work as scheduled in accordance with the Contract Documents.

END

SECTION 01 70 00 - EXECUTION REQUIREMENTS

1.1 EXAMINATION

.1 Examine the site, existing premises and surrounding areas and be fully informed as to the conditions and limitations under which the work has to be executed. Claims for additional costs will not be entertained with respect to conditions which could reasonably have been ascertained by an inspection prior to bid closing.

.2 Prior to commencement of work, make careful examination of previously executed work, existing conditions, levels, dimensions and clearances. Promptly advise Consultant of unsatisfactory preparatory work and substrate conditions; commencement of work implies acceptance of conditions.

1.2 PROTECTION

1. Ensure that no damage is caused to existing structures, buildings, foundations, pavement, fences, curbs, grounds, plants, property, utilities, services, finishes during the progress of Work. Repair and make good any damage caused at no extra cost to Board to the complete satisfaction of the respective property owners and authorities having jurisdiction. Do not proceed with repairs or remedial work without written permission of the Consultant. Only trades specifically capable of performing the work will be allowed to make remedial or repair work.

.2 Keep surfaces to receive finished flooring dry and free from oil and grease. Stockpiling of damp or wet building materials and use of mixing boxes or water buckets without protecting floors from moisture gain by approved means, is prohibited.

.3 Keep municipal roads clean of mud and debris resulting from construction traffic.

.4 Prevent soiling of pavement due to spillage, mixing of material or any other cause. Make good any damage caused.

.5 Protect new work from damage with suitable protective coverings.

.6 Protect work during periods of suspension, regardless of reason for suspension.

1.3 SERVICES AND UTILITY SYSTEMS

.1 Consult with utility companies and other authorities having jurisdiction to ascertain the locations of existing services on or adjacent to site.

.2 Information as to the location of existing services, if shown on the Drawings, does not relieve the Contractor of his responsibility to determine the exact number and location of existing services.

.3 Report existing unknown services encountered during excavation to Consultant for instructions; cut back and cap or plug unused services. Be responsible for the protection of all active services encountered and for repair of such services if damaged.

1.4 SLEEVES, SUPPORTS, AND FASTENERS

.1 Unless specified in other Sections, furnish, set and secure inserts, hangers, sleeves, fasteners, adhesives, anchors and other supports and fittings required for proper installation of work.

.2 Use exposed metal fastenings and accessories of same texture, colour and finish as base metal on which they occur.

.3 Select appropriate type of anchoring and fastening devices and in sufficient quantity and in such manner as to provide positive permanent anchorage of unit to be anchored in position. Keep exposed fasteners to a minimum, evenly spaced and neatly laid out.

.4 Fasteners shall be of permanent type. Do not use wood plugs.

.5 Fasteners which cause spalling or cracking of material to which anchorage is being made shall not be used.

1.5 CONCEALMENT

.1 Conceal ductwork, piping, conduit and wiring located in finished areas, in ceiling spaces and furred construction unless specifically noted to be exposed.

.2 If any doubt arises as to means of concealment, or intent of Contract Documents in this connection, request clarification from Consultant before proceeding with portion of work in question.

1.6 CUTTING AND PATCHING

.1 Regardless of which Section of work is responsible for any portion of cutting and patching, in each case tradesmen qualified in work being cut and patched shall be employed to ensure that it is correctly done.

.2 Any cost caused by omission or ill-timed work shall be borne by party responsible therefore.

.3 Do not endanger any work by cutting, digging or otherwise altering, and do not cut nor alter any loadbearing element without written authorization by Consultant. Provide bracing, shoring and temporary supports as required to keep construction safely supported at all times.

.4 Cut holes carefully and not larger than required after they are located by Sections requiring them, using suitable equipment and tools.

.5 Patching and making good work shall be undetectable in finished work.

1.7 WORKMANSHIP

.1 All work shall be carried out in accordance with the best trade practice, by mechanics skilled in the type of work concerned.

.2 Products, materials, systems and equipment shall be applied, installed, connected, erected, used cleaned and conditioned in accordance with the applicable manufacturer's printed directions.

.3 Where specified requirements are in conflict with manufacturer's written directions, follow manufacturer's directions, but inform Consultant in writing prior to proceeding with affected work. Where specified requirements are more stringent than manufacturer's directions, comply with specified requirements.

1.8 LINES AND LEVELS

.1 Verify all elevations, lines, levels and dimensions as indicated and report errors, any conflicts, or inconsistencies to the Consultant before commencing work or as soon as discovered.

.2 Accurately lay out work and establish lines and levels in accord with requirements of Contract Documents.

.3 Set up, maintain and protect permanent reference points and provide general dimensions and elevations for all Sections of Work.

1.9 DIMENSIONS

.1 Check and verify dimensions wherever referring to work. Dimensions, when pertaining to work of another Section, shall be verified with Section concerned. Details and measurements of work which is to fit or conform with work installed shall be taken at site.

.2 Do not scale Drawings. If there is ambiguity, lack of information or inconsistency, immediately consult Consultant for directions. Be responsible for extra costs involved through the disregarding of this notice.

.3 Walls, partitions and screens shall be considered as extending from floor to underside of structural deck unless specifically indicated otherwise.

1.10 LOCATION OF FIXTURES

.1 Location of fixtures, apparatus, equipment, fittings, outlets, conduits, pipes and ducts shown or specified, but not dimensioned, shall be considered approximate.

.2 Request direction from Consultant to establish exact location. Any relocation caused by Contractor's failure to request direction from Consultant shall be done by Contractor at no extra cost. Where job conditions require reasonable changes in indicated locations and arrangements, make changes at no additional cost.

.3 Conserve space and coordinate with work of other Sections to ensure that ducts, pipes, conduits and other items will fit into allocated wall and ceiling spaces, while ensuring adequate space for access and maintenance.

.4 Where ducts, piping and conduits are permitted to be exposed they shall be neatly and uniformly laid out parallel to adjacent building lines and parallel to each other where they run in the same direction. Review exposed installations with Consultant prior to start of work. At no cost to Board make changes to exposed work as directed by the Consultant where such work is not installed in accordance with Consultant's prior review.

.5 Except where locations are specifically noted on Drawings, install exposed mechanical and electrical fixtures including outlets, switches, thermostats, panels and other items, located on walls, in orderly and neatly laid out manner, lining up with each other and grouped together where possible. Review installation with Consultant prior to start of rough-in work. Relocate at no cost to Board any work which does not meet this requirement.

END

SECTION 01 74 00 - CLEANING AND WASTE MANAGEMENT

1.1 GENERAL

.1 Be responsible for cleanliness of assigned work areas to satisfaction of Consultant. Maintain work areas in neat and orderly condition at all times.

.2 Periodically, or when directed by the Consultant, remove from work areas rubbish and waste materials.

.3 Burning or burying of rubbish and waste materials on site is not permitted.

.4 Use only cleaning materials recommended by manufacturer of surface to be cleaned.

.5 Use cleaning material only on surfaces recommended by cleaning material manufacturer.

1.2 CLEANING DURING CONSTRUCTION

.1 Remove debris, packaging and waste materials frequently.

.2 Keep dust and dirt to an acceptable level, as directed.

.3 Remove oily rags, waste and other hazardous substances from premises at close of each day, or more often if required.

1.3 FINAL CLEANING

.1 Upon completion of work, or, where work is phased, upon completion of each phase, thoroughly clean all surfaces and components. Provide professional cleaning by a recognized, established cleaning company, to allow Owner to complete final cleaning and floor preparation / build-up.

.2 Remove stains, dirt and smudges from finished surfaces.

.3 Clean exposed finished surfaces in accordance with respective material manufacturer's recommendations.

.4 Clean mechanical and electrical fixtures and other fittings of labels, wrappings, paper and other foreign material.

.5 Replace heating, ventilation and air conditioning filters if units were operated during construction. Clean inside of ducts, blowers and coils.

.6 Remove from work areas all waste and surplus materials from all areas, including roofs and ceiling spaces.

1.4 WASTE COLLECTION AND DISPOSAL

.1 All waste materials and debris resulting from the work of this Contract shall belong to the Contractor and shall be removed from the site and legally disposed.

.2 Periodically, or when directed by the Consultant remove waste material and debris.

.3 Separate and salvage materials suitable for recycling from general waste stream and transport to recognized recycling facility.

.4 Burying, burning, selling waste materials on site is prohibited.

.5 Disposal of liquid wastes into waterways, sewers is prohibited.

END

1.1 REFERENCE STANDARD

.1 Comply OAA/OGCA Document No. 100-2018 “Take-Over Procedures”, except as modified in these Specifications.

1.2 OPERATING AND MAINTENANCE MANUALS

.1 Provide hard copy operation and maintenance manuals with data contained in D-ring binders with soft vinyl covers. Binders shall have clear plastic pocket at back of spine identification containing label "Operation and Maintenance Manual" and project name and volume number, if applicable. Each manual shall contain a title sheet listing project name, date and volume number and names and addresses of Contractors and Subcontractors, Consultant and Subconsultants.

.2 Provide operating and maintenance data, prepared on 8 1/2" X 11" sheets in printed or typewritten form.

.3 Data shall be assembled in systematic order, generally following the specification format. Provide labelled, celluloid covered tabs fastened to hard paper dividers to identify different Sections.

.4 Provide the following material as applicable to work of this Contract:

.1 List of contents. If more than one volume is required, provide a cross-reference contents page at front of each volume.

.2 Complete list of subcontractors and suppliers, showing name, address, telephone number, e-mail address, name of contact person and description of work done.

.3 Complete list of products used in the work showing product name, part number or code and manufacturer for each listing; follow specification format.

.4 Copy of finish hardware list, complete with all amendments and revisions.

.5 Schedule of paints and coatings. Include sufficient explanation to fully identify each surface with the applicable paint or coating used. Enclose copy of colour schedule.

.6 Maintenance instructions for all finished surfaces.

.7 Brochures, cuts of all equipment and fixtures.

.8 Operating and maintenance instructions for all equipment.

.9 Valve manual.

.10 Controls schematics.

.11 Extended warranties.

.12 Maintenance contracts.

.13 Other data required elsewhere in Contract Documents or deemed necessary by Consultant.

.5 In addition to hardcopy manuals specified above also provide a USB storage device containing the entire manual in digital form, arranged in same order and format as the hardcopy manuals.

1.3 EXTENDED WARRANTIES

.1 Submit extended warranties as part of "Operating and Maintenance Manuals".

.2 Arrange extended warranties in systematic order matching Specification format. Include a table of contents listing warranties in same order.

.3 Each warranty must show:

.1 Name and address of Project
.2 Name of Owner
.3 Section Number and Title

.4 All extended warranties must be presented under subcontractor's letterhead, seal and signature and must bear similar wording to that specified in Contract Documents.

.5 Submit manufacturers' Product warranties in accordance with GC 12.3.6.

1.4 MAINTENANCE MATERIALS

.1 Deliver to the location directed by Consultant maintenance materials as required elsewhere in these Specifications. Obtain receipt for delivered materials and submit copy of receipt to Consultant.

.2 Package materials so that they are protected from damage and loss of essential properties.

.3 Label packaged materials for proper identification of contents and project name.

1.5 OPERATING AND MAINTENANCE INSTRUCTIONS

.1 Prior to requesting Substantial Performance, at a time acceptable to Board and Consultant, but not before operating and maintenance data has been reviewed and accepted by Consultant, instruct designated Owner's representatives in the operation and maintenance of all systems and equipment.

.2 Arrange training sessions for each type of operating system and equipment. Sessions shall be conducted by qualified instructors and shall be of sufficient duration and depth to adequately instruct participants.

.3 Throughout the training sessions make reference to reviewed operation and maintenance manuals to familiarize participants with the data provided.

.4 Prepare an attendance record for each training session, to be signed by each participant upon conclusion of session. Show date and time of session, subject of session and name, title and organization of each participant. Submit a copy of each record to Consultant.

.5 Subcontractor whose work is subject of training session and Contractor shall be represented during training session by qualified personnel.

.6 Make digitally recorded video of each training session and provide Owner with a properly labelled copy in format directed by Consultant.

1.6 CERTIFICATES OF COMPLIANCE

.1 Submit Certificates of Compliance, prior to the application for Substantial Performance for each of the following items:

.1 An affidavit relative to the use of lead free solder for all domestic water lines, regardless of location.

.2 Products for which Material Safety Data Sheets have been submitted and accepted.

.3 Other Work/Products identified in the Contract Documents as requiring a Certificate of Compliance.

.4 Each Certificate of Compliance shall indicate names and addresses of the project, the Board, the date of issue, product description including name, number, manufacturer, with a statement verifying that the Work/Product installed meets specified requirements and, if applicable, complies with the submitted and accepted Material Safety Data Sheets.

.5 Each Certificate of Compliance shall be issued on the subcontractor’s letterhead, properly executed, under whose work the respective Work/Product has been provided.

.6 Each Certificate of Compliance shall be endorsed by the Contractor with his authorized stamp/ signature. Ensure that submissions are made to allow sufficient time for review without delaying progress of scheduled completion.

.7 The Completion Security Account will not be paid to the Contractor without submission of all required affidavits and requested material and safety data sheets

1.7 INSPECTION AND ACCEPTANCE OF WORK

.1 Prior to requesting Substantial Performance submit the following:

.1 3 copies (hardcopy) and a USB storage device with digital data of operating and maintenance manuals (manuals must be submitted minimum 6 weeks prior to requesting Substantial Performance).

.2 Inspection and acceptance certificates required from regulatory agencies.

.2 Advise the Consultant in writing, when work has been substantially completed. If Consultant agrees that this stage has been reached, prepare a complete list of deficiencies and submit this list to Consultant.

.3 On receipt of the above deficiency list in a satisfactory form, the Consultant, accompanied by Subconsultants, the Contractor and the Board, if deemed desirable, will carry out an inspection of the Project.

.4 Add to the deficiency list, in accordance with Consultant's directions, any additional deficiencies which are identified during inspection and reissue updated deficiency list.

.5 Upon completion, inspection and acceptance of work, Owner will take over and occupy completed work. Refer to Supplementary Conditions for procedures relating to certification of Substantial Performance and release of holdback. Comply with requirements of the Construction Act regarding liens and statutory holdback. In case of discrepancies between requirements of the Construction Act and requirements included elsewhere in the Contract Documents, the Construction Act shall govern.

1.8 FINAL SUBMISSION

.1 Prior to claiming Final Payment do the following:

.1 Submit one complete set of reviewed shop drawings, folded to 8-1/2" x 11" size, contained in heavy duty manila envelopes, numbered and labelled. Follow specification format with no more than one Section per envelope.

.2 Submit maintenance materials.

.3 Submit a final accounting of all approved changes to the Contract Price, including adjustments to cash allowances.

1.9 WARRANTY INSPECTION

.1 The Contractor shall organize a warranty inspection to take place two weeks prior to the expiration of the standard one-year warranty. The Consultant, subconsultants, the Contractor, subcontractors and the Board's representatives shall attend.

END

SECTION 02 41 19 - SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Temporary screens, partitions, closures and other protective devices: Section 01 35 00

.2 Disconnecting and capping of mechanical and electrical services: Divisions 20 to 28

1.3 REGULATORY REQUIREMENTS

.1 Obtain and pay for necessary permits for work of this Section. Give required notices.

.2 Comply with applicable requirements of CSA S350-M1980 "Code of Practice for Safety in Demolition of Structures" and jurisdictional authorities.

1.4 PROTECTION

.1 Prevent movement, settlement, or damage of adjacent parts of building to remain. Provide shoring and bracing required. Make good any damage caused.

.2 Take steps to positively prevent uncontrolled falling of demolished materials.

.3 Ensure that no part of existing structure is overloaded due to work carried out under this Section.

.4 Prevent debris from blocking drainage systems.

.5 Ensure that temporary guards, hoardings are provided in accordance with applicable safety regulations.

1.5 EXAMINATION

.1 Visit the site and the existing building so as to fully understand all existing conditions and extent of work required. No increase in cost or extension of performance time will be considered for failure to know conditions.

.2 Examine structural, mechanical and electrical drawings and specifications to determine specific requirements relating to that work.

PART 2 - PRODUCTS Not Applicable

PART 3 - EXECUTION

3.1 PREPARATION

.1 Ensure that affected building areas are unoccupied and discontinued in use and that required screens, partitions are in place prior to start of demolition work.

.2 Verify that existing services in areas affected by demolition work are disconnected, capped or removed, prior to start of work.

.3 Erect and maintain protective devices to control spread of dust and to provide weather protection. Refer to Section 01 35 00.

3.2 SALVAGE

.1 Prior to start of general demolition carefully remove and temporarily store in protected location until required for reuse, components identified accordingly.

.2 Prior to start of general demolition carefully remove and turn over to Owner at designated location on site, components identified accordingly.

.3 Salvage sufficient number of exterior clay masonry units, including bullnosed brick as required for building new brickwork and patching existing. Carefully remove mortar from masonry units so as to avoid any damage. Stack brick units on pallets off ground and cover with waterproof covering until required for incorporation into the work.

3.3 DEMOLITION

.1 Demolish existing work as indicated and as required to accommodate new work. Demolition in excess of that which is required shall be rectified by restoring, rebuilding work to its original condition at no extra cost.

.2 Demolish and remove existing work as required to accommodate new work indicated.

.3 Demolish work in a safe and systematic manner, from top to bottom.

.4 Do not throw or drop demolished materials from heights. Use chutes, conveyors, or hoisting equipment to lower materials.

.5 Demolish in a manner to minimize dusting. Keep dusty materials wetted but prevent flooding or contaminated run-off.

.6 Demolish masonry and concrete elements in small sections. Carefully remove and lower structural framing and other heavy and large objects.

.7 At all times, leave work in safe condition, so that no part is in danger of uncontrolled toppling or falling.

3.4 DISPOSAL AND CLEAN-UP

.1 All materials, rubbish and debris resulting from demolition work shall become the Contractor's property and shall be removed from site and legally disposed of unless specifically indicated otherwise.

.2 Do not allow demolished materials to accumulate on site. Promptly, as work progresses, remove and legally dispose of materials away from site.

.3 Selling burning and burying of materials on site is not permitted.

.4 Leave site in clean condition with all required guards in place.

END

SECTION 03 33 00 - ARCHITECTURAL CONCRETE

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1	Concrete forming:	Section 03 10 00
.2	Concrete reinforcing:	Section 03 20 00
.3	Cast-in-place concrete:	Section 03 30 00
.4	Concrete paving and curbs:	Section 32 13 13

1.3 DESCRIPTION

.1 Provide architectural concrete at exterior concrete ramp and stair structures and where indicated at other locations.

1.4 QUALITY ASSURANCE

.1 Requirements for architectural concrete specified in this Section shall apply in addition to requirements specified in Sections 03 10 00, 03 20 00 and 03 30 00 and exterior ramp and stair concrete structures. In case of conflict the more stringent requirement shall govern.

.2 Workers qualifications: Fully trained and skilled in type of work specified and with minimum 5 years of experience in work of similar scope and complexity.

.3 Quality of finish: flat, plumb, dense, even, uniform in colour and texture, free from defects such as honeycombing, voids, visible flow lines, misaligned formwork joints, visible cold joints. Corners and edges shall have sharp, accurate definition free from chips and spalls. Formwork panel layout and tie hole shall be uniform and aligned in both directions.

1.5 SUBMITTALS

.1 Submit formwork drawings, showing formwork panel and form tie layout, details of corners and reglets, location of construction joints and other pertinent information.

.2 Submit duplicate samples of the following materials:

- .1 Formwork panel (minimum 300x300 mm)
- .2 Form tie and plug
- .3 Round column form liner (minimum 300 mm long)
- .4 Form panel joint seal
- .5 Chamfer strips and reglets (minimum 300 mm long)

.3 Submit detailed and complete product data for each product required.

.4 Submit concrete mix design

1.6 PROTECTION

.1 Protect architectural concrete from damage and staining during the construction period. Pay special attention to the protection of projecting reinforcing at construction joints.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Overlaid plywood panels:

.1 Use only new form panels.

.2 Coated or overlaid form panels, with one face overlaid with resin impregnated surface and treated with chemical release coating, to qualify standard of Crown Z44 by Crown Zellerbach, Wood Products Division, or Evans 107 Concrete Form Panel by Evans Products Company Ltd. or Sylvacote Plygard by McMillillan Bloedel Building Materials.

.2 Chamfers: Wood or plastic, 45°, 20x20 mm or as detailed.

.3 Reglets: Clear pine, to profile shown.

.4 Coil type plastic cone snap ties: minimum 20mm deep with precast concrete or grout plugs.

.5 Form release agent: Waterborne, non-staining, non-grain raising, suitable for type of formwork.

.6 Joint tape: Non-staining, water impermeable, self-release.

.7 Joint sealant: Closed cell foam strip.

2.2 CONCRETE MIX

.1 Design and mix concrete to ensure optimum workability and the highest possible degree of consistency, meeting the following requirements:

.1 Consistency of materials: use the same materials from the same sources in the same proportions throughout.

.2 Aggregate: well graded, free of impurities such as chert, iron, clay.

.3 Water – cement ratio: 0.45 to 0.60; use water reducing admixture if considered beneficial.

.4 Compressive strength: 30 MPa/28 days, unless shown otherwise; provide the same compressive strength throughout.

PART 3 - EXECUTION

3.1 WORKMANSHIP

.1 Erect formwork in accordance with reviewed formwork drawings. Seal form panel joints. Provide chamfers at all exposed corners, unless otherwise shown. Seal wood chamfers and reglets with form release agent. Provide reglets at construction joints unless otherwise shown.

.2 Convey concrete from mixer to place of final deposit by method which will prevent segregation of materials and change of concrete qualities. Deposit concrete as close as possible to its final position. Placing once started shall proceed as a continuous operation until the full section planned for concreting has been completed.

.3 Place concrete in forms using suitable equipment so as to limit free fall of concrete to maximum 900 mm.

.4 Provide an adequate number of operating and back-up vibrators during the placing of concrete. Engage experienced workers to operate. Do not use vibrators to move concrete from one place in the form to another. Commence vibration of each lift as soon as its depth reaches 300 mm. Do not allow vibrator to touch formwork. Apply systematically and at such spacing intervals that zones of influence overlap and the vibrator penetrates the previous lift.

.5 After stripping of formwork fill form tie holes with precast concrete or grout plugs of colour matching concrete.

3.2 INSPECTION AND ACCEPTANCE

.1 After removal of formwork request Consultant's review. Consultant will determine acceptability of architectural concrete. If declared unacceptable remove affected work and replace at no extra cost.

.2 Make minor repairs, if necessary, as directed by Consultant. Under no circumstances make any repairs without Consultant's direction.

END

SECTION 04 05 13 - MORTAR

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Masonry, including mortar joint workmanship: Section 04 20 00

1.3 QUALITY ASSURANCE

.1 Quality Standards: meet requirements of CSA A179-14.

.2 Source of Material: for mortar to remain exposed in finished project, brands of cementitious materials and source of supply of sand, shall remain the same for duration of work.

1.4 PRODUCT HANDLING

.1 Store cementitious materials so as to prevent moisture absorption from any source. Do not use material affected by moisture.

.2 Store mortar aggregate materials to prevent contamination. Do not use contaminated materials.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Water: Clean and non-staining.

.2 Sand: CSA ASTM C144-18.

.3 Portland cement: CAN/CSA-3000-18.

.4 Masonry cement: CAN/CSA-3000-18.

.5 Lime: ASTM C207-18, Type S.

PART 3 - EXECUTION

3.1 PROPORTIONING & MIXING

.1 Mix mortar in accordance with CSA A179-14 except as specified herein.

.2 Place an experienced and competent person in direct charge of proportioning and mixing operations.

.3 Accurately premeasure mortar ingredients before placing them in the mixer.

.4 Except where specified otherwise do not add admixtures of any kind to mixes.

.5 All mortar shall be mixed for a period of not less than 3 minutes and not more than 10 minutes.

3.2 TIME LIMITS & RETEMPERING

.1 Use and place mortar in final position within following time limits after mixing:

.1 Air Temp. above 25°C - 2 hours.

.2 Air Temp. below 25°C - 2.5 hours.

.2 Standard mortar that has stiffened within above time limits because of evaporation of water may be retempered by adding water as frequently as needed to restore required consistency. Discard mortar not used within above time limits.

3.3 MORTAR SCHEDULE

.1 Bearing walls: Type S mortar.

.2 Non-bearing interior partitions: Type N mortar.

.3 Exterior clay brick walls: 1-1-6 cement/lime mortar.

END

SECTION 04 20 00 - UNIT MASONRY

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1	Salvage of existing clay brick:	Section 02 41 19
.2	Mortar:	Section 04 05 13
.3	Supply of loose steel lintels:	Division 5
.4	Caulking of control joints:	Section 07 92 00

1.3 WORK INSTALLED BUT SUPPLIED BY OTHERS

.1 Build into masonry elements inserts, anchors, bolts, sleeves and other items supplied by other Sections and which are required for installation and performance of work of other Sections.

.2 Install loose steel lintels required for support of masonry elements.

.3 Install steel door frames and access doors occurring in masonry elements.

.4 Install reinforcing steel and concrete fill into block lintels and reinforcing steel grouted into masonry walls.

1.4 QUALITY ASSURANCE

.1 Meet requirements of CSA A370-14, CSA A371-14 and CSA S304-14.

.2 Ensure that work is executed under the continuous supervision and direction of a competent foreperson.

.3 Masonry units used in partitions/walls designated to provide a fire separation shall be of thickness and material required to achieve required rating. Hollow masonry units used in fire separation shall have the necessary percentage of solid material to meet required rating. Concrete block used in fire separation shall be suitably identified to permit verification of fire resistance rating.

1.5 SUBMITTALS

.1 Prior to start of exterior masonry submit up to 3 full range clay brick samples to assist Consultant to select the best match with existing brick.

.2 Prior to start of work submit product data and duplicate samples of all masonry accessories including horizontal reinforcement and masonry anchors.

.3 Prior to start of work submit drawings showing proposed locations of control joints.

1.6 PRODUCT HANDLING AND STORAGE

.1 Deliver and handle masonry units so as to prevent soiling and chipping.

.2 Store masonry units above and off ground on level platforms which permit air circulation under stacks.

.3 During storage, protect masonry units against moisture absorption, damage and staining.

1.7 PROTECTION

.1 Protect finished work at corners, sills, projections and other areas likely to be damaged, with suitable coverings until completion of building.

.3 Adequately brace masonry walls and partitions to resist effects of lateral forces.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Clay Masonry Units:

.1 Hard burned clay brick to CSA A82-14, salvaged by Section 02 41 19 or new, matching existing brick. Provide bullnose brick where required.

.2 Concrete Masonry Units: to CSA A165 Series-14: by Simcoe Block, Boehmers, Richvale York , Day & Campbell or other source approved by the Consultant.

.1 Standard weight: H/15/A/M and S/15/A/M.

.2 Lightweight: H/15/C/M and S/15/C/M.

.3 Units must be cured for at least 28 days before delivery and shall have a moisture content of not more than 30% of total absorption.

.4 Exposed concrete block units shall be uniform in size, free of perceptible warp or twist, without chipped, ragged or broken edges; have a uniform surface texture, free of cracks, blemishes or defects detrimental to appearance or performance.

.5 Where indicated provide solid and semi-solid (solid top) units.

.6 Provide manufacturer's catalogued special units such as bullnose, corner, end, return, lintel block and others as indicated.

.7 Where incorporated into existing block work provide masonry units matching existing block work.

.3 Metal Reinforcement:

.1 Material: high tensile strength steel wire meeting ASTM A82, by Blok-Lok or Dur-O-Wall.

.2 Finish: hot dip galvanized after fabrication to ASTM A153, Class B.

.3 Horizontal reinforcement for interior walls and partitions: truss type with minimum 3.66 mm thick side and cross rods unless otherwise indicated; width 50 mm less than wall thickness; mill galvanized: BLOK-TRUS BL30.

.4 Horizontal reinforcement, exterior walls: truss type with 4.8 mm diameter steel side and cross rods; side rods centred on concrete block face shells; prefabricated corner and intersection assemblies: BLOK-TRUS BL30 by Blok-Lok or equivalent product by Dur-O-Wal.

.4 Connectors, anchors and ties:

.1 Materials:

.1 Steel: hot dip galvanized to ASTM A123.

.2 Wire materials: high tensile strength steel wire meeting ASTM A82, hot galvanized after fabrication to ASTM A153, Class 2.

.2 Interior anchors and ties:

.1 Non-bearing walls and partitions to bearing walls: corrugated wall ties minimum 0.7 mm thick, 21 x 175 mm BLOK-LOK BLT7A.

.2 Masonry to existing masonry: Flexible wire tie, 4.76 mm thick, size to suit wall condition, and flat bar screw-on anchor: Blok-Lok, Flex-O-Lok Type C.

.3 Masonry to structural steel: Flexible, triangular 4.76 mm ties and weld-on column anchor straps: FLEX-O-LOK BLT9.

.3 Lateral support angles:

.1 75 x 75 x 200 mm long steel angles.

.2 Steel: CAN/CSA-G40.21-04, minimum 260W.

.3 Finish: hot dip galvanized to CSA G164-18.

.4 Fasteners: Expansion type concrete anchors, two per angle.

.4 Reinforcing bar positioners: Dur-O-Wal 1A 810.

.5 Premoulded Joint Filler: Non-fire rated locations: Type 704 fibreglass board by Owens Corning or Rockboard 40 by Roxul.

.6 Concrete block lintels:

.1 Reinforcing steel: CSA G30.18-09 (R2014).

.2 Cast-in-place concrete: CSA A23.1-14.

PART 3 - EXECUTION

3.1 ERECTION - GENERAL

.1 Lay masonry work in uniform manner. No one portion of any section of work shall rise more than 750 mm above general level. Do not lay more than 1500 mm in height of any wall in any working day.

.2 Unless otherwise noted, all walls and partitions shall extend to the underside of the structural deck.

.3 Cut exposed masonry units with power driven table model masonry saw only. Ragged or chipped edges will not be permitted.

.4 Consult with other Sections to avoid cutting and patching. Co-operate in setting and aligning built-in items. Build in conduit and piping so that they are not exposed. Do not break masonry bond to accommodate concealed built-in items.

.5 Grout solid with mortar all spaces around built-in items.

.6 Build in metal nailing plugs, grounds, inserts, anchor bolts, bearing plates, loose and miscellaneous items of steel and iron, isolated beams, lintels and shelf angles, sleeves, blocking and items furnished by other Sections.

.7 Do not shift or tap masonry units after mortar has taken its initial set.

.8 At masonry openings less than 450 mm wide, unless otherwise detailed, use mild steel plates, minimum 6 mm thick, of width 25 mm less than supported masonry thickness and with minimum 100 mm end bearing each side.

.9 Construct structurally reinforced masonry elements in accordance with requirements indicated on drawings.

3.2 CHASES, SLEEVES, OPENINGS AND HOLES

.1 Chases, sleeves and openings shall be built in during erection of masonry work, and purpose-made chased units shall be built into proper position.

.2 Openings in masonry work exceeding 450 mm shall be provided with lintels in accord with lintel schedule.

.3 Chasing of completed walls or formation of holes shall only be carried out with Consultant's prior approval, and then only with a tool designed to cleanly cut masonry units.

.4 Chases shall be plumb and shall be minimum of one unit length from jambs of openings.

.5 Horizontal or diagonal chases are not permitted.

3.3 MASONRY BEARING

.1 Masonry bearing shall extend full thickness of wall.

.2 Unless otherwise indicated, provide at least 200 mm of bearing for lintels and beams.

.3 Bearings of block masonry walls: use minimum 2 courses of solid or grouted block units except where concrete bearing pads are required.

.4 Bearings in brick masonry walls: use solid face brick where exposed to view.

.5 Build masonry neatly around beam, and lintel bearings.

3.4 CONSTRUCTION JOINTS

.1 Where fresh masonry joins partially or totally set masonry, clean exposed surfaces of set masonry and remove loose mortar and foreign material prior to laying fresh masonry.

.2 If necessary to stop off a horizontal run of masonry, rack back one-half masonry unit length in each course. Toothing will not be permitted unless approved by the Consultant.

3.5 BRICKWORK

.1 Lay clay brick in bond matching existing. Provide header, soldier, rowlock and special band courses, where indicated. Provide solid units at outside corners; mitred units will not be accepted.

.2 Lay exposed face brick in full horizontal modules only, except where Consultant has approved use of cut units. Make small adjustments in width of vertical mortar joints to maximize use of full modules. Cut units, where permitted by Consultant, shall be located as directed by Consultant.

.3 Completed brickwork shall appear uniform and well blended, free of contrasting areas. Replace at no cost to Contract, brickwork which does not meet this requirement.

.4 Brick with an absorption rate of over 1 g/min./1000 mm^2 when tested in accordance with ASTM C67 shall be dampened before laying.

.5 Tops of walls which have been left exposed for any period of time shall be dampened before work is commenced again, if required.

.6 Brickwork at different levels shall be stepped in regular proportions between levels.

.7 Brickwork shall be laid up with the shove joint method in full bed of mortar with vertical and horizontal joints filled flush. Slushing mortar into joints after brick is laid, is not permitted.

.8 All joints in brickwork, including bed and collar joints, shall be filled flush as each course is laid. Pull down and rebuild walls/partitions which do not meet this requirement as directed by Consultant and at no extra cost to Contract.

.9 Variations in size of brick shall be evenly distributed in wall so that mortar joints are uniform throughout.

.10 At first brick course over steel lintels place brick directly on membrane flashing without mortar.

3.6 BLOCKWORK

.1 Blockwork shall be laid up in running bond except where shown otherwise. Unless otherwise indicated, blocks shall be of thickness required to produce total wythe thickness. Provide standard weight block unless otherwise shown.

.2 Do not wet blocks before laying.

.3 Units shall be laid with webs aligning one over the other in full bed of mortar over entire laying surface including webs.

.4 Exposed faces shall be full units laid out to minimize cutting with not less than 100 mm any at vertical edge or corner.

.5 Top course of block walls shall be laid with semi-solid blocks at door and window sills, at wall changes to brick and where shown.

.6 Partitions which do not extend full height, to underside of structural deck, shall be capped with solid or semi-solid (solid top).

.7 Use solid block for at least two courses under all point bearing loads.

.8 Provide bullnose block at all exposed vertical block corners. Where directed by Consultant provide square corner block at first course above floor; grind corner above base to match bullnose above.

.9 Provide minimum 400 mm solid or grouted block for jambs of openings and at ends of walls. Provide return corner block where shown.

.10 Cut with power saw exposed units to accommodate flush mounted electrical outlets, grilles and other components. Leave maximum 5 mm clearance. Cover plates and flanges must cover cut edges.

.11 Where new masonry is located within existing masonry or where it is abutting existing masonry, match type of block coursing, sizes, and jointing of existing block.

.12 Blockwork scheduled to be left exposed or painted shall be laid and pointed with utmost care. Distribute units of varying colour and texture evenly to achieve homogeneous blend. Replace at no extra cost to Contract, block units which in the opinion of the Consultant are too contrasting in appearance for satisfactory blending.

3.7 BLOCK LINTELS

.1 Build block lintels; install reinforcement and concrete fill. Unless otherwise detailed make lintels 200 mm high.

.2 Lintels shall have minimum 200 mm bearing, with care taken in layout of wall to ensure that lintel jointing coincides with regular bond of wall.

.3 Provide building paper in joint at bearings and at vehicle joint at ends of block lintels to break bond.

3.8 JOINT WORK

.1 Make joints to match existing.

.2 Joints in exposed and painted surfaces, and in masonry behind wall mounted and built-in fixtures, lockers and cabinetwork shall be tooled when thumbprint hard with a 25 mm o.d. plastic tool to produce a concave joint.

.3 Joints in unparged masonry below grade shall be pointed tight with a trowel.

.4 Joints directly behind resilient base, rigid insulation, ceramic tile and gypsum board shall be struck flush.

3.9 ANCHORING, BONDING AND REINFORCEMENT

.1 Anchor or bond walls and partitions at points where they intersect.

.2 Except where stack bond is required bond each wythe or masonry walls and partitions at corners by alternately bonding 50% of units of each wall and partition at corner intersection.

.3 Bond non-loadbearing walls and partitions to loadbearing walls with ties spaced at 400 mm o.c. vertically. Provide one tie for each 100 mm thickness, or part thereof, of wall or partition.

.4 Anchor masonry walls and partitions to concrete and steel elements with anchors spaced at 400 mm vertically.

.5 Unless otherwise indicated reinforce all walls and partitions with continuous horizontal metal reinforcement, installed at 400 mm o.c. vertically.

.6 At wall openings place continuous reinforcement in first and second mortar joints above and below openings. Additional reinforcement at openings shall extend 610 mm beyond both sides of openings.

.7 Install prefabricated corner assemblies at corners.

.8 Lap continuous reinforcement 150 mm at splices. Cut reinforcement at control joints.

.9 Provide lateral support angles at top of non-loadbearing masonry partitions/walls. Anchor angles to structural deck or beam at 10 x partition/wall thickness each side of partition and maximum 0.6 m from end of partition/wall.

3.10 CONTROL JOINTS

.1 Provide control joints at masonry walls supported by foundation walls at approximately 7.5 m o.c. and at masonry walls supported on framed slabs at approximately 4 m o.c., and where shown. Confirm actual locations of control joints with Consultant before starting work.

.2 Provide control joints at intersection of bearing and nonbearing walls.

.3 Construct control joints as shown. Unless otherwise shown make control joints 10 mm wide. Interrupt masonry reinforcement at control joints. Provide expanding foam sealant at control joint, at exterior and interior wythe.

.4 Control joints must be constructed during erection of masonry, and may not be sawcut later.

3.11 STEEL DOOR AND SCREEN FRAMES

.1 Install steel frames in masonry walls. Build in frames rigid, true and plumb. Fill voids between frames and masonry with grout. Fill fixed centre mullions at double doors with grout.

.2 Brace frames solidly in position while being built in. Provide temporary horizontal wood spreader at mid-height of frames to ensure maintenance of required frame width until masonry work is completed. For frames over 1200 mm width provide temporary vertical support at centre of head.

.3 Comply with installation requirements specified under Section 08 11 13.

3.12 MISCELLANEOUS

.1 Where non-loadbearing, non-fire rated partitions extend to underside of structure, terminate partitions as detailed. Where not detailed allow for structural deflection and fill space with premoulded joint filler. Refer to Section 07 84 00 for firestopping requirements at fire rated partitions.

.2 Provide continuous 0.1 mm thick polyethylene or glass fibre reinforced kraft paper - asphalt laminate bond breaker at base of partitions and walls which bear on concrete slabs.

.3 Provide paper backed galvanized steel lath as required for support of grout and mortar fill within masonry elements.

.4 Install access doors occurring in masonry elements, required by Divisions 20 to 28. Install access doors plumb, level, properly aligned and securely anchored, in locations directed by Divisions 21 to 28. Remove all excess grout and masonry debris from shafts and chases accessible by means of access doors.

3.13 GROUTED MASONRY

.1 Provide vertically reinforced and grouted masonry in accordance with requirements shown on structural drawings. Secure reinforcing with reinforcing bar positioners.

3.14 PATCHING AND CLEANING

.1 At completion of work, holes and other defects in masonry joints shall be repaired, and masonry surfaces shall be thoroughly cleaned.

.2 Holes in masonry joints shall be filled with mortar and suitably tooled. Cut out and repoint defective joints.

.3 Dry brush masonry surfaces at end of each day's work and after all final pointing.

.4 Remove mortar smears and droppings from concrete block masonry surfaces after such smears and droppings have dried. When mortar joints are dry and hard, clean block masonry surfaces by rubbing down with abrasive blocks and stiff fibre brushes.

.5 Remove efflorescence from masonry surfaces by wet cleaning in accordance with manufacturer's recommendations.

END

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Field painting: Section 09 91 00

1.3 WORK SUPPLIED BUT NOT INSTALLED

.1 Supply following items for installation under other Sections of work: Anchor bolts, bearing plates, sleeves and other inserts to be built into concrete and masonry elements and required for anchorage and support of metal fabrications.

.2 Supply other Sections with instructions, and if required, templates, necessary for accurate setting of insets and components.

1.4 QUALITY ASSURANCE

.1 Qualifications of Welders: Welding shall be performed by fabricator certified under CSA W47.1-09.

.2 Upon completion of installation of ladders, stairs, platform, pit covers, balustrades and railings submit certification by professional engineer responsible for design of these components, verifying that they have been installed in accordance with reviewed shop drawings.

1.5 SHOP DRAWINGS

.1 Submit detailed shop drawings of all metal fabrications required, showing profiles, members, fastenings, thicknesses, finishes and other pertinent data.

1.6 PRODUCT HANDLING

.1 Deliver, handle and store fabricated components to prevent permanent distortion, corrosion and damage.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Steel sections and plate: Cold rolled steel to ASTM A506-16.

.2 Steel tubular profile: CAN/CSA-G40.21-13 Grade 350W, Class H.

.3 Steel pipe: ASTM A53, Type E, Grade A.

.4 Sheet steel: Hot dip galvanized, cold rolled, with stretcher level degree of flatness to ASTM A653; zinc coating designation Z275.

.5 Stainless steel:

.1 Tube, pipes: ASTM A269 Type 316.

.2 Plate, sheet: ATM A167, Type 316.

.6 Welding materials:

.1 Steel: CSA W59-13.

.7 Shop primer: CAN/CGSB-1.40-97.

.8 Bituminous enamel: Alkali resistant asphaltic coating.

.9 Non-shrink grout: Por-Rok by Hallemite Products Ltd., or SET 15 Minute Anchoring Cement by SET Products Ltd.

2.2 FABRICATION GENERAL

.1 Fabricate components in the shop to details shown, in largest size practicable to minimize field jointing.

.2 Fabricate components square, straight, true, free from warpage and other defects. Accurately cut, machine file and fit joints, corners, copes and mitres.

.3 Reinforce fabricated components to safely withstand expected loads.

.4 Make joints in built-up sections with hairline joints in least conspicuous locations and manner.

.5 Make allowance for thermal expansion and contraction when fabricating exterior work.

.6 Joints shall be welded unless otherwise indicated and unless details of construction do not permit - welding. Exposed welds shall be continuous and shall be ground smooth.

.7 Close exposed open ends of tubular members with welded on steel plugs.

.8 Where work of other Sections is to be attached to work of this Section, prepare work by drilling and tapping holes, as required to facilitate installation of such other work.

.9 Work of this Section, supplied for installation under other Sections, shall be prepared as required ready for installation by: drilling, countersinking and tapping holes, forming shapes and cutting to required sizes.

.10 Grind off mill stampings and fill recessed markings on steel components left exposed to view.

.11 Follow recommendations of AISI Committee of Stainless Steel Producers when fabricating, joining, welding and finishing stainless steel components. Remove heat discolourations with mechanical, chemical or electro-chemical means.

2.3 METAL RAILINGS

.1 Definition: the term “railing” shall be taken to mean balustrades, guards, rails and railings of all types.

.2 Fabricate railings to conform to applicable OBC requirements.

.3 Construction: unless otherwise indicated:

.1 Close open ends of tubular members with welded steel plugs.

.2 Support railings at each end and at maximum 1 m o.c. between.

.3 Tube wall thickness: minimum 2.5 mm.

.4 At corners, angles and intersections cope or miter and weld and grind smooth.

.5 Pickets shall be solid bars.

.4 Pipe railings: unless otherwise indicated:

.1 38 mm outside diameter Schedule 40 tubing.

.2 Bends: smooth and continuous, without crimping or deflection in the pipe diameter.

.3 Welds: even, continuous and ground smooth prior to finishing.

2.4 FINISHES

.1 Thoroughly clean steel of loose scale, rust, oil, dirt and other foreign matter. Suitably prepare steel surfaces by power tool cleaning to receive specified finishes.

.2 Grind smooth sharp projections.

.3 Remove oil and grease by solvent cleaning.

.4 Apply coatings in the shop and before assembly. Where size permits, galvanize components after assembly.

.5 Shop apply coat of primer to interior components after fabrication except where galvanized or zinc rich paint finish is required.

.6 Apply coat of bituminous enamel to contact surfaces of metal components in contact with cementitious materials and dissimilar metals.

.7 Stainless steel: No. 4 brushed finish unless otherwise shown.

.8 Provide suitable wrappings or strippable coating to protect stainless steel surfaces, until components are installed.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Install components plumb, square, straight and true to line. Drill, cut and fit as necessary to attach this work to adjoining work.

.2 Provide temporary supports and bracing required to position components until they are permanently anchored in place.

.3 Securely anchor components in place; unless otherwise indicated, anchor components as follows:

.1 To concrete and solid masonry with expansion type anchor bolts.

.2 To hollow construction with toggle bolts.

.3 To thin metal with screws or bolts.

.4 To thick metal with bolts or by welding.

.5 To wood with bolts or lag screws.

.6 Fill space between railing members and sleeves with non-shrink grout.

.4 Provide all components required for anchoring. Make anchoring in concealed manner wherever possible. Make exposed fastenings, where approved by Consultant, neatly and of same material, colour, texture and finish as base metal on which they occur. Keep exposed fastenings evenly spaced.

.5 Dissimilar metals and metals in contact with cementitious elements shall have contact surfaces coated with bituminous paint or be isolated by other means as approved by Consultant.

.6 After installation, clean and refinish injured finishes, welds, bolt heads and nuts. Refinish with zinc rich paint or primer to match original finish.

3.2 SCHEDULE OF COMPONENTS

.1 Provide components made of shop primed steel unless otherwise indicated.

.2 Provide the following components:

.1 Steel support framing for hollow metal screens.

.2 Stair and ramp railings (stainless steel).

.3 Miscellaneous steel angles, plates and lintels required.

.4 Other metal fabrications required.

END

SECTION 07 92 00 - SEALANTS

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 DEFINITION

.1 Caulking = Sealant.

1.3 QUALITY ASSURANCE

.1 Sealants must be installed by qualified caulking contractor with minimum five years experience and proven record of being able to produce good quality work.

.2 Use only sealants which are proven to be compatible with materials they are in contact with. Notify Consultant prior to start of work should any sealant specified be considered unsuitable for the purpose intended.

1.4 PRODUCT HANDLING

.1 Deliver sealants to site in sealed containers bearing manufacturer's name, brand name of sealant and reference standard to which sealant complies.

.2 Store materials in a dry area having an ambient temperature within limitations recommended by material manufacturer.

1.5 JOB CONDITIONS

.1 Co-ordinate work of this Section with that of Section 09 91 00. Prior to start of work review installation procedures with Consultant, where caulking is located adjacent to painted surfaces.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Sealants

.1 Compatibility: provide joint sealants, backings, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as recommended by sealant manufacturer based on testing and field experience.

.2 Exterior joints invertical surfaces: multi-part, low-modulus, chemically curing polyurethane sealant colours selected by Consultant: ASTM C920, Type M, Grade NS, Class 50 Use 1, standard of acceptance: Dymeric 240 FC by Tremco.

.3 Exterior and interior joints in horizontal surfaces: multi-component, self-levelling, chemically curing polyurethane: ASTM C920, Type M, Grade P, Class 25: Standard of acceptance: Tremco THC-900.

.4 Joints at interior vertical surfaces: one part acrylic latex with joint movement capability of ± 7½%, paintable: ASTM 834; Standard of acceptance: Tremco Tremflex 834.

.5 Joints at interior horizontal surfaces: multi-component, self-leveling, chemically curing polyurethane: ASTM C920, Type M, Grade P, Class 25; Standard of acceptance: Tremco THC-900.

.6 Joinsts at interior wet locations: mildew-resistant silicone formulated with fungicide: ASTM C920, Type S, Grade NS, Class 25, Uses NT, G, A; Standard of acceptance: Dow Corning 786 Mildew Resistant Silicone Sealant.

.7 Sealant colours: selected by Consultant from manufacturer’s standard range, unless custom colour is required.

.2 Primers, thinners, cleaners: As recommended by sealant manufacturer, non-staining type.

.3 Premoulded backup for sealant: Non-gassing foam rope, compressed 25% when in joint: Sof-Rod by Tremco or Cera-Rod by W.R. Meadows.

.4 Bond breaker: Polyethylene tape, self-adhering one side.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Examine joints to be caulked and report in writing to the Consultant any defects in work of other Sections which would impair installation, performance and warranty of sealants.

.2 Do not commence installation of sealants until conditions are acceptable.

.3 Start of work implies acceptance of conditions.

3.2 PREPARATION

.1 Clean and prepare joints to be caulked to produce clean sound surfaces for sealant adhesion.

.2 Remove dust, oil, grease, water, frost, loose mortar and other foreign matter. Remove loose particles by blowing joint out with compressed air.

.3 Chemically clean non-pourous surfaces such as metal and glass, taking care to wipe solvents dry with a clean cloth. Use solvents recommended by sealant manufacturer.

.4 Clean porous surfaces such as masonry, concrete and stone by mechanical abrading.

.5 Surfaces adjacent to joints to be primed and which may be stained by primer shall be masked with tape before primer is applied.

.6 Prime joints in accordance with sealant manufacturer's recommendations. Apply primer before installing premoulded backup.

.7 Install premoulded backup in joints 6 mm and more in width. Roll rope type backup into joint, do not stretch or braid. Install bond breaker in joints less than 6 mm in width.

.8 Protect adjacent surfaces from stains and contamination. Make good any damage caused.

3.3 APPLICATION

.1 Apply sealants under pressure using suitable equipment. Gun nozzle shall be of proper size to fit, and seal joint.

.2 Force sealant into joints in full bead, making certain that void free contact is made with sides of joint. Tool joints to produce a slightly concave surface.

.3 Caulking must appear as a concave recessed joint, free of ridges, wrinkles and embedded foreign matter. Caulking shall not spread or bulge beyond surfaces on each side of joint.

.4 Apply sealants in accordance with following table:

Joint Width	Sealant Depth
5 mm	5 mm
10 mm	5 mm
15 mm	7 mm
20 mm	10 mm
25 mm	12 mm

3.4 CLEANING

.1 As work progresses, remove sealant smears and stains from adjacent surfaces. Use cleaning method recommended by sealant manufacturer.

.2 Leave adjacent surfaces in neat and clean condition.

3.5 SCHEDULE

.1 Apply sealant at the following exterior locations:

.1 Between dissimilar materials in exposed locations except where specifically indicated otherwise.

.2 Control joints in masonry elements.

.3 At penetrations through exterior building elements.

.4 Where indicated.

.2 Apply sealant at the following interior locations:

.1 Between dissimilar materials in exposed locations except where specifically indicated otherwise.

.2 Perimeter of steel door and screen frames.

.3 Control joints in masonry elements, and joints between bearing and non-bearing masonry walls.

.4 Terrazzo control joints.

.5 Where shown.

.3 At interior locations use acrylic emulsion sealant except:

.1 At floor control joints use self levelling polyurethane.

END

SECTION 08 11 13 - STEEL DOORS AND FRAMES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1	Grout fill of door frames:	Section 04 20 00
.2	Caulking at frame perimeters:	Section 07 92 00
.3	Supply of door hardware:	Section 08 71 00
.4	Painting:	Section 09 91 00

1.3 QUALITY ASSURANCE

.1 Acceptable manufacturers:

- .1 Artek
- .2 Daybar
- .3 Fleming – Baron (Assa Abloy)

.2 Reference standards: Unless otherwise indicated, meet requirements of "Canadian Manufacturing Specification for Steel Doors and Frames" and “Recommended Dimensional Standards for Commercial Steel Doors and Frames” published by the Canadian Steel Door Manufacturers' Association.

.3 Fire protection requirements: fire rated doors and frames shall bear ULC or WHI label for required rating and shall be installed in accordance with NFPA80 - Fire Doors and Windows, current edition. Provide temperature rise rated assemblies where required.

1.4 WORK SUPPLIED BUT NOT INSTALLED

.1 Supply frames and anchors to other Sections where it is necessary to build frames into work of other Sections.

.2 Supply instructions required for accurate positioning and proper installation of components supplied to other Sections.

1.5 SHOP DRAWINGS

.1 Prepare and submit detailed shop drawings. Include door and frame schedules, materials and finishes, hardware preparations and frame anchorage details.

1.6 PRODUCT HANDLING

.1 Tag doors and frames at shop with identification marks indicating proper location for installation.

.2 Deliver, store and handle components so as to prevent damage, distortion and corrosion. Store components off the ground and under cover in a dry protected area. Stack doors and frames to prevent twisting. Do not enclose components in plastic covers without venting.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Sheet Steel: hot dip galvanized (wipe coated) cold rolled steel with stretcher level degree of flatness, meeting requirements of ASTM A924 and A653; minimum zinc coating designation ZF120.

.2 Core Material

- .1 Fire rated doors: in accordance with fire test requirements.

.2 Interior doors, except fire rated doors: honeycomb core of rigid, pre-expanded resin impregnated Kraft paper having maximum 25 mm hexagonal shaped cells.

.3 Finishing Materials

.1 Touch up paint: zinc rich paint CAN/CGSB-1.181-99.

.2 Metal filler: two component epoxy type.

2.2 HARDWARE PREPARATION

.1 Comply with requirements of Section 08 71 00.

.2 Prepare for mortised and cylindrical hardware in accordance with ANSI A115 Series standards, except where specified otherwise. Provide mortise lock preparation to ANSI A115.1, including integral reinforcement channel, mounting tabs, and lock support. Provide cylindrical lock preparation to ANSI A115.2, including integral latch case support.

.3 Blank, reinforce, drill and tap doors and frames for concealed, mortised and surface mounted hardware. Provide door closer reinforcement at all steel doors and frames whether closer is required by hardware list or not.

.4 Provide hardware reinforcements in accordance with CSDFMA-08100 'Specifications…'. Table 1, except as otherwise herein:

.1 For mortised template hinges, provide minimum 3.4 mm thick reinforcement, with integral high frequency angle, and integral field-conversion from standard-weight to heavy weight hinges, at all hinge locations in both doors and frames.

.2 For continuous hinges, provide minimum 2.7 mm thick continuous reinforcement, in both doors and frames.

.3 For mortise locks to ANSI A115.1, provide minimum 1.3 mm thick reinforcing box, with integral lock-edge mounting tabs and lock body supports.

.4 For cylindrical locks to ANSI A115.2, provide minimum 1.3 mm thick reinforcing, with integral lock-edge mounting tabs and latch case support.

.5 Provide all function holes for all latching and locking hardware, including those for through-bolted lever trim, (CSDFMA-08100, Article 2.3.5).

.6 Factory mortise, reinforce, drill and tap all preparations for mortised template hardware. Site drill and tap for installation of surface-applied hardware, in accordance with hardware manufacturer's installation templates. (CSDFMA-08100, Article 2.3.4).

2.3 DOORS

.1 Construct fire rated doors in accordance with fire test requirements. Provide astragals at fire rated pairs of doors. Doors located in firewalls shall be temperature rise rated and labelled as required by regulatory requirements.

.2 Provide all doors of seamless construction with no visible seams or joints on faces.

.3 Interior doors shall be of honeycomb core construction. Skins shall be minimum 1.2 mm thick. Join door faces at vertical door edges by tackwelding; fill, grind and dress smooth.

.4 Provide flush galvanized steel end closures at top edge of exterior doors and where required for attachment of hardware.

.5 Hardware reinforcements shall be minimum 3.4 mm thick, not including door skin thickness. Provide reinforcement at all hardware fastening points.

.6 Surround openings in flush doors with minimum 1.2 mm thick steel edge channels, welded to both face sheets

.7 Where glazing is required provide removable glazing stops of zinc coated steel channels, accurately fitted into position and fastened with oval head plated screws. Length of each glazing stop shall match length/height of glass retained; intermediate joints are not acceptable.

2.4 FRAMES

.1 Provide welded frames to profiles shown, 1.6 mm thick unless otherwise shown; provide 2 mm thick frames at oversized double doors. Door stops and glass stops shall be formed integrally with frame and not added as a separate profile.

.2 Assemble components with accurately cut joints. Mitre outside corner joints of frames. Continuously weld joints on inside of profile and grind welds, flush and sand to smooth uniform surface; tabbed and spotwelded connections are not acceptable.

.3 Glazing stops shall be minimum 0.9 mm thick steel, mitred at corners, drilled and secured with oval headed screws.

.4 Drill interior door frames for rubber bumpers. Drill strike jamb of each single door frame for 3 bumpers. Drill head member of double door frames for 2 bumpers.

.5 Provide angle or channel head reinforcement for door frames wider than 915 mm.

.6 Tack weld two removable minimum 1.2 mm thick steel spreader channels to inside faces of door frames at base.

.7 Provide adjustable base clips for anchorage to floor at bottom of each door jamb.

.8 Protect strike and hinge reinforcements with 0.9 mm guard boxes.

.9 Hardware reinforcements shall be minimum 3.4 mm thick, not including frame thickness. Provide reinforcement at all hardware fastening points. Provide high frequency (angle type) reinforcement at hinges.

2.5 FINISHES

.1 Fill seams, corner joints and other depressions with filler and sand smooth.

.2 Clean and remove all traces of oil, grease, and other foreign substances to ensure proper bond of touch up after fabrication.

.3 Touch up damaged zinc coating with zinc rich paint.

.4 Insulate, where necessary to prevent electrolysis, metal surfaces in contract with dissimilar metals or cementitious materials.

PART 3 - EXECUTION

3.1 FRAME AND SCREEN INSTALLATION

.1 Allowable limit of distortion shall be 1.5 mm out of plumb at each jamb, measured on face of frame, resulting in maximum twist of frame of 3 mm measured from upper corner to lower diagonal corner.

.2 Generally, anchorage of frames shall be by means of standard anchors. Where standard anchors cannot be used, provide special anchors to ensure proper installation. Method of anchorage shall not be visible when frames are installed.

.3 Provide minimum 3 anchors at each jamb. At frames exceeding 2150 mm in height provide one additional anchor for each additional 610 mm or part thereof.

.4 Anchor intermediate vertical frame members to structure above as required to ensure stability. Where required, provide steel frame extensions. Provide flexible connection at structure to allow for deflection.

.5 Remove steel shipping spreaders; install wood installation spreaders at sill and at third points of frame rabbet height to maintain constant frame width. Remove wood spreaders only after frames are securely anchored in place.

3.2 DOORS

.1 Install steel doors.

.2 Install hardware in accordance with hardware supplier's instructions.

.3 Adjust operable parts to ensure proper operation.

3.3 TOUCH-UP

.1 Patch damaged finishes. Remove rust, sand damaged and abraded surfaces and touch-up with zinc rich paint.

END

SECTION 08 11 16 - ALUMINUM DOORS AND FRAMES

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1	Sealants except as specified herein:	Section 07 92 00
.2	Supply only of door hardware for aluminium doors:	Section 08 71 00
.3	Glass and glazing:	Section 08 88 00

1.3 WORK SUPPLIED BUT NOT INSTALLED

.1 Supply to other Sections anchors, inserts and items required to be built into work of other Sections.

.2 Ensure accurate setting of built-in items; where necessary provide templates, diagrams or other suitable means of instruction.

1.4 DESIGN AND PERFORMANCE REQUIREMENTS

.1 Details shown on drawings are schematic and are intended to convey general design intent, but shall not be taken to represent final design, responsibility for which belongs exclusively to the Contractor.

.2 Design curtain wall to withstand, without any detrimental effects to appearance and performance, wind loads and temperature range expected in geographical area of this project (OBC climatic information 50 year probability), unless specified otherwise.

.3 Design system based on rain screen principles, having all cavities outboard of the air seal, pressure equalized and drained to the exterior.

.4 Design curtain wall systems to perform as an effective air and vapour barrier.

.5 Design systems to accommodate without detrimental effects on appearance and performance of system.

.1 Wind loads, positive and negative.

.2 Thermal expansion and contraction of systems components.

.3 Movement, deflection and creep of building structural frame.

.6 Limit deflection of component parts under maximum design load to 1/175 of span or less if required by glass manufacturer.

.7 Prevent water infiltration through curtain wall systems, when tested in accordance with ASTM E331, with static pressure difference across system of 500 Pa.

.8 Limit air infiltration and exfiltration through curtain wall systems of maximum 0.0003 $m^3/s.m^2$ under a static pressure of 75 Pa when tested in accordance with ASTM E283.

.9 Curtainwall, extending below a level of 1070 mm above finished floor and where grade/floor at outside is more than 600 mm below finished floor, shall be designed as guards in accordance with requirements of OBC.

1.5 QUALITY ASSURANCE

.1 Work of this Section shall be executed by fabricator and installer approved by manufacturer and with a minimum of five years experience in the type of work specified herein, having adequate equipment and skill to expediently complete the work in an efficient manner. Only products from manufacturers listed

will be accepted unless written approval is issued by the Consultant.

.2 Fabrication tolerances: overall height, width and diagonal dimensions of frames shall be within the following tolerances:

Dimension of 2 m and less: +/- 2 mm
Dimension more than 2 m: +/- 3.5 mm

.3 Caulking: comply with requirements of Section 07 92 00 except where specified otherwise herein.

.4 Glazing: comply with IGMAC recommendations and with requirements of Section 08800 except where specified otherwise herein.

1.6 SUBMITTALS

.1 Prior to preparing shop drawings submit a letter from the manufacturer certifying that the subcontractor has issued a purchase order, letter of intent or otherwise entered into a contract with the manufacturer. The letter shall be dated and include the:

.1 Name of the project.

.2 Name of the subcontractor.

.3 Complete list of products.

.4 Manufacturers contact with telephone and telefax numbers.

.2 Submit detailed shop drawings showing fabrication, assembly and installation requirements. Show dimensions, profiles and materials, joint locations and sizes; connections; expansion allowances, reinforcing; drainage paths, rainscreen, air and vapour barrier continuity; anchorage systems. Show details full size.

.3 Shop drawings shall be stamped and signed by a professional engineer, licensed to practice in Ontario.

.4 Upon Consultant's request submit design calculation for curtain wall system for review.

.5 Upon Consultant's request, submit sample section and assemble corner of each framing system used.

.6 Submit duplicate sets of samples minimum 100 x 100 mm of each type of metal finish specified.

.7 Upon Consultant's request submit test report from recognized testing agency verifying that systems provided will meet design and performance requirements.

1.7 WARRANTY

.1 At no cost to Owner remedy any defects in work of this Section for a period of five (5) years from date of Substantial Performance. For the purposes of this paragraph, defects shall include but not necessarily be limited to:

.1 Water infiltration in excess of requirements specified.

.2 Air infiltration/exfiltration in excess of requirements specified.

.3 Deflection of system components in excess of requirements specified.

.4 Failure of joint seal.

.5 Cracked glass (except where caused by vandalism).

.6 Failure of insulating glass perimeter seal.

.7 Delamination, cracking, blistering, excessive fading of metal finishes.

.2 At no cost to Owner, replace factory sealed glass units should obstruction of vision develop due to dust or film forming on inner glass surfaces caused by perimeter seal failure within a period of 10 years from date of Substantial Performance.

PART 2 - PRODUCTS

2.1 SYSTEMS

.1 Screen framing: one of the following systems:

.1 Series 1600 by Kawneer.

.2 Series 2600 by Alumicor.

.2 Exterior doors: one of the following products:

.1 Insulclad 560 by Kawneer

.2 Insuldoor Series 600B by Alumicor.

2.2 MATERIALS

.1 Framing Components:

.1 Aluminum extrusions: AA 6063-T5 and 6063-T6 alloy.

.2 Aluminum plate and sheet: ASTM B209, AA 1100 alloy.

.3 Steel sections and plate: CAN/CSA-G40.21-04, Grade 300W.

.4 Steel tubes: CAN/CSA-G40.21-04, Grade 350W, Class H.

.5 Screws, bolts, nuts, washers and other fasteners incorporated into aluminum sections: aluminum or ANSI Series 300 stainless steel, or hot dip galvanized steel.

.6 Anchoring devices: aluminum, non-magnetic stainless steel or hot dip galvanized steel.

.7 Thermal break: PVC.

.2 Glass and Glazing Materials:

.1 Setting blocks: Neoprene, Shore "A" Durometer hardness of 70 to 90 points; spacer shims, 40 to 50 points, as recommended by system manufacturer.

.2 Glazing Sealant: one part polysulphide meeting requirements of ASTM C920 or as recommended by system manufacturer.

.3 Glazing Tape: preshimmed polyisobutylene: Polyshim Tape by Tremco.

.4 Glazing gaskets: solid extruded neoprene or EPDM having Shore "A" Durometer hardness of 50 to 70 points as recommended by system manufacturer.

.5 Glass: refer to Section 08 80 00.

.3 Caulking Materials:

.1 Sealant: multi-part chemical curing type to ASTM C920; acceptable product: Tremco Dymeric or type recommended by system manufacturer; custom colours selected by Consultant.

.2 Primer: as recommended by sealant manufacturer.

.3 Joint backing: non-gassing foam rope, compressed minimum 25% when installed: Sof-Rod by Tremco.

.4 Air barrier sealant (concealed): single component, gun grade flexible foamed in place polyurethane: ExoAir Flex Foam by Tremco.

.4 Spandrel Panels:

.1 Galvanized sheet steel to ASTM A653, zinc coating designation Z275.

.2 Aluminum sheet: AA110-H14 or AA3003 - H14 alloy, anodizing quality.

.3 Insulation: AF530 by Owens Corning or RXL 40 by Roxul Inc.

.4 Insulation clips: adhesive bonded pin and disc type: SticKlip by Eckel or similar by Kelty or Dewar, or gun welded steel pin.

.5 Adhesives: as recommended by manufacturer of material to be bonded.

.5 Miscellaneous Materials:

.1 Concealed sheet metal closures: galvanized sheet steel, minimum 1.2 mm thick, Z275 zinc coating.

.2 Air barrier sealant: single component gun grade flexible foamed in place urethane: ExoAir Flex Foam by Tremco.

.3 Bituminous paint: alkali resistant asphaltic enamel.

.4 Bedding compound: non-hardening and nonskinning.

2.3 FABRICATION

.1 Aluminum components shall be extruded sections and shapes unless otherwise specified.

.2 Framing shall consist of tubular inner aluminum section reinforced if necessary, thermal break, pressure plate and exterior cap. Provide cap depths as indicate; use machine screws to fasten pressure plates; self-drilling, self-tapping screws are not permitted.

.3 Size units to allow for structural deflection of surrounding construction.

.4 Design work so that it will not be distorted, nor fasteners overstressed, from expansion and contraction of metal.

.5 Reinforce members as required to withstand loads and to maintain deflection within allowable limited.

.6 Internally reinforce framing members where work of other Sections is to be fastened thereto.

.7 Fastenings shall be concealed.

.8 Mechanically joined sections shall have hairline joints.

.9 Fabricate extruded or formed aluminum sills to profiles indicated to suit wall conditions and minimum 3 mm thick. Provide drip deflectors at sill ends and at abutting vertical surfaces. Open ends of sills shall be fitted with neatly applied closure plats. Anchors shall be designed not to work loose after installation. Unless otherwise detailed provide flush slip joint at intermediate sill joints.

.10 Stools, cap flashings, copings, closures, covers and trim shall be extruded or formed to profiles shown and unless otherwise shown, minimum 3 mm thick.

.11 Spandrel back-up panels: brake form insulation back-up panels from minimum 1 mm thick galvanized sheet steel at concealed locations and of minimum 1 mm thick aluminum with finish matching adjacent framing at exposed locations, designed to engage into framing in manner maintaining air and vapour barrier in all locations. Install back-up panels into framing and provide air seal, at shop, not in the field.

.12 Metal spandrel face panels: fabricate panels to profile indicated of minimum 3 mm thick aluminum sheet. Exposed face of panel shall be flat, smooth, free of waves, buckles, dents and other defects.

.13 Doors:

.1 Provide suitable thermally broken subframes to incorporate doors into curtain wall.

.2 Construct doors of minimum 3 mm thick porthole extrusions, with all fastenings and connection concealed.

.3 Vertical edge profile: bevelled or rounded.

.4 Provide heavy duty reinforcing at all doors and frame hardware fastening points.

.5 Internally reinforce framing members where work of other Sections is to be fastened thereto.

.6 Provide rails and transoms to sizes and profiles shown.

.7 Prepare doors/frames for automatic door operator, provide had member of sufficient size to accommodate recessed operator.

.8 Prepare doors/frames for door contacts required for security system.

.9 Glazing stops shall be snap-on type, without exposed fasteners.

.10 Weatherstripping: provide manufacturer's standard weatherstripping at jambs, head and bottom of exterior door. Weather stripping shall be removable for replacement.

.11 Door hardware: prepare doors and frame to receive door hardware. Prepare each door/frame for continuous hinge, rim type panic device with cylinder lock, surface overhead closer, overhead stop, pull, threshold.

2.4 FINISHES

.1 All exposed metal surfaces: clear anodized aluminum AA M12 C22 A31.

.2 Contact surfaces of aluminum components with dissimilar building components shall be coated with bituminous paint.

PART 3 - EXECUTION

3.1 FRAMING

.1 Erect and secure framing plumb, square and level, free from warp, twist and superimposed loads.

.2 Anchor curtain wall system to supporting building elements; provide brackets, anchors and clips as required. All devices for anchoring shall have sufficient adjustment to permit correct and accurate alignment. After alignment, weld or otherwise positively lock anchoring devices to prevent movement other than that required to accommodate expansion, contraction and deflection.

.3 Anchor intermediate vertical frame members to structure above as required. Where support for intermediate vertical frame members is not available directly above head, provide frame extensions to structure above. Provide flexible connection at structure to allow for movement.

.4 Provide necessary inserts to be built into work of other Sections as required for anchorage of framing.

.5 Set frame members in bedding compound to ensure watertight assembly.

.6 Metal to metal joints between abutting components shall be sealed weathertight.

.7 Use concealed fastenings and anchorages in all locations. Exposed fastenings, where unavoidable, must be clearly identified on shop drawings, and require Consultant's approval prior to fabrication of work.

.8 Joints between framing members and adjacent work, which are to be caulked, shall be minimum 10 mm wide.

3.2 SPANDREL PANELS

.1 Adhere insulation clips to back-up panel at maximum 300 mm o.c. both ways; welded clips may be used in lieu of adhesive bonded type, provided pins to not easily break off and weld burn-through does not occur.

.2 Apply adhesive to back-up panels and embed insulation boards. Fit boards tightly and accurately, leave no voids or gaps. Place retainer discs over pins. Unless noted otherwise provide 100 mm thick insulation.

3.3 GLAZING

.1 Glaze openings in accordance with curtainwall and glass manufacturer's recommendation so as to achieve weathertight installation.

.2 Unless otherwise indicated provide double glazed insulating glass at all locations. Provide translucent glass units where shown.

.3 Provide a dry/dry glazing system using glazing gaskets under constant compression. Provide triple

glazed and translucent glass units where shown.

3.4 DOORS

.1 Install door subframes and doors.

.2 Install door hardware and weatherstripping required, in accordance with hardwaremanufacturer's directions. Check test operation of all operable parts and, if necessary, adjust to ensure correct and smooth function.

.3 Coordinate with Division 16 for required power connection and wiring to automatic door operator and controls.

3.5 SEALANTS

.1 Seal joints in accordance with system and sealant manufacturers' recommendations. Prime contact surfaces prior to installation of sealant.

.2 Provide caulking between framing members and adjoining work, inside and outside, and where required to render work of this Section weathertight.

.3 Provide for continuity of air and vapour barrier in all locations; join up with air/vapour barrier components of adjacent systems. Where indicated, and where required to maintain continuity of air barrier, install galvanized sheet metal closures and or air seal membrane at terminations of curtain wall systems and effectively seal to adjacent building elements. Ensure that membrane materials are compatible with each other.

.4 Fill space between perimeter frames and adjacent construction with air barrier sealant. Apply insulation with suitable equipment, in accordance with manufacturer's directions. Fill spaces completely, leaving no voids or gaps; trim excess material. Leave sufficient room for installation of interior and exterior sealant and back-up.

3.6 SILLS

.1 Provide aluminum sills, complete with chairs, anchors, expansion plates, drip deflectors as detailed.

.2 Provide sills in longest practicable lengths. Provide flush slip joints at maximum 3 m o.c. Align joints with centre line of mullions.

3.7 COPINGS, COVERS, CLOSURES AND TRIM

.1 Provide copings, covers, closures and trim as indicated and as required to provide complete and finished installation.

.2 Use concealed fastenings unless approved otherwise by Consultant.

3.8 CLEANING AND ADJUSTMENT

.1 Remove protective elements and thoroughly clean aluminum and glass surfaces with solution of mild domestic detergent in warm water. Exercise care in removing dirt from corners. Wipe surfaces dry using soft cloths.

.2 Just prior to takeover of building by Owner, check test hardware and weatherstripping and, if

necessary adjust or replace components to ensure proper and smooth operation, and weathertight closure.

END

SECTION 08 71 00 - DOOR HARDWARE

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Installation of hardware for steel doors: Section 08 11 13

1.3 QUALITY ASSURANCE

.1 Meet requirements of Ontario Building Code and other applicable regulations.

.2 Upon completion of finish hardware installation, hardware supplier shall inspect work and shall certify in writing that all items and their installation are in accord with requirements of Contract Documents and are functioning properly.

1.4 SUBMITTALS

.1 Upon Consultant's request submit samples of door hardware.

.2 Prepare and submit two copies of a detailed hardware and keying schedule.

.3 Furnish other Sections with templates required for hardware preparation and installation. Issue templates when requested so as not to cause any delays but not before hardware list has received final review by Consultant.

1.5 PRODUCT DELIVERY, HANDLING & STORAGE

.1 Deliver each hardware item packaged separately in individual containers with necessary screws, keys, instructions and installation templates.

.2 Mark each container with item number corresponding to number shown on hardware schedule with respective door number.

.3 Store hardware in dry, lockable area.

PART 2 - PRODUCTS

2.1 DOOR HARDWARE

.1 Supply only of door hardware except where specified to be provided under other Sections is included in the Hardware List appended to this Section.

2.2 KEYING

.1 Locks shall be keyed to existing master key system as directed by the Board.

.2 Provide 3 change keys per lock.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Meet requirements of ANSI / DHI A115.1G-94, “Installation Guide for Doors and Hardware”.

.2 Confirm locations and mounting heights of finish hardware with Consultant.

.3 Install hardware in accordance with hardware suppliers directions. Ensure that hardware is installed correctly. Issue instructions if required to Sections concerned.

.4 Unless otherwise directed by the Consultant, install finish hardware at heights matching.

END

Finishing Hardware Schedule

Port Credit SS BF Entrance Alt.. 2021, PDSB

Mississauga

Job No. 1902

Architect
MG Architects Inc.

Detailer: **Chris Hynes**
Consultant: **Ross Ruprecht B.A., A.H.C.**

Submittal Date: **May 31/21**

Manufacturers & Finishes

Manufacturers

Best
Camden
Door Mftg.
Fleming Door Products Ltd.
Gallery
GYRO-TECH
HES Innovations (Pgs 24-25)
K.N. Crowder
MISC
Rixson Specialty Door Control
Sargent
Stanley
Von Duprin

Finishes

600 - Primed for painting
626 - Satin chromium plated over nickel
628 - Satin aluminum, clear anodized
630 - Satin stainless steel
689 - Aluminum painted
US26D - Satin chromium plated over nickel
US28 - Satin aluminum, clear anodized
US32D - Satin stainless steel

Openings Schedule

Opening Number(s)	Qty	Location 1	To/ From	Location 2	Door Catalog	Nominal Width	Nominal Height	Door Thickness	Type	Hand	Label	Degree of Opening	Hardware Group	Heading Num.	Remarks
E102	1	VEST	FROM	CORR		1000, 800	2150	45	Pair	LHRA		90°	VEST PR PP-OP	1	ADO, NO MULLION
XE102	1	EXTERIOR	FROM	VEST	<Aluminum>	1000, 800	2150	50	Pair	LHRA		90°	EXT PR,950 RM,MAIN, C/W BF	2	ADO, FM
N111	1	VEST	FROM	CORR		1000, 1000	2150	45	Pair	LHRA/RHRA		100°	N111	3	ADO, FM
XN111	1	EXTERIOR	FROM	VEST	<Aluminum>	914, 914	2150	50	Pair	LHRA/RHRA			EXISTING ADD ADO	4	EXISTING AL DR & FR , ADO
121	1	VEST	FROM	CORR		1000, 1000	2150	45	Pair	LHRA/RHRA		100°	N111	3	ADO, FM
X121	1	EXTERIOR	FROM	VEST	<Aluminum>	1000, 1000	2150	50	Pair	LHRA/RHRA		100°	X121	5	ADO, FM

Hardware Schedule

Heading #1 (Group: VEST PR PP-OP)

Item #1 — 1 Pair of doors E102, VEST FROM CORR — 90° LHRA

1000, 800 x 2150 x 45 - HM DR x HM FR

NO MULLION BTW DOORS

8	Standard Hinge	Stanley FBB168 4 1/2" x 4 1/2" US26D	US26D
2	Door Pull	Gallery 4012-2 C32D	US32D
2	Push Plate	GSH 127 X 505 TMS	US32D
1	Surface Closer	Stanley HD7016-SPA 689 SN	689
1	Electronic Closer	GYRO-TECH OPERATOR 8710 X DR WIDTH HEADER 628 ACTIVE LEAF	628
2	Kick Plate	Gallery GSH 80A 200 x 50MMLDW C32D	US32D
1	Overhead Door Stop	Rixson 1-X36 630 (SIZED TO SUITE) RHR LEAF	630
1	Wall Door Stop	Gallery GSH 240B C32D	US32D
2	Miscellaneous Hardware	Camden Actuator CM-60/4	
1	Miscellaneous Hardware	Camden CM-160/3 POS (MTD IN OP HEADER)	
1	Miscellaneous Hardware	Camden CX-TRX-2024 INSTALL IN OP HEADER	
1	Miscellaneous Hardware	Camden DEDICATED PS CX-PS13V3 INSTALL IN OP HEADER	
2	Miscellaneous Hardware	Camden Escutcheon CM-89S	
1	Miscellaneous Hardware	MISC WIRING /RISER DIAGRAM BY HARDWARE SUPPLIER	

PREPARE DR AND FRAME FOR 4 HINGES

HARDWARE SUPPLIER SECTION O8710 TO SUPPLY AND INSTALL AUTO OPERATORS.

ELECTRICAL CONTRACTOR TO PROVIDE 120 VAC TO HEAD OF FRAME AND LOW VOLTAGE WIRE TO PUSH BUTTON LOCATIONS.
PB REQUIRE 2 X 4 BACK BOX BY ELECTRICAL CONTRACTOR

Heading #2 (Group: EXT PR,950 RM,MAIN, C/W BF)

Item #2 1 Pair of doors XE102, EXTERIOR FROM VEST 90° LHRA

1000, 800 x 2150 x 50 - AL DR x AL FR

MULLION BR FRAME SUPPLIER

8	Standard Hinge	Stanley NRP-FBB199 4 1/2" x 4 1/2" US32D	US32D
1	Exit Device	Sargent 8804 X RIM CYL US32D	US26D/US32D
1	Exit Device	Sargent 8810 US32D	US32D
1	Cylinder	Best 1E72S2RP 626	626
2	Cylinder	Best Construction Core 1CA Brass	
1	Cylinder	Best Key Switch Cyl. 1E74 C4	626
2	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
1	Electric Strike	HES 9600-630- 2005M3	630
2	Door Pull	Gallery 1180-2 TB 2" THICK DR. C32D	USC32D
1	Surface Closer	Stanley HD7016-SPA 689 SN RHR LEAF	689
1	Electronic Closer	GYRO-TECH OPERATOR 8710 X DR WIDTH HEADER 628 LHR	628
2	Kick Plate	Gallery GSH 80A 200 x 50MMLDW C32D	US32D
1	Overhead Door Stop	Rixson 1-X36 630 (SIZED TO SUITE)	630
1	Wall Door Stop	Gallery GSH 240B C32D LHR	US32D
2	Accessory	Von Duprin (CAD) MULLION STABALIZER 154	600
2	Threshold	K.N. Crowder CT-45 x 1219mm	
2	Weatherstripping	K.N. Crowder W-24S- 1219 CA	CA
2	Weatherstripping	Door Mftg. Weatherstripping by Dr & Frame Supplier	US28
2	Miscellaneous Item	MISC DOOR CONTACT BY SECURITY CONTRACTOR	
2	Miscellaneous Hardware	Camden Actuator CM-60/4	
1	Miscellaneous Hardware	Camden CM-1190-7224 WALL MTD	
1	Miscellaneous Hardware	Camden CM-160/3 POS (MTD IN OP HEADER)	
1	Miscellaneous Hardware	Camden CX-TRX-2024 INSTALL IN OP HEADER	
1	Miscellaneous Hardware	Camden DEDICATED PS CX-PS13V3 INSTALL IN OP HEADER	
2	Miscellaneous Hardware	Camden Escutcheon CM-89S	
1	Miscellaneous	Camden RELAY CX-33	

	Hardware	
1	Miscellaneous Hardware	MISC WIRING /RISER DIAGRAM BY HARDWARE SUPPLIER

HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR

ELECTRICAL CONTRACTOR TO PROVIDE 120 VOLT TO HEADER OF FRAME AND RUN ALL LVW IN CONDUIT TO PUSH BUTTONS,ELECTRIC STRIKES KEYSWITCH, . GC TO PROVIDE 2 X 4 BACKBOXES FOR PUSHBUTTONS.

MODE OF OPERATION
UNLOCKED POSITION: EXIT DEVICES ARE DOGGED DOWN VIA DOGGING FEATURE. ACTUATOR BUTTON EITHER SIDE OPENS DOOR AUTOMATICALLY (WALL MTD. KEYSWITCH LED IS GREEN)

SECURED POSITION:DOORS ARE UNDOGGRED AND LOCKED WALL MTD KEYSWITCH CM 1210 SHUNTS POWER TO EXTERIOR ACTUATOR ONLY (LED IS RED) . INTERIOR ACTUATOR IS ALWAYS ACTIVE.

EGRESS IS ALWAYS FREE
3 POSITION KEYSWITCH TURNS UNIT ON/OFF/HOLDOPEN.

PREPARE DOOR AND FRAME FOR 4 HINGES

Heading #3 (Group: N111)

Item #3	1 Pair of doors N111, VEST FROM CORR	100° LHRA/RHRA
Item #4	1 Pair of doors 121, VEST FROM CORR	100° LHRA/RHRA

1000, 1000 x 2150 x 45 - HM DR x HM FR

HM MULLION BTW DOORS

16	Standard Hinge	Stanley FBB168 4 1/2" x 4 1/2" US26D	US26D
4	Door Pull	Gallery 4012-2 C32D	US32D
4	Push Plate	GSH 127 X 505 TMS	US32D
2	Surface Closer	Stanley HD8016 -SPA 689 SN INACTIVE LEAF	689
2	Electronic Closer	GYRO-TECH OPERATOR 8710 X DR WIDTH HEADER 628 ACTIVE LEAF	628
4	Kick Plate	Gallery GSH 80A 200 x 50MMLDW C32D	US32D
4	Overhead Door Holder	Rixson 1-436 630	630
4	Miscellaneous Hardware	Camden Actuator CM-60/4	
2	Miscellaneous Hardware	Camden CM-160/3 POS (MTD IN OP HEADER)	
2	Miscellaneous Hardware	Camden CX-TRX-2024 INSTALL IN OP HEADER	
2	Miscellaneous Hardware	Camden DEDICATED PS CX-PS13V3 INSTALL IN OP HEADER	
4	Miscellaneous Hardware	Camden Escutcheon CM-89S	
2	Miscellaneous Hardware	MISC WIRING /RISER DIAGRAM BY HARDWARE SUPPLIER	

PREPARE DR AND FRAME FOR 4 HINGES

HARDWARE SUPPLIER SECTION O8710 TO SUPPLY AND INSTALL AUTO OPERATORS.

ELECTRICAL CONTRACTOR TO PROVIDE 120 VAC TO HEAD OF FRAME AND LOW VOLTAGE WIRE TO PUSH BUTTON LOCATIONS.
PB REQUIRE 2 X 4 BACK BOX BY ELECTRICAL CONTRACTOR

Heading #4 (Group: EXISTING ADD ADO)

Item #5 1 Pair of doors XN111, EXTERIOR FROM VEST LHRA/RHRA

914, 914 x 2150 x 50 - AL DR x AL FR

MULLION BR FRAME SUPPLIER.
EXISTING ALUM DOOR & FRAME.
REUSE EXISTING HARDWARE EXCEPT AS NOTED.

1	Cylinder	Best Construction Core 1CA Brass	
1	Cylinder	Best Key Switch Cyl. 1E74 C4	626
1	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
1	Electric Strike	HES 9600-630- 2005M3	630
1	Electronic Closer	GYRO-TECH OPERATOR 8710 X DR WIDTH HEADER 628 LHR	628
2	Miscellaneous Item	MISC DOOR CONTACT BY SECURITY CONTRACTOR	
2	Miscellaneous Hardware	Camden Actuator CM-60/4	
1	Miscellaneous Hardware	Camden CM-1190-7224 WALL MTD	
1	Miscellaneous Hardware	Camden CM-160/3 POS (MTD IN OP HEADER)	
1	Miscellaneous Hardware	Camden CX-TRX-2024 INSTALL IN OP HEADER	
1	Miscellaneous Hardware	Camden DEDICATED PS CX-PS13V3 INSTALL IN OP HEADER	
2	Miscellaneous Hardware	Camden Escutcheon CM-89S	
1	Miscellaneous Hardware	Camden RELAY CX-33	
1	Miscellaneous Hardware	MISC WIRING /RISER DIAGRAM BY HARDWARE SUPPLIER	

HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR

ELECTRICAL CONTRACTOR TO PROVIDE 120 VOLT TO HEADER OF FRAME AND RUN ALL LVW IN CONDUIT TO PUSH BUTTONS,ELECTRIC STRIKES KEYSWITCH, . GC TO PROVIDE 2 X 4 BACKBOXES FOR PUSHBUTTONS.

MODE OF OPERATION
UNLOCKED POSITION: EXIT DEVICES ARE DOGGED DOWN VIA DOGGING FEATURE. ACTUATOR BUTTON EITHER SIDE OPENS DOOR AUTOMATICALLY (WALL MTD. KEYSWITCH LED IS GREEN)

SECURED POSITION:DOORS ARE UNDOGGRED AND LOCKED WALL MTD KEYSWITCH CM 1210 SHUNTS POWER TO EXTERIOR ACTUATOR ONLY (LED IS RED) . INTERIOR ACTUATOR IS ALWAYS ACTIVE.

EGRESS IS ALWAYS FREE
3 POSITION KEYSWITCH TURNS UNIT ON/OFF/HOLDOPEN.

PREPARE DOOR AND FRAME FOR 4 HINGES

Heading #5 (Group: X121)

Item #6 1 Pair of doors X121, EXTERIOR FROM VEST — 100° LHRA/RHRA

1000, 1000 x 2150 x 50 - AL DR x AL FR

MULLION BR FRAME SUPPLIER

8	Standard Hinge	Stanley NRP-FBB199 4 1/2" x 4 1/2" US32D	US32D
1	Exit Device	Sargent 8804 X RIM CYL US32D	US26D/US32D
1	Exit Device	Sargent 8810 US32D	US32D
1	Cylinder	Best 1E72S2RP 626	626
2	Cylinder	Best Construction Core 1CA Brass	
1	Cylinder	Best Key Switch Cyl. 1E74 C4	626
2	Cylinder	Best Permanent Core 1C7N1 GMK 3 Keys	626
1	Electric Strike	HES 9600-630- 2005M3	630
2	Door Pull	Gallery 1180-2 TB 2" THICK DR. C32D	USC32D
1	Surface Closer	Stanley HD8016 -SPA 689 SN	689
1	Electronic Closer	GYRO-TECH OPERATOR 8710 X DR WIDTH HEADER 628 ACTIVE LEAF	628
2	Kick Plate	Gallery GSH 80A 200 x 50MMLDW C32D	US32D
2	Overhead Door Holder	Rixson 1-436 630	630
2	Accessory	Von Duprin (CAD) MULLION STABALIZER 154	600
2	Threshold	K.N. Crowder CT-45 x 1219mm	
2	Weatherstripping	K.N. Crowder W-24S- 1219 CA	CA
2	Weatherstripping	Door Mftg. Weatherstripping by Dr & Frame Supplier	US28
2	Miscellaneous Item	MISC DOOR CONTACT BY SECURITY CONTRACTOR	
2	Miscellaneous Hardware	Camden Actuator CM-60/4	
1	Miscellaneous Hardware	Camden CM-1190-7224 WALL MTD	
1	Miscellaneous Hardware	Camden CM-160/3 POS (MTD IN OP HEADER)	
1	Miscellaneous Hardware	Camden CX-TRX-2024 INSTALL IN OP HEADER	
1	Miscellaneous Hardware	Camden DEDICATED PS CX-PS13V3 INSTALL IN OP HEADER	
2	Miscellaneous Hardware	Camden Escutcheon CM-89S	
1	Miscellaneous Hardware	Camden RELAY CX-33	
1	Miscellaneous Hardware	MISC WIRING /RISER DIAGRAM BY HARDWARE SUPPLIER	

HARDWARE SUPPLIER SECTION 08710 TO SUPPLY AND INSTALL AUTO OPERATOR

ELECTRICAL CONTRACTOR TO PROVIDE 120 VOLT TO HEADER OF FRAME AND RUN ALL LVW IN CONDUIT TO PUSH BUTTONS,ELECTRIC STRIKES KEYSWITCH, . GC TO PROVIDE 2 X 4 BACKBOXES FOR PUSHBUTTONS.

MODE OF OPERATION
UNLOCKED POSITION: EXIT DEVICES ARE DOGGED DOWN VIA DOGGING FEATURE. ACTUATOR BUTTON EITHER SIDE OPENS DOOR AUTOMATICALLY (WALL MTD. KEYSWITCH LED IS GREEN)

SECURED POSITION:DOORS ARE UNDOGGRED AND LOCKED WALL MTD KEYSWITCH CM 1210 SHUNTS POWER TO EXTERIOR ACTUATOR ONLY (LED IS RED) . INTERIOR ACTUATOR IS ALWAYS ACTIVE.

EGRESS IS ALWAYS FREE
3 POSITION KEYSWITCH TURNS UNIT ON/OFF/HOLDOPEN.

PREPARE DOOR AND FRAME FOR 4 HINGES

Listed Components

Compliant

CM-60

6" ROUND ALL-ACTIVE SWITCHES

CM-60/2

FEATURES

- LARGE, EASY TO OPERATE SWITCHES
- 6" ROUND
- ALL-ACTIVE DESIGN REQUIRES MINIMAL ACTUATION FORCE
- DURABLE STAINLESS STEEL OR SOLID BRASS CONSTRUCTION
- MEETS ADA REQUIREMENTS
- FLUSH MOUNT OR SURFACE MOUNT
- UL/CSA APPROVED SPDT MOMENTARY SWITCH, RATED 15 AMPS @ 30V DC
- VARIOUS LOGOS & MESSAGES
- ARCHITECTURAL FINISHES

CM-60/3

DESCRIPTION

Camden Door Controls CM-60 Series all-active switches are heavy-duty, ADA-compliant door controls. The 6" round faceplates are stainless steel or solid brass, and the assembly is designed for easy installation in single-gang electrical boxes, or, with included adapter plate – double-gang and 4x4 boxes. The SPDT and optional DPDT switches are UL/CSA approved, and rated 15 amps @ 30 VDC.

CM-60/4

APPLICATION

Camden all-active switches are designed for areas where an easy-to-activate, high-visibility switch is desired. Ideal for high-traffic areas, hospitals, wheelchair access, seniors' residences, etc. They can be surface or flush mounted.

Camden all-active switches are designed to control electric strikes, electromagnetic locks and automatic doors. They may also be used for shunting, bypassing alarms, request to exit, timed functions and many other applications.

The switches are made for high frequency usage, for both indoor and outdoor environments. Camden switches are versatile, and can be supplied in various configurations and finishes, to suit any commercial, industrial or residential application.

ARCHITECTS / ENGINEERS SPECIFICATIONS

The switches to be used throughout the complex shall be Camden Door Controls CM-60 all-active switches.

The switches shall be easy-to-activate, ADA compliant and 6" round in diameter. Switches shall be all-active, whereby pressing any part of the faceplate will activate the device. Faceplates shall be constructed of 18-gauge stainless steel or solid brass, and have concealed mounting screws for tamper resistance. Switches shall use plastic spacers and rubber dampers for noise reduction. Switches shall be rated at a minimum of 15 amps @ 30 VDC.

Their design shall allow mounting in single-gang electrical boxes, or, with included adapter plate – double-gang and 4x4 boxes.

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Listed Components

CM-160/170/180

AUTOMATIC DOOR KEY SWITCHES

CM-160/23

CM-170/23

CM-180/24

FEATURES

- 3 FORMATS: JAMB, HEADER OR SINGLE GANG MOUNT
- 2, 3, OR 4 POSITION MAINTAINED AND 2 POSITION MOMENTARY MODELS
- VARIOUS LOGOS, AND LANGUAGES
- KEY REMOVABLE IN ALL MAINTAINED POSITIONS
- UL/CSA APPROVED SWITCH RATED 4 AMPS @ 28V DC

DESCRIPTION

Camden Door Controls CM-160/170/180 Series key switches are economical, automatic door controls. All key switches are keyed alike, and keys are removable in all maintained positions. The switches are UL/CSA approved, and rated 4 amps @ 28 VDC.

The CM-160 1 11/16" x 3" compact lamacoid faceplate is designed for easy installation directly in the aluminum jamb or operator header.

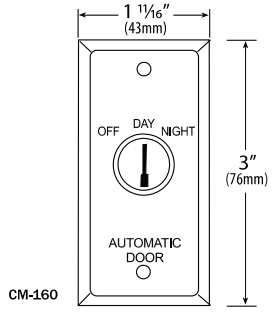
The CM-170 narrow stainless steel faceplate is 1 1/2" x 4 1/2", and is designed to mount in the aluminum jamb.

The CM-180 stainless faceplate is 2 3/4" x 4 1/2" and will fit on any standard electrical box, flush or surface.

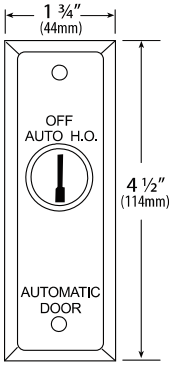
APPLICATION

Camden automatic door key switches are designed to control automatic pedestrian & overhead doors.

They may also be used for shunting, bypassing alarms, request to exit, timed functions and many other applications. Camden key switches are versatile and can be supplied in various logos and languages to suit any commercial, industrial or residential application.



CM-160



CM-170

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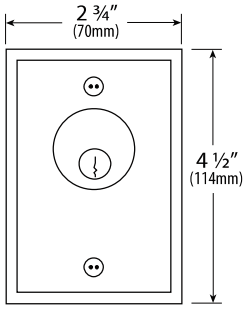
CM-1100/2000

CAST ALUMINUM KEY SWITCH CONTROLS

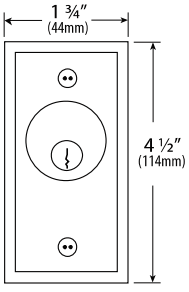
CM-1100

CM-2000

Shown with mortise cylinder (sold separately)



CM-1100



CM-2000

FEATURES

- SINGLE GANG AND NARROW STYLE MODELS
- ACCEPTS STANDARD MORTISE CYLINDERS, 1" – 1 1/4"
- HEAVY DUTY 1/4" THICK ALUMINUM PLATE
- 1 PIECE DIE CAST CONSTRUCTION
- LOCATORS PREVENT CYLINDER FROM SPINNING
- NO SET SCREWS REQUIRED
- VANDAL RESISTANT
- CYLINDER SITS FLUSH TO FACEPLATE
- TAMPER PROOF SCREWS & DRIVER PROVIDED
- INDOOR OR OUTDOOR APPLICATIONS
- UL/CSA APPROVED SWITCHES
- 1 OR 2 SWITCHES MAY BE INSTALLED
- LEFT AND/OR RIGHT OPERATION
- WIDE RANGE OF SWITCH CONFIGURATIONS
- COLOR CODED 18 AWG SOLDERED LEADS
- HEAT SHRINK PROTECTIVE SLEEVE OVER CONTACTS
- CASTED CENTRE RIB PROTECTS SWITCHES FROM DAMAGE
- BRUSHED ALUMINUM FINISH
- CUSTOM COLOR FINISHES & ENGRAVING AVAILABLE
- OPTIONAL LED INDICATORS
- FAST & EASY TO INSTALL

DESCRIPTION

Camden Door Controls, CM-1100 and CM-2000 Series flush mount key switches meet the stringent demands of key switch controls. They are designed for use with standard 1", 1 1/8", or 1 1/4" mortise cylinders. Fabricated from 1/4" thick aluminum, into a one piece die cast construction, with unique Camden Manufacturing features.

CM-1100 is single gang (2 3/4") width, CM-2000 is only 1 3/4" wide, perfect for door frames or narrow areas. Both models accept one or two switches, and have a counter sunk cylinder opening, in a one piece casted assembly. A brass cylinder lock ring, 2 socket/slotted screws, and 2 tamperproof screws with driver, are also supplied. (The mortise cylinder is available separately from Camden Door Controls.) The design and construction makes it ideal for all-weather environments. The assembly is tamper and vandal resistant.

CM Key Switches are flexible, and can be supplied in numerous switch configurations to suit varied commercial and industrial applications, and functions. Camden Key Switches provide a practical, cost effective means for authorized personnel to control and signal various functions within a complex.

APPLICATION

CM-1100 and CM-2000 Series Key Switches will control overhead doors, electric locks, electro-magnetic locks, electric strikes, and motors. They are also used for shunting, bypassing, timed functions, activating and deactivating CCTV and access control equipment, and other applications. They are constructed for high frequency use, and will accept a standard mortise cylinder.

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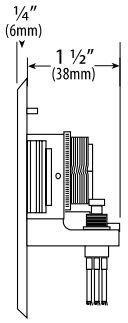
ARCHITECTS / ENGINEERS SPECIFICATIONS

Key Switch Controls to be used throughout the site, or complex will be supplied exclusively by Camden Door Controls. The CM-1100 and CM-2000 Series key switches shall be used for all flush mount applications.

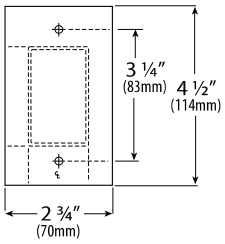
The faceplate will incorporate a mounting platform for both the cylinder and switches, in a single piece construction. The faceplate will have 180° locators so that set screws shall not be required to prevent the cylinder from rotating. Only a brass cylinder lock ring will be employed to hold the mortise cylinder to the faceplate. The one piece 1/4" thick aluminum assembly shall be tamper and vandal resistant, with a countersunk cylinder opening, and the edges beveled. The key switch shall be supplied with stainless steel Torx or snake eye security screws.

The one piece faceplate with casted mounting platform, will have two holes for switch mounting. It shall be possible to select either left or right operation. In areas requiring dual control, two switches shall be used offering bi-directional operation from the same key switch.

The switch component used will be a UL/CSA approved type, rated for 6A/30VDC. Switches are to be supplied with color coded soldered leads, encased in heat shrink tubing. The switch must be protected from accidental damage from the cylinder cam, by having an integral metal centre rib incorporated into the design of the faceplate.



CM-1100



CM-1100

ORDERING INFORMATION

All CM-1100 and CM-2000 Series Key Switches are supplied with a brushed aluminum cast faceplate, cylinder lock ring, 2 socket/slotted screws, and 2 tamperproof screws with driver. (The mortise cylinder is not included, but is available from Camden Door Controls.)

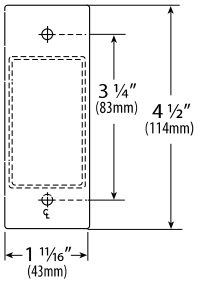
MODEL	MODEL	DESCRIPTION
SINGLE GANG	**NARROW STYLE**	
CM-1100	CM-2000	1 SPST MOMENTARY SWITCH, N/O
CM-1105	CM-2005	1 SPST MOMENTARY SWITCH, N/C
CM-1110	CM-2010	1 SPST MAINTAINED SWITCH
CM-1120	CM-2020	1 SPDT MOMENTARY SWITCH
CM-1130	CM-2030	1 SPDT MAINTAINED SWITCH
CM-1150	CM-2050	2 SPDT MOMENTARY SWITCHES
CM-1160	CM-2060	2 SPDT MAINTAINED SWITCHES
CM-1170	CM-2070	1 SPDT MAINTAINED, + 1 SPDT MOMENTARY
CM-1180	CM-2080	1 DPDT MOMENTARY SWITCH
CM-1182	CM-2082	2 DPDT MOMENTARY
CM-1190	CM-2090	1 DPDT MAINTAINED SWITCH
CM-1192	CM-2092	2 DPDT MAINTAINED SWITCH

FOR LED INDICATORS, ADD:

-7012	RED 12V LED
-7112	GREEN 12V LED
-7212	RED & GREEN 12V LED'S
-7024	RED 24V LED
-7124	GREEN 24V LED
-7224	RED & GREEN 24V LED'S
-7412	AMBER 12V LED
-7424	AMBER 24V LED
-7612	BI-COLOR 12V LED
-7624	BI-COLOR 24V LED

FOR FINISHES, ADD:

'BZ'	DARK BRONZE FINISH (BHMA 710, 313AN)



CM-2000

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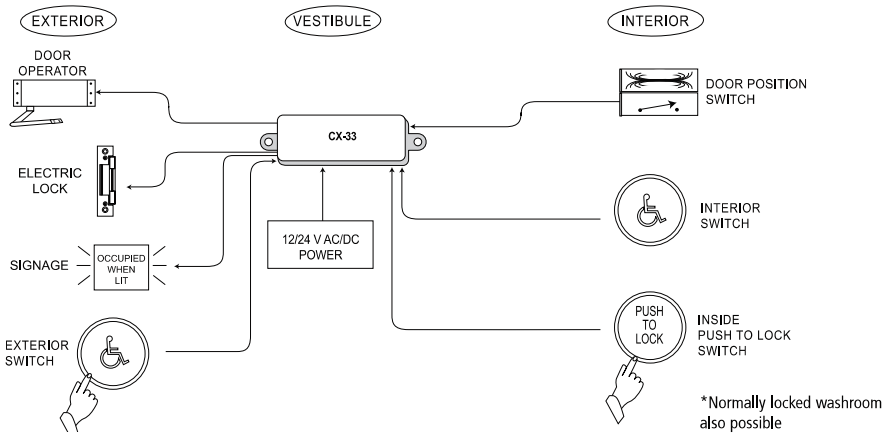
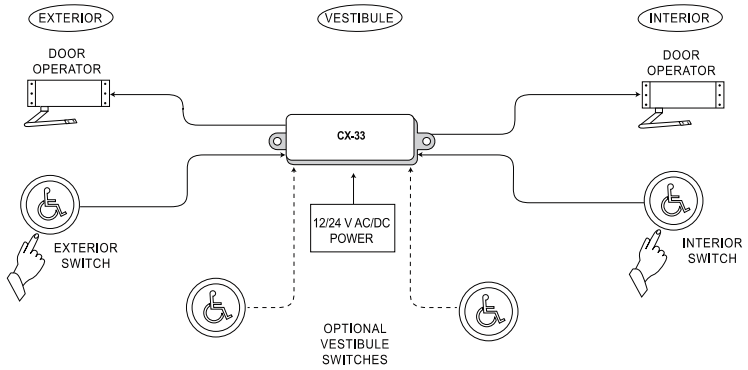
LIT-SP-11&2000-R4
Certified ISO 9001: 2008
FS 541752

TYPICAL APPLICATION

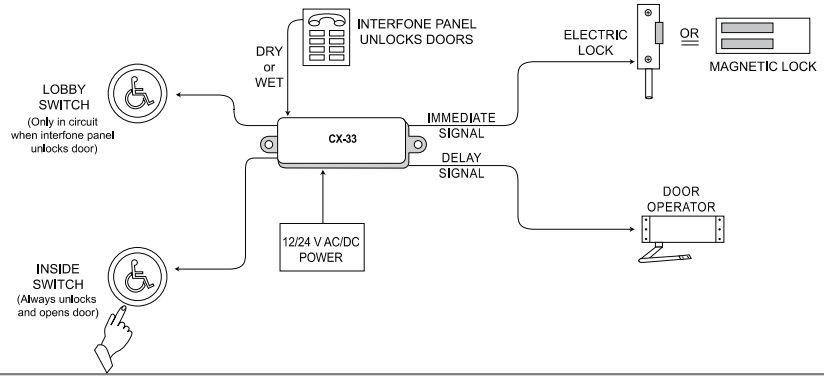
NORMALLY UNLOCKED* SINGLE USE RESTROOM



BI-DIRECTIONAL DOOR SEQUENCER



APARTMENT/CONDO APPLICATION



CX-TRK, CX-TRN, CX-TRP AND CX-TRX

TRANSFORMERS/RECTIFIER

FEATURES

- AC AND DC MODELS
- STANDARD MOUNT AND PLUG-IN MODELS
- PLUG-IN MODELS ARE UL/CUL LISTED
- FUSED MODEL FOR ADDITIONAL CIRCUIT PROTECTION
- 3 YEAR WARRANTY

DESCRIPTION

Camden offers a range of 12VAC to 24VAC standard, plug-in and panel (nipple) mount transformers to support any low voltage system application.

The CX-5024 rectifier is used to convert AC power, for use with DC powered devices.

PANEL (NIPPLE) MOUNT		
	CX-TRN-2024	24 VAC, 20 VA nipple mount transformer
STANDARD MOUNT		
	CX-TRX-2012	12 VAC, 20 VA standard mount transformer
	CX-TRX-4024	24 VAC, 40 VA standard mount transformer
	CX-TRX-5024	24 VAC, 50 VA standard mount transformer
FUSED, STANDARD MOUNT		
	CX-TRX-2024	24 VAC, 20 VA, fused, standard mount transformer
	CX-TRK-2450	24 VAC, 20 VA, standard mount transformer and AC/DC rectifier
PLUG-IN		
	CX-TRP-4016	16 VAC, 40 VA plug-in transformer
RECTIFIERS		
	CX-5024	Rectifier, (AC-DC) 50 VA

SPECIFICATIONS

VOLTAGE:	120V AC 60HZ
DIMENSIONS:	**CX-TRN-2024:** 2"L x 2 3/8"W x 2 1/4"H (51mm x 60mm x 57mm)
	CX-TRX-2012: 3"L x 2"W x 2 1/8" H (76mm x 51mm x 54mm)
	CX-TRX-4024: 2"L x 2 3/8"W x 2 1/2" H (51mm x 60mm x 64mm)
	CX-TRX-5024: 2 1/8"L x 3 1/8"W x 2 5/16" H (54mm x 80mm x 60mm)
	CX-TRX-2024: 2"L x 2 3/8"W x 2 1/2" H (51mm x 60mm x 64mm)
	CX-TRP-4016: 3 1/2"L x 2 1/2"W x 2 1/8" H (89mm x 64mm x 54mm)
	CX-5024: 1"L x 3/4"W x 1/4" H (25mm x 19mm x 6mm)

6" ROUND MOUNTING ENCLOSURES - SURFACE

MODEL: CM-69S

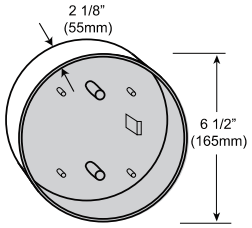
Size: 6 1/2" round, std. depth

Type: Surface mount box

Construction: Flame and impact resistant black polymer (ABS)

Application: Indoor/outdoor, wired or wireless

For Switch Series: CM-60



MODEL: CM-89S

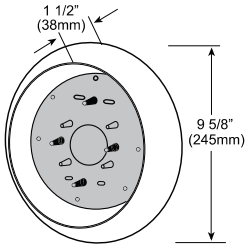
Size: 9 5/8" round, std. depth

Type: Surface mount escutcheon

Construction: Heavy gauge stainless steel

Application: Vandal resistant indoor/outdoor, wired.

For Switch Series: CM-60



MODEL: CM-79

Size: 9 5/8" round, 1 13/16" depth

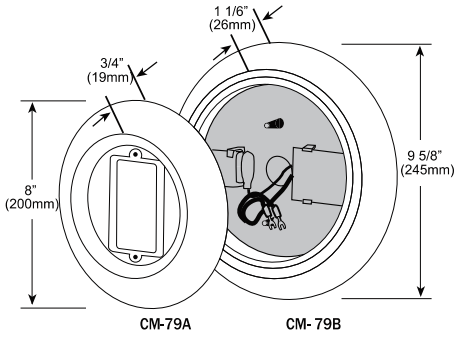
Type: 2 pcs. surface and semi flush mount escutcheon, gasket and adapter plate included

Construction: Flame and impact resistant black polymer (ABS)

Application: Vandal resistant indoor/outdoor

- **CM-79A:** Semi flush mounting on single gang electrical box, wired
- **CM-79B:** Surface mount. Wired or wireless. Must be used with CM-79A
- **CM-79C:** Adapter plate to mount CM-79A on double gang and 4" square electrical box
- **CM-79G:** Gasket for CM-79A or CM-79B

For Switch Series: CM-60



GSH 240B Wall Stop

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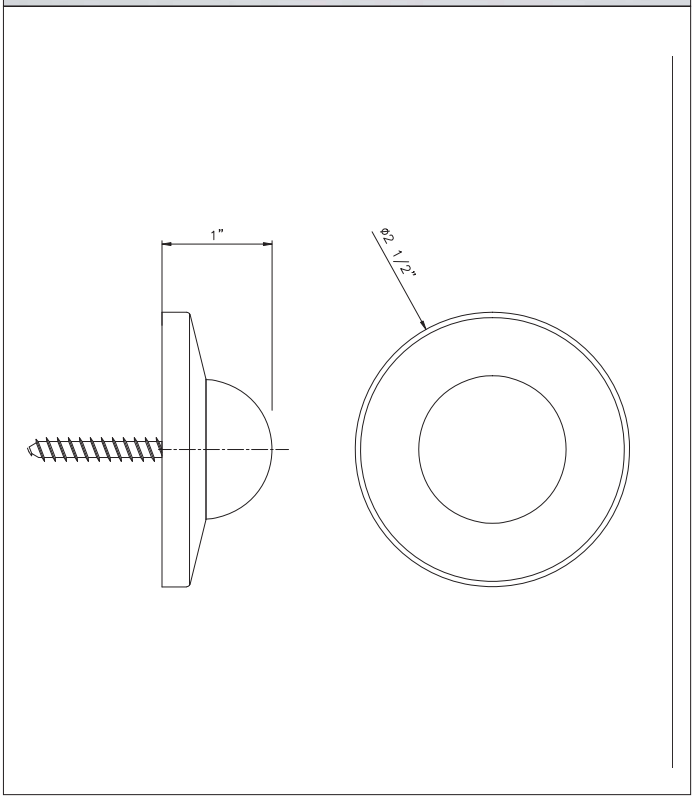

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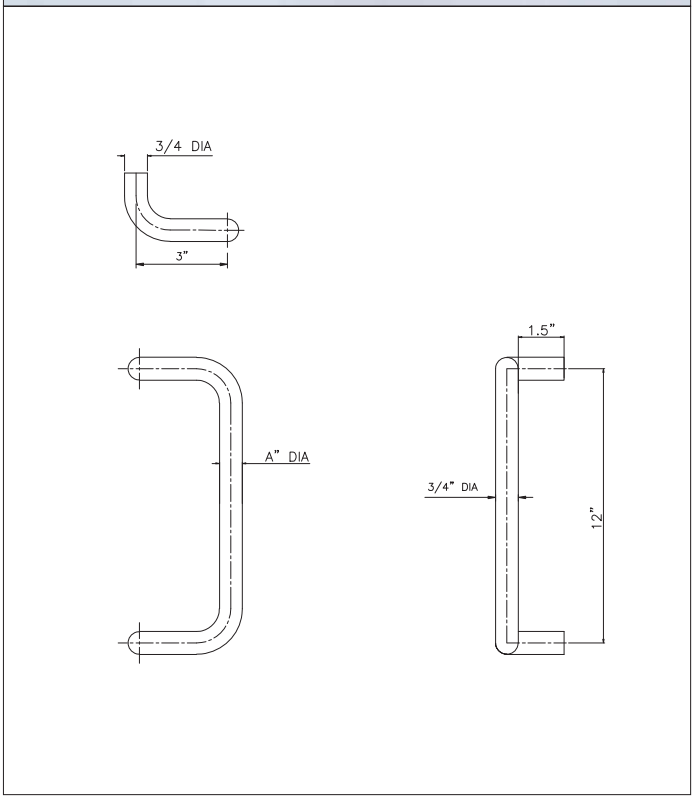

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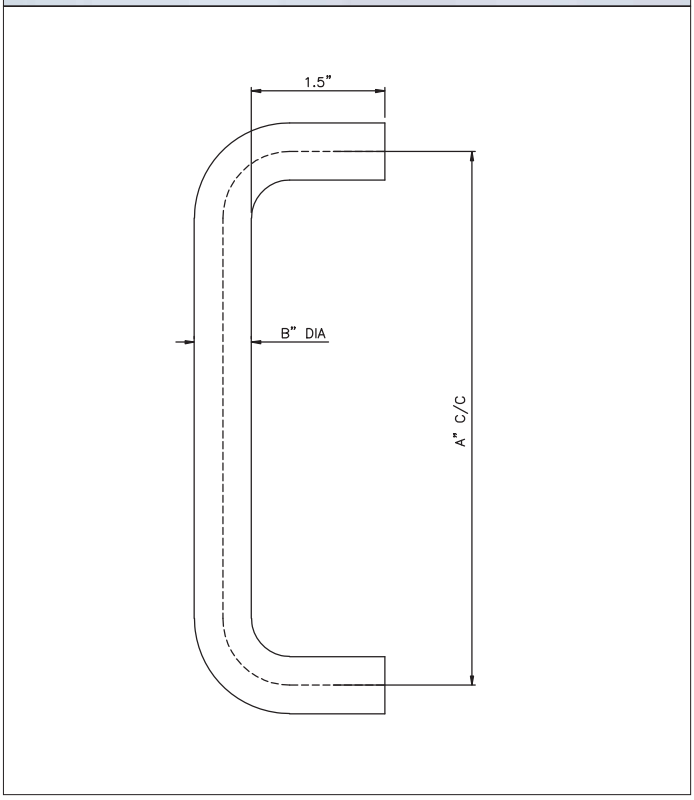


203

676 Petrolia Road, Toronto, ON, Canada M3J 2V2 Tel: 416.667.9593 Fax: 416.667.0806 Email: info@galleryspecialty.com

new

9600 Series

The **stylish windstorm-rated,** surface mounted solution

The 9600 series is a windstorm-rated, surface mounted electric strike designed to accommodate rim exit devices with a 3/4" throw Pullman latchbolt. All components are completely encased within its 3/4" thick stainless steel housing, so no cutting on the frame is required for installation. Simply place the electric strike on the surface of the frame, align it with the exit latchbolt and install. Adjustments have never been easier as the base is now separate from the cover. It is field selectable for fail secure and fail safe operation, and for 12 or 24VDC.

The 9600 is the only surface mounted electric strike designed with the strength and durability required to exceed the severe forces of ANSI Windstorm testing.

Specifications

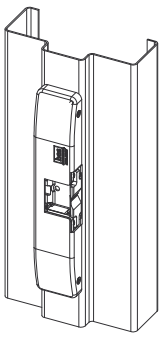
- ANSI 250.13-2003 Severe windstorm listed
- Florida Building Code Approved (FL#14307)
- UL 1034 burglary-resistant listed and suitable for outdoor use
- UL 294 (6th Edition) listed
- ANSI/BHMA, A156.31 Grade 1
- RoHS compliant
- Patent: 6,392,520

Frame Application

- Metal
- Wood

Electrical (continuous duty)

- .45 Amps @ 12VDC
- .25 Amps @ 24VDC
- PoE friendly



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43 Millwick Dr
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Port Credit SS BF Entrance Alt.. 2021, PDSB
Mississauga
Job No. 1902

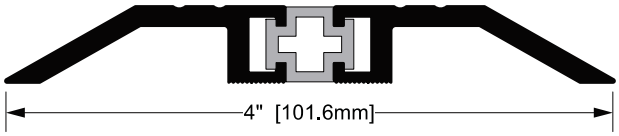
Submittal Date: May 31/21

Accessories

Item	Accessory	Description
	**2001M:** Plug-in bridge rectifier	**Converts AC to unfiltered DC.** Rated 35 V, 1 Amp *Includes MOV and self-resettable fuse* *Not recommended for 1006 Electric Strike*
	**2001-1:** Wire-in bridge rectifier	**Converts AC to unfiltered DC.** Rated 35 V, 2 Amp *Not recommended for 1006 Electric Strike*
	**2004M:** ElectroLynx® adapter	**Adapter between existing HES electric strikes** and ElectroLynx® connectors
	**2005M3:** SMART Pac® III	**In-line power controller able to receive input voltages from 12- 32V AC or DC.** Built-in bridge rectifier. Reduces initial voltage by 25% to extend the life of the electric strike. *Includes built-in resettable fuse, MOV, voltage regulation and input voltage level indicating and unit status* *For use with 1006, input voltage must be DC*
	**2006M:** Plug-in buzzer	**Audible operation indicator.** At 24VDC, 75db @ 11-3/4"
	**2007M:** Plug-in pigtail connectors	With 4" wire leads
	**150:** Strike latch guard	**Stainless steel.** Installed at the edge of the door to cover the lock and electric strike

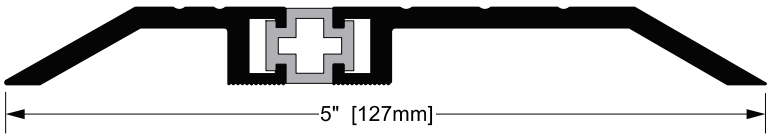
1/2” THERMAL BREAK THRESHOLDS

CT-44
EXTRUDED ALUMINUM
WITH RIGID P.V.C.

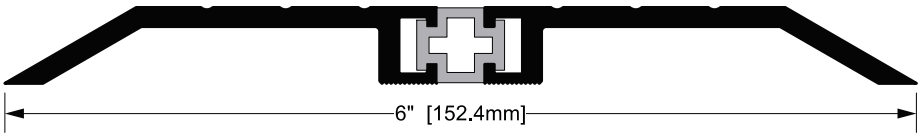


ALL PRODUCTS ON THIS PAGE

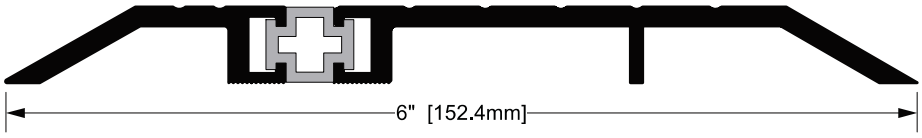
CT-45
EXTRUDED ALUMINUM
WITH RIGID P.V.C.



CT-46
EXTRUDED ALUMINUM
WITH RIGID P.V.C.



CT-44-1
CT-42-1
FROST INSERT



CT-44-1
CT-43-1
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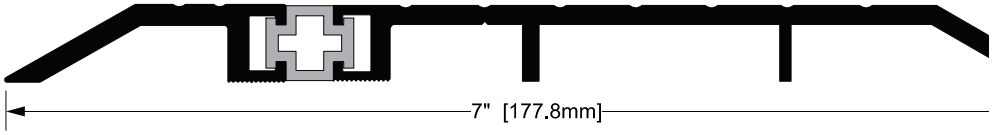

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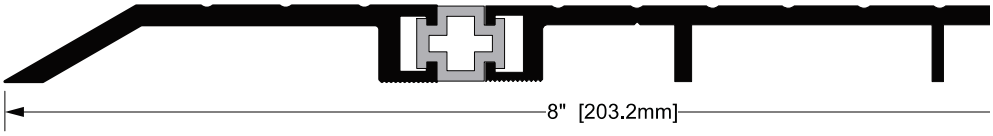
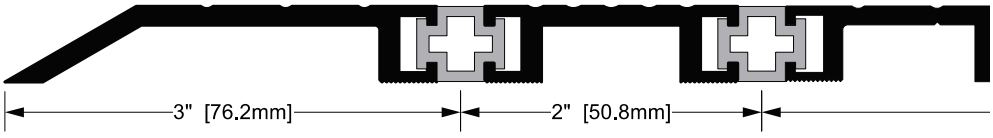
CT-43-1
FROST INSERT



CT-42-1
CT-43-1
FROST INSERT

CT-43-1
CT-43-1
FROST INSERT

CT-45-1
CT-41-1
CT-43-1
FROST INSERT



SWEEPS

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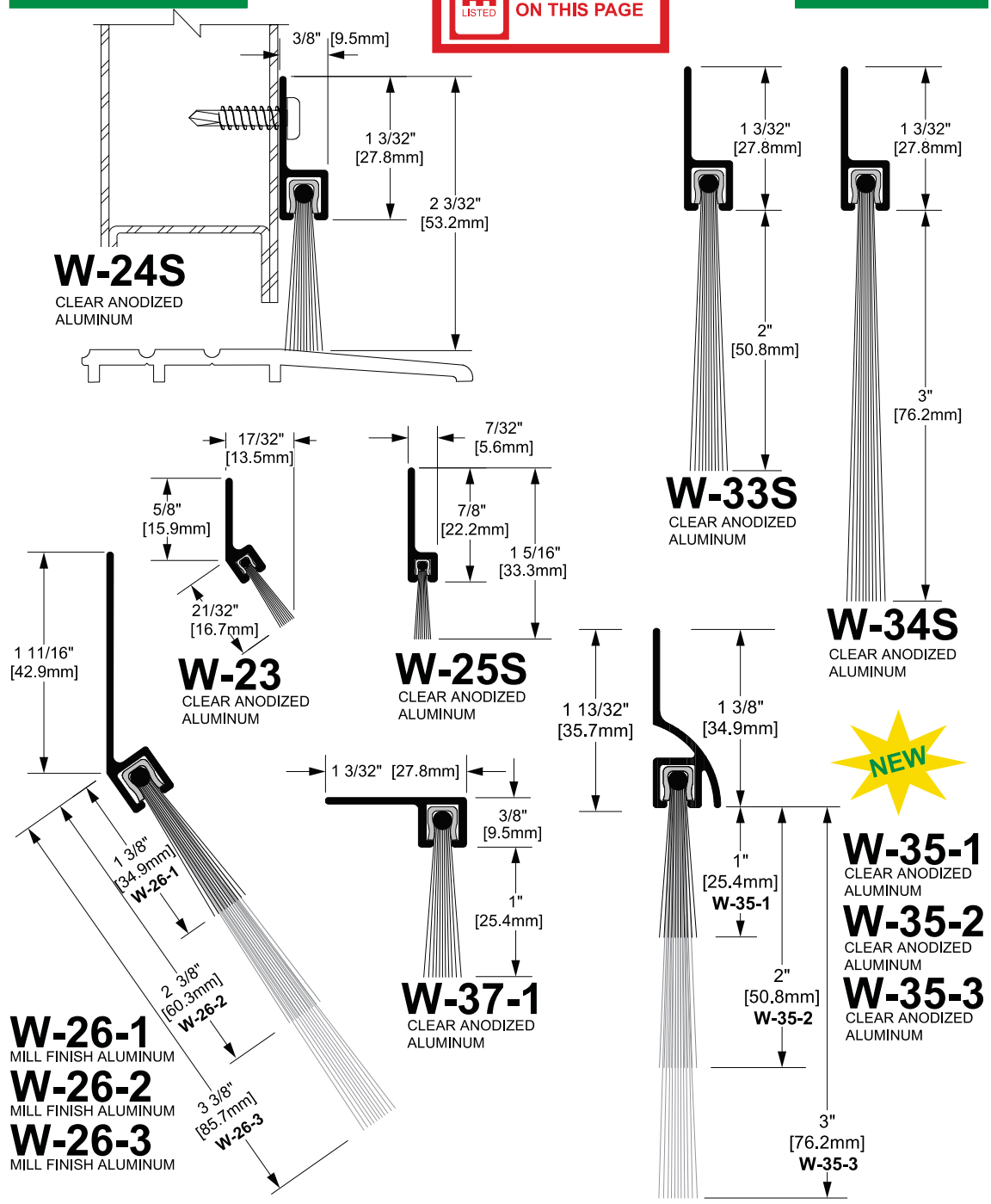

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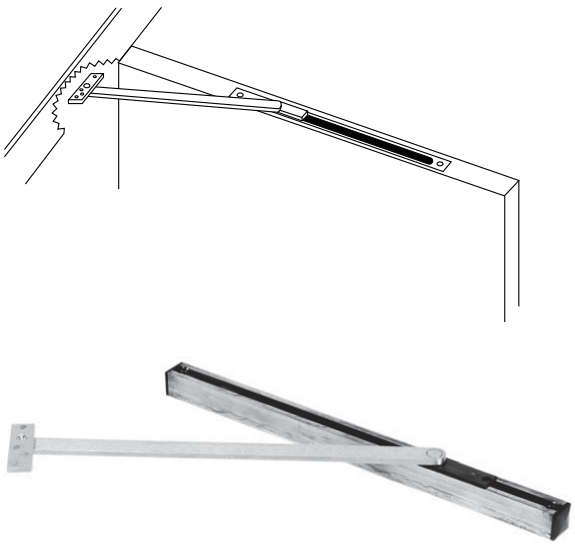
Job No. 1902

Submittal Date: May 31/21

1 Series



Application
- Interior or exterior doors
- Single or double acting
- Non-handed
- Recommended for high traffic, heavy abuse installations

Features
- Heavy-duty
- Slide track design
- Stop, friction stay or hold open functions
- 1-3/4" minimum door thickness. For thicker doors, specify when ordering
- 110° maximum opening
- Heavy shock absorber spring provides 5-7° compression before dead stop
- LS option omits spring for special applications
- Durable slider cam and shock block
- Surface on/off knob on hold open models
- 1-3/16" square channel
- Complete screw packet for installation in wood and machine screws for door and frame.
- For security areas, Torx® screws available for exposed fasteners
- Hanging means other than standard butts or offset pivots require special templating and pricing. Consult factory
- Standard architectural finishes

Compliance
- Stop function UL listed for fire door assemblies
- ANSI: C01531 (Friction)
  C01511 (HO)
  C01541 (Stop)

Door Opening Chart (In Inches)

Butts Offset Pivots	Center Hung Pivots	Model Number		
		Friction	H.O.	Stop
*24 - 28	—	1-116	1-126	1-136
28-1/16 - 33	30 - 36	1-216	1-226	1-236
33-1/16 - 38	36-1/16 - 41	1-316	1-326	1-336
38-1/16 - 43	41-1/16 - 46	1-416	1-426	1-436
43-1/16 - 48	46-1/16 - 50	1-516	1-526	1-536

Butt hung only on this size door. No swing clear hinges.

RIXSON®
ASSA ABLOY

ASSA ABLOY, the global leader in door opening solutions

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8800 Rim Exit Device

80 Series

SARGENT
ASSA ABLOY

8800 Series
Rim Exit Device

8800 Features

- Designed for standard width stile applications on wood and metal doors
- Also available as an HC8800 or WS8800 for hurricane-resistant applications, see Hurricane-Resistant section of this catalog
- Single point rim latching device
- Single door & double door applications with mullions
- Quiet operation and solid security
- ANSI/BHMA A156.3 - Grade 1
- UL10C (Fire) and UL305 (Panic) Listed

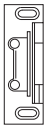
Specifications — 8800 Series Rim Exit Device

Door Type	Metal Doors
Door Thickness	1-3/4" (44mm) minimum thickness. For doors over 1-3/4" to 2 1/4" thick, specify thickness and order as 31-
Rail sizes as determined by door width	Rails are available in 4 sizes, use door width to determine size needed. Rails will be factory cut to size, if door width is supplied • E Rail for 24" to 32" door widths, No cutting required for 32" door • F Rail for 33" to 36" door widths, No cutting required for 36" door • J Rail for 37" to 42" door widths, No cutting required for 42" door • G Rail for 43" to 48" door widths, No cutting required for 48" door
Strike	649 Standard Black Nylon Coated
Optional Strikes	642, 644 and 613
Dogging Feature	Hex key dogging standard on non fired rated devices; specify 16- for cylinder dogging (#41 cylinder supplied)
Electric Options	AL- Alarm PL- SARGuide Photoluminescent Coated TL- SARGuide Illuminated Touchpad
	49- Indicator 53- LX Latchbolt Monitor 54- Outside Lever Monitoring 55- Request-to-Exit Signal - Rail Monitoring 56- Remote Latch Retraction 57- Delay Egress & Electromagnets 58- Electric Dogging 59- Electroguard – Self Contained Delayed Egress
Mounting Fasteners	Supplied standard with wood and machine screws Available with through-bolts and mortise (sex) nuts
Latch Bolt	Stainless steel, 3/4" (19mm) throw
Device Centerline from Finished Floor	41" (1041 mm) for Standard Applications
Center Case Dimensions	8-3/8" (213mm) x 2-5/8" (67mm)
Projection	Pushbar Neutral – 3" (76 mm) Pushbar Depressed – 2-1/8" (54 mm)
Fire Exit Hardware	See Chart – Page 6

49- Lock/Unlock Indicator Option

- Displays whether the door has been secured by the inside cylinder.
- Red icon indicates locked
- White icon indicates unlocked
- Dogging overrides 49- functionality (must order less dogging)
- Available on 8816 and 8866 functions only

649 Strike



- Supplied standard for panic & fire rated openings
- Surface applied
- Black nylon coated

688 Trim Retrofit Kit

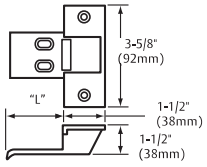
- 688 Trim Retrofit kit allows an 8800* Series rim exit with an ET to replace Von Duprin's 98/99 Series exit with trim with minimal door prep.

*Except for 16 function

- Order as: 688 Kit

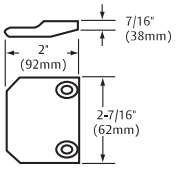
Alternate Strikes For 8800 Rim Devices

642 Strike



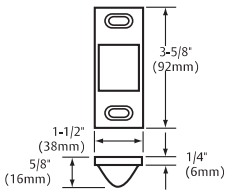
- Mortised. Dimension "L" equals door thickness plus 1/2" (13mm). Black nylon coated on lip only

644 Strike



- Surface applied. For use on pairs of doors without mullion. Ductile Iron. Black nylon coated

613 Strike



- Half mortised. Black nylon coated

8800 Functions and Trims

80 Series

SARGENT
ASSA ABLOY

Options	Series	Function	Rail Lgth	Trim	Hand	Outside Finish	Inside Finish	Door Width
F1-83-56	88	13	F	ETL	RHR	26D	32D	36"

700 Series ET Trim

Exits with ET Trim, specify lever design after the ET designation (e.g., ETL)

Lever Designs for ET Controls

A, B, E, F, J, L, P, W

Also available with Coastal Series & Studio Collection Levers

ET Designation with Suffix (Used to order ET without device)

8800 Series: 704, 706-8, 710, 713-8, 715-8, 716, 740, 743-8, 744, 746-8, 773-8, 774-8, 775-8 & 776-8

Freewheeling Trim

The lever rotates when the door is locked preventing excessive force from being applied to the horizontal lever

Electrified ET Trim

Voltage must be specified for the following functions: 73, 74, 75 and 76. Specify: 12VDC or 24VDC

SARGENT Function Numbers	ANSI Function Numbers	Description & Cylinder Info (1-3/4" Door)	ANSI Type 1 8800 Panic & Fire
04	03	Night Latch Key Retracts Latch #34 Cylinder Supplied	8804 x ET_
06	09	Key unlocks Trim, Trim retracts latch/ Trim relocks when key is removed #41 Cylinder Supplied	8806 x ET_
10	01	No outside operation (No Cylinder)	8810
10	02	No outside operation (No Cylinder) ET Control is used as Pull Only	8810 x ET_
13	08	Key Outside Unlocks/locks Trim #41 Cylinder Supplied	8813 x ET_
15	14	Passage Only (No cylinder)	8815 x ET_
16	10	Key Outside Retracts Latch; Key Inside Unlocks/Locks O/S Trim O/S #34 Cylinder & I/S #44 Cylinder Supplied	8816 x ET_
40	02	Freewheeling Trim - No outside operation (No Cylinder) Dummy Trim	8840 x ET_
43	08	Freewheeling Trim - Key Outside Unlocks/locks Trim #41 Cylinder Supplied	8843 x ET_
44	03	Freewheeling Trim - Key Retracts Latch #34 Cylinder Supplied	8844 x ET_
46	09	Freewheeling Trim - Key unlocks Trim, Trim retracts latch/ Trim relocks when key is removed #41 Cylinder Supplied	8846 x ET_
73		Electrified ET Trim - Fail Safe Power Off, Unlocks Lever (No Cylinder)	8873 x ET_
74		Electrified ET Trim - Fail Secure Power Off, Locks Lever (No Cylinder)	8874 x ET_
75		Electrified ET Trim - Fail Safe Power Off, Unlocks Lever, Key Retracts Latch #34 Cylinder Supplied	8875 x ET_
76		Electrified ET Trim - Fail Secure Power Off, Locks Lever, Key Retracts Latch #34 Cylinder Supplied	8876 x ET_

Note: Exit devices are available in all standard finishes, except 14, 15, 26 & 26D. With these finishes, exit devices are supplied in 32 or 32D to match accordingly. 32 or 32D is automatically supplied when 26 or 26D is specified. For nickel finishes, specify 14/32 or 15/32D to receive nickel finished trims and stainless exit devices

Pull & Thumbpiece Trim Section

Trim Designations

- Use three letter designations (Ex "PTB") when ordering the Exit Device with trim
- Use the six digit designation (Ex "866-MAL") when ordering trim without an Exit Device, always specify finish

Series

8800
Panic & Fire

SARGENT Function Numbers	ANSI Function Numbers	Description & Cylinder Info. (1-3/4" Door)	814-FSL*	814-FSW*	814-MSL*	814-PSB*	814-STS	862 Pull	8804 x Trim Designation
04	03	Night Latch Key Retracts Latch #34 Cylinder Supplied	814-FSL*	814-FSW*	814-MSL*	814-PSB*	814-STS	862 Pull	8804 x Trim Designation
10	02	No O/S Operation or Cylinder (Pull Only)	810-FLL	810-FLW	810-MAL	810-PTB	810-STS	862 Pull	8810 x Trim Designation
28	15	Passage Only (No cylinder)	828-FLL	828-FLW	828-MAL	828-PTB	828-STS	N/A	8828 x Trim Designation
63	05	Key Outside Unlocks/ Locks Thumbpiece #34 Cylinder Supplied	866-FLL	866-FLW	866-MAL	866-PTB	866-STS	N/A	8863 x Trim Designation
66	07	Key Outside Retracts Latch; Key Inside Unlocks/Locks O/S Trim O/S #34 & I/S #44	866-FLL	866-FLW	866-MAL	866-PTB	866-STS	N/A	8866 x Trim Designation

* FSL, FSW, MSL and PSB trims are used with (HC-& 12-) 8888 and 8804 only and are the same as FLL, FLW, MAL and PTB pulls except for cylinder hole located 3/8" (9mm) lower.
Note: Thumbpiece trims for 63 and 66 function devices are identical and are identified as 66 function when trim is ordered separately.
Note: FLW & FSW trims are not available in 32(629) or 32D(630).
Note: Pulls and thumb piece trims are not available in 14, 15, 26 or 26D.

Options

8800

Mechanical Options:
12-
16-
19-
31-
36-
37-
43-
53-
54-
55-
56-
56-HK-
57-
58-
59-
5CH-
BC-59-
76-
85-
86-
87-
AL-
BT-
CPC-
GL-
LD-
PL-
** SG-
TB-
TL-

Cylinder Options:
10-
10-21-
10-63-
11-
11-21-
11-60-
11-63-
11-64-
11-70-7P-
11-72-7P-
11-73-7P-
11-65-73-7P-
21-
22-
51-
52-
60-
63-
64-
70-
72-
73-
65-73-
65-73-7P-
73-7P-
81-
82-
F1-82-
83-
F1-83-
84-
BR-
LC-
*SC-
*SE-

* Options are not available with 8816
** Only available with 15, 26D and 32D finishes

Available Finishes

SARGENT Finishes	BHMA Finishes
03	605
04	606
09	611
10	612
10B	613
10BE	613E
10BL	613L
14	618
15	619
20D	624
26	625
26D	626
32	629
32D	630
BSP	—
WSP	

5 Knuckle Full Mortise Hinges

Heavy Weight Ball Bearing

FBB168 – (ANSI A8111) Steel – polished and plated or phosphated and prime coated for painting

FBB199 – (ANSI A2111) Brass or bronze – polished and plated or painted

FBB199 (32) – (ANSI A5111) Stainless steel – highly polished

FBB199 (32D) – (ANSI A5111) Stainless steel – satin finish

- For use on heavy doors or doors where high frequency is expected such as entrance doors to office buildings, stores, public buildings and corridor entrance doors to offices
- All hinges have template screw hole location for use on either wood or hollow metal doors and frames
- Equipped with four Stanley permanently lubricated non-detachable ball bearings
- Pins in non-ferrous hinges are stainless steel
- Hole in bottom tip for easy pin removal
- Reversible flush tips and pins
- Hinges can be furnished as follows:
  - with raised barrel (RB)
  - with electric wires and/or switches (CE and/or CS)
  - with hospital tips (HT)
  - with decorative tips
  - with security studs
  - with non-removable pins (NRP)

Size Open		Gauge of Metal		Flat Head Screws Per Piece		Quantity Per Box	Quantity Per Case	Case Weight			
								Bronze		Steel	
Inches	(mm)	Inches	(mm)	Machine	Wood			Lbs.	(Kg)	Lbs.	(Kg)
4 1/2 x 4 1/2	(114 x 114)	.180	(4.6)	8-12-24 x 1/2	8-12 x 1 1/4	3 ea	30 ea.	45	(21)	42	(19)
5 x 4 1/2	(127 x 114)	.190	(4.8)	8-12-24 x 1/2	8-12 x 11/2	3 ea.	24 ea.	46	(21)	40	(18)
5 x 5	(127 x 127)	.190	(4.8)	8-12-24 x 1/2	8-12 x 11/2	3 ea.	24 ea.	50	(23)	46	(21)
6 x 4 1/2	(152 x 114)	.203	(5.2)	10-1/4-20 x 1/2	10-14 x 11/2	3 ea.	24 ea.	63	(29)	53	(24)
6 x 5	(152 x 127)	.203	(5.2)	10-1/4-20 x 1/2	10-14 x 11/2	3 ea.	24 ea.	65	(30)	55	(25)
6 x 6	(152 x 152)	.203	(5.2)	10-1/4-20 x 1/2	10-14 x 11/2	3 ea.	24 ea.	76	(35)	61	(28)
8 x 6*	(203 x 152)	.203	(5.2)	16-1/4-20 x 1/2	16-14 x 11/2	3 ea.	12 ea.	57	(26)	51	(23)
8 x 8*	(203 x 203)	.203	(5.2)	16-1/4-20 x 1/2	16-14 x 11/2	3 ea.	12 ea.	68	(31)	61	(28)

* Available in Steel only

Consult factory for other sizes not listed

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General Information

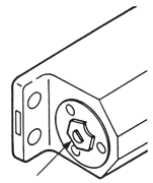
Closing Power Adjustment – **D-3550** – Size 2 – 6 with 15% adjustment over size 6. The D-3550 Series is adjusted to size 3 before leaving the factory.

D-3551 – Size 1 – 4 with 15% adjustment over size 4. The D-3551 Series Door Closer is specially designed for doors where the door opening forces shall be 5 LBF or less through 90°. The D-3551 Door Closer is adjustable up to a size 4.

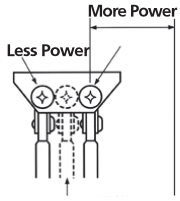
The D-3551 Series is adjusted to size 2 before leaving the factory.

Latching Power Adjustment – The D-3550 / D-3551 Series Door Closers have the provision to adjust the leverage of the arms by changing the pivot position of the arm in the shoe. The shoe itself does not have to be removed from the door or jamb.

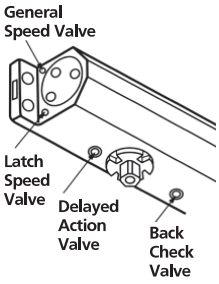
Delayed Action – A delayed action feature is available with this series for all applications and arms. The feature permits the door to close very slowly through the delayed action cycle range. To order add suffix DA to closer number.



Spring Adjusting Nut



Standard Position



Arm Options Suffix Description		Page
L	Long Rod Forearm (Top Jams only)	9
H	Standard Hold Open	4
PH	Parallel Hold Open	5
EDA	Heavy Duty Arm	7
H-EDA	Heavy Duty Arm w/Hold Open	7
S	Heavy Duty Arm w/Stop	7
CS	Heavy Duty Arm w/Compression Stop	7
HS	Heavy Duty Arm w/Hold Open and Stop	7
HCS	Heavy Duty Arm w/Hold Open & Comp. Stop	7
T	Track Mount	8
HT	Track Mount w/Hold Open	8
TCS	Track Compression Stop	8

Packing – All D-3550 / D-3551 Series Door Closers with standard arm sets are packed for mounting on standard, parallel arm or top jamb applications. All closer assemblies are packed 4 per carton. Tracks for track mounted closers are packed separately.

Through Bolts and Sex Nuts – When through bolting is ordered, factory will furnish sex nuts for use with the machine screws furnished with the closer. Nuts are sized to accommodate 1-3/8" or 1-3/4" thick doors.

ANSI and U.L. Specifications – The D-3550/D-3551 Series Door Closers have been Certified to the requirements of the ANSI/ BHMA Standard A156.4 - 2000 Grade 1.

Listed with Underwriters' Laboratories, Inc. and Underwriters' Laboratories of Canada. "For Self-Closing Doors Without Hold-Open Feature" on R7525(R).

D-3550 / D-3551 Series Door Closers have been certified by UL to be in compliance with UL 10 C and UBC 7.2 (1997).

How To Order D–3550/D–3551

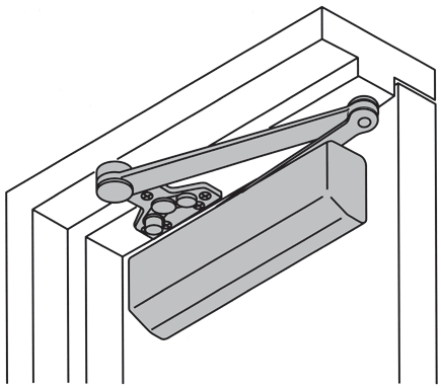
D-355	0	DA	EDA	689	SN
Model. No.	**Size**	**Options**	**Arm Type**	**Finishes**	**Fasteners**
D-355	0– See Closing Power Adjustment page 5 1– See Closing Power Adjustment page 5	DA – Delayed Action (optional)	L– Long Rod Forearm (TJ only) H – Standard Hold Open PH – Parallel Hold Open EDA – Heavy Duty Arm H-EDA – Heavy Duty Arm w/ Hold Open S – Heavy Duty Arm w/ Stop CS – Heavy Duty Arm w/Compression Stop HS – Heavy Duty Arm w/ Hold Open & Stop HCS – Heavy Duty Arm w/ Hold Open & Comp. Stop T – Track Mount HT – Track Mount w/ Hold Open TCS– Track Compression Stop	689 690 691 693 695 696	SN – Sex Nuts & Bolts Wood & Machine Screws furnished standard SEC – Security Screws

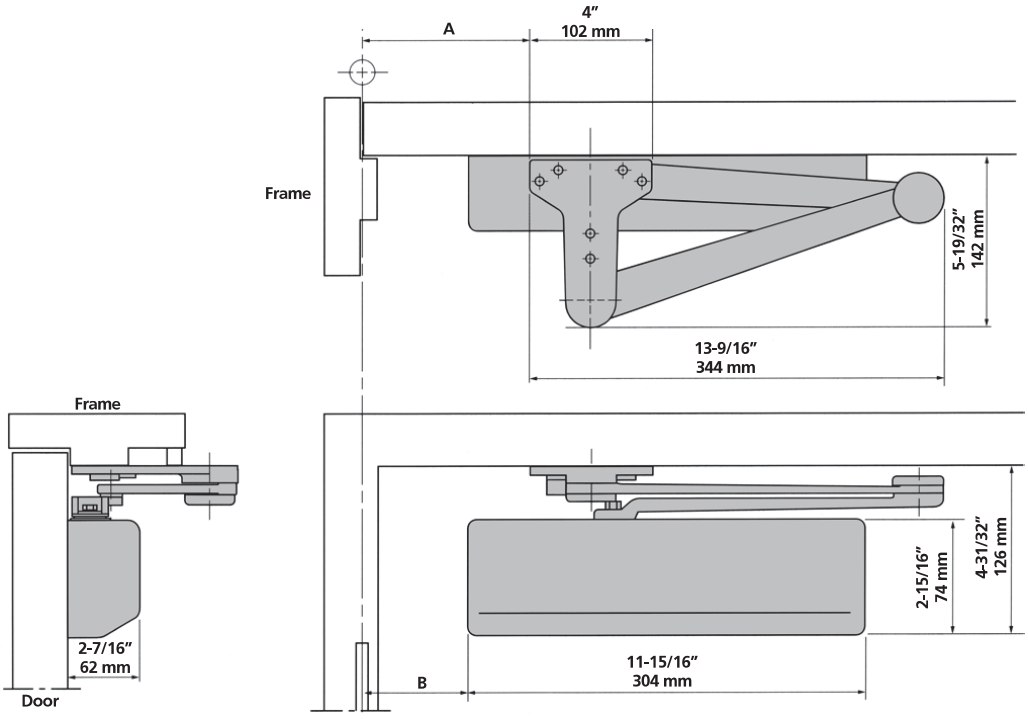
STANLEY

Heavy Duty Arm Application

D-3550 / D-3551 Series Door Closer Specifications

- EDA, H-EDA, S, CS, HS and HCS
- Closer mounted on PUSH side of door
- See installation instructions for additional template options.
- Contact dormakaba for Technical Support.



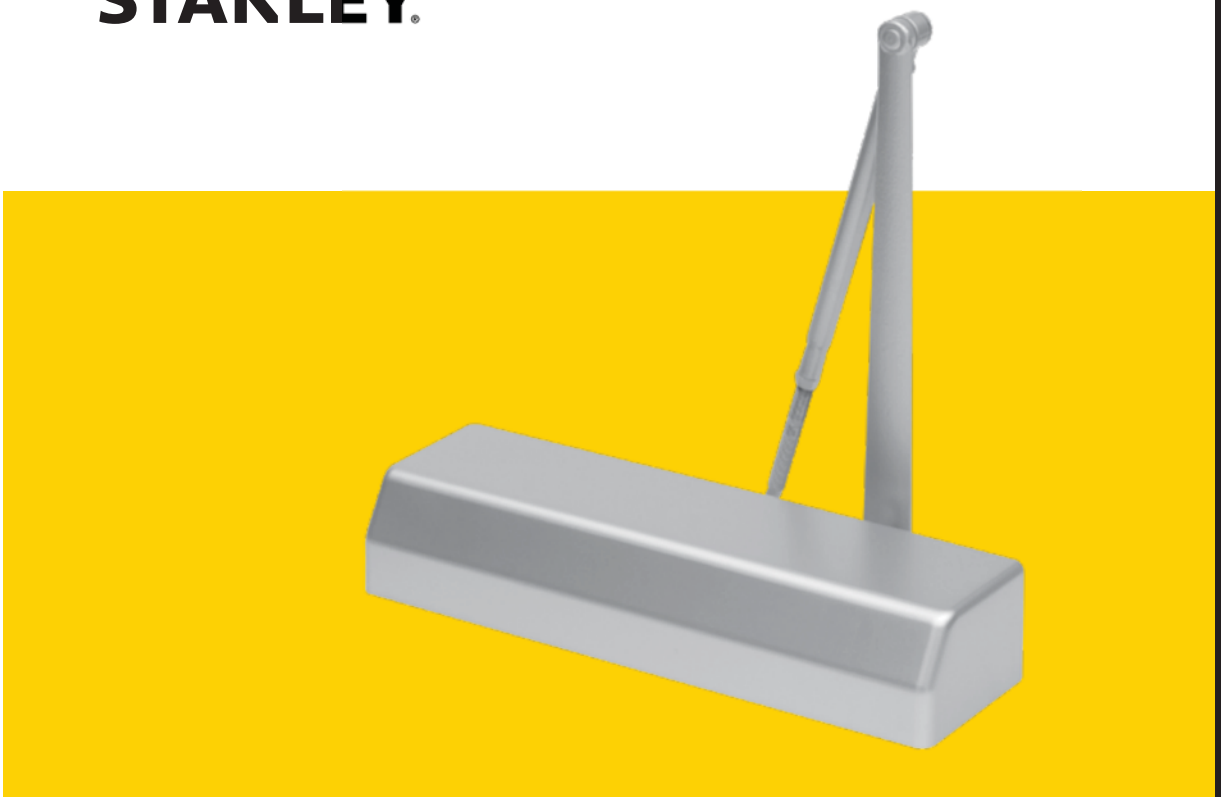


CDH
Commercial Doors & Hardware Ltd.
43 Millwick Dr
Weston, On, M9L 1Y4, Ph 416-749-7231

Port Credit SS BF Entrance Alt.. 2021, PDSB
Mississauga
Job No. 1902

Submittal Date: May 31/21

STANLEY



D-4550 / D-4551 Series

Door Closers

dormakaba

Trusted experts. Proven reliability. Simply STANLEY.

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43 Millwick Dr
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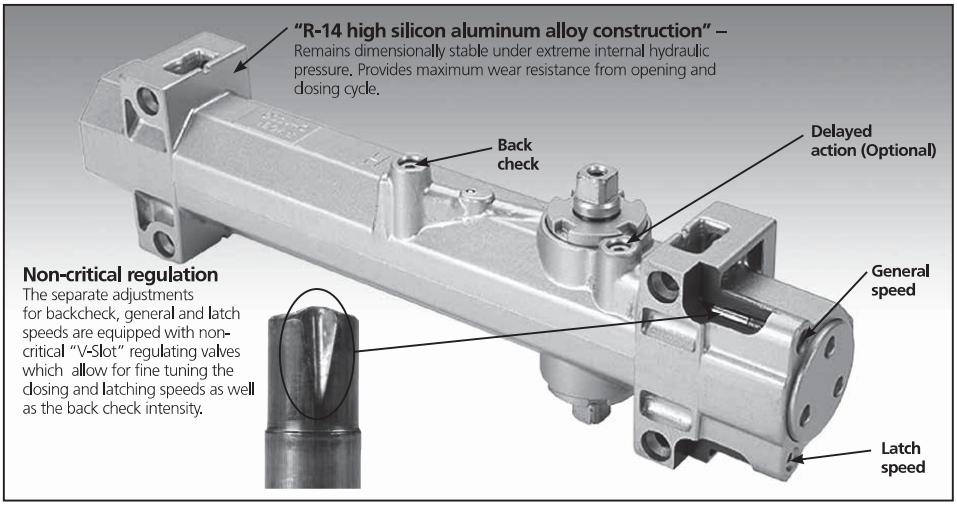
Port Credit SS BF Entrance Alt.. 2021, PDSB
Mississauga
Job No. 1902

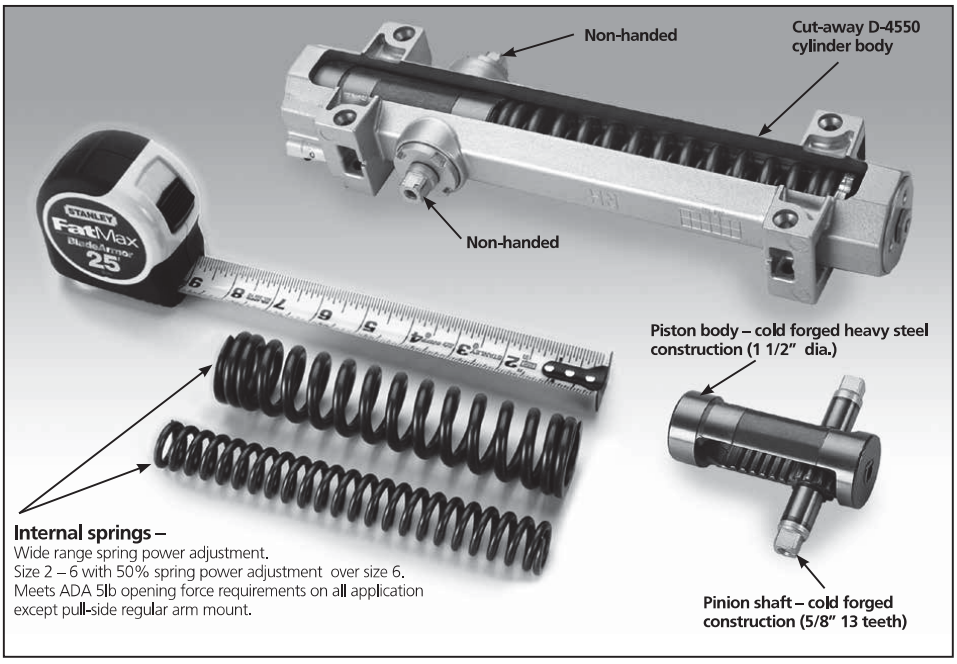
Submittal Date: May 31/21

STANLEY

General Information

Non-handed feature is available in a variety of finishes wide range of spring power adjustment. Standard packaging with tri-pack: regular, top-jamb and parallel arm arrangement. Can be ordered with heavy duty arm assembly. ANSI/BHMA A156.4 Grade 1, U.L. listed U.S. & Canada. The cylinder body is made from R-14 die cast aluminum. This alloy provides wear resistance from contact with the piston during the opening and closing cycle. R-14 wear characteristics are similar to that of cast iron. In addition the R-14 aluminum alloy holds the cylinder body dimensionally stable under extreme internal hydraulic pressures.





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43 Millwick Dr
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Mississauga
Job No. 1902

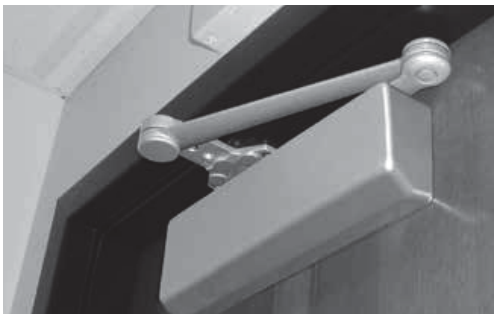
Submittal Date: May 31/21

Heavy Duty Arm (Push) Application

D-4550 / D-4551 Series Door Closer Specifications

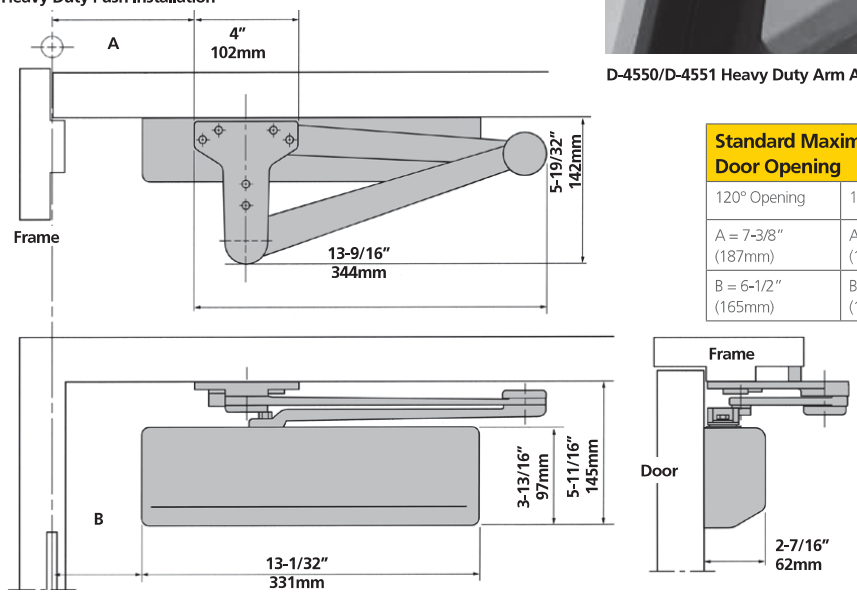
- EDA, H-EDA, S, CS, HS and HCS
- Can be templated for either 120° or 180° (when butt, frame and wall conditions permit.)
- Custom installation template may be available for unusual installation conditions. Contact dormakaba for assistance.

Hold-open is approximately 3° less than maximum door opening.



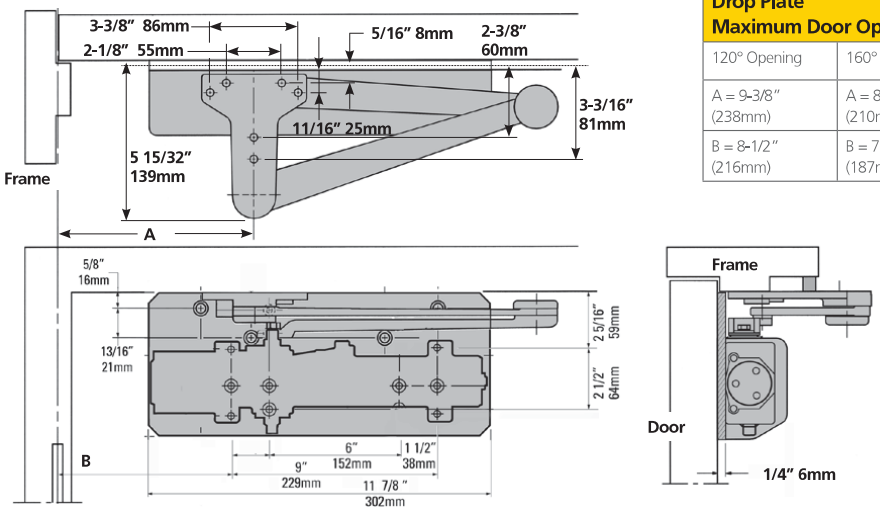
D-4550/D-4551 Heavy Duty Arm Application

Heavy Duty Push Installation



Standard Maximum Door Opening		
120° Opening	160° Opening	180° Opening
A = 7-3/8" (187mm)	A = 6-3/32" (155mm)	A = 4-5/8" (117mm)
B = 6-1/2" (165mm)	B = 5-11/32" (136mm)	B = 3-3/4" (95mm)

Drop Plate Installation P45-180-D **(For drop plate dimensions see page 13.)**



Drop Plate Maximum Door Opening		
120° Opening	160° Opening	180° Opening
A = 9-3/8" (238mm)	A = 8-1/4" (210mm)	A = 6-5/8" (168mm)
B = 8-1/2" (216mm)	B = 7-3/8" (187mm)	B = 5-3/4" (146mm)

GT710/8710

Low-Energy
ADA Swing Door Operator

Where SOLUTIONS are AUTOMATIC

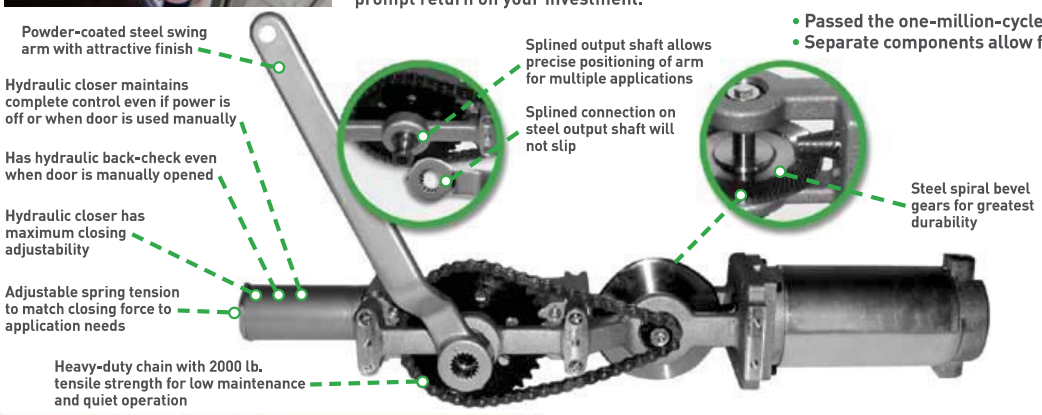
Product Features and Benefits

- Hydraulic design offers **proven reliability**
- Adjustable closing speeds to **enhance energy savings**
- Manual mode requires very little pressure to open **promoting ease of operation**
- Approved on fire door assemblies rated up to 3 hours, **maintaining security and safety**
- Hydraulic back-check during windy conditions **protects the door and operator from damage**

GT710/8710 Low-Energy ADA Swing Door Operator

The NABCO GT710/8710 Low-Energy Operator is engineered for interior and exterior use, and designed to automate essentially any new or existing door frame. The GT710/8710 operates in both automatic and manual modes with a hydraulic back-check that protects the door and mechanical operator from damage when forced open in windy conditions or when manually operated. The GT710/8710 Operator has been approved for use on fire door assemblies rated up to 3 hours. The low-energy performance, combined with the adjustable opening and closing speeds, reduces energy consumed, which offers a prompt return on your investment.

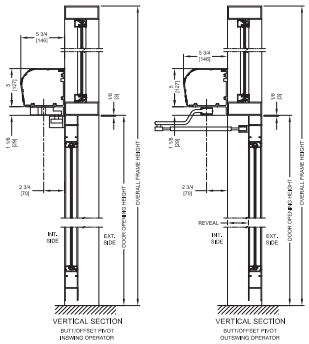
- Passed the one-million-cycle endurance test
- Separate components allow for lower repair costs



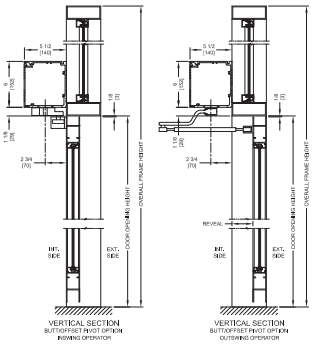
PRODUCT INFORMATION

Header dimensions	Side load - 5" H X 5 3/4" D (GT710) curved header Side load - 6" H X 5 1/2" D (GT8710)
Standard finish	Clear and dark bronze anodized
Optional finishes	Painted, clad, special anodized
Mounting	Surface applied or overhead concealed
Installation types	Push or pull
Operating voltage	120 VAC @ <5 amps
Auxiliary power output	12VDC 750mA
Operator drive	Electro-hydraulic
Motor voltage	Pulse width modulated
Motor type	1/8th HP @ peak
Control type	Microprocessor
Door panel weight	300 lbs.
Adjustable open	Force and speed
Adjustable close	Force and speed
Closing method	Spring/hydraulic (with selectable power assist)
Adjustable opening angle	Up to 145º
Power boost close	Selectable
Basic features	Low-energy operation Push and go Obstacle detection in opening and closing cycles Sequential or timer mode operation LCD display for programming and diagnostics Open- or closed-circuit safety inputs Momentary or maintained activation
Switch modes	On, off, hold-open
Opening and closing speed	Adjustable
Hold-open time	Adjustable (0-30 seconds)
Code compliances	ANSI A156.19/ANSI A117.1
Approvals	UL, ULC

GT710 Operator



GT8710 Operator



CONFIGURATIONS:
The GT710/8710 is available for multiple configurations, such as single doors, simultaneous pairs, and dual-egress, as well as the Opman configuration, which is a single continuous header for a pair of doors containing a manual closer on one side and an automatic operator on the other.

NABCO Service and Specifications

Along with the NABCO factory branches, NABCO has the largest independently owned network of automatic door distributors in North America. Their friendly, qualified installers and technicians always strive to exceed your expectations from install to after-sales service. NABCO's factory branches and independent distributors provide AAADM-certified technicians to ensure your doors meet all ANSI A156.10/A156.19 standards.

Complete three-part specifications and CAD drawings are available on the NABCO website.

NABCO

Member of the Nabtesco Group

Member AAADM

NABCO ENTRANCES INC.
S82 W18717 Gemini Drive | Muskego, WI 53150 | 877-622-2694 | Fax 888-679-3319
www.NABCOentrances.com | Email info@nabcoentrances.com

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06/15

SECTION 08 80 00 - GLASS AND GLAZING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Steel doors, frames and screens: Section 08 11 13

1.3 QUALITY ASSURANCE

.1 Every pane of glass shall be factory labelled and label shall remain in place until final cleaning.

1.4 SUBMITTALS

.1 Submit detailed product data for each product to be used.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Setting Blocks: neoprene, Shore 'A' durometer hardness of 70 to 90 points; spacer shims, 40 to 50 points, as recommended by glass manufacturer.

.2 Glazing Sealant: to ASTM C920, one part polysulphide or one part silicone.

.3 Glazing Tape: preshimmed polyisobutylene tape; acceptable product: Polyshim by Tremco.

.4 Glazing Gasket: Tremco Vision Strip; colour selected by Consultant.

.5 Float Glass: clear to CAN/CGSB-12.3-M76 Glazing Quality.

.6 Tempered Glass: fully tempered float glass to CAN/CGSB-12.1-M90. Tempered glass identification must be sandblasted into glass and shall be visible after installation.

.7 Spandrel glass: float glass tempered; with PPG Duranar “DTG” or Opacicoat, colour selected by Consultant.

.8 Insulating glass: factory sealed double glazed to CAN/CGSB-12.8-97:

.1 Nominal thickness: 25 mm.

.2 Glass: clear tempered glass outside and inside, with low emissivity coating on No. 3 surface (shading coefficient 0.6).

.3 Low emissivity glass: Vitro Solarban 60.

.4 Glass perimeter: warm edge design.

PART 3 - EXECUTION

3.1 GLASS INSTALLATION GENERAL

.1 Do not glaze when ambient or surface temperature is less than 5EC. Ensure that glazing rabbets, stops and glass are dry, free of frost, grease, oil, dust, rust and other substances detrimental to adhesion of compounds and sealants.

.2 Provide clearance at perimeter edge of glass on all four sides, minimum equal to glass thickness. Accurately cut glass to fit openings, allowing for expansion in accord with glass manufacturer's recommendations.

.3 Provide sealer space between face of glass and glazing stops of minimum 3 mm.

.4 Clean sealing surfaces at perimeter of glass and sealing surfaces of rabbets and stop beads before applying glazing tapes, gaskets and compounds. Use solvents and cleaning agents recommended by manufacturer of sealing materials.

.5 Install glazing tapes uniformly with accurately formed corners and bevels. Ensure that proper contact is made with glass and rabbet interfaces.

.6 Set glass on setting blocks, spaced as recommended by glass manufacturer. Provide at least one setting block at quarter points from each corner.

.7 Centre glass in glazing rabbet to maintain specified clearances at perimeter on all four sides. Maintain centred position of glass in rabbet and provide the required sealer thickness on both sides of glass.

.8 Use spacers and shims in accordance with glass manufacturer's recommendations.

.9 Carefully remove glazing stops and reinstall after glazing.

3.2 INTERIOR GLAZING

.1 Unless otherwise indicated glaze interior openings as follows:

.1 Apply glazing tape to permanent stop; centre glass in opening and set on setting blocks; apply glass and press against tape.

.2 Apply glazing tape to removable stops and install stops. Trim tape for neat appearance.

3.3 CLEANING

.1 Remove dirt, scum, plaster, paint spatter, and other harmful and deleterious matter from glass promptly and completely, before they establish tight adhesion.

.2 Avoid using abrasives, steel wool, razor blades, solvents, alkaline or other harsh cleaning agents.

.3 Remove glazing compound droppings promptly from all surfaces as the work progresses.

.4 Replace scratched or otherwise damaged glass.

3.4 SCHEDULE

.1 Provide glazing for the following elements and components:

.1 Steel doors and screens.

.2 Other glazing shown and not covered in other Sections.

.2 Provide the following glass:

.1 Tempered glass: at all locations except where shown otherwise.

.2 Float glass: where shown and at locations where no particular type of glass is indicated.

.3 Unless otherwise shown provide 6 mm thick glass.

END

SECTION 09 21 16 - GYPSUM BOARD

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1	Caulking, except as specified herein:	Section 07 92 00
.2	Supply of steel door frames:	Section 08 11 13
.3	Painting:	Section 09 91 00
.4	Supply of access doors:	Divisions 21 to 28

1.3 DEFINITIONS

.1 Drywall = gypsum board.

1.4 FIRE PROTECTION REQUIREMENTS

.1 Provide fire rated gypsum board components and assemblies as indicated.

.2 Comply with requirements of Section 01 41 00.

1.5 WORKMANSHIP STANDARDS

.1 Interior metal framing and furring: comply with applicable requirements of ASTM C754 and ASTM C840 unless otherwise shown.

.2 Gypsum board application and finishing: Comply with requirements of ASTM C840, unless otherwise shown.

.3 Gypsum board surfaces exposed to view shall meet Gypsum Association GA 214-10 Recommended Levels of Gypsum Board finish “Level 4”.

1.6 PRODUCT HANDLING & STORAGE

.1 Handle gypsum board panels to prevent damaged and broken edges.

.2 Store materials in dry place so as to preserve their quality and fitness for work.

1.7 JOB CONDITIONS

.1 Install and finish gypsum board when ambient temperature is between 14 and 22^{o}C. Maintain this temperature range in areas to receive gypsum board for 24 hours before and during application and until joint cement and adhesives are fully cured.

.2 Apply gypsum board after building has been completely enclosed. Ensure that work to be concealed by gypsum board has been installed, tested, inspected and approved before starting work.

PART 2 - PRODUCTS

2.1 FRAMING, FURRING AND TRIM

.1 Unless otherwise specified provide framing, and frame members of minimum 0.5 mm core thickness steel hot dip galvanized (wipe coat) to ASTM A653. Provide 0.9 mm thick framing to support cementitious board, and where partition height exceeds 3.6 m.

.2 Studs: channel shaped screw-on type: depth as indicated; with knurled supporting flanges at least 34mm wide; with service pass-through holes at 610mm o.c. in web.

.3 Top and bottom runners: channel sections, 35mm legs. Depth to suit studs.

.4 Rough furring members: 38 x 19 x 1.2mm and 19 x 13 x 1.2mm galvanized steel channels.

.5 Furring and strapping members to receive gypsum board: 19mm deep channel shaped section with outstanding flanges and 35mm wide knurled supporting face.

.6 Corner beads: beaded angle with perforated flanges.

.7 Casing beads: channel shaped; beaded corners.

.8 Hangers: minimum 3mm galvanized steel wire.

.9 Tie wire: minimum 1.5mm soft annealed galvanized steel.

.10 Metal control joint section: bellows shaped section with perforated flanges.

.11 Special reveals and feature strips: extruded aluminum, to profiles indicated: Fry Reglet or Pittcon Softforms or Gordon.

2.2 GYPSUM BOARD

.1 Exposed gypsum board for interior use: tapered edge: ASTM C1396.

.2 Unexposed gypsum board for interior use: backing board: ASTM C1396.

.3 Fire rated gypsum board: Type 'X' board: ASTM C1396.

2.3 FASTENING AND FINISHING MATERIALS

.1 Drywall screws: self-drilling, self-tapping, case hardened.

.2 Laminating adhesive: CGC Durabond 90 compound by CGC, or equivalent product by CertainTeed.

.3 Joint tape: 50mm perforated type.

.4 Joint filler and topping cement: Casein, vinyl or latex base, slow setting.

2.4 ACOUSTICAL MATERIALS

.1 Acoustic insulation inside partitions: AFB Acoustic Fire Batt by Roxul or equivalent product by Fibrex, Owens Corning or CertainTeed..

.2 Steel deck closures: Emseal 25V Expanding Foam Sealant sized and shaped to fit flutes.

.3 Acoustical sealant: ASTM C920: Tremco Acoustical Sealant or equivalent product by other manufacturer approved by Consultant.

.4 Isolators: Neoprene type, providing nominal deflection of minimum 6 mm under load of ceiling: Mason WHD by Vibrasonic, or equivalent product by BVA.

.5 Acoustic insulation at perimeter of and at penetrations through ceilings: Semi-rigid fibrous board: Noise-Stop by Fiberglas Canada Inc. or equivalent product by other manufacturer approved by Consultant.

PART 3 - EXECUTION

3.1 METAL FRAMING

.1 General

.1 Framing and furring indicated is schematic and shall not be considered exact or complete. Location and spacing of members, bracing, supports and securement shall be in accord with

referenced standards as required to provide complete and finished work.

.2 Make provision for supporting recessed and surface mounted fixtures and equipment. Provide additional framing, supports and stiffeners as required.

.3 Neatly frame around recessed fixtures and openings.

.4 Examine mechanical and electrical drawings and co-ordinate with Divisions 15 and 16 to determine openings required.

.2 Ceilings

.1 Erect suspension and furring system level with a maximum tolerance of (+) (-) 3mm over a 3000mm length.

.2 Suspension system shall support ceiling assemblies, with maximum deflection of L/360, L being span between supports.

.3 Hangers for suspended ceilings shall support grillage independent of walls, columns, pipes and ducts. Space hangers at maximum 1220mm o.c. along rough furring members and not more than 150mm from ends.

.4 Space rough furring members at maximum 915mm and not more than 150mm from perimeter walls.

.5 Space furring channels transverse to runner channels at maximum 610mm o.c. except at exterior soffits, and secure to each support with clip or saddle tie with 2 loops of tie wire. Install furring channels so as not to contact perimeter walls.

.6 Where ductwork, piping and other elements within ceiling spaces interfere with direct suspension of ceiling from structure, install additional framing securely fastened to main structure to accommodate proper hanging of ceiling.

.3 Bulkheads

.1 Frame to profiles shown, rigid, square, true to line and securely fastened to supporting building elements.

.2 Space furring members to receive gypsum board at maximum 610mm o.c.

.3 Provide rough framing and bracing members as required to ensure stability and accuracy of work.

3.2 GYPSUM BOARD INSTALLATION

.1 Unless otherwise specified, erect gypsum board and cementitious board vertically or horizontally, whichever results in fewer end joints.

.2 Locate board end joints over supporting members.

.3 Cut and fit board as required to accommodate other work.

.4 Unless otherwise shown or specified, extend board on both sides of partitions to underside of structural slab above. Fasten gypsum board to studs, not to top channel. Allow for deflection.

.5 Provide corner beads at external corners.

.6 Provide casing beads around openings and where board abutts dissimilar material and construction.

.7 Fasten gypsum board and cementitious board to supports with screws spaced at maximum 305mm o.c.

.8 Adhesive bonded gypsum board; apply 13 x 13mm ribbons of laminating adhesive to back side of board, parallel to long dimension; space adhesive ribbons at maximum 150mm o.c. temporarily brace boards until complete adhesive bond develops.

.9 In areas requiring gypsum board ceiling, gypsum board shall extend over the whole ceiling area including furred and pipe spaces.

.10 Where double layer gypsum board is required, screw fasten second layer through first, into framing, offset joints.

3.3 GYPSUM BOARD FINISHING

.1 Tape and fill exposed joints, fastener heads, edges, corners, to produce an acceptable surface ready for decoration.

.2 Conceal exposed flanges of corner beads, casing beads and other trim sections with at least 3 coats of cement, feathered out minimum 200mm.

.3 Fill depressions at fastener head with cement, then apply 2 additional coats of cement to produce smooth, level surface.

.4 Treat joints using 3 coat method as follows:

.1 Apply thin uniform layer of cement and embed joint tape.

.2 Immediately apply thin skim coat of cement over tape and allow to dry.

.3 Apply 2 additional coats of cement. Allow first coat to dry before applying second coat.

.5 Sand each coat of topping cement with fine sandpaper as required to produce smooth surface. Do not sand paper face of gypsum board.

.6 Finish concealed joints at fire rated and at acoustically insulated gypsum board elements. Provide tape and one coat of cement.

3.4 CONTROL AND RELIEF JOINTS

.1 Control Joints

.1 Provide control joints where shown and at maximum 10 m o.c.

.2 Break continuity of gypsum board and framing system at control joints; install continuous metal control joint section.

.2 Relief Joints

.1 Provide relief joints where shown and where gypsum board assemblies abutt dissimilar construction. Provide channel type reveal moulding.

.2 Where indicated provide other reveals, and feature strips. Install in accordance with manufacturer's directions, plumb, level, accurately aligned at joints and securely fastened to supporting work.

3.5 ASSOCIATED WORK

.1 Install access doors supplied by Divisions 20 to 28. Build doors into gypsum board elements flush and parallel to walls and securely fastened.

3.6 GYPSUM BOARD SCHEDULE

.1 Use Type 'X' gypsum board at fire rated elements.

.2 Provide 13 mm thick gypsum board at ceilings and bulkheads, except where otherwise shown.

.3 Include in Contract 4 additional steel framed gypsum board bulkheads, 3 m long, 400 mm wide, 300 mm deep.

END

SECTION 09 30 13 - TILING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Caulking: Section 07 92 00

.2 Portland cement terrazzo: Section 09 66 13

1.3 QUALITY ASSURANCE

.1 Installer Qualifications: Member of Terrazzo, Tile and Marble Association of Canada (TTMAC) or approved in writing by the Consultant.

1.4 SUBMITTALS

.1 Of each type of tile required, submit sample consisting of minimum 4 tiles bonded to rigid board back-up and joints filled with grout. Select tiles to show full range of tile to be used. Resubmit sample if required until tile range and grout colour is approved by the Consultant.

.2 Submit list of mortar mixes and grouts to be used. In each case products proposed must be suitable for the purpose intended and they shall be capable to produce top quality work. Upon Consultant's request submit evidence of material manufacturer`s endorsement of products proposed.

.3 Upon Consultant's request submit samples of bases, trim and fittings.

.4 Submit manufacturer’s recommended maintenance procedures and materials for inclusion into operation and maintenance manual.

.5 Provide extra 5% of each size, type, colour tiles used.

1.5 JOB CONDITIONS

.1 Maintain minimum air temperature of 10^{o}C during installation and curing period.

.2 Exclude construction traffic from areas to receive tile during installation and curing period.

.3 Protect tile flooring subjected to construction traffic with non-staining protective covers.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Products by Laticrete listed herein are specified to establish a standard of acceptance. Equivalent products, subject to Consultant’s review, by Mapei, H.B. Fuller (TEC), Flextile are also acceptable.

.2 Water: clean and non-staining.

.3 Portland cement: CAN/CSA-A3001-13.

.4 Sand: ASTM C144-11.

.5 Mortar levelling bed: Laticrete 226/3701/8510.

.6 High strength mortar: 100% solids epoxy adhesive: Latapoxy 300.

.7 Thin set mortar: latex Portland cement: Laticrete 211/4237.

.8 Floor grout: presanded, coloured latex grout: Laticrete 1500 Series/1776; colours selected by Consultant.

.9 Wall grout: unsanded, dry set, coloured: Laticrete 1600 Series/1776, colours selected by Consultant.

.10 Tile:

.1 Tactile surface tile: 300 x 300 mm, unglazed: Elan Tile by Kinesik or Easyway Cross by Olympia, colour selected by Consultant.

.2 CT.1: nominal 200 x 500 mm glazed wall tile: Centura “Design Positive”; up to 4 colours selected by Consultant form manufacturer’s full range.

.11 Cleaning compounds: as recommended by TTMAC and acceptable to tile manufacturer.

2.2 MIXES

.1 Mortar and grout: mix in accordance with material manufacturer's directions. Wherever possible use latex additive instead of water.

PART 3 - EXECUTION

3.1 PREPARATION

.1 Provide mortar levelling bed where ceramic tile is installed onto existing substrates.

.2 Substrates shall be clean and free of foreign matter and minimum 10°C.

.3 Clean and prepare substrates as required to produce acceptable surface.

.4 Remove existing adhesive and other substances which would adversely affect adhesion of new tile.

3.2 TILE INSTALLATION GENERAL

.1 Unless otherwise specified, meet applicable requirements of TTMAC Tile Installation Manual 2019 – 2020.

.2 Bond porcelain tile to substrates with high strength mortar.

.3 Bond ceramic wall tile to substrate with thin set mortar.

.4 Finished work shall be level, plumb, or sloped as shown, true, square and free of defective, chipped, broken, discoloured or blemished tiles. Maximum allowable finished surface variation shall be 3 mm in 3 m when measured, in any direction, with a 3 m straightedge.

.5 Lay out tile patterns symmetrically within each area and to patterns shown. Unless otherwise indicated provide stacked pattern. Provide multi-coloured tile patterns as indicated and/or as directed by Consultant.

.6 Joints shall be parallel, uniform, neat, straight, square and completely filled. Provide joint width as directed by Consultant.

.7 Fit tile accurately against and around interruptions, penetrations and abutting dissimilar surfaces. Wherever possible, drill holes for penetrating elements to ensure neat fitting.

.8 After setting, sound tiles and replace hollow backed tiles.

.9 Provide tile manufacturer's standard trim pieces at changes in direction and at terminations.

.10 Provide transition moulding where porcelain tile edge would otherwise be exposed.

3.3 GROUTING

.1 Commence grouting not earlier than 24 hours after setting tiles unless otherwise directed by grout manufacturer.

.2 Force grout into joint so as to fill them flush, leaving no voids.

.3 Promptly as work progresses remove excess grout from adjacent tile surfaces before grout establishes tight permanent adhesion.

.4 Cure grout in accordance with manufacturer's directions.

3.4 CONTROL JOINTS

.1 Provide control joints at substrate control joint locations, around columns, between floor and wall tiles, at abutting dissimilar materials, at locations recommended by TTMAC and as directed by Consultant.

.2 Meet the following physical properties:

.1 Minimum joint width: 6 mm.

.2 Spacing of control joints in both directions at horiztonal and vertical tile fields: maximum 6 m.

.3 Spacing of control joints in both directions at areas exposed to moisture or direct sun light: maximum 3.6 m.

.4 Spacing of control joints in both directions at above grade floor slabs: maximum 3.6 m.

.3 Install prefabricated control joints in accordance with manufacturer’s directions. Set control joints slightly lower than adjacent tile.

3.5 CLEANING

.1 Thoroughly clean tile surfaces in accordance with manufacturer's recommendations.

.2 Polish after cleaning with clean, dry cloths.

.3 Remove grout haze from exposed tile surfaces; use acid wash method if required.

END

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Mechanical fixtures: Mechanical work

.2 Electrical fixtures: Electrical work

1.3 QUALITY ASSURANCE

.1 Comply with applicable requirements of ASTM C636, Intermediate Duty, unless otherwise shown or required.

.2 Acoustic panel ceilings and their support attachments shall be designed and constructed to resist the effects of seismic motions in accordance with local jurisdiction with applicable regulatory requirements.

1.4 SUBMITTALS

.1 Submit detailed and complete product data for each product required.

.2 Submit statement from suspension system manufacturer verifying that suspension system will support light fixtures within deflection criteria contained in referenced standards.

.3 Samples: Submit two samples of each type of acoustical panel specified; size: 300mm x 300mm. Upon Consultant's request submit samples of suspension system components.

.4 Maintenance materials: Provide Board with one sealed carton of each type of acoustical panel used. Obtain receipt and submit copy to Consultant.

1.5 PRODUCT STORAGE

.1 Store material in dry place, keep free of dampness.

1.6 JOB CONDITIONS

.1 Install ceiling systems after building has been completely enclosed and not before cementitious building elements are complete and cured and humidity levels are acceptable in the opinion of the Consultant.

.2 Ensure that work to be concealed by ceiling systems has been installed, tested, inspected and approved before starting work.

.3 Co-ordinate with Divisions 15 and 16 for work to be built into work of this Section.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Acoustic panels (LAP.1): 16 mm thick mineral fibre board, 610 mm x 1220 mm with square edges, White: Fine Fissured 1729 by Armstrong or equivalent product by CGC or Certainteed.

.2 Suspension system: Standard exposed grid system matching existing; DXL Quick Release by CGC, or Prelude by Armstrong and as follows:

.1 Main tees: 38 x 24 mm bulb section, minimum 0.4 mm thick cold rolled galvanized steel; one expansion joint per 3.6 m length.

.2 Cross tees: 24 mm wide, minimum 0.4 mm thick cold rolled galvanized steel; profile designed to limit deflection to 1/360 of span; designed to have suitable detail to rest on, automatically engage, level and lock to main tee.

.3 Wall moulding: pre-finished 22mm exposed face galvanized steel angle shape. Provide special flexible type moulding for use at round columns.

.4 Hangers: minimum 2.5 mm (No. 12 SWG) galvanized steel wire.

.5 Carrying channels: minimum 1.2 mm thick cold rolled galvanized steel channels 38 x 13 mm.

.6 Finish for exposed metal surfaces: satin enamel: colour to match acoustic panels.

.3 Accessories: Splicers, fasteners, clips as required to provide complete and finished work: manufacturer's standard types.

.4 Seismic securement clip: ACMT b CGC or equivalent product by other manufacturers listed.

PART 3 - EXECUTION

3.1 CEILING LAYOUTS

.1 Lay out ceilings in accordance with reflected ceiling plans and symmetrical within each area to obtain uniform borders. Where layout is not shown install ceilings as directed by Consultant.

.2 Finished work shall be plumb, level and square with adjoining work.

3.2 SUSPENSION SYSTEM

.1 Suspend ceilings directly from structural members or from carrying channels supported from structural members. Do not fasten hangers to steel deck.

.2 Erect suspension systems level with a maximum tolerance of 3 mm over 3 m length.

.3 Install main tees in accordance with module size. Suspend at maximum 1220 mm o.c.

.4 Install cross tees perpendicular to main tees in accordance with module size. Interlock with main tees.

.5 Hangers for suspended ceilings shall support grillage independently of walls, columns, pipes and ducts. Space hangers at maximum 1220 mm o.c. along supporting grillage and not more than 150 mm from ends.

.6 Make provisions for carrying fixtures occurring on and in suspended ceilings. Install additional hangers and reinforcing to ensure that loads being carried do not compromise integrity of system. Frame around fixtures and openings as required.

.7 Where ductwork, piping and other elements within ceiling spaces interfere with direct suspension of ceiling from structure, install additional framing securely fastened to main structure to accommodate proper hanging of ceiling.

.8 Exposed members shall be as long in length as possible to minimize joints. Distribute joints to prevent clustering in one area. Joints shall be made square, tight and flush so that exposed faces of intersecting members are on same plane.

.9 Joints in suspension system members shall be reinforced with splines or other suitable method.

.10 Install perimeter moulding at abutting vertical surfaces.

.11 At all ceilings larger than 13.38 m² (144 sf) provide seismic securement clip at ends of all main and cross tees where they meet the wall mould.

3.3 ACOUSTICAL PANELS

.1 Install panels so that work is clean and unmarked.

.2 Neatly cut and fit panels as required to suit ceiling layout and to accommodate other work.

.3 Recessed items shall replace or be centred on panel unless otherwise indicated.

3.4 CLEANING

.1 After installation, clean and touch up minor surface defects on acoustical panels and gypsum board panels.

.2 Remove damaged and badly marked units which in the opinion of the Consultant cannot be satisfactorily touched up and replace with new unmarked material.

END

SECTION 09 66 13 - PORTLAND CEMENT TERRAZZO

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 DESCRIPTION

.1 This section includes new interior Portland cement terrazzo flooring, wall bases and stairs, matching existing terrazzo work.

1.3 RELATED WORK

.1 Caulking: Section 07 92 00

.2 Tactile surface tile: Section 09 31 00

1.4 QUALITY ASSURANCE

.1 Do terrazzo work in accordance with Terrazzo, Tile and Marble Association of Canada (TTMAC), except where specified otherwise.

.2 Terrazzo supplier shall be a member in good standing of TTMAC.

.3 Terrazzo applicator's qualifications: fully trained and experienced in type of work specified.

1.5 SUBMITTALS

.1 Submit shop drawing showing layout of divider strips, control joints, and transitions to other floor finishes.

.2 Submit detailed product data for each product to be used.

.3 Submit duplicate 300 x 300 x 20 mm thick samples of terrazzo matching existing. Make adjustments to mix proportions and match colour as directed by Consultant and resubmit samples until accepted.

.4 Provide maintenance data as set out in TTMAC Terrazzo Maintenance Guide, for incorporation into maintenance manual.

1.6 JOB CONDITIONS

.1 Maintain air temperature and structural base temperature at terrazzo installation area above 10°C for 48 hours before, during and 24 hours after installation.

.2 Bar traffic from areas receiving terrazzo during installation and for at least 48 hours after.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Cement: to CSA-A5-98 type 10 grey for underbed and white for topping.

.2 Sand, fine and coarse aggregates to CSA A23.1-00.

.3 Water: clean and non-staining.

.4 Marble chips: to CSA A194.1-1967 for uniformity, soundness and abrasion resistance. Grade chips in accordance with TTMAC standard and as required to match existing terrazzo.

.5 Pigments: non-fading mineral pigments in selected colours.

.6 Divider strips: 4 mm thick commercial grade brass alloy or zinc, as selected by Consultant, with depth

of 32 mm for floors and of depth and height to suit base profile.

.7 Accessories: base caps, separator strips, purpose made and of same material to match divider strips.

.8 Stair nosings: _____

.9 Control joints: 32 x 1.5 mm brass or zinc strip laminated to both sides of 32 mm x 4 mm black neoprene strip.

.9 Welded steel wire fabric: to CSA G30.5-1972 (R1979), 50 x 50 x 1.6 x 1.6 mm wire, galvanized, in flat sheets only.

.10 Curing compound: to manufacturer's standard.

.11 Cleaning compound: to TTMAC Standard Series 1000 and approved by Consultant.

.12 Sealing compound: to TTMAC Standard Series 2000 and approved by Consultant.

.13 Finishing compound: to TTMAC Standard 3001.

2.2 MIXES

.1 Slurry coat: cement and water mixed to creamy paste.

.2 Underbed: 1 part cement to 4 parts sand by volume.

.3 Terrazzo floor topping mix: matching existing terrazzo.

.4 Use a mechanical mixer for mixing of toppings. Add materials to mixer while mixer is operating. Mix for at least 5 minutes.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Examine substrates and all conditions affecting work under this Section. Report in writing to the Consultant any deficiencies. Start of work shall imply acceptance of conditions.

3.2 INSTALLATION: GENERAL

.1 Provide bonded terrazzo in all locations to a minimum thickness of 40 mm unless otherwise indicated. Follow TTMAC Details, unless otherwise indicated.

.2 Apply terrazzo after concrete slabs have cured 28 days.

.3 Install divider strips true and level to detailed pattern.

.4 Install reinforcing mesh as required.

.5 Apply non-slip aggregate at rate of 1.25 kg/m² to designated surfaces.

.6 Produce terrazzo finished surfaces consisting of 80% of marble chips and to match approved samples.

3.3 INSTALLATION: FLOORS

.1 Clean concrete slab of foreign matter and saturate with water. Remove free water prior to application of slurry coat. Slush with slurry coat and broom it onto substrate.

.2 Place underbed mixture and screed to the level required to allow for 16 mm depth of finished topping.

.3 Set divider strips into the semi-plastic underbed straight and at the levels and to layout required. Trowel firmly along the edges of the strips to assure anchorage into the underbed.

.4 Allow underbed to set firmly, at least overnight, before placing topping.

.5 Clean underbed of foreign matter, then saturate with clean water. Remove any free water prior to application of cement bond coat. Slush wet substrate with neat Portland cement grout and broom it into the underbed immediately before placing topping. Where colour pigments are required in the topping, provide uniform appearance throughout.

.6 Place topping mixture in areas bounded by divider strips and bring it to the level of the strips.

.7 Sprinkle topping surface with additional chips to meet requirements of the sample. Trowel the sprinkled chips uniformly over the finish.

.8 Roll the topping with heavy metal rollers until excess water is extracted and surface is covered with cement paste. Hand trowel to an even surface.

3.4 INSTALLATION: DIVIDER STRIPS

.1 Lay divider strips to separate the floor from the base and to divide the floor areas into panels. Where the spacing of the strips is not detailed, space the strips not exceeding 750 mm x 750 mm.

.2 Except where otherwise shown or specified for special designs, install divider strips perpendicular/ parallel to walls.

.3 The pattern of strips shall be approved by the Consultant.

.4 Set divider strips into the underbed prior to the initial set with the top edge of the strips flush with the finished surface.

.5 Provide control joints at maximum 10 m o.c., at concrete slab control joints, where corridors meet, and at other locations shown.

3.5 INSTALLATION WALL BASES AND STAIRS

.1 Bases:

.1 Install zinc base bead top strips at required location and height, straight and level, matching existing base profile.

.2 Apply underbed to backing and trowel to within 8 mm of finished surface.

.3 Install divider strips and cove base dividers in line with floor divider strips.

.4 Apply topping in accordance with TTMAC “Standard Terrazzo Topping”.

.2 Steps and risers:

.1 Provide two slip resistant strips at each step, parallel with step nosing, terminating 100 mm from each wall. Set slip resistant strip channels during underbed application or epoxy bond to cured underbed and concrete slab.

.2 Apply topping in accordance with TTMAC “Standard Terrazzo Topping”.

.3 Install topping around slip resistant strip channels. After topping has been cured, ground and sealed, clean channels and apply masking tape to protect adjacent surfaces. Pack and fill channels with abrasive epoxy mixture in colour selected by Consultant, to maintain a consistent thickness of 2 mm above terrazzo o treads.

.4 Over concrete substrates, terrazzo topping and underbed shall be minimum 45 mm thick for treads and minimum 25 mm thick for risers, stringers and curbs.

.3 Ramps:

.1 Apply topping in accordance with TTMAC “Standard Terrazzo Topping:.

.2 Provide slip resistant strips at maximum 300 mm o.c., terminating 100 mm from each wall, unless shown otherwise. Prepare channels and install slip resistant mixture as specified above under steps and risers.

3.6 FINISHING: GRINDING

.1 Flood the grinding area with water during grinding.

.2 Do not grind terrazzo floors until they have developed sufficient strength to prevent chips from pulling out.

.3 For first grinding, use a 24 to 60 grit carborundum stone; follow immediately with a second grinding using an 80 to 120 grit stone.

.4 After each grinding, thoroughly wash the surface with water and clean residue from holes and recesses. Remove excess water with a vacuum or squeegee.

3.7 FINISHING: GROUTING

.1 After the second grinding, trowel patching grout onto the surface and work it into voids. Remove excess grout with a trowel. Do not apply dry cement to wet terrazzo.

.2 When patching grout begins to set, rub surface with burlap or excelsior pads to consolidate grout into voids and to remove excess.

.3 Cover the entire surface with curing material and allow to cure fully to protect surface from staining.

.4 Finish surface with 120 grit or finer stone and water generally, with 80 grit stone, when non-slip finish aggregate is used, not sooner than 3 days after grout is applied.

3.8 FINISHING: CLEANING AND SEALING

.1 Thoroughly clean all terrazzo after final grinding with a solution of the neutral cleaner to remove all dust and fine material; then rinse.

.2 When the surface is dry, apply two coats of sealer according to the manufacturer's recommendations. Do not apply terrazzo protective finish on non-slip surfaces.

.3 If directed by the Consultant apply first coat of sealer immediately after cleaning and second coat just prior to takeover of building by Owner. Thoroughly clean surfaces prior to application of second coat.

.4 Finished terrazzo work shall be free of cracks, discolouration and other defects.

END

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Prime painting of structural and miscellaneous steel components: Division 5

.2 Prime painting of steel doors and frames: Section 08 11 13

1.3 QUALITY ASSURANCE

.1 Comply with provisions of The Master Painters Institute's (MPI) Architectural Painting Specification Manual latest issue, referenced herein as the MPI Manual.

.2 Work of this Section shall be carried out by qualified workers only, who have a valid Provincial Tradesman Qualification Certificate of Proficiency.

1.4 QUALITY CONTROL

.1 Work of this Section may be subject to inspection and testing by independent agency in accordance with the MPI "Accredited Quality Assurance Program".

1.5 LIST OF MATERIALS AND SAMPLES

.1 List of Materials

.1 Before ordering materials, submit written request in form acceptable to Consultant for approval of paint materials. List each of the materials proposed and surfaces to be covered. State manufacturer's name and brand name and product code of each material.

.2 Do not order material or commence work until list of materials is approved by Consultant.

.2 Samples

.1 Submit two 200 x 250 mm colour draw-downs of each paint colour coated with manufacturer's paint system to confirm colour match with colour chips supplied by Consultant.

1.6 PRODUCT HANDLING

.1 Deliver paint materials to site in sealed original labelled containers bearing manufacturer's name, brand name, type of paint and colour designation.

.2 Store materials in strict accordance with manufacturer's recommendations.

.3 Do not store paints, stains, varnishes, rags, or equipment inside building. Maintain separate workshop/storage shed for duration of work by this Section.

1.7 JOB CONDITIONS

.1 Comply with requirements of the MPI Manual and as specified herein.

.2 Environmental Conditions

.1 Adequately ventilate areas where coatings are being applied. Maintain a reasonably dust-free atmosphere for duration of work.

.3 Protection

.1 Protect adjacent surfaces not scheduled to receive coatings from damage.

.2 Remove electrical plates, surface hardware, fittings and fastenings prior to painting operations. These items shall be carefully stored, cleaned and replaced on completion of work in each area. No solvent shall be used to clean hardware that will remove permanent lacquer finish on these items.

.3 Mask labels and specification plates occurring on equipment to be painted.

.4 Post "wet coating" signs and "no smoking" signs while work is in progress and while coatings are curing.

.4 Work Schedule

.1 Unless otherwise permitted, apply coatings only after all other Sections have completed their work.

.2 Co-ordinate work of this Section with that of Section 07 92 00 and review order of installation with Consultant where sealants are installed adjacent to painted surfaces.

1.8 WARRANTY

.1 Provide a 2 year MPI Guarantee or a 100% 2 year maintenance bond commencing at date of Substantial Performance in accordance with MPI “Accredited Quality Assurance Program”.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Acceptable products: as per MPI Manual.

.2 Materials for each paint system shall be from single manufacturer.

.3 Paints shall be factory mixed unless otherwise specified, except any coating in paste or power form, or to be field-catalyzed shall be field mixed in accordance with manufacturer's directions.

.4 Stains shall be of the rapid dry, alkyd base type or pigment oil type.

.5 Varnishes shall be synthetic type.

.6 Shellac shall be pure white gum in pure grain alcohol.

.7 Scuff and stain resistant paint: interior acrylic latex paint: Ultra Spec Scuff X Interior Latex Paint by Benjamin Moore or equivalent product by other manufacturer approved by Consultant.

.8 Decorative topcoating at interior structural steel with intumescent fireproofing: silicone alkyd as recommended by intumescent fireproofing manufacturer; colours selected by Consultant.

2.2 FINISHES

.1 Paint colours and other finishes will be selected by Consultant. Do not start work until after receiving colour schedule.

.2 Colours selected by the Consultant will not necessarily be from manufacturer's standard colours.

.3 A variety of colours may be used. Consultant may select different colours for different elements such as ductwork, bulkheads, exposed decks, slabs and structural steel. Some colours may be deep tone.

.4 Confirm gloss levels for all surfaces with Consultant before starting work. Unless otherwise directed

provide the following:

.1 Ceilings: flat

.2 Walls: eggshell

.3 Trim, doors, frames: semi-gloss

PART 3 - EXECUTION

3.1 CONDITIONS OF SUBSTRATES

.1 Sound, non-dusting, and free of grease, oil, dirt, and other matter detrimental to adhesion and appearance of coatings.

.2 Temperature: minimum 12°C.

.3 Moisture content: maximum 12%. Test for moisture content using moisture meter.

.4 Alkalinity: test cementitious substrates for alkalinity. Use method recommended by coating manufacturer.

3.2 PREPARATION OF SUBSTRATES

.1 Prepare substrates in accordance with MPI Manual.

.2 All substrates: clean as required to produce an acceptable surface. If wood, metal or any other surface to be finished cannot be put in proper condition for finishing by cleaning, sanding and filling as specified, notify Consultant in writing or assume responsibility for and rectify any unsatisfactory finish resulting.

.3 Wood generally: clean soiled surfaces; sand off smooth and dust off; putty nail holes, splits, scratches, after prime coat has been applied and dried; colour putty to match finish; putty stained wood after stain application.

.4 Bare ferrous metal: remove rust and scale; wash with solvent; chemically clean; apply coat of metal primer.

.5 Previously primed metal: remove rust, oil, grease and loose shop paint by washing or wire brushing; make good shop coat; feather out edges of touchup.

.6 Zinc coated metal provide light brush blasting in accordance with SSPC-SP7, or liquid etching treatment acceptable to Consultant.

.7 Unit masonry & concrete: fill minor cracks, holes and fissures with Polyfilla and smooth to a flush surface. Texture filled areas to match surrounding surface.

.8 Alkaline surfaces: wash and neutralize using proper type of solution compatible with paint to be used.

.9 Fill joints between different materials, junction of trim pieces and other similar conditions with non-shrinking filler and sand smooth to ensure a tight fit, without holes or cracks.

3.1 APPLICATION OF COATINGS

.1 Apply paint by industry accepted standards and as referenced in the MPI Manual.

.2 Spray painting may be permitted where deemed of advantageous and shall be subject to Consultant's approval. When spray painting is permitted, use only airless spray guns. Consultant may prohibit use of spray painting at any time for such reasons as carelessness, poor masking or protective measures,

drifting paint fog, disturbance to other trades or failure to obtain a uniform satisfactory finish.

.3 Applied and cured coatings shall be uniform in of thickness, sheen, colour and texture and free of brush or roller marks, sags, crawls and other defects detrimental to appearance and performance.

.4 Regardless of the number of coats specified for any surface, apply sufficient paint to completely cover and hide substrate and to produce a solid uniform appearance.

.5 Thoroughly mix materials before application. Use same brand of paint for primer, intermediate and finish coats.

.6 Touch up suction spots after application of first coat. Sand lightly between coats with fine sandpaper.

.7 Each coat of finish shall be dry and hard before succeeding coats are applied with a minimum of 24 hours between coats, to achieve an anchor for required finish. Do not proceed with any coat until the last preceding coat is approved by the Consultant and inspector.

3.2 PATCHING

.1 Prior to takeover of project by Board, inspect work of this Section and touch-up or refinish damaged finishes and finishes unsatisfactory to Consultant and the inspector.

3.3 SCHEDULE OF FINISHES

.1 General Requirements

.1 Paint exposed surfaces of building materials, services and equipment, except those which are prefinished in factory and except those which are located in areas designed as not requiring painting.

.2 Comply with the following requirements except in areas designed as not requiring painting:

.1 Paint behind surface mounted fixtures on walls and ceilings with full coats of paint.

.2 Paint walls behind wall mounted heating units with full coats of paint.

.3 Paint inside surfaces of light coves white.

.4 Finish top and bottom edge of doors, trim, projections and other work as specified for surrounding work whether above sight lines or not.

.5 Finish edges of doors to match face of door. Refinish edges of doors after fitting.

.6 Paint tops, bottoms and edges of shelves with full specified coats, whether exposed to view or not.

.7 Paint interior of ducts at grilles and diffusers with two coats of flat black paint, so that duct interior is not visible when grilles and diffusers are installed.

.8 Paint piping, ducts and conduits in colours matching background wall or ceiling colours, unless otherwise directed by the Consultant.

.9 Paint gas piping whether exposed to view or not, with high-visibility yellow-orange paint selected by Consultant.

.10 Where finishing formula for surfaces requiring painting is not included herein, follow recommendations of MPI Manual for respective surface (Premium Grade).

.2 Interior Finishing: System references listed hereunder are based on Chapter 3 – Section 2 of the MPI Manual and shall be MPI Premium Grade unless otherwise indicated.

.1 Concrete block: INT 4.2A. Provide scuff and stain resistant paint.

.2 Metal, prime painted: INT 5.1Q

.3 Existing steel surfaces with sprayed intumescent fireproofing: 1 coat primer and 2 coats of silicone alkyd.

3.7 EXISTING SURFACES

.1 Repaint existing surfaces where they are scheduled to be painted or where finish is damaged by alteration work. Extend new paint finish over full height and/or width of area affected, to a straight line in location determined by Consutlant.

.2 All existing surfaces to be repainted shall receive as many coats of new paint, as required to hide existing finish.

.3 Materials used for repainting shall be of similar quality to those specified for new work, but in each case shall be compatible with finishes to which they are applied.

.4 Where compatibility of new coating with existing surface is uncertain, apply test patch of approximately 0.5 m² and check for results.

.5 Prepare existing surfaces to be repainted as follows:

.1 Clean as required to remove dirt, dust, oil, grease, loose paint, rust and any other foreign matter which would prevent proper bonding of new finish.

.2 Peeled chipped, scratched and otherwise damaged surfaces shall be filled, sanded and repaired as required to provide consistent surface with texture matching that of adjacent area.

.3 Sandy glossy surfaces to uniform dull texture.

.4 Treat bare areas as specified for new work.

.6 Prior to repainting existing surfaces request Consultant's review and acceptance of prepared substrates, existing surfaces repainted without Consultant's review and acceptance may have to be prepared again as directed by Consultant and repainted at no extra cost.

END

SECTION 09 94 13 - TEXTURED COATING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Sealants: Section 07900

.2 Cementitious board: Section 09250

1.3 QUALITY ASSURANCE

.1 Acceptable Coating System Manufacturers:

.1 Dryvit.

.2 Durabond,

.3 Durock

.4 STO

.2 Applicator's qualifications: Approved or licensed by material manufacturer.

.3 Workmanship standard: Apply materials in accordance with current manufacturers installation instructions.

1.4 SUBMITTALS

.1 Submit two 300 mm x 300 mm samples of each specified finish and colour, on rigid backing board.

.2 Submit maintenance data for incorporation into maintenance manual.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in original packages with labels intact.

.2 Store materials in a cool, dry location, out of direct sunlight, protected from weather and at an ambient temperature of a minimum of 5ºC.

1.6 JOB CONDITIONS

.1 Ambient and substrate temperature during installation and for at least 24 hours after installation shall be minimum 5ºC.

.2 Protect adjacent surfaces from damage; make good any damage caused.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Materials listed herein are based on products by Dryvit, to establish a standard of acceptance. Equivalent products by other manufacturers, listed above, may also be used.

.2 Reinforcing Mesh: fibreglass mesh as recommended by system manufacturer for each condition.

.3 Base Coat: Primus by Dryvit.

.4 Finish Coat: Sandpebble Fine by Dryvit; colours selected by Consultant.

.5 Water: clean and potable.

.6 Cement: as recommended by system manufacturer, ASTM C150 Type I, I-II or II, white or grey.

.7 Primers: as recommended by system manufacturer.

.8 Trim and accessories: minimum 0.5 mm thick formed zinc.

.9 Sealants: Dow Corning 790, or as recommended by system manufacturer; colours selected by Consultant.

2.2 MIXING

.1 Use clean containers, free of loose and foreign substances. Clean containers and mixing tools after each use.

.2 Mix materials in quantities and with equipment recommended by system manufacturer until uniform, homogeneous consistency is achieved.

PART 3 - EXECUTION

3.1 SUBSTRATES

.1 Examine substrates to ensure that they are sound, clean, dry, reasonably smooth and free of substances which would adversely affect coating.

.2 Correct substrate conditions until they are satisfactory to material manufacturer. Start of work shall imply acceptance of conditions.

3.2 APPLICATION

.1 Apply base coat, reinforced with mesh, over entire substrate, and render to uniformly smooth surface with reinforcing mesh completely embedded.

.2 Allow base coat to cure completely before applying primer.

.3 Apply primer by brush, roller or spray.

.4 Apply finish coat over cured primed base coat. Apply coating by spraying.

.5 Apply coating in one continuous operation, maintaining a wet edge.

.6 Cure coating as recommended by manufacturer.

.7 Finish coat shall match approved samples and shall be uniform in thickness, texture and colour.

.8 Provide beads or moulds at terminations.

.9 Provide control joints where shown and/or directed by Consultant. Seal control joints with sealant in accordance with requirements specified in Section 07900.

END

SECTION 31 10 00 - SITE CLEARING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Excavating, filling, grading: Section 31 23 00

1.3 PROTECTION

.1 Prevent damage to adjacent property and to areas scheduled to remain unchanged. Make good any damage caused by site clearing operations.

PART 2 - PRODUCTS Not Applicable

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Visit the site and examine existing conditions and so as to understand the extent of work required. No increase in cost will considered out of failure to know existing conditions.

3.2 CLEARING OPERATIONS

.1 Remove existing items, including but not limited to the following, as applicable to this site and as required to accommodate new work:

.1 Paving and curbs.

.2 Sod, plants, vegetation and topsoil.

.2 Remove items, components, work as shown and required to accommodate new work.

.3 Notwithstanding requirements specified herein, retain existing items specifically indicated to be retained.

.4 Topsoil:

.1 Strip topsoil in areas of new construction, and below new paving, and where grades are altered, and stockpile for later use, if considered suitable.

.2 Strip topsoil to its full depth but do not contaminate with subsoil.

3.3 DISPOSAL OF MATERIAL

.1 Except where specifically indicated otherwise herein, remove from site and legally dispose of all materials, rubbish and debris resulting from site clearing operations.

END

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1	Excavation and backfilling for mechanical and electrical underground services:	Divisions 21 to 28
.2	Site clearing:	Section 31 10 00
.3	Asphalt paving including base:	Section 32 12 16
.4	Concrete curbs and paving, including base:	Section 32 13 13
.5	Sodding:	Section 32 92 23

1.3 QUALITY CONTROL

.1 Owner may arrange and pay out of cash allowance included in Section 01 21 00 for independent inspection and testing agency to inspect and test work of this Section.

.2 Testing agency may do the following as directed by the Consultant:

.1 Determine at what depth existing soil is capable of supporting fill, floor slabs and superimposed loads without deleterious settlement.

.2 Carry out grain size analysis on samples of each type of granular fill to ensure that proper material is being placed.

.3 Determine the quantity of water to be added to or removed from each type of fill to attain correct moisture content for compaction and maximum density.

.4 Determine the in-situ density and moisture content of compacted fills.

1.4 EXISTING CONDITIONS

.1 Visit and examine the site and note all characteristics and features affecting the work of this Section. No allowance will be made for difficulties encountered or expense incurred resulting from conditions known or visible at the time of tendering.

.2 A geotechnical investigation has been carried out for this site. Refer to Section 00 31 19 - Existing Conditions.

1.5 PROTECTION

.1 Protect excavations in accordance with applicable regulations. Provide and maintain in safe condition, lining, bracing and shoring required.

.2 Prevent damage to existing structures, buried services and areas of site to remain undisturbed. Make good any damage caused.

.3 Protect bottoms and sides of all excavations from exposure to wet weather, snow and frost, and from drying out, to prevent softening or weathering of any bearing surface.

.4 Prevent unnecessary disturbance and protect soil from getting excessively wet. Schedule excavation and grading operations during dry periods. Take other protective steps such as designated traffic lanes, half load restriction on vehicles and temporary roads.

1.6 JOB CONDITIONS

.1 If excavation reveals unexpected subsurface conditions, advise Consultant immediately.

.2 Do not place fill material when temperature is at or below 0ºC, nor while either fill material or subgrade is frozen.

.3 Stockpile each type of fill material separately to prevent integration. Stockpile granular materials so as to prevent segregation.

PART 2 - PRODUCTS

2.1 FILL MATERIAL

.1 Fill type 1: clean, hard, durable aggregate free of shale, clay, organic matter or other deleterious substances: Granular 'A' OPSS Form 1010.

.2 Fill type 2: clean, hard, durable aggregate free of shale, clay, organic matter or other deleterious substances: Granular 'B' Type 1, OPSS Form 1010.

.3 Fill type 3: clean sand, free of organic and deleterious matter.

.4 Fill type 4: selected, clean, native soil excavated on this site, or imported clean fill, capable of being compacted to the required density, free of roots, debris, stones larger than 50 mm diameter, and free of any organic or deleterious matter.

.5 Fill type 5: granular or sandy material, OPSS 1010.05.04 “Select Subgrade Material”..

.6 Moisture content of fill (native or imported) shall be within 2% of the optimum moisture content (ASTM D698-12).

.7 Obtain all fill materials from sources approved by Consultant.

PART 3 - EXECUTION

3.1 EXCAVATION

.1 Carry out excavation to the extent, elevation and depth required for the construction of the building and for a sufficient distance beyond to permit proper construction, shoring, curing and inspection of work.

.2 Do all excavation required for work of this project, unless it is clearly covered in other Sections.

.3 Remove topsoil, vegetation, all forms of fill, disturbed soil, rubble, organic and organic bearing materials below building and paved areas.

.4 Excavate for foundations to levels indicated but in no case less than 1.4 mm below finish grade.

.5 Take precautions when excavating adjacent to buried services; use hand tools only in locating services.

.6 Where piping is laid closer than 45º line from the underside of a footing or supporting structure, provide approved solid concrete underpinning.

.7 After completion of excavation and prior to forms being erected, concrete placed, or piping installed, notify the Consultant for inspection of exposed surfaces. If any soft of spongy areas are located, notify Consultant at once. If the Consultant so directs, carry down the excavations to a greater depth until a suitable bearing is obtained.

.8 Ensure that the bottoms of all excavations upon which any footings, walls or piers are to be built are accurately levelled and properly stepped, by cutting only, at all changes in elevation.

.9 If the removal of earth causes displacement of adjacent earth, remove the earth so disturbed at no additional cost to the Owner.

3.2 FILLING AND COMPACTION

.1 Do not place backfilling until all bearing surfaces, subgrades and all work to be covered has been inspected and approved by the Consultant.

.2 Proofroll exposed subgrade below slabs on grade, prior to backfilling, with heavy static roller to ensure a minimum Standard Proctor Maximum Dry Density of 98% throughout. Subexcavate soft spots with suitable fill material and compact to 98% SPMDD.

.3 Remove all debris, rubbish and temporary shoring before commencing backfilling.

.4 Take care to avoid damage to or displacement of walls, piers, and other work. Wherever temporary unbalanced earth pressures are liable to develop in walls, provide and place the necessary shoring and bracing to counteract the imbalance, and leave these members in place until their removal is approved by the Consultant. Make good any damages caused due to inadequate bracing at no cost to the Owner.

.5 Thoroughly compact all areas under and adjacent to building to be backfilled by mechanical tamping or rolling. Compaction shall be minimum 98% SPMDD unless otherwise indicated. Subexcavate soft and excessively wet spots and backfill with suitable granular material.

.6 Place fill material in layers not exceeding 200 mm uncompacted depth and compact each layer. Backfill to the levels required as indicated on the Drawings.

.7 Unless otherwise indicated provide the following fill types:

.1 Below slab on grade base course: type 2.

.2 Slab on grade base course: 200 mm thick type 1.

.3 Below paved areas: type 2.

.4 Below topsoil at sodded and landscaped areas: type 4.

.8 Provide the following minimum compaction densities when tested in accordance with ASTM D698:

.1 Below slab on grade base course: 98% SPMDD.

.2 Slab on grade base course: 100% SPMDD.

.3 Below paved areas: 98% SPMDD.

.4 Below sodded areas: 95% SPMDD.

.9 Remove and replace fill until compaction test reports by the independent inspection agency are satisfactory to the Consultant.

3.3 GRADING

.1 Do grading required for new paved areas.

.2 Cut and fill as required. Make allowance for depth of surface finishes and base courses. Rough grade areas to within ±75 mm of required subgrade.

.3 Establish and maintain line and grade stakes for duration of grading operations.

.4 Conform to grades and contours indicated on Drawings. Uniformly slope grade between elevations shown and at slope top and toe of slopes.

.5 Proofroll existing subgrade below paved areas with a heavy static roller to consolidate existing soil to minimum 98% SPMDD. Subexcavate soft and excessively wet spots and backfill with suitable granular material compacted to 98% SPMDD.

.6 Establish subgrade parallel to finish grades and shape in manner to permit drainage of water in the event of heavy rain.

3.4 COMPLETION

.1 Upon completion, remove all surplus fill and excavated materials from the site, and leave site clean and tidy.

END

SECTION 32 12 16 - ASPHALT PAVING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with the requirements of Division 1.

1.2 RELATED WORK

.1 Site clearing: Section 32 10 00

.2 Excavating, filling, grading: Section 31 23 00

.3 Cast-in-place concrete curbs and paving: Section 32 13 13

1.3 QUALITY ASSURANCE

.1 All work under this Section shall be done by a bonafide road building contractor engaged in paving work for at least five years and having the equipment necessary to carry out the work as specified.

.2 Comply with requirements of Ontario Provincial Standard Specifications (OPSS) 310 and 1150.

.3 Do work located on public property with applicable requirements of municipality.

1.4 QUALITY CONTROL

.1 Comply with requirements of Section 01 45 00.

.2 Testing agency may do any or all of the following as directed by the Consultant.

.1 Carry out grain size analysis.

.2 Determine minimum and maximum moisture content of densities of granular fill.

.3 Determine in-situ density, thickness and moisture content of compacted fills.

.4 Check properties of asphalt mixes, including aggregate gradation of asphalt content.

.5 Check suitability of equipment used.

1.5 SUBMITTALS

.1 Prior to delivery of materials to site submit gradation tables and, upon Consultant's request, representative samples of base course materials to be used.

1.6 JOB CONDITIONS

.1 Environmental Conditions

.1 Lay granular base courses and asphalt paving courses when weather is dry and only on dry bases.

.2 Place granular base courses only when ambient temperature is above 0°C. Do not place granular materials while either material or subgrade is frozen.

.3 Place asphalt paving courses only when ambient temperature is 5°C or above.

.2 Protection

.1 Make special provisions to minimize deterioration of subgrade, particularly when operating during unfavourable weather conditions or when working in wet soil. Use special designated traffic lanes, build temporary roads, reduce traffic to half-loads or take other suitable measures.

.2 Do not permit vehicular traffic on finished asphalt pavement until it has cooled and hardened and in no case sooner than 6 hours after completion.

.3 Provide barricades and warning devices to protect pavement.

1.7 WARRANTY

.1 At no cost to Board, remedy any defects in work, including work of this and other Sections, due to faults in materials or workmanship provided under this Section of Specifications appearing within a period of 2 years from date of Substantial Performance.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Base Materials:

.1 Clean, hard, durable aggregate free of shale, clay, organic matter and other deleterious substances.

.2 Base: 19 mm crushed limestone.

.3 Subbase: OPSS Granular B or 50 mm crushed limestone.

.2 Asphalt:

.1 Hot mixed, hot laid asphalt meeting requirements of OPSS 1150, designation H.L.8 and H.L.3.

.2 Tack coat: OPSS 1103, Grade SS-1.

PART 3 - EXECUTION

3.1 LINES AND LEVELS

.1 Establish and maintain line and grade stakes for duration of work.

.2 Conform to contours and grades shown. Uniformly slope grade between elevations shown.

.3 Slope paving away from building minimum 1%. Slope paving minimum 1% for drainage in all locations unless specifically indicated otherwise on Drawings.

3.2 PREPARATION OF SUBGRADE

.1 Examine rough graded subgrade over which asphalt paving system is to be installed to ensure it is suitable for installation. Start of work shall imply acceptance of conditions.

.2 Fine grade subgrade as required to bring it to required levels and slopes. Meet compaction densities and fill material requirements specified in Section 31 23 00. Slope fine graded subgrade to permit drainage to catch basins.

.3 Proofroll subgrade using static compaction method; avoid excessive compaction Subexcavate soft spots that develop during compaction and bring to proper grade by the addition of fill material and then thoroughly compact until satisfactory, adding more fill material as required.

.4 Sterilize subbase before granular base is put down. Base shall be naturally curved, sloped and graded to be self-draining.

3.3 BASE COURSES

.1 Spread, shape and compact granular base course material deposited on subgrade the same day.

.2 Compact base courses by rolling with power rollers capable of reversing without backlash. Use hand tamping or mechanical hand compaction equipment in areas inaccessible to rollers.

.3 Install base courses in layers not exceeding 150 mm thickness. Compact each layer to 98% SPMDD unless otherwise indicated.

.4 Add water as required to obtain optimum density. Use calcium chloride to control dust.

3.4 ASPHALT PAVING COURSES

.1 Place hot asphalt mixture over prepared dry base. Asphalt mixture shall be minimum 118° C when applied.

.2 Roll each asphalt paving course to be smooth and uniform. Trim and tamp edges of pavement to a clean and straight line. There shall be no visible aggregate.

.3 Compact each asphalt paving course in accordance with OPSS requirements, to minimum 97% Marshall Density.

.4 Thoroughly and uniformly compress the asphalt mixture by rolling soon after being spread, so that it will bear the roller without checking or undue displacement. Delays in rolling freshly spread mixture will not be permitted.

.5 Consolidate with a power driven roller of sufficient weight until all roller marks are eliminated, and no further compression is possible.

.6 Along all places which are not accessible to the roller, thoroughly compact by means of hot tampers.

.7 Curves: all curves shall conform to radii and lines indicated on the drawings. When necessary, construct forms, sufficiently braced to withstand the stress of placing and compacting the asphalt.

.8 Leave edges of asphalt pavement exposed where indicated. Where edges are straight, lay pavement up to a wooden batter board. On completion of rolling, remove batter board and tamp edges. Where edges are curved, trim asphalt after rolling with a cutting tool and tamp edge.

.9 Each asphalt paving course after final compaction shall be smooth and true to established crown and grade, and shall comply with the following dimensional tolerances:

.1 Thickness: plus 5 mm, minus 0.

.2 Surface variation: max. ±5 mm in 3000 mm.

.10 Construct asphalt speed bumps to details and in locations indicated.

3.5 JOINTS

.1 Construct joints to have same texture, density and smoothness as adjacent paving. Cut back edges of previously placed asphalt to expose an even, vertical surface for full course thickness. Clean contact surfaces and apply asphalt tack coat.

.2 Junctions where new asphalt paving meets existing asphalt paving shall be well defined and straight. Sawcut existing asphalt paving in order to meet this requirement. Clean contact surfaces and apply asphalt tack coat.

.3 Offset transverse joints in succeeding courses not less than 600 mm. Offset longitudinal joints in

succeeding courses not less than 150 mm.

.4 Paint surfaces of curbs, manholes, gutters and other elements in contact with asphalt concrete paving with asphalt tack coat.

3.6 SCHEDULE

.1 Dimensions indicated are compacted thicknesses.

.2 Provide light duty asphalt paving at walkways and where indicated:

50 mm H.L.3 asphalt course
200 mm granular base course

END

SECTION 32 13 13 - CONCRETE CURBS AND PAVING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1	Site clearing:	Section 31 10 00
.2	Excavating, filling, grading:	Section 31 23 00
.3	Asphalt paving:	Section 32 12 16

1.3 QUALITY ASSURANCE

.1 Do concrete work in accordance with requirements of Division 3 except where otherwise specified herein.

.2 Do concrete curb and paving work located on public property in accordance with requirements of municipality.

1.4 SUBMITTALS

.1 Submit detailed product data for each product to be used.

.2 Submit duplicate, minimum 300 x 300 x 25 mm thick coloured concrete samples in colour selected by Consultant.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Concrete materials: CSA A23.1-14.

.2 Reinforcing steel:

.1 Bars: CAN/CSA-G30.18-09, Grade 400, epoxy coated, or hot dip galvanized.

.2 Mesh: CSA G30.5-M1983 (R1991).

.3 Formwork: steel or wood, capable of producing smooth and flat surfaces.

.4 Concrete curing compound: ASTM C309, suitable for exterior use.

.5 Expansion joint: asphalt impregnated fibre board, 12 mm thick, unless indicated otherwise; ASTM D1751.

.6 Granular base: clean crushed stone or rock: Granular "A" OPSS 1010.

.7 Sealer: Sealtight CS-309 by W.R. Meadows.

.8 Colour pigment: integral colour for ready mix concrete, in the form of iron oxide pigment powder or liquid, to ASTM C979-16: SGS Integral Colors for Ready Mix Concrete by Solomon, or equivalent product by Davis or Scofield; colours selected from full range of manufacturer's products.

.9 Stair nosing: extruded aluminum profile with satin lacquer finish and with high content of aluminum oxide abrasive in colour selected by Consultant: Supergrit Safety Treads by Wooster Products, Type 232.

.10 Slip resistant strips: extruded aluminum base with through-colour abrasive filler in colour selected by Consultant, nominally 20 mm wide, 7 – 10 mm thick WP1 by Wooster Products.

2.1 CONCRETE MIX

.1 Unless otherwise indicated provide ready mix concrete designed by concrete producer, meeting the following requirements:

.1 Coarse aggregate: Standard weight, maximum size 19 mm.

.2 Water-cement ratio: max. 0.45 by weight.

.3 Compressive strength: 35 MPa at 28 days.

.4 Air content: 7% +/- 1%.

.5 Slump at point of discharge: 30 to 70 mm.

.2 Coloured concrete: add colour pigment to concrete in accordance with pigment manufacturer's direction. Follow the same procedure for each batch to ensure consistency of colour.

PART 3 - EXECUTION

3.1 CURBS

.1 Excavate for curbs to lines and grades required.

.2 Carefully consolidate curb grade; erect formwork to obtain the required curb section.

.3 Obtain approval of forms from Consultant before pouring concrete.

.4 Side forms shall be free of warp, and properly supported to maintain alignment and grade. Treat all form lumber with a non-staining mineral oil prior to concrete placement.

.5 Unless otherwise detailed, place two continuous 10M reinforcing bars, one near the top and one near the bottom of the curb. Cut reinforcing at expansion joints.

.6 Cut expansion joint material to the full cross-sectional shape of the curb and place at approximately 5 m o.c. and at the beginning and end of all curved sections. Place before pouring concrete; do not force into freshly poured concrete.

.7 Pour concrete in accordance with Section 03 30 00.

.8 Do not deposit concrete on frozen ground. When deposited in forms concrete shall have a temperature between 10°C and 30°C and these limits shall be maintained for 72 hours.

.9 Fill forms with an excess of concrete and, after compacting strike to the required level in such a manner as to force the coarse aggregate below the mortar surface; finish top surface with a wood float to an even, smooth, dense surface.

.10 Finish top edges of curb with tool to produce a rounded edge of 10 mm radius.

.11 Where indicated provide curb cuts and depressed curbs.

.12 Do not strip forms for 24 hours after pouring.

.13 After finishing and after stripping the forms, treat exposed curb surfaces with approved curing compound, or use other curing method acceptable to Consultant.

.14 Protect concrete from harmful effects of sunshine, drying winds and cold running of surface water for a minimum period of five days.

.15 Where curbs are located adjacent to concrete paving, pour curb and paving at the same time.

3.2 PAVING

.1 Provide standard paving at all locations, except where exposed aggregate paving is required.

.2 Examine subgrade over which concrete paving is to be installed, to ensure it is suitable for installation. Start of work shall imply acceptance of conditions.

.3 Fine grade subgrade to required levels and slopes. Meet compaction density and fill material requirements specified in Section 02310. Slope subgrade to permit drainage.

.4 Stake out layout of paving and obtain Consultant's review prior to proceeding.

.5 Over subgrade place minimum 150 mm compacted thickness of granular base material. Compact to 98% SPMDD.

.6 Erect formwork for paving to achieve lines and grades shown.

.7 On top of compacted base, place wire reinforcing mesh; before pouring concrete, raise mesh 25 mm above base. Unless otherwise detailed, provide 150 x 150mm, W18.7/W18.7 mesh. Cut mesh at expansion joints.

.8 Pour paving minimum 125 mm thick with a transverse slope of 1:50 unless otherwise detailed.

.9 Cut expansion joint material to full cross-sectional shape of paving and place at approximately 5 m o.c. in both directions and where paving abutt curbs, walks and other elements.

.10 Fill forms with concrete in accordance with Section 03 30 00. Provide broom finish non-slip surface.

.11 Treat exposed surfaces with curing compound in accordance with manufacturer's instructions, or moist cure in accordance with CSA A 23.1-14.

.12 Immediately after stripping forms, treat exposed edges with curing compound; do not strip forms for a minimum of 24 hours after pouring.

.13 Divide paving sections between expansion joints into the pattern indicated. Unless otherwise indicated, provide tooled joints during finishing stage at maximum 1500 mm o.c. in each direction or saw cut, if directed by Consultant after completion of finishing.

3.3 STAIR NOSING AND SLIP RESISTANT STRIPS

.1 Install stair nosing at each step. Terminate nosing 100 mm from end of stair each side. Cast nosing into wet concrete; leave top surface of slip resistant abrasive slightly above stair tread.

.2 Provide slip resistant strips at ramps spaced at 300 mm o.c., cast into wet concrete. Terminate strips 100 mm short of ramp width on each side. Set strips leaving top surface of abrasive slightly above concrete ramp surface.

3.4 COLOURED CONCRETE

.1 Provide coloured concrete at locations and in configuration shown.

.2 Place, finish, and cure coloured concrete in accordance with specified requirements and pigment manufacturer’s instructions.

.3 Allow excess surface water to evaporate before finishing.

.4 Do not over-finish surface. Avoid burning surface.

.5 Do not fog with water or cover surface of coloured concrete during initial curing process for a minimum of 48 hours.

3.5 SEALER

.1 Apply sealer to exposed surfaces of curbs and paving, in two coats, in accordance with manufacturer's directions. Prevent contamination of adjacent surfaces.

END

SECTION 32 92 23 - SODDING

PART 1 - GENERAL

1.1 GENERAL REQUIREMENTS

.1 Comply with requirements of Division 1.

1.2 RELATED WORK

.1 Excavating, filling, grading: Section 31 23 00

1.3 SCHEDULING

.1 Schedule sod laying to coincide with topsoil operations.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Topsoil: fertile and friable sandy loam with a minimum 4% organic matter content with acidity values between pH6.0 and 7.5, free from admixtures of subsoil, clay lumps, stones or roots over 25 mm in diameter, toxic chemicals or any other foreign matter. Test all topsoil, native and imported, for nitrogen, phosphorus and potassium, magnesium, soluble salt content, texture, organic matter content, pH and chemical residues and make improvements in accordance with analysis.

.2 Nursery sod: quality and source to comply with standards outlined in Metric Guide Specifications for Nursery Stock, Section 17, 1984 Edition, published by Canadian Nursery Trades Association. Sod to be nursery sod grown from 2 seed mixture containing 60-70% by weight of Kentucky Bluegrass cultivars and 30-40% by weight of Creeping, Red, Chewings or Hard Fescue cultivars.

.3 Water: potable.

.4 Herbicide: type, rate, and method of application subject to approval by Consultant.

.4 Fertilizer: complete synthetic slow release fertilizer with maximum 35% water soluble solution. Include 10-6-4 (NPK) fertilizer at 1 kg/m³ soil. Make adjustments in make-up and quality of fertilizer based on soil analysis, at no extra cost to Contract.

PART 3 - EXECUTION

3.1 PREPARATION OF SUBGRADE

.1 Examine rough graded subgrade over which sodding is to be installed to ensure it is suitable for installation. Start of work shall imply acceptance of conditions.

.2 Fine grade subgrade as required to bring it to required levels and slopes. Meet compaction densities and fill material requirements specified in Section 02315.

.3 Place and compact a layer of topsoil, minimum 150 mm compacted thickness.

.4 Ensure that top surface of topsoil is smooth, firm against footprints, with a fine loose texture, free of foreign objects larger than 30 mm in diameter.

.5 Prior to laying sod sprinkle topsoil with water.

3.2 LAYING OF SOD

.1 Prior to sodding, obtain approval from Consultant that finished grade and depth of topsoil are satisfactory.

.2 Specified fertilizer shall be applied and worked well into topsoil by discing, raking or harrowing; apply fertilizer within 48 hours of laying sod.

.3 Lay sod within 36 hours of being lifted.

.4 Sodding during excessively wet conditions, at freezing temperatures or over frozen soil is not acceptable.

.5 Lay sod in rows, perpendicular to slope, and with joints staggered. Butt sections closely without overlapping or leaving gaps between sections. Cut out irregular or thin sections with sharp implements.

.6 Provide close contact between sod and soil by light rolling. Use of heavy roller to correct irregularities in grade is not permitted.

.7 Water sod immediately after laying to obtain moisture penetration into top 100 mm of topsoil.

.8 Where sod abuts paving ensure top of sod and paving are flush, to ensure drainage without ponding at edge.

.9 Neatly trim sod around all shrub beds and tree saucers.

3.3 MAINTENANCE

.1 Maintain sodded area from start of installation until acceptance at Substantial Performance or later as specified hereinafter.

.2 Water sodded areas in sufficient quantities and at frequency required to maintain soil under sod continuously moist to depth of 75 mm to 100 mm.

.3 Cut grass to 40 mm when it reaches height of 60 mm. Remove clippings which will smother grassed areas.

.4 Maintain sodded areas weed-free.

.5 Fertilize sodded areas one month after sodding with 2:1:1 ratio fertilizer. Spread evenly at rate of 0.5 kg of nitrogen/100 m^2 and water in well.

3.4 ACCEPTANCE

.1 Sodded areas will be accepted at Substantial Performance or when the following conditions are met, whichever comes later:

.1 Sodded areas are properly established.

.2 Sod is free of bare and dead spots and without weeds.

.3 No surface soil is visible when grass has been cut to height of 40 mm.

.4 Sodded areas have been cut minimum two times.

END

1902 **ROOM FINISH SCHEDULE**

1.1 ROOM FINISH SCHEDULE - TABLE OF CONTENTS

.1	Notes on Schedule Items	Page 1
.2	List of Materials	Pages 1-2
.3	Finish Notes	Page 3
.4	General Notes	Page 3
.5	Room Finish Schedule	Pages 4-6

1.2 NOTES ON SCHEDULE ITEMS

.1 Room Finish Schedule shall be read in conjunction with list of materials, finish notes, general notes, specification and the drawings.

.2 The floor material indicated in this schedule is the exposed surface - refer to drawings and details for substrate materials.

.3 The wall material column does not indicate doors, windows, screens, etc. Refer to door schedule, specifications and drawings for these items.

.4 The material types in the floor finish column indicates the floor finish first/and the base material (e.g., CPT/R denotes carpet floor finish with a resilient base).

.5 Where no base is indicated on the schedule the wall material and finish shall extend to the floor.

.6 The letters N, S, W or E may be used to designate north, south, west or east walls, where different materials or colours are to be used.

.7 The ceiling material column on the schedule indicates the material and the finish on it, if any. If a colour selection is not given, it will be issued at a later date. The ceiling elevation is the clear height from the finish floor level to the underside of the ceiling system or material indicated. Where no ceiling height is indicated, the specified material is to be secured or applied directly to the structure above. Where no ceiling is indicated, the finish indicated is to be applied to the underside of the structure above, including all framing members.

.8 An asterisk (*) in any column indicates a reference to a note in the Remarks column to the right.

.9 Refer to the floor plans, general finish notes and details for extent of accent colours and paint finishes.

1.3 PAINT FINISHING

In addition to the paint finishing indicated on the Schedule, paint other materials, as specified in Section 09 91 00.

1.4 LIST OF MATERIALS

AI - acoustic insulation

BH	-	bulkhead
BRK	-	brick
C	-	concrete
CB	-	concrete block
CT	-	ceramic tile (see Specification Section 09 30 13)
		CT.1
EC	-	epoxy coating
EX	-	exposed structure
EXIST	-	existing
GB	-	gypsum board
GL	-	glass
HM	-	hollow metal
INSUL	-	insulation
LAP	-	lay in acoustic panels (see Specification Section 09 51 00)
METL	-	metal
P	-	paint
SFP	-	spray fireproofing
TERR	-	terrazzo
UNFIN	-	unfinished
U/S	-	underside
VCT	-	vinyl composite tile
WD	-	wood

1.5 **FINISH NOTES**

Note: the following requirements apply throughout the entire project unless specifically noted otherwise.

.1 Room Finish Schedule (RFS) shall be read in conjunction with list of materials, general notes, specifications and drawings. Colour selection will be made by Consultant at a later date.

.2 Refer to drawings for extent and location of all bulkheads.

.3 Heating units, recessed convectors, forced flow heaters, fire extinguisher cabinets, grilles, door grilles, access panels, wall fins, exposed pipes and hangers, miscellaneous metal (other than BE/FP or stainless steel) shall be painted to match the surface on which they occur, unless noted otherwise.

.4 Guard rails, ladders and miscellaneous metal in areas called to be unfinished or not covered by Room Finish Schedule shall be painted.

.5 Painted exposed metal in stairs, steel columns and miscellaneous steel elements.

.6 Paint interior HM doors and screen frames to match PLAM doors unless noted otherwise on Door Schedule. Paint all grilles in PLAM and HM doors to match colour of door.

.7 Paint interior of coves and valances matte white.

.8 Paint plywood backboards.

.9 Caulking colour(s) as selected by Consultant.

.10 Exterior metal work such as preformed metal flashing, metal trim, exposed vents, flues and roof mounted equipment (i.e., Mechanical A.H.U.'s, roof top condenser units, exhaust fans, etc.) to match colour of exterior windows.

.11 Exterior miscellaneous metal i.e., ladders, grilles, handrails, light standards to be painted.

1.6 **GENERAL NOTES**

.1 Ceiling elevation to be maximum possible (minimum ceiling elevation not less than 2400 mm above finished floor, unless indicated otherwise).

END

	ROOM NO.	FLOOR FINISH/ FLOOR BASE	WALL MATERIAL	WALL FINISH	CEILING MATERIAL	CEILING ELEVATION	REMARKS
NORTH ENTRANCE							
Existing Corridor	E101	EXIST TERR*	EXIST CB*	EXIST*	LAP*	EXIST	*Restore all affected existing finishes at floor wall and ceiling after new HM screen and doors installation.
Existing Vestibule	E102	EXIST TERR*	EXIST CB*	P	EXIST. GB*	EXIST	*Restore all affected existing finishes at floor wall and ceiling after new interior and exterior screens installation. Repair any affected areas of the exterior soffit
Existing Office	E103	EXIST*	EXIST CB* CB**	P**	EXIST.	EXIST	*Protect all room finishes and equipment prior to any work. Restore all affected existing finishes at floor and wall after new removal and reinstallation of the heater and AC unit. **New masonry work to match existing coursing. Paint affected areas with matching colour
WEST ENTRANCE							
Existing Corridor	E110	EXIST TERR/ TERR*	EXIST CB* EXIST BRK**	EXIST*	EXIST.LAP* LAP***	EXIST	*Restore all affected existing finishes at floor wall and ceiling after new HM screen and doors installation. **Exist brick wall chase to be disassembled, salvaged brick too be reused ***Change tiles, scope as indicated on drawings
Existing Corridor New Ramp	E110A	TERR/ TRR*	CONC CB BRK	TERR** CT BRK	EXIST. LAP LAP***	EXIST	*Surface of new ramp to be terrazzo to match existing in the corridor. **Carry terrazzo up the vertical surfaces of new concrete curb walls on both sides and over the top of curbs. ***Restore ceiling grid affected by the new

	ROOM NO.	FLOOR FINISH/ FLOOR BASE	WALL MATERIAL	WALL FINISH	CEILING MATERIAL	CEILING ELEVATION	REMARKS
							work. Replace existing ceiling tiles as shown on drawings
Existing Corridor New Stair	E110B	TERR/ TERR*	BRK**	TERR**	EXIST. LAP***	EXIST	*New stair, treads and risers be terrazzo to match existing in the corridor. Provide non-slip inserts at treads. **Carry terrazzo up the vertical surface of new concrete curb wall, provide 100 mm base on the brick chase wall. ***Restore ceiling grid affected by the new work. Replace existing ceiling tiles as shown on drawings
New Vestibule	N111	TERR/ TERR*	EXIST BRK**	-	LAP***	EXIST	*Install new terrazzo to match exist. in place of removed tiles. Repair all affected remaining terrazzo **Exist brick wall chase to be disassembled, salvaged brick too be reused for rebuilt chase *** Match existing ceiling height; note there is a concrete slab above
SOUTH ENTRANCE							
Existing Corridor	E120	EXIST TERR/ TERR*	EXIST CB* EXIST BRK**	P* EXIST**	EXIST.LAP* LAP***	EXIST	*Restore all affected existing finishes at floor wall and ceiling after new HM screen and doors installation. **Exist brick wall chase to be partly disassembled, salvaged brick too be reused ***Change tiles, scope as indicated on drawings
New Vestibule	N121	TERR/ TERR*	EXIST BRK**	-	LAP***	EXIST	*Install new terrazzo to match exist. in place of removed tiles. Repair all affected remaining terrazzo **Exist brick wall chase to be disassembled, salvaged brick too be

	ROOM NO.	FLOOR FINISH/ FLOOR BASE	WALL MATERIAL	WALL FINISH	CEILING MATERIAL	CEILING ELEVATION	REMARKS
							reused for rebuilt chase *** Match existing ceiling height; note there is a concrete slab above

C:\MG Architect\PROJECTS\1902 Port Credit S.S. Alterations\Schedules and Drawing Lists\ROOM-FIN.doc

DOOR SCHEDULE - TABLE OF CONTENTS

.1	Door Schedule Notes	Pages 1-2
.2	Door Types	Page DS-1
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.4	Door Schedule	Page 1

1.2 NOTES ON SCHEDULE ITEMS

.1 Door Schedule (DS) to be read in conjunction with room finish schedule (RFS), Drawings and Specifications.

.2 Door number: The prefix "X" in front of the door number designates an exterior door. The door number is the room number. Where two doors exist in the same room the letter "A" or "B" differentiates the two doors.

.3 Door type and size: The door type, width and material are indicated by the following code: (all doors in HM frames are 45 mm thick, 950 mm wide and 2150 mm high, unless noted otherwise).

e.g., 2A1000HM:

2A - Door type (see "Door Types" in this schedule). A prefix "2" indicates a pair of doors of equal width.

1000 - Rebate width, in mm (X height, in mm - if indicated).

HM - Door material (see list of abbreviations).

.4 All frames shall be Hollow Metal, unless noted otherwise.

.5 Door grilles cannot be installed in fire doors - where 2 numbers are indicated, they refer to the sizes of the door grille required (in mm, height first). For a pair of doors, a grille is required in each leaf.

.6 An hour rating ("HR") or letters A, B, C indicate the required fire label on the door and frame. Note: (FS) indicates a fire separation only is required (labeled construction only is required).

.7 For details of hardware, see Specification Section 08 71 00.

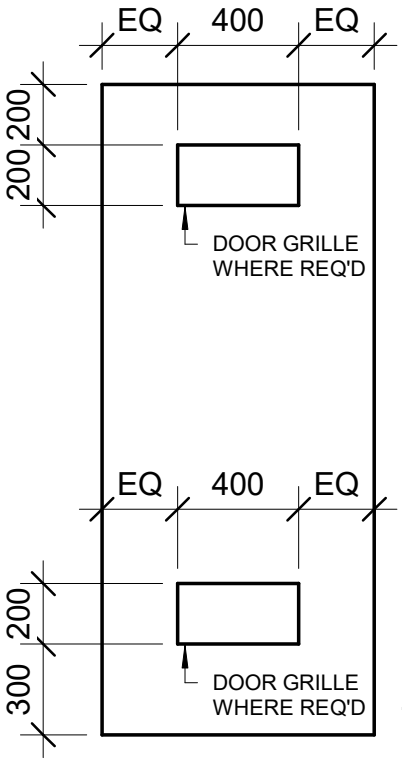
.8 An asterisk (*) in any column indicates a reference to a note in the Remarks column to the right.

.9 Refer to room finish schedule - 1.4 List of Materials for P (Paint), PLAM finishes and colours indicated in the door and frame finish columns.

1.3 LIST OF ABBREVIATIONS

AL	-	aluminum
EXIST	-	existing
HM	-	hollow metal
MTL	-	metal
P	-	paint

END



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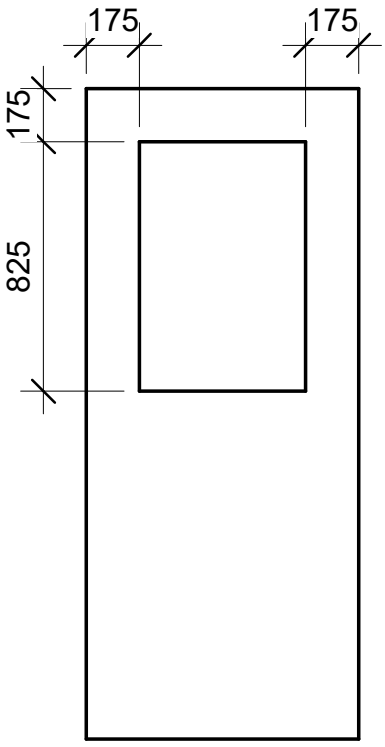

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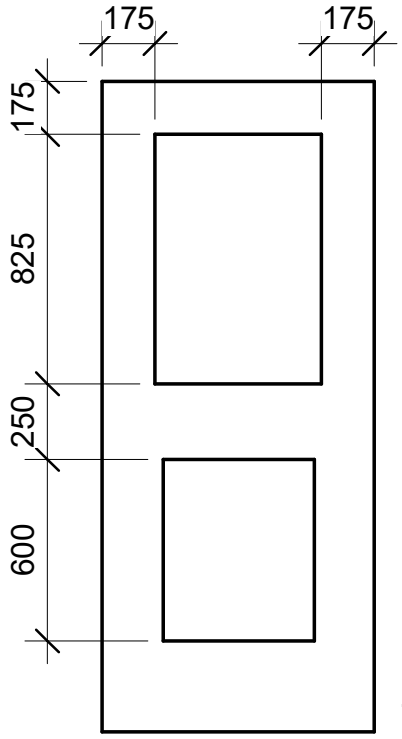


TYPE C

peel District School Board

5650 Hurontario Street
Mississagua, Ont., L5R 1C6
Tel: (905) 890-1099
Fax: (905) 890-9453

PORT CREDIT SECONDARY SCHOOL

BARRIER FREE ENTRANCES ALTERATIONS 2021

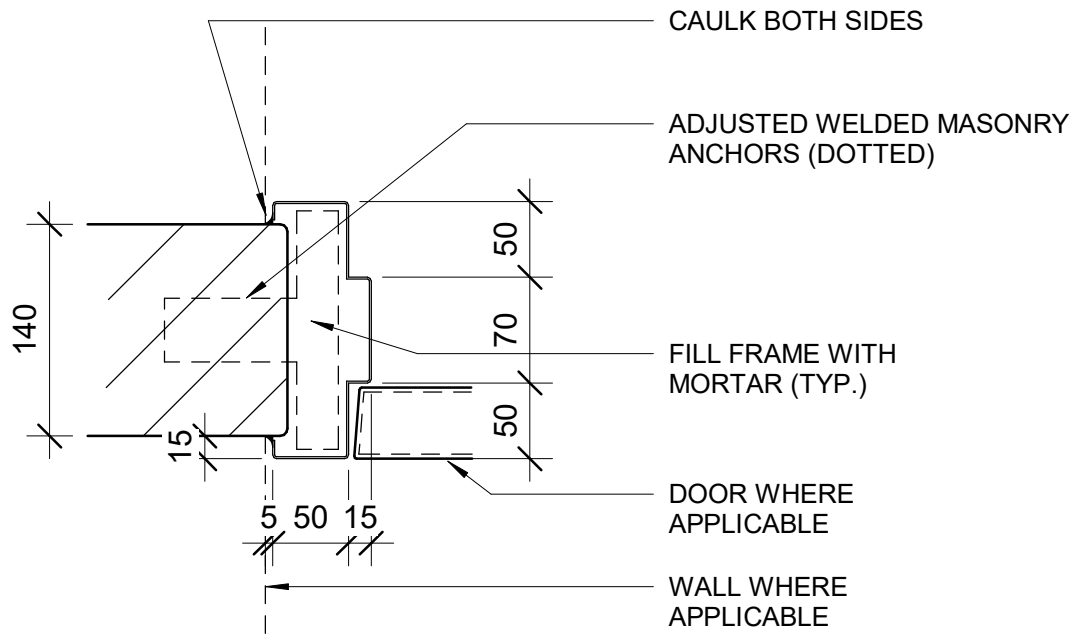
Brampton Ontario

MG Architects Inc.

18 Kuhl Ave, Toronto, Ontario M5B 5X9, Canada T/F 416-239-1933

DOOR TYPES

Scale	Drawn by
AS NOTED	Author
Date	Checked by
JUNE 2021	Checker
Project No.	Drawing No.
1902	DS-1



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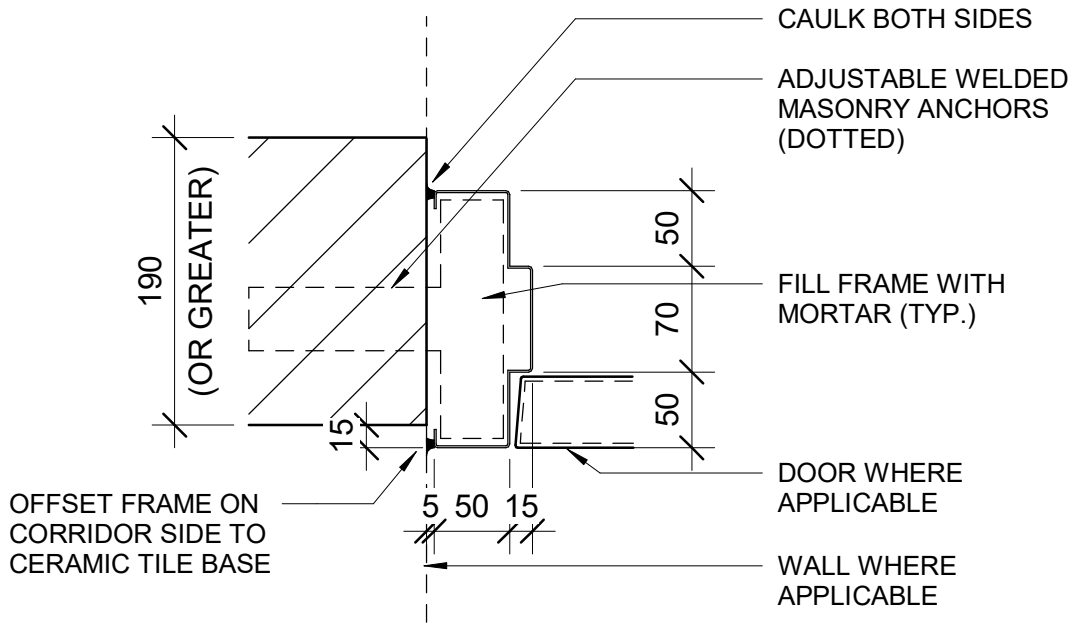

TYPE 2 (190 CONC. BLOCK OR GREATER)

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5650 Hurontario Street
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PORT CREDIT SECONDARY SCHOOL

BARRIER FREE ENTRANCES ALTERATIONS 2021

Brampton Ontario

MG Architects Inc.
18 Kuhl Ave, Toronto, Ontario M5B 5X9, Canada T/F 416-239-1933

DOOR FRAME TYPES

Scale	Drawn by
AS NOTED	Author
Date	Checked by
JUNE 2021	Checker
Project No.	Drawing No.
1902	DS-2

PORT CREDIT SECONDARY SCHOOL
BARRIER FREE ENTRANCES ALTERATIONS 2021 DOOR SCHEDULE PROJECT NO. 1902

OPENING No.	DOOR TYPE AND SIZE	DOOR FINISH	FIRE LABEL OR GRILLE	GLASS TYPE	FRAME TYPE	FRAME FINISH	REMARKS
E102	2CHM 1000W* 800W**	P	-	TG	2***	P	* Automatic door opener **Site verify the width of the smaller leaf ***HM Screen MS01. Note: No centre mullion.
XE102	2CAL 1000* 800*	ANOD	-	TG	3***	P	* Automatic door opener **Site verify the width of the smaller leaf ***Alum frame part of Screen CW01
N111	2C1000HM*	P	-	TG	2**	P*	* Automatic door opener **HM Screen MS02
XN111	EXIST* ALUM	EXIST	-	TG**	EXIST*** ALUM SCREEN	P	* Automatic door opener **Change all glass in doors and screen ***Clean exist doors and frame. Reroute the exist. door contact conduits to hide them inside the frame centre mullion Add 3mm formed alum plate at the sidelight spandrel midrail to accommodate push button
121	2C1000HM*	P	-	TG	2**	P	* Automatic door opener ** Screen MS03
X121	2C1000AL*	P	-	TG	3**	P	* Automatic door opener **Alum frame part of Screen CW02

OHE CONSULTANTS
Occupational Hygiene & Environment

HAZARDOUS BUILDINGS MATERIALS SURVEY

Accessibility Entrances
Port Credit Secondary School
70 Mineola Road East
Mississauga, Ontario
L5G 2E5

Presented to:

Peel District School Board
933 Central Parkway West
Mississauga, Ontario
L5C 2T9

May 2021

OHE Project No.: 25736

Submitted by:

OHE Consultants
Occupational Hygiene & Environment
311 Matheson Blvd. East
Mississauga, Ontario
L4Z 1X8

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APPENDIX E: Site Photographs

OHE Consultants (OHE) was retained by the Peel District School Board (PDSB) to perform a Pre-Renovation Hazardous Building Materials Survey at Port Credit Secondary School located at 70 Mineola Road East, Mississauga, Ontario (the "Subject Location").

The initial field work was carried out on June 26 and July 15, 2020 by Mr. Viraj Daruwala, Project Specialist and Mr. Huntly Xiao, Junior Project Specialist with OHE. The additional field work was carried out on May 25, 2021 by Mr. Darren Kim, Project Manager with OHE. The survey consisted of a review of existing environmental reports (where available), visual inspection for the presence of hazardous building materials and testing and sampling of materials suspected to contain asbestos and lead.

A summary of hazardous building materials identified during the survey is presented below:

Asbestos

- Asbestos-containing cladding panel (cement board) was identified above the window of Entrance 11 at the Subject Location.
- Asbestos-containing drywall joint compound was identified on the walls, ceiling and bulkhead at the Subject Location.

Lead

- Lead-containing paint was identified in the surveyed area at the Subject Location. A detailed description of the colours and locations is reported in Table B.2 presented in Appendix B. It is assumed that the results presented apply to all paint(s) of the same colour.
- Lead is often present in ceramic building products such as floor or wall tiles, in wiring connectors and electric cable sheathing, in solder joints on copper piping or in lead piping.

Mercury

- Mercury-containing thermostats were not identified in the surveyed area at the Subject Location during the survey.
- Mercury is suspected to be present as a vapour in fluorescent light bulbs, and as a component in electrical equipment, such as silent, position dependent switches.

Silica

- Silica is presumed to be present in materials such as fillers for paints and mastic and in bricks, ceramics, masonry, concrete, and mortar.

This hazardous building materials survey was limited to the areas associated with the renovation area highlighted in the drawing provided by client.

Hazardous building materials may be present in areas not accessible for view and identification. In situations where the hazardous building materials extend into a non-accessible area, the materials were assumed to also be present in those areas and have been reported as such. Contractors and maintenance personnel must be warned of the possibility of undisclosed suspect building materials when breaking into enclosed areas. All suspected hazardous building materials discovered in these areas must be treated as hazardous until proven otherwise through bulk sampling and analysis.

OHE's recommendations, based on the findings of the survey, are as follows:

- Provide a copy of this report to contractors bidding on or performing work within the Subject Location.

- Remove all Asbestos-Containing Materials (ACMs) that are likely to be disturbed during planned renovations or demolition in accordance with all applicable guidelines and regulations.

- Removal of asbestos-containing cladding panel (cement board) will require removal operation procedures as specified in Ontario Regulation 278/05 (Type 1 Operations).

- Removal of drywall with asbestos-containing drywall joint compound will require removal operation procedures as specified in Ontario Regulation 278/05 (Type 1 Operations for <1 m^2 and Type 2 Operations for ≥ 1 m^2).

- Remove all lead-containing materials that are likely to be disturbed during planned renovations or demolition.

- Removal of lead-containing materials shall be carried out in accordance with the following requirements:
  - Guideline: Lead on Construction Projects (issued by Ontario Ministry of Labour);
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Renovations and/or demolition operations that are likely to generate silica-containing dust shall be carried out in accordance with the following requirements:
  - Guideline: Silica on Construction Projects (issued by Ontario Ministry of Labour);
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Remove all mercury-containing equipment that is likely to be disturbed during planned renovations or demolition.

- Removal of mercury-containing equipment or components shall be carried out in a manner that will eliminate the potential for spills in accordance with the following regulations:
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Should previously unidentified suspect hazardous materials be discovered during any demolition or renovation work in the above mentioned location, the contractor shall stop all work in the vicinity of the suspected hazardous material and immediately notify personnel from both PDSB and OHE.

This executive summary provides a brief overview of the survey findings. It is not intended to substitute for the complete survey report, nor does it discuss specific issues documented in the report. The executive summary should not be used as a substitute to reading the complete report.

This report is not a scope of work/specifications document for the abatement/remediation of hazardous materials and shall not be used for such purposes.

1. INTRODUCTION AND REGULATORY REQUIREMENTS

1.1 Introduction and Scope

OHE Consultants (OHE) was retained by the Peel District School Board (PDSB) to perform a Pre-Renovation Hazardous Building Materials Survey at Port Credit Secondary School located at 70 Mineola Road East, Mississauga, Ontario (the "Subject Location").

In accordance with Sections 25 and 30 of the Ontario Occupational Health and Safety Act, Designated Substances and other potentially hazardous building materials must be identified prior to construction or demolition that may disturb such materials.

Designated Substances are a group of eleven (11) substances that are known to be hazardous for which the Ontario Ministry of Labour (MOL) has developed specific guidelines and regulations regarding their handling to minimize exposure and human health and safety concerns. The 11 Designated Substances include:

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

Regarding designated substances, this survey focused on the identification of asbestos, lead, mercury, and silica. The remaining seven (7) designated substances, Isocyanates, Vinyl Chloride, Benzene, Acrylonitrile, Coke Oven Emissions, Arsenic, and Ethylene Oxide, are not commonly found in buildings of this type and no potential sources were reported to OHE by the client prior to the survey. As such, they were not included in this survey.

The survey was limited to the areas renovation areas highlighted on the drawing provided by PDSB.

This report is not a scope of work/specifications document for the abatement/remediation of hazardous materials and shall not be used for such purposes.

1.2 Applicable Regulations and Guidelines

1.2.1 Designated Substances

A Designated Substances report is completed to fulfil the Owner's requirements under Section 30 of the Ontario Occupational Health and Safety Act. A copy of the report must be provided to the general contractor who in turn must submit the report to all subcontractors prior to the commencement of any demolition, construction or renovation work.

1.2.2 Asbestos

Ontario Regulation 278/05 (as amended) – "Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations" (O. Reg. 278/05) applies to buildings with regards to maintenance, renovations or demolition work where asbestos-containing materials are or may be disturbed.

When ACMs are present in a building, the owner must maintain an Asbestos Management Program (AMP). The major requirements of the AMP for the building owner include:

- Preparation and maintenance of a record of the location of asbestos-containing materials in the building;
- Notification of the building's tenants of the location of such material;
- Establishment of a training program for those employees of the owner who may work in close proximity to and disturb the material;
- Periodic inspection of the material to determine its condition;
- Remedial action on material that has deteriorated following the precautions and procedures prescribed by the regulation as Type 1, Type 2 and Type 3; and
- Removal of ACMs to the extent practicable prior to demolition of a building or part thereof.

O. Reg. 278/05 prescribes work to be conducted according to three (3) procedure types. The procedure to be followed depends on the type of material and the regulation provides instruction on how the work must be performed.

The following regulations govern the control, handling, transport and disposal of asbestos in Ontario:

- O. Reg. 278/05;

- Ontario Regulation 490/09 (as amended) – "Designated Substances" (O. Reg. 490/09); and
- Ontario Regulation 213/91 (as amended) – "Construction Projects" (O. Reg. 213/91);
- Ontario Regulation 347/90 (as amended) – "General – Waste Management" (O. Reg. 347/90);
- Regulations Respecting the Handling and Offering for Transport and Transporting of Dangerous Goods.

1.2.3 Lead

Ontario Ministry of Labour Guideline: Lead on Construction Projects (issued September 2004, updated April 2011) has been prepared to raise the awareness of employers and workers to the hazards posed by lead in construction and the measures and procedures that should be taken to control those hazards.

The document provides information on the following:

- Health effects associated with lead exposure;
- Methods for controlling the lead hazard;
- Classification of work; and,
- Measure and procedures for working with lead.

The MOL Guideline classifies operations involving lead-containing materials into three groups, Type 1, Type 2 and Type 3 operations. The procedure to be followed depends on the anticipated airborne concentration of lead generated during the operation, which is dependent on the type of work performed.

1.2.4 Silica

Guideline: Silica on Construction Projects (issued by Ontario Ministry of Labour) has been prepared to raise the awareness of employers and workers to the hazards posed by silica in construction and the measures and procedures that should be taken to control those hazards.

The document provides information on the following:

- Health effects associated with silica exposure;
- Methods for controlling the silica hazard;
- Classification of work; and,

- Measure and procedures for working with silica.

The MOL Guideline classifies operations involving silica-containing materials into three groups, Type 1, Type 2 and Type 3 operations. The procedure to be followed depends on the anticipated airborne concentration of silica generated during the operation, which is dependent on the type of work performed. The guideline also provides instruction on how the work must be performed.

1.2.5 Remaining Designated Substances

There are no specific MOL guidelines or regulations for control of the other eight (8) designated substances on construction projects. However, the MOL actively enforces the general duty clause of the Health and Safety Act which protects workers and provides guidance on exposure monitoring, permissible exposure levels, medical monitoring, etc. for all designated substances in an industrial setting. O. Reg. 490/09 also provides guidance on the handling of designated substances.

2. METHODOLOGY

2.1 Survey Methodology

The initial fieldwork was conducted by Mr. Viraj Daruwala, Project Specialist and Mr. Huntly Xiao, Junior Project Specialist with OHE on June 26 and July 15, 2020. The additional fieldwork was conducted by Mr. Darren Kim, Project Manager with OHE on May 25, 2021. Identification of materials suspected of containing hazardous building materials was performed by the surveyors who, through their knowledge (from published literature and past experience), are able to identify the potential presence of such materials in buildings. The fieldwork consisted of surveying all accessible areas in order to obtain an overall representation of the hazardous materials present.

OHE followed the protocols outlined in O. Reg. 278/05 for collecting and analyzing bulk samples of materials suspected to contain asbestos. Visual assessment of the material was the primary method of identification with occasional physical contact for the purpose of collecting bulk samples or examining for underlying layers.

Representative bulk samples were collected of materials suspected of containing asbestos. The tools used by the investigator to collect the bulk samples were cleaned after each sample was collected to avoid cross contamination. Samples were placed in plastic sealable containers, marked with a unique sample number and transported to an independent accredited laboratory for analysis.

2.2 Methodology for Bulk Sample Analysis

Bulk samples of suspect ACMs were analyzed in accordance with a US EPA method for the determination of asbestos content in bulk materials, EPA Method 600/R-93/116. The EPA Method requires that the samples be analyzed using the Polarized Light Microscopy (PLM) technique. The percentage of asbestos in the sample is measured as perceived by the analyst in comparison to standard area projections and is greatly influenced by the analyst's experience. The method is useful for the qualitative identification of asbestos (type) and the semi-quantitative (% estimates) determination of asbestos content in bulk samples.

The asbestos bulk samples were analyzed by EMC Scientific Inc. (EMC), an independent and NVLAP accredited laboratory.

2.3 Methodology for Lead Analysis

Bulk samples of suspect lead-containing materials were analyzed in accordance with a US EPA method for the determination of lead content in bulk materials, EPA Method (SW 846 3050B/7000B). The EPA Method requires that the samples be analyzed using the Flame Atomic Absorption Spectrometry (SW 846 3050B/7000B) technique. This method may be used determine trace elements in solution.

The lead bulk samples were analyzed by EMSL Canada Inc. (EMSL), an independent and Environmental Lead Laboratory Accreditation Program (ELLAP) accredited laboratory.

3. RESULTS

The results of the survey for asbestos and lead are presented in Appendix B. The results are presented in the form of summary tables for each of the materials.

Locations of bulk samples for asbestos are shown on Drawing 1.1 presented in Appendix A.

Locations of bulk samples for lead are shown on Drawing 2.1 presented in Appendix A.

Location of identified non-friable ACM is shown on Drawing 3.1 presented in Appendix A.

Laboratory analysis reports (asbestos and lead) are presented in Appendix D.

Selected site photographs are presented in Appendix E.

4. FINDINGS

4.1 Asbestos-Containing Materials

4.1.1 Sprayed Fireproofing

Suspected asbestos-containing sprayed fireproofing was not observed in the surveyed area at the Subject Location.

4.1.2 Texture Finishes

Suspected asbestos-containing texture finishes were not observed in the surveyed area at the Subject Location.

4.1.3 Mechanical Systems Insulation

Mechanical systems insulation observed within the surveyed area at the Subject Location was visually identified as fibreglass, which is not suspected to contain asbestos.

4.1.4 Suspended Ceiling Tiles

Suspected asbestos-containing Suspended Ceiling Tiles (SCTs) were observed in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-1A to 25736-1C), of the SCTs was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

4.1.5 Plaster Material

Suspected asbestos-containing plaster was observed in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-12A to 25736-12C), of the plaster was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

4.1.6 Vinyl Floor Tiles

Suspected asbestos-containing vinyl floor tiles were not observed in the surveyed area at the Subject Location.

4.1.7 Vinyl Sheet Flooring

Suspected asbestos-containing vinyl sheet flooring was not observed in the surveyed area at the Subject Location.

4.1.8 Drywall Joint Compound

Suspected asbestos-containing Drywall Joint Compound (DJC) was observed at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-11A to 25736-11C), of the DJC was collected as part of the survey. OHE Samples 2573611A was determined to contain 1% Chrysotile asbestos. The remaining samples in the sample set were not analyzed as per O. Reg. 278/05.

4.1.9 Other ACM

Caulking

Suspected asbestos-containing grey caulking was observed between the window frame and the wall in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-3A to 25736-3C), of the grey caulking was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

Suspected asbestos-containing white caulking was observed between the glass and the window frame in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-5A to 25736-5C), of the white caulking was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

Suspected asbestos-containing black caulking was observed between the glass and the window frame in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-7A to 25736-7C), of the black caulking was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

Mortar

Suspected asbestos-containing mortar was observed between the bricks in the surveyed area at the Subject Location. One (1) sample set, consisting of two (2) samples (OHE Samples 25736-6A and 25736-6B), of the mortar was collected as part of the survey. Asbestos was not detected in the two (2) samples collected and analyzed.

Expansion Joint

Suspected asbestos-containing expansion joint was observed in the gaps between the bricks in the surveyed area at the Subject Location. One (1) sample set, consisting of three (3) samples (OHE Samples 25736-2A to 25736-2C), of the expansion joint was collected as part of the survey. Asbestos was not detected in the three (3) samples collected and analyzed.

Cladding Panel (Cement Board)

Suspected asbestos-containing cladding panel (cement board) was observed on the soffit and the exterior walls at the Subject Location. Two (2) sample sets, consisting of five (5) samples (OHE Samples 25736-4B to 25736-4C and 25736-10A to 25736-10C), of the cladding panel (cement board) were collected as part of the survey. OHE Sample 25736-4B, collected above the exterior window of Entrance 11, was determined to contain 10% Chrysotile asbestos. The remaining sample in the sample set was not analyzed as per O. Reg. 278/05. Asbestos was not detected in the remaining three (3) samples collected and analyzed.

4.2 Lead

Lead-containing paint was identified in the surveyed area at the Subject Location. A detailed description of the colours and locations is presented in Table B.2 found in Appendix B. It is assumed that the results presented apply to all paint(s) of the same colour.

Lead may also be present in ceramic building products such as floor or wall tiles, in wiring connectors and electric cable sheathing, in solder joints on copper piping, or in lead piping.

4.3 Mercury

Mercury-containing thermostats were not identified in the surveyed area at the Subject Location during the survey.

Mercury is suspected to be present as a vapour in fluorescent light bulbs, and as a component in electrical equipment, such as silent, position dependent switches.

4.4 Silica

Silica is presumed to be present in materials such as fillers for paints and mastic and in brick, concrete, and mortar.

4.5 Isocyanates

The material was not identified during the site visit and is not expected to be found.

4.6 Vinyl Chloride

The material was not identified during the site visit and is not expected to be found.

4.7 Benzene

The material was not identified during the site visit and is not expected to be found.

4.8 Acrylonitrile

The material was not identified during the site visit and is not expected to be found.

4.9 Coke Oven Emissions

The material was not identified during the site visit and is not expected to be found.

4.10 Arsenic

The material was not identified during the site visit and is not expected to be found.

4.11 Ethylene Oxide

The material was not identified during the site visit and is not expected to be found.

5. DISCUSSION

5.1 Asbestos

Prior to disturbance of asbestos-containing materials, the materials should be removed using the appropriate type of removal operation as per O. Reg. 278/05.

5.2 Lead

Prior to disturbance of lead-containing materials, the materials should be removed using the appropriate type of removal operation as specified in the applicable guidelines and regulations.

5.3 Mercury

Mercury-containing equipment and components should be handled using the appropriate type of procedures as specified in the applicable regulations and guidelines.

5.4 Silica

Silica-containing materials should be handled using the appropriate type of operation as specified in the applicable guidelines and regulations.

The hazardous building materials survey was limited to the areas associated with the renovation areas as highlighted in the drawing provided by the client.

Hazardous building materials may be present in areas not accessible for view and identification. In situations where hazardous building materials extend into a non-accessible area, the materials were assumed to also be present in those areas and have been reported as such. Contractors and maintenance personnel must be warned of the possibility of undisclosed hazardous building materials in enclosed areas. All previously unidentified suspected hazardous building materials discovered in these areas must be treated as hazardous until proven otherwise through bulk sampling and analysis.

6. RECOMMENDATIONS

OHE's recommendations, based on the findings of the survey, are as follows:

- Provide a copy of this report to contractors bidding on or performing work within the Subject Location.
- Remove all Asbestos-Containing Materials (ACMs) that are likely to be disturbed during planned renovations or demolition in accordance with all applicable guidelines and regulations.

- Removal of asbestos-containing cladding panel (cement board) will require removal operation procedures as specified in Ontario Regulation 278/05 (Type 1 Operations).

- Removal of drywall with asbestos-containing drywall joint compound will require removal operation procedures as specified in Ontario Regulation 278/05 (Type 1 Operations for <1 m^2 and Type 2 Operations for ≥ 1 m^2).

- Remove all lead-containing materials that are likely to be disturbed during planned renovations or demolition.

- Removal of lead-containing materials shall be carried out in accordance with the following requirements:
  - Guideline: Lead on Construction Projects (issued by Ontario Ministry of Labour);
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Renovations and/or demolition operations that are likely to generate silica-containing dust shall be carried out in accordance with the following requirements:
  - Guideline: Silica on Construction Projects (issued by Ontario Ministry of Labour);
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Remove all mercury-containing equipment that is likely to be disturbed during planned renovations or demolition.

- Removal of mercury-containing equipment or components shall be carried out in a manner that will eliminate the potential for spills in accordance with the following regulations:
  - Designated Substances Regulation, Ontario Regulation 490/09; and
  - Regulation for Construction Projects, Ontario Regulation 213/91.

- Should previously unidentified suspect hazardous materials be discovered during any demolition or renovation work in the above mentioned location, the contractor shall stop all work in the vicinity of the suspected hazardous material and immediately notify personnel from both PDSB and OHE.

7. GENERAL STATEMENT OF LIMITATIONS

The information and opinions rendered in this report are for use exclusively by **PDSB.** OHE reserves the right to review and comment on any interpretation of the data or conclusions derived by the **PDSB**. No other representation, either expressed or implied, is included in this report.

The survey did not consider current or past use of the property or occupant articles within the building (i.e. furniture, stock items, etc.), nor does it report on possible contaminants in the soil and groundwater of the site, vessels, drums, underground storage tanks, etc. The survey consisted of accessible areas only; samples were not collected if accessibility was restricted.

The field observations and analysis are considered sufficient in detail and scope to form a reasonable basis for the findings presented in this report. OHE warrants that the findings and conclusions contained herein have been made in accordance with generally accepted evaluation methods in the industry and applicable regulations at the time of the performance of the survey.

It is possible, due to the nature of building construction, that conditions may exist which could not be reasonably identified within the scope of the sampling or which were not apparent during the site investigation. OHE believes that the information collected during the sampling period concerning the property is reliable. No other warranties are implied or expressed.

OHE Consultants
Occupational Hygiene & Environment

Prepared by:

Original signed by:

Viraj Daruwala, M. Eng.
Project Specialist

Original signed by:

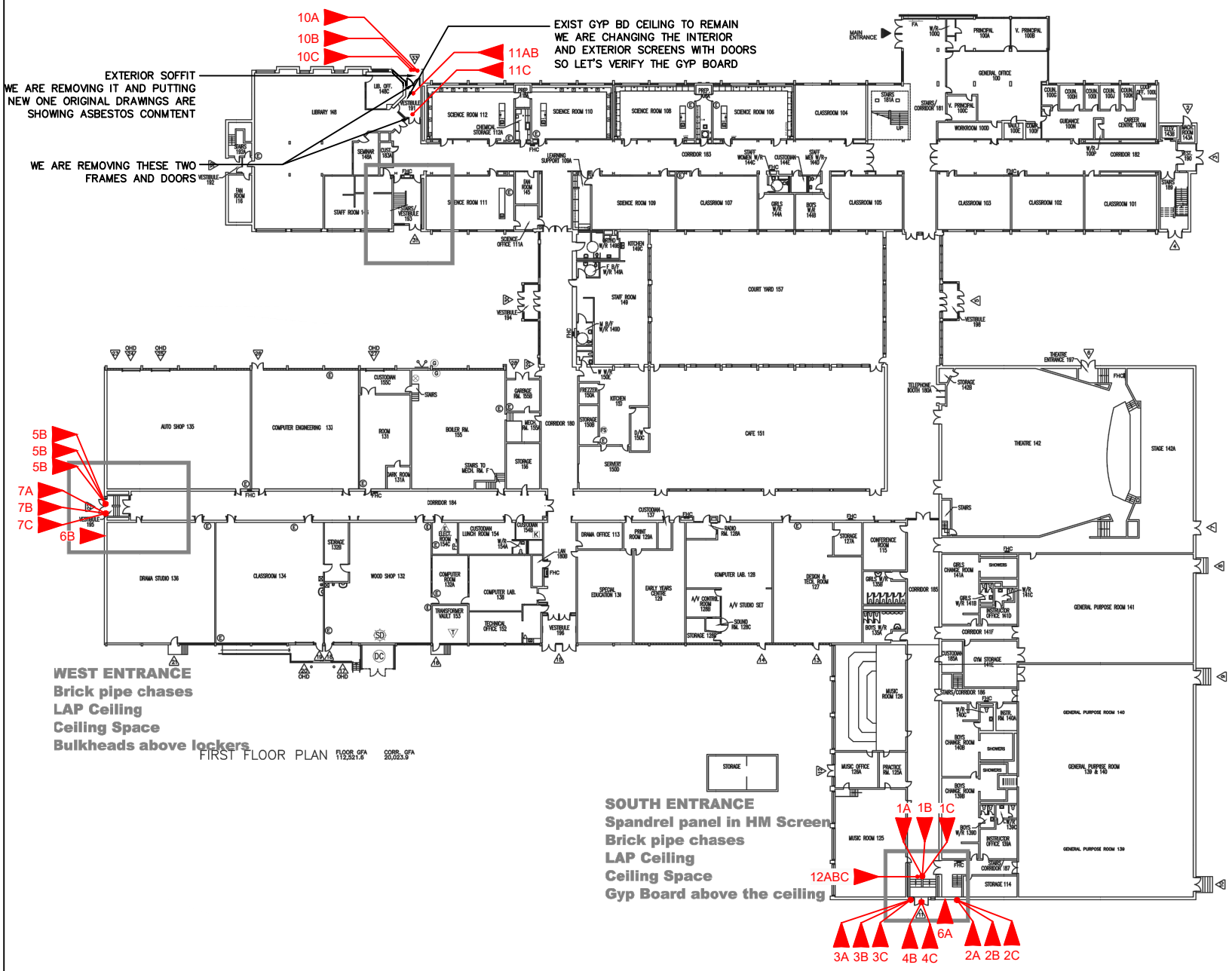
Michal Zitnik, M.H.Sc., ROH, CIH
Vice President

Reviewed by:

Original signed by:

Darren Kim
Project Manager

DRAWINGS



FIRST FLOOR PLAN FLOOR GFA 112,021.6 CORR. GFA 20,023.9

Legend:

xx Asbestos Bulk Sample Location

Notes:
Locations of site features are approximate and may vary from that shown.

Drawing Title:

Asbestos Bulk Sample Locations

Client Address:

Peel District School Board
933 Central Parkway West
Mississauga, Ontario

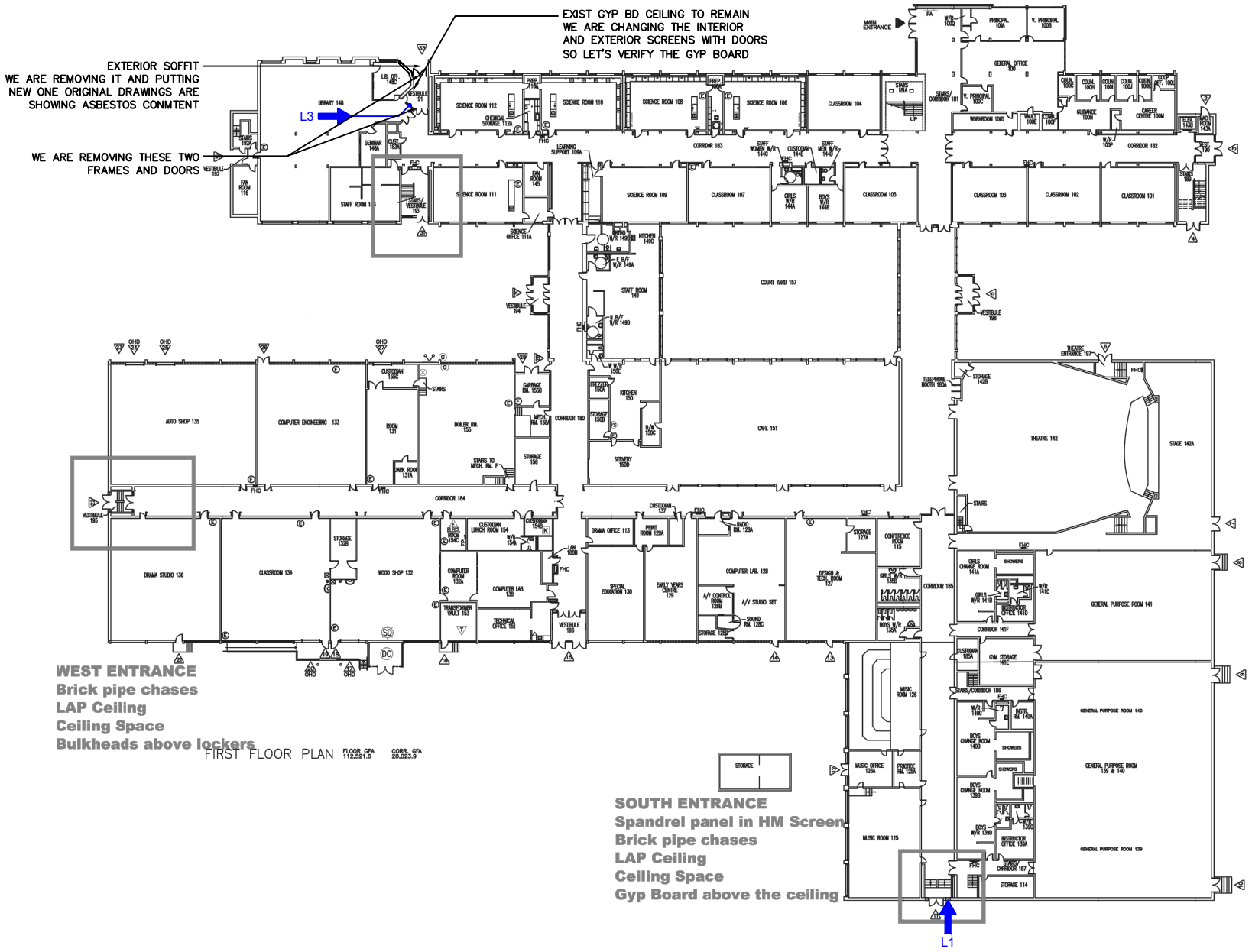
Project Location:

Main Floor
Port Credit Secondary School
70 Mineola Road East
Mississauga, Ontario

Project No: 25736

Date: Jun. 2021	Drawing No: 1.1
Scale: NTS	
Drawn By: SCJ	
Approved By: FA	

CONSULTANTS
Occupational Hygiene & Environment



Legend:

LX Lead Bulk Sample Location

Notes:
Locations of site features are approximate and may vary from that shown.

Drawing Title:

Lead Bulk Sample Locations

Client Address:

Peel District School Board
933 Central Parkway West
Mississauga, Ontario

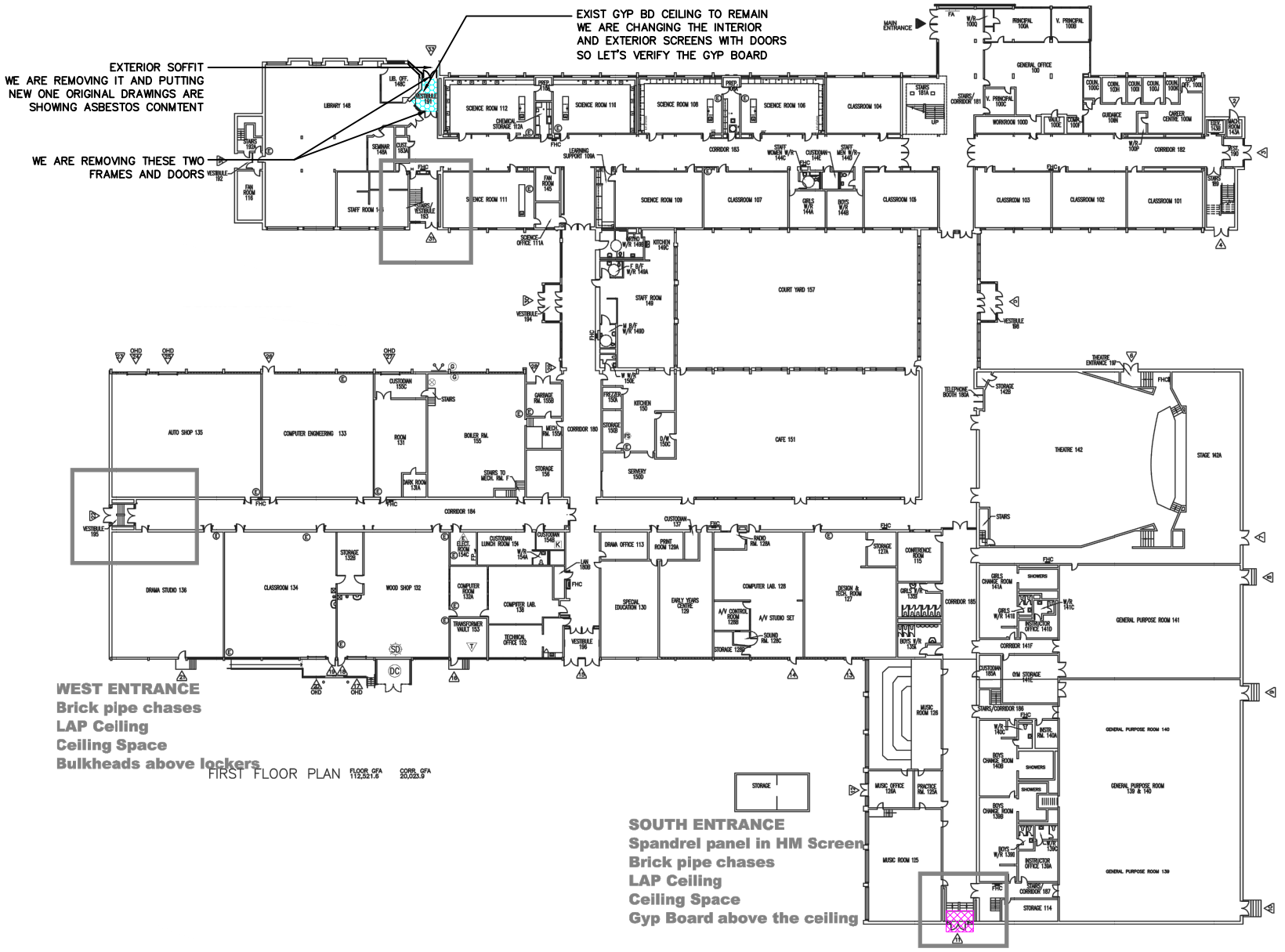
Project Location:

Main Floor
Port Credit Secondary School
70 Mineola Road East
Mississauga, Ontario

Project No: 25736

Date: Jun. 2021	Drawing No: 2.1
Scale: NTS	
Drawn By: SCJ	
Approved By: FA	

CONSULTANTS
Occupational Hygiene & Environment



Legend:

- Cladding Panel (Cement Board)
- Drywall Joint Compound

Notes:
Locations of site features are approximate and may vary from that shown.

Drawing Title:

Non-Friable Asbestos-Containing Materials

Client Address:

Peel District School Board
933 Central Parkway West
Mississauga, Ontario

Project Location:

Main Floor
Port Credit Secondary School
70 Mineola Road East
Mississauga, Ontario

Project No: 25736

Date: Jun. 2021	Drawing No: 3.1
Scale: NTS	
Drawn By: SCJ	
Approved By: FA	

CONSULTANTS
Occupational Hygiene & Environment

RESULTS OF SAMPLING AND TESTING FOR:

Asbestos
Lead

Table B.1

Summary of Bulk Sample Analysis Results for the Presence of Asbestos by Polarized Light Microscopy (PLM) with Dispersion Staining

Collected on June 26 and July 15, 2020

OHE Sample Number	Sample Description	Sample Location	Analysis Results (% and Type of Asbestos)
25736-1A	Suspended Ceiling Tiles (SCTs): 2'x4' with pinholes and fissures	Ceiling, Entrance 11	None Detected
25736-1B	SCTs: 2'x4' with pinholes and fissures	Ceiling, Entrance 11	None Detected
25736-1C	SCTs: 2'x4' with pinholes and fissures	Ceiling, Entrance 11	None Detected
25736-2A	Expansion joint	West exterior wall, Entrance 11	None Detected
25736-2B	Expansion joint	West exterior wall, Entrance 11	None Detected
25736-2C	Expansion joint	West exterior wall, Entrance 11	None Detected
25736-3A	Caulking: grey	Between window panel and wall, Entrance 11	None Detected
25736-3B	Caulking: grey	Between window panel and wall, Entrance 11	None Detected
25736-3C	Caulking: grey	Between window panel and wall, Entrance 11	None Detected
25736-4B	**Cladding panels**	**Exterior of Entrance 11**	**10% Chrysotile**
25736-4C	**Cladding panels**	**Exterior of Entrance 11**	**Not Analyzed (Stop Positive)**
25736-5A	Caulking: white	Between glass and window frame, Entrance 22	None Detected
25736-5B	Caulking: white	Between glass and window frame, Entrance 22	None Detected
25736-5C	Caulking: white	Between glass and window frame, Entrance 22	None Detected

Table B.1 (Continued)

Summary of Bulk Sample Analysis Results for the Presence of Asbestos by Polarized Light Microscopy (PLM) with Dispersion Staining

Collected on June 26 and July 15, 2020

OHE Sample Number	Sample Description	Sample Location	Analysis Results (% and Type of Asbestos)
25736-6A	Mortar	West wall outside Entrance 11	None Detected
25736-6B	Mortar	North wall outside Entrance 22	None Detected
25736-7A	Caulking: black	Between window frame and glass, Entrance 22	None Detected
25736-7B	Caulking: black	Between window frame and glass, Entrance 22	None Detected
25736-7C	Caulking: black	Between window frame and glass, Entrance 22	None Detected

Table B.2

Summary of Bulk Sample Analysis Results for the Presence of Asbestos by Polarized Light Microscopy (PLM) with Dispersion Staining

Collected on May 26, 2021

OHE Sample Number	Sample Description	Sample Location	Analysis Results (% and Type of Asbestos)
25736-10A	Cladding panel	Exterior Soffit, Entrance 33	None Detected
25736-10B	Cladding panel	Exterior Soffit, Entrance 33	None Detected
25736-10C	Cladding panel	Exterior Soffit, Entrance 33	None Detected
25736-11A	**DJC**	**Ceiling, Vestibule to entrance 33**	**1% Chrysotile**
25736-11B	**DJC**	**Ceiling, Vestibule to entrance 33**	**Not Analyzed (Stop Positive)**
25736-11C	**DJC**	**Ceiling, Vestibule to entrance 33**	**Not Analyzed (Stop Positive)**
25736-12A	Plaster, White	Wall above the ceiling tiles, Hallway by entrance 11	None Detected
	Plaster, Grey	Wall above the ceiling tiles, Hallway by entrance 11	None Detected
25736-12B	Plaster, White	Wall above the ceiling tiles, Hallway by entrance 11	None Detected
	Plaster, Grey	Wall above the ceiling tiles, Hallway by entrance 11	None Detected
25736-12C	Plaster, White	Wall above the ceiling tiles, Hallway by entrance 11	None Detected
	Plaster, Grey	Wall above the ceiling tiles, Hallway by entrance 11	None Detected

Table B.3

Summary of Bulk Samples Analysis Results for the Presence of Lead by Flame Atomic Absorption Spectrometry (AAS)

Collected on June 26 and July 15, 2020

OHE Sample Number	Sample Description	Sample Location	Contains Lead by Weight (%)
25736-L1	Blue paint	Door leading from outside to Entrance 11	0.011%

Table B.4

Summary of Bulk Samples Analysis Results for the Presence of Lead by Flame Atomic Absorption Spectrometry (AAS)

Collected on May 26, 2021

OHE Sample Number	Sample Description	Sample Location	Contains Lead by Weight (%)
25736-L3	Light blue paint	Door frame, Vestibule to Entrance 33	0.12%

BACKGROUND INFORMATION ON DESIGNATED SUBSTANCES

ASBESTOS

Asbestos is a naturally occurring mineral. Asbestos is divided into two mineral groups: Serpentine and Amphibole. The division between the two types of asbestos is based upon the crystalline structure. The fibers of asbestos are long and thin, easily distinguishable when compared with non-asbestos minerals. The construction industry has been using asbestos for many years because of the ability of asbestos to withstand high temperatures as well as its strength and resistance to corrosive chemicals.

When asbestos-containing material is disturbed dust is released into the air that contains asbestos fibers that have the potential to be inhaled into the lungs. Depending on the size of the individual fibers inhaled, some fibers can make their way deep into the air sacs (alveoli) of the lungs. Exposure to asbestos fibers may result in scarring of the lung tissue (asbestosis), cancer of the chest cavity (mesothelioma) or other asbestos related cancers.

ACRYLONITRILE

Acrylonitrile is explosive, flammable and toxic, found as a colorless or yellow clear liquid. It is used to produce a variety of products including plastics, adhesives, gaskets, seals and hoses. Health effects resulting in acute exposure to acrylonitrile vary from minor symptoms such as eye irritation, itching skin, blisters, headaches, sneezing and vomiting. Chronic exposure may cause cancers of the stomach, lymph system and brain.

ARSENIC

The common form of arsenic is grey in color with a metallic appearance. Arsenic has been used in the manufacturing of glass to eliminate the green color resulting from the impurities of iron compounds. It was also used in the productions of poisons. Arsenic is poisonous in doses significantly larger than 65 mg (1 grain), and poisoning can arise from a single large dose or from repeated small doses.

BENZENE

Benzene is an aromatic organic hydrocarbon existing either as a clear liquid or a vapour. Benzene is highly flammable and volatile material and was primarily a by-product in petroleum refineries. However, it has also been commonly used to produce styrene, synthetic rubbers, plastics, resins and solvents.

Serious health effects can occur from exposure to benzene, mainly as a result of inhalation of vapours and mists. Ingestion by swallowing and absorption through the skin are also possible routes of exposure. Health effects can result from ingesting food or drink contaminated with benzene. Symptoms can range from irritated eyes, red blistering skin, headaches, nausea and drowsiness. Benzene exposure can also induce blood and bone marrow toxicity.

COKE OVEN EMISSIONS

Coke oven emissions can be either in a condensed form as a brownish thick liquid, or uncondensed form as a vapour. Coke oven emissions are a mixture of coal tar, coal tar pitch, and creosote and contain chemicals such as benzo(a)pyrene, benzanthracene, chrysene, and phenanthrene.

Chronic (long-term) exposure to coke oven emissions in humans results in conjunctivitis, severe dermatitis, and lesions of the respiratory and digestive systems. Epidemiologic studies of coke oven workers have reported an increase in cancer of the lung, trachea, bronchus, kidney, prostate, and other sites.

ETHYLENE OXIDE

Sources of ethylene oxide emissions into the air include uncontrolled emissions or venting with other gases in industrial settings. Other sources of ethylene oxide air emissions include automobile exhaust and its release from commodity-fumigated materials. Individuals may be exposed to ethylene oxide through breathing contaminated air or from smoking tobacco or being in the proximity to someone who is smoking.

Ethylene Oxide has been linked to reproductive damage, including spontaneous abortions; cytogenetic damage; neurological effects ranging from nausea and dizziness to peripheral paralysis; and tissue irritation.

ISOCYANATES

Isocyanates are compounds that contain a group of atoms consisting of Nitrogen (N), Carbon (C), and Oxygen (O), which make isocyanates very useful in the manufacturing industry. Isocyanates are commonly used in the production of plastics, foams, and coatings.

Health effects associated with exposure to isocyanates are: decreased lung function, cold and flu-like symptoms, fever and shortness of breath. Exposure to isocyanates can be through inhalation of vapour, mist or dust, or by direct contact.

LEAD

For thousands of years lead has been used industrially because of its poor conductive property. Lead has been commonly used for electric storage batteries, pigments, paints, and rubber compounds.

Health effects associated with lead exposure can result in damage to the kidneys, gastrointestinal system, nervous system and reproductive system. Symptoms range from vomiting, and abdominal cramps to pains in joints and muscles.

MERCURY

At room temperature mercury is in the form of a silver colored liquid. Mercury can exist in three forms: elemental, the pure form; organic, where mercury is bonded to a carbon molecule; or inorganic, where mercury is bonded to a molecule other than carbon.

Mercury can be absorbed into the body by inhalation, ingestion or absorption through the skin. As a health hazard mercury can affect the respiratory system resulting in coughing and chest pains. Mercury poisoning can also cause kidney damage, skin irritation and may even harm the nervous system.

SILICA

Silica can be found naturally in two forms, crystalline or amorphous material. Crystalline silica is regulated due to its significant toxicity over the amorphous silica. The three most common forms of crystalline silica in the workplace are: quartz, cristobalite and tridymite. The physical properties of silica make it a valuable substance for use in a variety of different industries and processes such as an abrasive and scouring compound, fillers for paint and mastic and optical equipment. Health effects resulting from exposure to crystalline silica range from eye and skin irritation, coughing and sneezing to silicosis a progressive lung disease.

VINYL CHLORIDE

Vinyl chloride is required in the manufacture of polyvinyl chloride (PVC) and at room temperature is present as a colorless, flammable gas. Vinyl chloride is also known as chloroethene, chloroethylene, and ethylene monochloride, and can result from the breakdown of other substances such as trichloroethane, trichloroethylene, and tetrachloroethylene.

Common exposure is a result of inhaling vinyl chloride from industrial leaks, hazardous waste sites and landfills. Symptoms of breathing vinyl chloride are sleepiness, dizziness or labored breathing. Chronic exposure can cause liver and nerve damage or cancer.

LABORATORY ANALYSIS REPORTS

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Laboratory Analysis Report

To:

Fred Atrash
OHE Consultants Inc.
311 Matheson Boulevard East
Mississauga, Ontario
L4Z 1X8

EMC LAB REPORT NUMBER: A59695rr*
Job/Project Name:
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: Jun 29/20 **Date Analyzed:** Jul 6/20
Analyst: Jon Delos Santos, *Laboratory Supervisor*
Reviewed By: Malgorzata Sybydlo, *Laboratory Manager*

No. of Phases Analyzed: 18
Job No: 25736
Number of Samples: 19
Date Reported: Jun 4/21

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
25736-1A	A59695-1	Suspended ceiling tiles (SCTs):2'x4' with pinholes and fissures/ceiling, entrance 11	Grey, ceiling tile	**ND**		75	25
25736-1B	A59695-2	SCTs:2'x4' with pinholes and fissures/ceiling, entrance 11	Grey, ceiling tile	**ND**		75	25
25736-1C	A59695-3	SCTs:2'x4' with pinholes and fissures/ceiling, entrance 11	Grey, ceiling tile	**ND**		75	25
25736-2A	A59695-4	Expansion joint/west exterior wall, entrance 11	Black and grey, caulking	**ND**			100
25736-2B	A59695-5	Expansion joint/west exterior wall, entrance 11	Black and grey, caulking	**ND**			100
25736-2C	A59695-6	Expansion joint/west exterior wall, entrance 11	Black and grey, caulking	**ND**			100
25736-3A	A59695-7	Caulking: grey/between window panel and wall, entrance 11	Grey, caulking	**ND**			100
25736-3B	A59695-8	Caulking: grey/between window panel and wall, entrance 11	Grey, caulking	**ND**			100
25736-3C	A59695-9	Caulking: grey/between window panel and wall, entrance 11	Grey, caulking	**ND**			100
25736-4B	A59695-11	Cladding panels/above the window, exterior of entrance 11	Grey, cement sheet	**Chrysotile**	**10**		90

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Laboratory Analysis Report

EMC LAB REPORT NUMBER: A59695rr*
Client's Job/Project Name/No.: 25736
Analyst: Jon Delos Santos, *Laboratory Supervisor*

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
25736-4C	A59695-12	Cladding panels/above the window, exterior of entrance 11	NA	**NA**			
25736-5A	A59695-13	Caulking: white/between glass and window frame, entrance 22	Grey, caulking	**ND**			100
25736-5B	A59695-14	Caulking: white/between glass and window frame, entrance 22	Grey, caulking	**ND**			100
25736-5C	A59695-15	Caulking: white/between glass and window frame, entrance 22	Grey, caulking	**ND**			100
25736-6A	A59695-16	Mortar/west wall outside entrance 11	Grey, cementitious material	**ND**			100
25736-6B	A59695-17	Mortar/north wall outside entrance 22	Grey, cementitious material	**ND**			100
25736-7A	A59695-19	Caulking: black/between window frame and glass, entrance 22	Black, caulking	**ND**			100
25736-7B	A59695-20	Caulking: black/between window frame and glass, entrance 22	Black, caulking	**ND**			100
25736-7C	A59695-21	Caulking: black/between window frame and glass, entrance 22	Black, caulking	**ND**			100

Note:
1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

* This report has been revised as requested on June 4, 2021.

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Laboratory Analysis Report

To:

Fred Atrash
OHE Consultants Inc.
311 Matheson Boulevard East
Mississauga, Ontario
L4Z 1X8

EMC LAB REPORT NUMBER: A69198
Job/Project Name:
Analysis Method: Polarized Light Microscopy – EPA 600
Date Received: May 26/21 **Date Analyzed:** May 27/21
Analyst: Kathy Jin
Reviewed By: Fajun Chen, Ph.D., *Laboratory Director*

No. of Phases Analyzed: 10
Job No: 25736
Number of Samples: 9
Date Reported: May 27/21

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)			
				Asbestos Fibres		Non-asbestos Fibres	Non-fibrous Material
25736-10A	A69198-1	Cladding panel / exterior soffit, entrance 33, 1st floor	Off white, cementitious material	**ND**			100
25736-10B	A69198-2	Cladding panel / exterior soffit, entrance 33, 1st floor	Off white, cementitious material	**ND**			100
25736-10C	A69198-3	Cladding panel / exterior soffit, entrance 33, 1st floor	Off white, cementitious material	**ND**			100
25736-11A	A69198-4	DJC / ceiling, vestibule to entrance 33, 1st floor	Beige, joint compound	**Chrysotile**	**1**		99
25736-11B	A69198-5	DJC / ceiling, vestibule to entrance 33, 1st floor	NA	**NA**			
25736-11C	A69198-6	DJC / wall above the interior door, vestibule to entrance 33, 1st floor	NA	**NA**			
25736-12A	A69198-7	Plaster / wall above the ceiling tiles, hallway by entrance 11, 1st floor	2 Phases: a) White, plaster b) Grey, plaster	 **ND** **ND**			 100 100
25736-12B	A69198-8	Plaster / wall above the ceiling tiles, hallway by entrance 11, 1st floor	2 Phases: a) White, plaster b) Grey, plaster	 **ND** **ND**			 100 100
25736-12C	A69198-9	Plaster / wall above the ceiling tiles, hallway by entrance 11, 1st floor	2 Phases: a) White, plaster b) Grey, plaster	 **ND** **ND**			 100 100

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Laboratory Analysis Report

EMC LAB REPORT NUMBER: A69198
Client's Job/Project Name/No.: 25736
Analyst: Kathy Jin

Note:
1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. **ND** = None Detected (no asbestos fibres were observed), **NA** = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

EMSL Canada Inc.
2756 Slough Street, Mississauga, ON L4T 1G3
Phone/Fax: (289) 997-4602 / (289) 997-4607
http://www.EMSL.com torontolab@emsl.com

EMSL Canada Or	552007303
CustomerID:	55OHEI93
CustomerPO:	25736
ProjectID:	

Attn: **Fred Atrash**
OHE Consultants
311 Matheson Blvd. East
Mississauga, ON L4Z 1X8

Phone:	(905) 890-9000
Fax:	(905) 890-9005
Received:	6/29/2020 09:00 AM
Collected:	

Project: **25736**

Test Report: Lead in Paint Chips by Flame AAS (SW 846 3050B/7000B)*

Client SampleDescription	Collected	Analyzed	Weight	RDL	Lead Concentration
25736-L1		6/29/2020	0.2483 g	0.0081 % wt	0.011 % wt
552007303-0001	Site: Blue paint, door leading from outside to entrance 11				

Rowena Fanto, Lead Supervisor
or other approved signatory

EMSL maintains liability limited to cost of analysis. Interpretation and use of test results are the responsibility of the client. 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. The report reflects the samples as received. Results are generated from the field sampling data (sampling volumes and areas, locations, etc.) provided by the client on the Chain of Custody. Samples are within quality control criteria and met method specifications unless otherwise noted.
Analysis following Lead in Paint by EMSL SOP/Determination of Environmental Lead by FLAA. Reporting limit is 0.008% wt based on the minimum sample weight per our SOP. "<" (less than) result signifies the analyte was not detected at or above the reporting limit. Measurement of uncertainty is available upon request. Definitions of modifications are available upon request.
Samples analyzed by EMSL Canada Inc. Mississauga, ON AIHA-LAP, LLC - ELLAP #196142

Report Amended: 06/04/2021 15:54:11 Replaces the Inital Report 07/06/2020 08:10:10. Reason Code: Client-Change to Appearance

SITE PHOTOGRAPHS

Photograph 1: View of the asbestos-containing cladding panels (cement board) above the window at Entrance 11 at the Subject Location.

Photograph 2: View of the asbestos-containing drywall joint compound on the ceiling in the vestibule by Entrance 33 at Subject Location.

Photograph 3: View of the lead-containing blue paint on the door of Entrance 11 at the Subject Location.

Photograph 4: View of the lead-containing light blue paint on the door frame in the vestibule by Entrance 33 at the Subject Location.