

HWDSB

2026-133-P02206

Chedoke

Elementary School

Student Washroom Renovations

500 Bendamere Ave., Hamilton
Ontario L9C 1R3



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MECHANICAL DRAWINGS

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E-0.01	Electrical specifications, legend, schedule
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END OF THIS SECTION

1. PINCHIN Report

1. A copy of the following report with respect to the identified portion of the Work is being made available as part of the Bid Documents; files titled as follows:

.1 Titled: Hazardous Building Materials Assessment (Preconstruction)

Prepared by: Pinchin Ltd.

File No.: 352293.015

Dated: February 27, 2026

No. of Pages: 141

.2 Abatement Specifications: N/A

2. HWDSB Construction School Specific Information Sheet

1. Refer to attached HWDSB Appendix A instructions and information sample sheet, of construction site specific protocols the contractor will be required to follow. (6 pages)

End of Section



February 27, 2026

Hamilton-Wentworth District School Board,
20 Education Court
Hamilton, ON

Re: Hazardous Building Materials Assessment (Preconstruction)
Washroom Renovation Project
Chedoke Elementary School, 500 Bendamere Avenue, Hamilton, ON
Pinchin File: 352293.015

Hamilton-Wentworth District School Board (Client) retained Pinchin Ltd. (Pinchin) to conduct a hazardous building materials assessment of Chedoke Elementary School located at 500 Bendamere Avenue, Hamilton, ON.

Pinchin performed the assessment on January 19, 2026 and February 20, 2026. The assessor was unaccompanied during the assessment. The assessed area was unoccupied at the time of the assessment.

The objective of the assessment was to identify specified hazardous building materials in preparation for building renovation activities. The proposed work as identified by the Client includes renovations to the washrooms on the first and second floors.

The results of this assessment are intended for use with a properly developed scope of work or performance specification.

The **assessed area** is limited to the portion(s) of the building to be renovated, as described by the Client, and identified in the drawings in Appendix I.

1.0 SUMMARY OF FINDINGS

- Paint/compound (block filler)
- Vinyl floor tile and mastic
- Mirror mastic (presumed asbestos)
- Terrazzo (presumed asbestos)
- Lead is present in paints and coatings.
- Solid lead is present in batteries of emergency lights.



- Crystalline silica is present in concrete and other materials such as masonry, ceramic tiles, and plaster.
- Mercury vapour is present in lamp tubes
- No PCB-containing items were identified.
- Water damage was observed.

2.0 RECOMMENDATIONS

2.1 General

Prepare scope of work or performance specifications for hazardous material removal required for the planned work. The specifications should include safe work practices, personal protective equipment, respiratory protection, and disposal of waste materials.

If suspected hazardous building materials are discovered during the planned work, which are not identified in this report, do not disturb, and arrange for further testing and evaluation.

Provide this report and the detailed plans and specifications to the contractor prior to bidding or commencing work.

Retain a qualified consultant to specify, observe and document the successful removal of hazardous materials.

Update the asbestos inventory upon completion of the abatement and removal of asbestos-containing materials and any other relevant findings.

2.2 Remedial Work

The following remedial work is recommended. The work must be completed in compliance with procedures defined in applicable regulations.

2.2.1 Mould and Water Damage

System	Material Description	Quantity	Location Name, (Location No.)	Recommended Procedure
Ceiling	Water damage to drywall and joint compound	6 SF	9163	

2.3 Project Work

The following recommendations are made regarding renovations involving the hazardous materials identified.



2.3.1 Asbestos

Remove asbestos-containing materials (ACM) prior to renovation, alteration, or maintenance if ACM may be disturbed by the work.

Asbestos-containing materials must be disposed of at a landfill approved to accept asbestos waste.

2.3.2 Lead

For lead-containing or lead-based paints (i.e., greater than the EACC guideline of 0.1% (1,000 mg/kg) for lead-containing paints, and 0.5% (5,000 mg/kg) for lead-based), construction disturbance may result in over-exposure to lead dust or fumes. The need for work procedures, engineering controls and personal protective equipment should be assessed on a site-specific basis to comply with applicable regulations, and/or guidelines.

Exposure from construction disturbance of paints containing lead less than 0.009% (90 mg/kg) is assumed to be insignificant.

Lead-containing items should be recycled when taken out of service.

2.3.3 Silica

Construction disturbance of silica-containing products may result in excessive exposures to airborne silica, especially if performed indoors and dry. Cutting, grinding, drilling or demolition of materials containing silica should be completed only with proper respiratory protection and other worker safety precautions that comply with applicable regulations and guidelines.

2.3.4 Mercury

Do not break lamps or separate liquid mercury from components. Recycle and reclaim mercury from fluorescent lamps when taken out of service. Mercury is classified as a hazardous waste and must be disposed of in accordance with applicable regulations.

3.0 BACKGROUND INFORMATION

3.1 Assessed Area Description Summary

Description Item	Details
Building Use	Elementary School
Floors Above Grade	2
Floors Below Grade	1
Total Area (square feet)	The assessed area is 4,920 square feet.
Year of Construction	1969
Additions	2003, 2012



Description Item	Details
Structure	Concrete, steel
Exterior Cladding	Masonry
HVAC	Radiant heating, forced air
Roof	Not Assessed
Flooring	Ceramic tile, vinyl floor tile, terrazzo
Wall and Ceiling Finishes	Concrete block, ceramic tile, drywall, ceiling tiles

3.2 Existing Reports

3.2.1 Review of Previous Reports

No existing reports were provided for reference.

4.0 FINDINGS

Any quantities listed in this report or data tables are estimated based on visual approximations only and are subject to variation.

4.1 Asbestos

The following table summarizes the materials evaluated for asbestos in the assessed area. For details on approximate quantities, condition, friability, accessibility, and locations of hazardous building materials; refer to the Hazardous Material Summary / Sample Log and All Data Report in Appendices V and VI.

Sample Number	Material Description	Type of Asbestos	Confirmed Hazard	Total Quantity Present	Material Specific Notes
S0001 C	Wall Paint On block	Chrysotile	Yes	1100 SF	1
S0002 ABC	Floor Thin-set	None Detected	No	2735 SF	
S0003 ABCDE	Ceiling Drywall and joint compound	None Detected	No	2360 SF	
S0004 ABC	Wall Mastic black baseboard	None Detected	No	40 LF	
S0005 ABC	Other Mastic white	Chrysotile	No	1 EA	2
S0006 ABC	Floor Vinyl Floor Tile and Mastic 9x9 red and yellow	Chrysotile	Yes	550 SF	



S0007 ABC	Wall Thin-set	None Detected	No	100 SF	
S0008 ABC	Piping Sweatwrap	None Detected	No	30 LF	
S0009 ABC	Floor Vinyl Floor Tile and Mastic 12x12 beige with white fleck	None Detected	No	1175 SF	
S0010 ABC	Wall Mastic cream baseboard	None Detected	No	60 LF	
S0011 ABC	Floor Caulking white	None Detected	No	30 LF	
S0012 ABC	Floor Vinyl Floor Tile and Mastic 12x12 beige with brown and white fleck	None Detected	No	160 SF	
S0013 ABC	Other Caulking light grey	None Detected	No	240 LF	
S0014 ABC	Other Caulking white	None Detected	No	45 LF	
S0015 ABCD	Wall Paint	None Detected	No	600 SF	
S0016 ABCD	Wall Paint	None Detected	No	400 SF	
S0017 ABCD	Wall Paint	None Detected	No	600 SF	
S0018 ABCD	Wall Paint	None Detected	No	400 SF	
S0019 AB	Wall Paint	None Detected	No	1030 SF	
S0020 ABCD	Wall Paint	None Detected	No	600 SF	
S0021 ABCD	Wall Paint	None Detected	No	400 SF	
S0022 AB	Wall Paint	None Detected	No	600 SF	
S0023 ABCD	Wall Paint	None Detected	No	600 SF	
S0024 ABCD	Wall Paint	None Detected	No	600 SF	
S0025 AB	Wall Paint	None Detected	No	300 SF	



V9500	Floor Terrazzo	Presumed Asbestos	Yes	1175 SF	
V9500	Other Mastic behind mirrors	Presumed Asbestos	Yes	40 SF	3
V0000	Ceiling Ceiling Tiles (lay-in)	None	No	100 %	4

Material Specific Notes:

1. Paint on concrete block containing asbestos is present in the Staff Room (Location 9206). Additional testing determined none of the paint in the washrooms and corridors which are expected to be impacted by the renovations contain asbestos.
2. An insignificant amount of chrysotile asbestos was found in one of the sink mastic samples and is not considered to be asbestos-containing.
3. Sampling of mastic behind mirrors was not possible due to lack of access. Mastic is presumed to contain asbestos.
4. Ceiling tiles are presumed to be non-asbestos based on the date of manufacture determined from the date stamp applied to the top of the tiles. The tiles were manufactured after asbestos stopped being used in acoustic ceiling tiles.

General Notes:

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

Materials identified as Sample Number V9500 were either observed to be present or based on the construction of the building/equipment are likely present in concealed locations. These materials have not been sampled and are presumed to contain asbestos based on historical known use of asbestos. Sampling of these materials may be completed prior to disturbance.

Materials identified as Sample Number V0000 were determined to be non-asbestos based on the manufacture date and known end of use of asbestos in these products.

4.1.1 Excluded Asbestos Materials

The following is a list of materials which may contain asbestos and were excluded from the assessment. These materials are presumed to contain asbestos until otherwise proven to be non-asbestos by sampling and analysis:

- Roofing felts and tar, mastics
- Electrical components



- Vermiculite
- Sealants on pipe threads

4.2 Lead

Refer to the Hazardous Material Summary / Sample Log and All Data Report in Appendices V and VI for details on locations, condition and approximate quantities on paints sampled and their locations.

The following table summarizes the analytical results of paints sampled.

Sample Number	Material Description	Concentration	Confirmed Hazard	Total Quantity Present	Material Specific Notes
L0001	Wall Concrete Block light grey	0.00021%	No	660 SF	
L0002	Wall Concrete Block beige	0.00022%	No	3660 SF	
L0003	Wall Concrete Block blue	0.15%	Yes	1100 SF	
L0004	Wall Concrete Block multicolour	0.00026%	No	2800 SF	
L0005	Wall Concrete Block beige	0.0011%	No	800 SF	
L0006	Ceiling Drywall and joint compound white	0.00011%	No	1000 SF	
V9500	Structure Steel red on beam	N/A	Presumed (>0.1%)	300 SF	

General Notes:

Results above 0.1% (1,000 mg/kg) are considered lead-containing, and over 0.5% (5,000 mg/kg) are considered lead-based.

Paints containing lead less than 0.009% (90 mg/kg) are assumed to be insignificant relating to potential exposure from construction disturbance.

Paints identified as Sample Number V9500 were observed to be present and have not been sampled and based on the construction of the building/equipment are assumed to contain lead. Sampling of these materials may be completed prior to disturbance.

4.2.1 Lead Products and Applications

Refer to the Hazardous Material Summary / Sample Log and All Data Report in Appendices V and VI for details on lead-products including their locations and quantities.



Sample Number	Material Description	Confirmed Hazard	Total Quantity Present	Material Specific Notes
V9500	Batteries In Emer. Lights	Yes	2 EA	

General Notes:

Items identified as Sample Number V9500 were observed to be present but could not be definitively determined to contain lead (e.g., inaccessible batteries).

4.2.2 Excluded Lead Materials

Lead may be present in a number of materials which were not assessed and/or sampled. The following materials, where found, should be considered to contain lead.

- Electrical components, including wiring connectors, grounding conductors, and solder
- Solder on pipe connections
- Glazing on ceramic tiles

4.3 Silica

Crystalline silica is a presumed component of the following materials:

- Poured and pre-cast concrete
- Masonry and mortar
- Ceramic tiles and grout
- Terrazzo

4.4 Mercury

Refer to the Hazardous Material Summary / Sample Log and All Data Report in Appendices V and VI for details on mercury-containing products including their locations and quantities.

Sample Number	Material Description	Confirmed Hazard	Total Quantity Present	Material Specific Notes
V9500	Mercury Vapour Lamp	Yes	84 EA	
V0000	Light Fixture	No	5 EA	

General Notes:

Items identified as Sample Number V9500 were observed to be present but could not be definitively determined to contain mercury (e.g., inaccessible lamps and thermostats).



Items identified as Sample Number V0000 are items that historically may have contained mercury; however, have been visually identified as non-mercury types (e.g., LED lamps, digital or electric thermostats).

4.5 Polychlorinated Biphenyls

PCB-containing materials were not found during the assessment.

4.5.1 Excluded PCB Materials

PCBs are known to be present in several materials and equipment which were not assessed or sampled. The following materials, where found, should be presumed to contain PCBs until sampling proves otherwise.

- Capacitors within or associated with electrical equipment
- Caulking

4.6 Mould and Water Damage

The following water damage was identified:

Sample Number	Material Description	Location	Confirmed Hazard	Total Quantity Present	Material Specific Notes
V9500	Drywall and joint compound	9163	No	7 SF	

General Notes:

Materials identified as Sample Number V9500 were noted as having visible water damage; however, no visible indications of suspect mould growth.

5.0 METHODOLOGY

For the purpose of the assessment and this report, hazardous building materials are defined as follows:

- Asbestos
- Lead
- Silica
- Mercury
- Polychlorinated Biphenyls (PCBs)
- Mould and Water Damage



Arsenic, acrylonitrile, benzene, coke oven emissions, ethylene oxide, isocyanates and vinyl chloride monomer are not typically found in building materials in a composition/state that is hazardous and were not included in this assessment.

Pinchin conducted a room-by-room assessment to identify the hazardous building materials as defined in the scope.

The assessment was performed to establish the type of specified hazardous building materials, locations and approximate quantities incorporated in the structure and its finishes.

The assessment did not include limited demolition of wall and ceiling finishes (drywall or plaster) to view concealed conditions at representative areas as permitted by the current building use. Limited destructive testing of flooring was conducted where possible (under ceramic tiles, carpets, or multiple layers of flooring). Demolition of exterior building finishes, masonry walls (chases, shafts etc.), and structural surrounds was not conducted.

The assessment included demolition of wall and ceiling finishes (drywall or plaster) to view concealed conditions at representative areas as permitted by the current building use. Destructive testing of flooring was conducted where possible (under carpets or multiple layers of flooring). Demolition of exterior building finishes, masonry walls (chases, shafts etc.), and structural surrounds was conducted as permitted by the current building use.

Sampling of roofing materials was not conducted.

For further details on the methodology including test methods and evaluation criteria, refer to Appendix III.

6.0 REFERENCES

The following legislation and documents were referenced in completing the assessment and this report:

Ontario

1. Asbestos on Construction Projects and in Buildings and Repair Operations, Ontario Regulation 278/05.
2. Designated Substances, Ontario Regulation 490/09.
3. Lead on Construction Projects, Ministry of Labour Guidance Document.
4. The Environmental Abatement Council of Canada (EACC) Lead Guideline for Construction, Renovation, Maintenance or Repair.
5. Ministry of the Environment Regulation, R.R.O. 1990 Reg. 347 as amended.
6. Ministry of the Environment Regulation, R.R.O. 1990 Reg. 362 as amended.
7. Silica on Construction Projects, Ministry of Labour Guidance Document.



8. Alert – Mould in Workplace Buildings, Ontario Ministry of Labour.

All jurisdictions

1. PCB Regulations, SOR/2008-273, Canadian Environmental Protection Act.
2. Surface Coating Materials Regulations, SOR/2016-193, Canada Consumer Product Safety Act.
3. Consolidated Transportation of Dangerous Goods Regulations, including Amendment SOR/2019-101, Transportation of Dangerous Goods Act.
4. Mould Guidelines for the Canadian Construction Industry, Standard Construction Document CCA 82 – 2004 (Revised 2018), Canadian Construction Association.

7.0 LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.



8.0 CLOSURE

The data presented in the appendices is prepared by Pinchin’s Hazardous Materials Inventory System (HMIS). The information can be made available for your real-time access through our secure web-based platform. Please contact your Pinchin representative to discuss HMIS solutions for management of your asbestos (and other hazardous materials) inventory.

Contact the Project Manager, Jessica Cozzitorto at 905.577.6206 or jcozzitorto@pinchin.com should you have any questions.

Sincerely,

Pinchin Ltd.

Prepared by:

Project Managed by:

Ben Weir
Project Technologist

Jessica Cozzitorto, C. Tech.
Team Leader

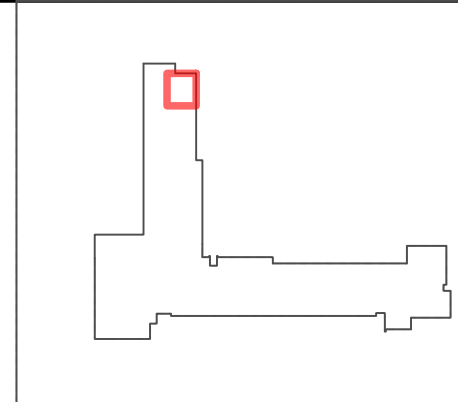
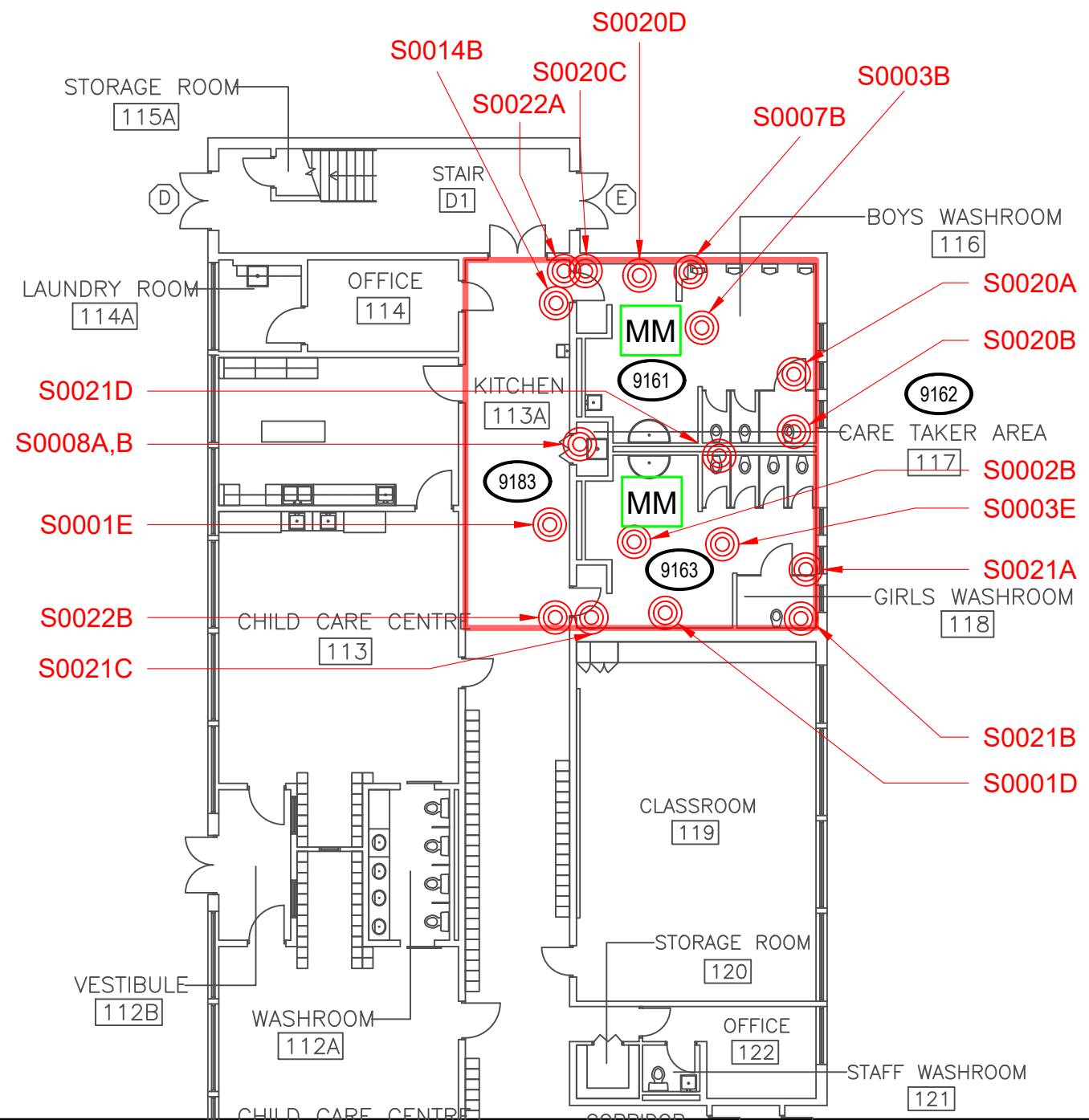
Reviewed by:

Damian Palus, C.E.T.
Operations Manager

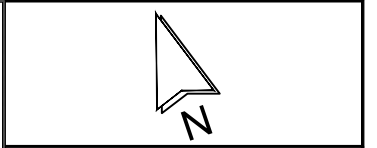
Encl:	APPENDIX I	Drawings
	APPENDIX II-A	Asbestos Analytical Certificates
	APPENDIX II-B	Lead Analytical Certificates
	APPENDIX III	Methodology
	APPENDIX IV	Location Summary Report
	APPENDIX V	Hazardous Materials Summary Report / Sample Log
	APPENDIX VI	All Data Report
	APPENDIX VII	Photographs

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Template: Master Template HBMA PreConstruction, HMIS, HAZ, August 15, 2024

APPENDIX I
Drawings



KEY PLAN



- LEGEND**
- (X) PINCHIN LOCATION NUMBER
 - ASBESTOS BULK SAMPLE
 - SURVEY BOUNDARY/ASSESSED AREA
- ASBESTOS-CONTAINING MATERIALS:
- VINYL FLOOR TILES & MASTIC
 - MM MIRROR MASTIC
 - FP BLOCK FILLER PAINT

FOR CLARITY, THE FOLLOWING ASBESTOS-CONTAINING MATERIALS, ARE PRESENT IN THE ASSESSED AREA, BUT HAVE NOT BEEN HATCHED ON THE DRAWING:

- TERRAZO (PRESUMED)
- PIPE INSULATION (CONCEALED)

NOT ALL KNOWN OR SUSPECTED HAZARDOUS BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE HAZARDOUS BUILDING MATERIALS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED HAZARDOUS BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.
BASE PLAN PROVIDED BY CLIENT.



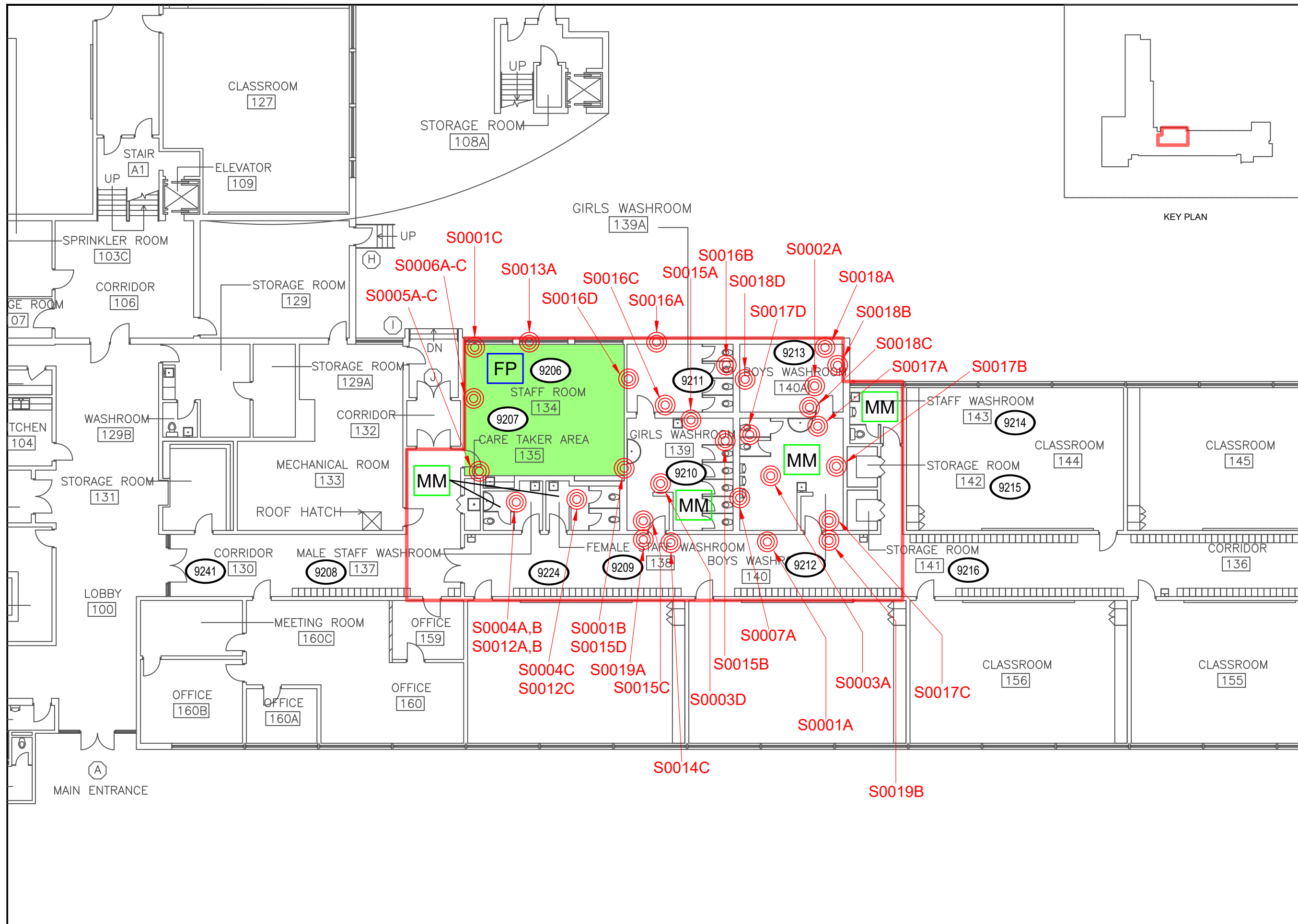
PROJECT NAME:
HAZARDOUS BUILDING MATERIALS ASSESSMENT

CLIENT NAME:
HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

PROJECT LOCATION:
**CHEDOKE ELEMENTARY SCHOOL
500 BENDAMERE AVENUE,
HAMILTON, ONTARIO**

FIGURE NAME:
FIRST FLOOR

PROJECT NUMBER: 352293.015	SCALE: NOT TO SCALE
DRAWN BY: ML	REVIEWED BY: JC
DATE: FEBRUARY 2026	FIGURE NUMBER: 1 OF 3



LEGEND

- (X) PINCHIN LOCATION NUMBER
- ASBESTOS BULK SAMPLE
- SURVEY BOUNDARY/ASSESSED AREA

ASBESTOS-CONTAINING MATERIALS:

- VINYL FLOOR TILES & MASTIC
- MM MIRROR MASTIC
- FP BLOCK FILLER PAINT

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BASE PLAN PROVIDED BY CLIENT.

PINCHIN

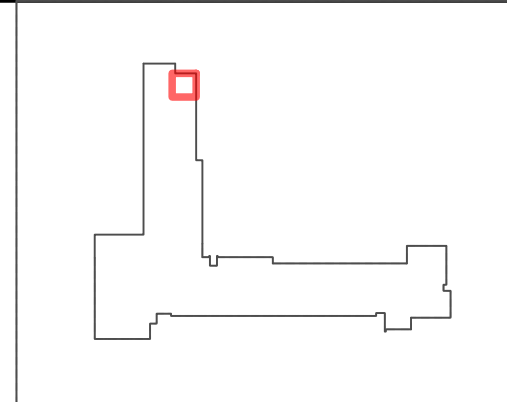
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HAZARDOUS BUILDING MATERIALS ASSESSMENT

CLIENT NAME:
HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

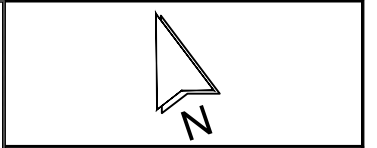
PROJECT LOCATION:
CHEDOKE ELEMENTARY SCHOOL
500 BENDAMERE AVENUE,
HAMILTON, ONTARIO

FIGURE NAME:
FIRST FLOOR

PROJECT NUMBER: 352293.015	SCALE: NOT TO SCALE
DRAWN BY: ML	REVIEWED BY: JC
DATE: FEBRUARY 2026	FIGURE NUMBER: 2 OF 3



KEY PLAN



LEGEND

- X PINCHIN LOCATION NUMBER
- ASBESTOS BULK SAMPLE
- SURVEY BOUNDARY/ASSESSED AREA
- ASBESTOS-CONTAINING MATERIALS:
- MM VINYL FLOOR TILES & MASTIC
- MM MIRROR MASTIC
- FP BLOCK FILLER PAINT

FOR CLARITY, THE FOLLOWING ASBESTOS-CONTAINING MATERIALS, ARE PRESENT IN THE ASSESSED AREA, BUT HAVE NOT BEEN HATCHED ON THE DRAWING:

- TERRAZO (PRESUMED)
- PIPE INSULATION (CONCEALED)

NOT ALL KNOWN OR SUSPECTED HAZARDOUS BUILDING MATERIALS MAY BE DEPICTED ON THE DRAWING. REFER TO THE HAZARDOUS BUILDING MATERIALS ASSESSMENT REPORT FOR A COMPLETE LIST OF KNOWN AND SUSPECTED HAZARDOUS BUILDING MATERIALS.

LEGEND IS COLOUR DEPENDENT. NON-COLOUR COPIES MAY ALTER INTERPRETATION.

BASE PLAN PROVIDED BY CLIENT.



PROJECT NAME:
HAZARDOUS BUILDING MATERIALS ASSESSMENT

CLIENT NAME:
HAMILTON-WENTWORTH DISTRICT SCHOOL BOARD

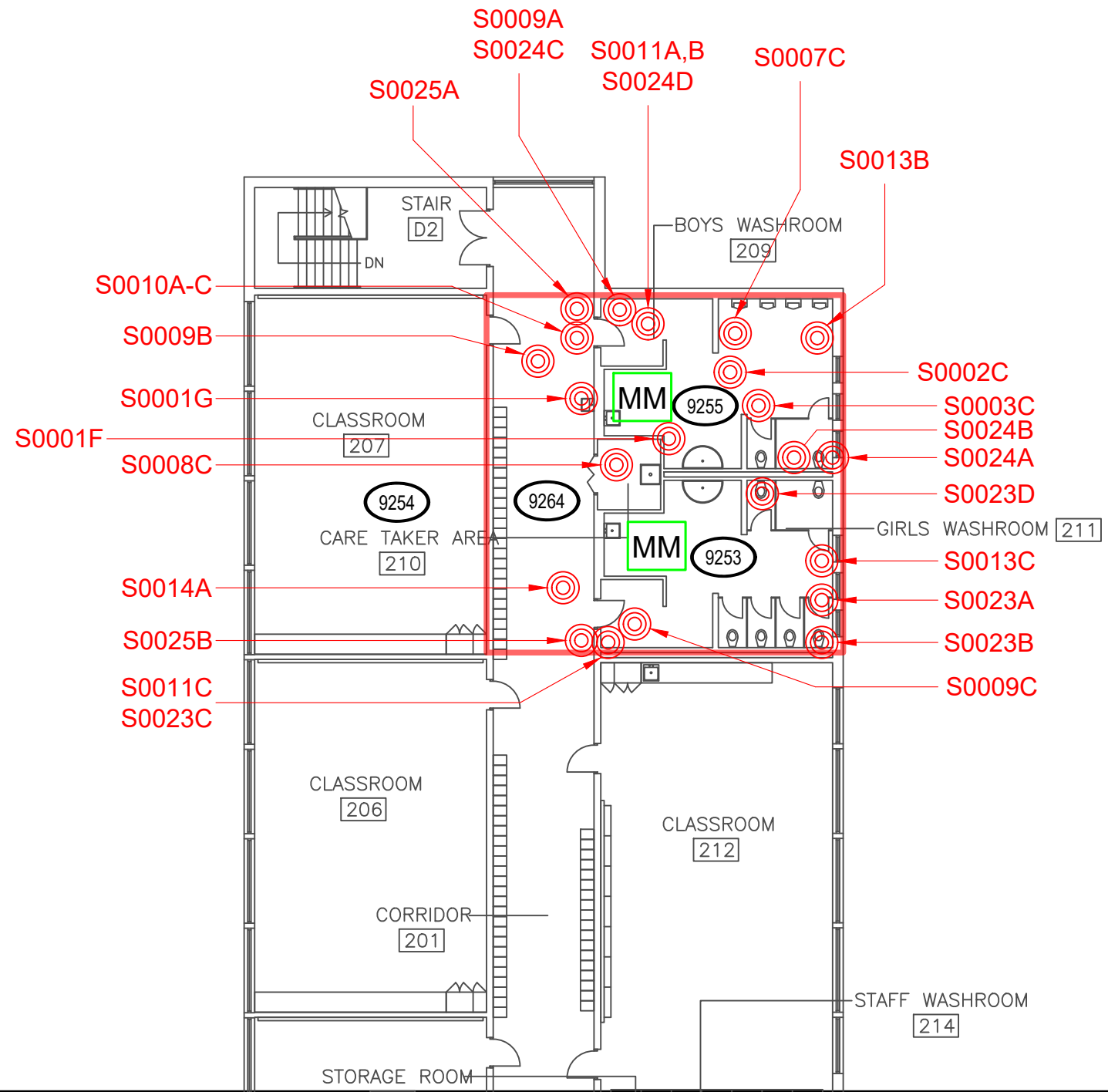
PROJECT LOCATION:
CHEDOKE ELEMENTARY SCHOOL
500 BENDAMERE AVENUE,
HAMILTON, ONTARIO

FIGURE NAME:
SECOND FLOOR

PROJECT NUMBER: 352293.015	SCALE: NOT TO SCALE
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DRAWN BY: ML	REVIEWED BY: JC
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DATE: FEBRUARY 2026	FIGURE NUMBER: 3 OF 3
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APPENDIX II-A
Asbestos Analytical Certificates



Your Project #: 352293.015
Your C.O.C. #: N/A

Attention: Jessica Cozzitorto

Pinchin Ltd
2360 Meadowpine Blvd
Unit # 2
Mississauga, ON
CANADA L5N 6S2

Report Date: 2026/01/28
Report #: R8687407
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C607072

Received: 2026/01/22, 14:27

Sample Matrix: Solid
Samples Received: 48

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Asbestos by PLM - 0.5 RDL (1)	48	N/A	2026/01/28	COR3SOP-00002	EPA 600R-93/116

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested. This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Bureau Veritas' Asbestos Laboratory is accredited by NVLAP for bulk asbestos analysis by polarized light microscopy, NVLAP Code 600136-0.

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Bureau Veritas' scope of accreditation includes EPA -- 40 CFR Appendix E to Subpart E of Part 763, "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" and EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk Building Materials".

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) P.O.B. - Percent of Bulk

When Asbestos data is reported with other data, this report contains data that are not covered by the NVLAP accreditation.



Your Project #: 352293.015
Your C.O.C. #: N/A

Attention: Jessica Cozzitorto

Pinchin Ltd
2360 Meadowpine Blvd
Unit # 2
Mississauga, ON
CANADA L5N 6S2

Report Date: 2026/01/28
Report #: R8687407
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C607072
Received: 2026/01/22, 14:27

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Elora Di Bratto, Project Manager
Email: Elora.Di-Bratto@bureauveritas.com
Phone# (905) 817-5700

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Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0001A WALL,PAINT,ON BLOCK,LOC:9224,CORRIDOR					
Bureau Veritas ID: AZGH38		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/light yellow paint/cementitious material	Not Detected		Non-Fibrous

S0001B WALL,PAINT,ON BLOCK,LOC:9210,GIRL'S WASHROOM					
Bureau Veritas ID: AZGH39		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white/grey paint/cementitious material	Not Detected		Non-Fibrous

S0001C WALL,PAINT,ON BLOCK,LOC:9206,STAFF ROOM					
Bureau Veritas ID: AZGH40		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous light blue/light yellow paint/cementitious material	Chrysotile 0.5%		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0001D WALL,PAINT,ON BLOCK,LOC:9163,GIRL'S WASHROOM					
Bureau Veritas ID: AZGH41		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1			N/A		
Comment: Not Analyzed - Positive Stop					

S0001E WALL,PAINT,ON BLOCK,LOC:9183,CORRIDOR					
Bureau Veritas ID: AZGH42		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1			N/A		
Comment: Not Analyzed - Positive Stop					

S0001F WALL,PAINT,ON BLOCK,LOC:9255,BOY'S WASHROOM					
Bureau Veritas ID: AZGH43		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1			N/A		
Comment: Not Analyzed - Positive Stop					

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0001G WALL, PAINT, ON BLOCK, LOC:9264, CORRIDOR					
Bureau Veritas ID: AZGH44		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1			N/A		
Comment: Not Analyzed - Positive Stop					

S0002A FLOOR, THIN-SET, LOC:9213, BOY'S WASHROOM STORAGE					
Bureau Veritas ID: AZGH45		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	65	Homogeneous grey thinset	Not Detected		Non-Fibrous
Layer 2	35	Homogeneous brown grout	Not Detected		Non-Fibrous

S0002B FLOOR, THIN-SET, LOC:9163, GIRL'S WASHROOM					
Bureau Veritas ID: AZGH46		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	65	Homogeneous grey thinset	Not Detected		Non-Fibrous
Layer 2	35	Homogeneous brown grout	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0002C FLOOR, THIN-SET, LOC:9255, BOY'S WASHROOM					
Bureau Veritas ID: AZGH47		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	65	Homogeneous grey thinset	Not Detected		Non-Fibrous
Layer 2	35	Homogeneous brown grout	Not Detected		Non-Fibrous

S0003A CEILING, DRYWALL AND JOINT COMPOUND, LOC:9212, BOY'S WASHROOM					
Bureau Veritas ID: AZGH48		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous white drywall joint compound	Not Detected		Non-Fibrous

S0003B CEILING, DRYWALL AND JOINT COMPOUND, LOC:9161, BOY'S WASHROOM					
Bureau Veritas ID: AZGH49		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous white drywall joint compound	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0003C CEILING, DRYWALL AND JOINT COMPOUND, LOC:9255, BOY'S WASHROOM					
Bureau Veritas ID: AZGH50		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous white drywall joint compound	Not Detected		Non-Fibrous

S0003D CEILING, DRYWALL AND JOINT COMPOUND, LOC:9210, GIRL'S WASHROOM					
Bureau Veritas ID: AZGH51		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous white drywall joint compound	Not Detected		Non-Fibrous

S0003E CEILING, DRYWALL AND JOINT COMPOUND, LOC:9163, GIRL'S WASHROOM					
Bureau Veritas ID: AZGH52		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous white drywall joint compound	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0004A WALL, MASTIC, BLACK BASEBOARD, LOC:9208, MALE STAFF WASHROOM						
Bureau Veritas ID: AZGH53		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>	
Layer 1	90	Homogeneous black baseboard	Not Detected		Non-Fibrous	
Layer 2	10	Homogeneous beige mastic	Not Detected	Synthetic fibres 1%	Non-Fibrous	

S0004B WALL, MASTIC, BLACK BASEBOARD, LOC:9208, MALE STAFF WASHROOM						
Bureau Veritas ID: AZGH54		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>	
Layer 1	90	Homogeneous black baseboard	Not Detected		Non-Fibrous	
Layer 2	10	Homogeneous beige mastic	Not Detected	Synthetic fibres 1%	Non-Fibrous	

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0004C WALL, MASTIC, BLACK BASEBOARD, LOC:9209, FEMALE STAFF WASHROOM						
Bureau Veritas ID: AZGH55		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>		<u>Particulate</u>
Layer 1	90	Homogeneous black baseboard	Not Detected			Non-Fibrous
Layer 2	10	Homogeneous beige mastic	Not Detected	Synthetic fibres	1%	Non-Fibrous

S0005A SINK, MASTIC, WHITE, LOC:9206, STAFF ROOM						
Bureau Veritas ID: AZGH56		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>		<u>Particulate</u>
Layer 1	100	Homogeneous off-white mastic	Not Detected	Cellulose	8%	Non-Fibrous

S0005B SINK, MASTIC, WHITE, LOC:9206, STAFF ROOM						
Bureau Veritas ID: AZGH57		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>		<u>Particulate</u>
Layer 1	100	Homogeneous off-white mastic	Chrysotile <0.50%	Cellulose	8%	Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0005C SINK, MASTIC, WHITE, LOC:9206, STAFF ROOM						
Bureau Veritas ID: AZGH58		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>		<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous off-white mastic	Not Detected		Cellulose 8%	Non-Fibrous

S0006A FLOOR, VINYL FLOOR TILE AND MASTIC, 9X9 RED AND YELLOW, LOC:9206, STAFF ROOM						
Bureau Veritas ID: AZGH59		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>		<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	98	Homogeneous red/yellow vinyl floor tile	Chrysotile	5%		Non-Fibrous
Layer 2	2	Homogeneous black mastic	Chrysotile	0.5%		Non-Fibrous

S0006B FLOOR, VINYL FLOOR TILE AND MASTIC, 9X9 RED AND YELLOW, LOC:9206, STAFF ROOM						
Bureau Veritas ID: AZGH60		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>		<u>Other Fibres</u>	<u>Particulate</u>
Layer 1			N/A			
		Comment: Not Analyzed - Positive Stop				

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0006C FLOOR, VINYL FLOOR TILE AND MASTIC, 9X9 RED AND YELLOW, LOC:9206, STAFF ROOM					
Bureau Veritas ID: AZGH61		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1			N/A		
Comment: Not Analyzed - Positive Stop					

S0007A WALL, THIN-SET, LOC:9212, BOY'S WASHROOM					
Bureau Veritas ID: AZGH62		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous white thinset	Not Detected		Non-Fibrous

S0007B WALL, THIN-SET, LOC:9161, BOY'S WASHROOM					
Bureau Veritas ID: AZGH63		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous white thinset	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0007C WALL, THIN-SET, LOC:9255, BOY'S WASHROOM						
Bureau Veritas ID: AZGH64		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>		<u>Particulate</u>
Layer 1	100	Homogeneous white thinset	Not Detected			Non-Fibrous

S0008A PIPING, SWEATWRAP, LOC:9162, CARETAKER AREA						
Bureau Veritas ID: AZGH65		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>		<u>Particulate</u>
Layer 1	70	Homogeneous brown layered paper	Not Detected	Cellulose	90%	Non-Fibrous
Layer 2	30	Homogeneous yellow/white canvas	Not Detected	Cellulose	90%	Non-Fibrous

S0008B PIPING, SWEATWRAP, LOC:9162, CARETAKER AREA						
Bureau Veritas ID: AZGH66		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>		<u>Particulate</u>
Layer 1	50	Homogeneous brown layered paper	Not Detected	Cellulose	90%	Non-Fibrous
Layer 2	50	Homogeneous black tar paper	Not Detected	Cellulose	90%	Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0008C PIPING, SWEATWRAP, LOC:9254, CARETAKER AREA						
Bureau Veritas ID: AZGH67		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>		<u>Particulate</u>
Layer 1	40	Homogeneous brown layered paper	Not Detected	Cellulose	90%	Non-Fibrous
Layer 2	40	Homogeneous black tar paper	Not Detected	Cellulose	90%	Non-Fibrous
Layer 3	20	Homogeneous yellow/white canvas	Not Detected	Cellulose	90%	Non-Fibrous

S0009A FLOOR, VINYL FLOOR TILE AND MASTIC, 12X12 BEIGE WITH WHITE FLECK, LOC:9255, BOY'S WASHROOM						
Bureau Veritas ID: AZGH68		Date Analyzed: 2026/01/28				
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>		<u>Particulate</u>
Layer 1	70	Homogeneous light grey vinyl floor tile	Not Detected			Non-Fibrous
Layer 2	20	Homogeneous yellow mastic	Not Detected			Non-Fibrous
Layer 3	10	Homogeneous grey cementitious material	Not Detected			Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0009B FLOOR, VINYL FLOOR TILE AND MASTIC, 12X12 BEIGE WITH WHITE FLECK, LOC:9264, CORRIDOR					
Bureau Veritas ID: AZGH69		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	70	Homogeneous light grey vinyl floor tile	Not Detected		Non-Fibrous
Layer 2	20	Homogeneous yellow mastic	Not Detected		Non-Fibrous
Layer 3	10	Homogeneous grey cementitious material	Not Detected		Non-Fibrous

S0009C FLOOR, VINYL FLOOR TILE AND MASTIC, 12X12 BEIGE WITH WHITE FLECK, LOC:9253, GIRL'S WASHROOM					
Bureau Veritas ID: AZGH70		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	70	Homogeneous light grey vinyl floor tile	Not Detected		Non-Fibrous
Layer 2	20	Homogeneous yellow mastic	Not Detected		Non-Fibrous
Layer 3	10	Homogeneous grey cementitious material	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0010A WALL, MASTIC, CREAM BASEBOARD, LOC:9264, CORRIDOR					
Bureau Veritas ID: AZGH71		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	70	Homogeneous off-white baseboard	Not Detected		Non-Fibrous
Layer 2	30	Homogeneous yellow mastic	Not Detected		Non-Fibrous

S0010B WALL, MASTIC, CREAM BASEBOARD, LOC:9264, CORRIDOR					
Bureau Veritas ID: AZGH72		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	70	Homogeneous off-white baseboard	Not Detected		Non-Fibrous
Layer 2	30	Homogeneous yellow mastic	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0010C WALL, MASTIC, CREAM BASEBOARD, LOC:9264, CORRIDOR					
Bureau Veritas ID: AZGH73		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	70	Homogeneous off-white baseboard	Not Detected		Non-Fibrous
Layer 2	30	Homogeneous yellow mastic	Not Detected		Non-Fibrous

S0011A FLOOR, CAULKING, WHITE, LOC:9255, BOY'S WASHROOM					
Bureau Veritas ID: AZGH74		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous off-white caulking	Not Detected		Non-Fibrous

S0011B FLOOR, CAULKING, WHITE, LOC:9255, BOY'S WASHROOM					
Bureau Veritas ID: AZGH75		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous off-white caulking	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Bureau Veritas Job #: C607072
 Report Date: 2026/01/28

Pinchin Ltd
 Client Project #: 352293.015
 Sampler Initials: BW

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0011C FLOOR,CAULKING,WHITE,LOC:9253,GIRL'S WASHROOM					
Bureau Veritas ID:		AZGH76	Date Analyzed:		2026/01/28
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous off-white caulking	Not Detected		Non-Fibrous

S0012A FLOOR,VINYL FLOOR TILE AND MASTIC,12X12 BEIGE WITH BROWN AND WHITE FLECK,LOC:9208,MALE STAFF WASHROOM					
Bureau Veritas ID:		AZGH77	Date Analyzed:		2026/01/28
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	90	Homogeneous grey vinyl floor tile	Not Detected		Non-Fibrous
Layer 2	10	Homogeneous yellow mastic	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0012B FLOOR,VINYL FLOOR TILE AND MASTIC,12X12 BEIGE WITH BROWN AND WHITE FLECK,LOC:9208,MALE STAFF WASHROOM					
Bureau Veritas ID: AZGH78		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	85	Homogeneous grey vinyl floor tile	Not Detected		Non-Fibrous
Layer 2	10	Homogeneous yellow mastic	Not Detected		Non-Fibrous
Layer 3	5	Homogeneous grey cementitious material	Not Detected		Non-Fibrous

S0012C FLOOR,VINYL FLOOR TILE AND MASTIC,12X12 BEIGE WITH BROWN AND WHITE FLECK,LOC:9209,FEMALE STAFF WASHROOM					
Bureau Veritas ID: AZGH79		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	90	Homogeneous grey vinyl floor tile	Not Detected		Non-Fibrous
Layer 2	10	Homogeneous yellow mastic	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0013A WINDOW,CAULKING,LIGHT GREY,LOC:9206,STAFF ROOM					
Bureau Veritas ID: AZGH80		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous light grey caulking	Not Detected		Non-Fibrous

S0013B WINDOW,CAULKING,LIGHT GREY,LOC:9255,BOY'S WASHROOM					
Bureau Veritas ID: AZGH81		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous light grey caulking	Not Detected		Non-Fibrous

S0013C WINDOW,CAULKING,LIGHT GREY,LOC:9253,GIRL'S WASHROOM					
Bureau Veritas ID: AZGH82		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous light grey caulking	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0014A					
DOOR, CAULKING, WHITE, LOC: 9264, CORRIDOR					
Bureau Veritas ID: AZGH83		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous white caulking	Not Detected		Non-Fibrous

S0014B					
DOOR, CAULKING, WHITE, LOC: 9183, CORRIDOR					
Bureau Veritas ID: AZGH84		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous white caulking	Not Detected		Non-Fibrous

S0014C					
DOOR, CAULKING, WHITE, LOC: 9224, CORRIDOR					
Bureau Veritas ID: AZGH85		Date Analyzed: 2026/01/28			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous white caulking	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



BUREAU
VERITAS

Bureau Veritas Job #: C607072
Report Date: 2026/01/28

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZGH38
Sample ID: S0001A WALL,PAINT,ON BLOCK,LOC:9224,CORRIDOR
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH39
Sample ID: S0001B WALL,PAINT,ON BLOCK,LOC:9210,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH40
Sample ID: S0001C WALL,PAINT,ON BLOCK,LOC:9206,STAFF ROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH40 Dup
Sample ID: S0001C WALL,PAINT,ON BLOCK,LOC:9206,STAFF ROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH41
Sample ID: S0001D WALL,PAINT,ON BLOCK,LOC:9163,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH42
Sample ID: S0001E WALL,PAINT,ON BLOCK,LOC:9183,CORRIDOR
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH43
Sample ID: S0001F WALL,PAINT,ON BLOCK,LOC:9255,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso



BUREAU
VERITAS

Bureau Veritas Job #: C607072
Report Date: 2026/01/28

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZGH44
Sample ID: S0001G WALL, PAINT, ON BLOCK, LOC:9264, CORRIDOR
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH45
Sample ID: S0002A FLOOR, THIN-SET, LOC:9213, BOY'S WASHROOM STORAGE
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH46
Sample ID: S0002B FLOOR, THIN-SET, LOC:9163, GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH47
Sample ID: S0002C FLOOR, THIN-SET, LOC:9255, BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH48
Sample ID: S0003A CEILING, DRYWALL AND JOINT COMPOUND, LOC:9212, BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH49
Sample ID: S0003B CEILING, DRYWALL AND JOINT COMPOUND, LOC:9161, BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH50
Sample ID: S0003C CEILING, DRYWALL AND JOINT COMPOUND, LOC:9255, BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso



BUREAU
VERITAS

Bureau Veritas Job #: C607072
Report Date: 2026/01/28

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZGH50 Dup
Sample ID: S0003C CEILING, DRYWALL AND JOINT COMPOUND, LOC:9255, BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH51
Sample ID: S0003D CEILING, DRYWALL AND JOINT COMPOUND, LOC:9210, GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH52
Sample ID: S0003E CEILING, DRYWALL AND JOINT COMPOUND, LOC:9163, GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH53
Sample ID: S0004A WALL, MASTIC, BLACK BASEBOARD, LOC:9208, MALE STAFF WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH54
Sample ID: S0004B WALL, MASTIC, BLACK BASEBOARD, LOC:9208, MALE STAFF WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH55
Sample ID: S0004C WALL, MASTIC, BLACK BASEBOARD, LOC:9209, FEMALE STAFF WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH56
Sample ID: S0005A SINK, MASTIC, WHITE, LOC:9206, STAFF ROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso



BUREAU
VERITAS

Bureau Veritas Job #: C607072
Report Date: 2026/01/28

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZGH57
Sample ID: S0005B SINK, MASTIC, WHITE, LOC:9206, STAFF ROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH58
Sample ID: S0005C SINK, MASTIC, WHITE, LOC:9206, STAFF ROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH59
Sample ID: S0006A FLOOR, VINYL FLOOR TILE AND MASTIC, 9X9 RED AND YELLOW, LOC:9206, STAFF ROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH59 Dup
Sample ID: S0006A FLOOR, VINYL FLOOR TILE AND MASTIC, 9X9 RED AND YELLOW, LOC:9206, STAFF ROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH60
Sample ID: S0006B FLOOR, VINYL FLOOR TILE AND MASTIC, 9X9 RED AND YELLOW, LOC:9206, STAFF ROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH61
Sample ID: S0006C FLOOR, VINYL FLOOR TILE AND MASTIC, 9X9 RED AND YELLOW, LOC:9206, STAFF ROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093314	N/A	2026/01/28	Rayana De Oliveira Cardoso

Bureau Veritas ID: AZGH62
Sample ID: S0007A WALL, THIN-SET, LOC:9212, BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif



BUREAU
VERITAS

Bureau Veritas Job #: C607072
Report Date: 2026/01/28

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZGH63
Sample ID: S0007B WALL, THIN-SET, LOC:9161, BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH64
Sample ID: S0007C WALL, THIN-SET, LOC:9255, BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH65
Sample ID: S0008A PIPING, SWEATWRAP, LOC:9162, CARETAKER AREA
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH65 Dup
Sample ID: S0008A PIPING, SWEATWRAP, LOC:9162, CARETAKER AREA
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH66
Sample ID: S0008B PIPING, SWEATWRAP, LOC:9162, CARETAKER AREA
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH67
Sample ID: S0008C PIPING, SWEATWRAP, LOC:9254, CARETAKER AREA
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH68
Sample ID: S0009A FLOOR, VINYL FLOOR TILE AND MASTIC, 12X12 BEIGE WITH WHITE FLECK, LOC:9255 BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif



BUREAU
VERITAS

Bureau Veritas Job #: C607072
Report Date: 2026/01/28

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZGH69
Sample ID: S0009B FLOOR, VINYL FLOOR TILE AND MASTIC, 12X12 BEIGE WITH WHITE FLECK, LOC:9253, CORRIDOR
Matrix: Solid
Collected: 2026/01/21
Shipped: 2026/01/21
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH70
Sample ID: S0009C FLOOR, VINYL FLOOR TILE AND MASTIC, 12X12 BEIGE WITH WHITE FLECK, LOC:9253, WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped: 2026/01/21
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH71
Sample ID: S0010A WALL, MASTIC, CREAM BASEBOARD, LOC:9264, CORRIDOR
Matrix: Solid
Collected: 2026/01/21
Shipped: 2026/01/21
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH72
Sample ID: S0010B WALL, MASTIC, CREAM BASEBOARD, LOC:9264, CORRIDOR
Matrix: Solid
Collected: 2026/01/21
Shipped: 2026/01/21
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH72 Dup
Sample ID: S0010B WALL, MASTIC, CREAM BASEBOARD, LOC:9264, CORRIDOR
Matrix: Solid
Collected: 2026/01/21
Shipped: 2026/01/21
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH73
Sample ID: S0010C WALL, MASTIC, CREAM BASEBOARD, LOC:9264, CORRIDOR
Matrix: Solid
Collected: 2026/01/21
Shipped: 2026/01/21
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH74
Sample ID: S0011A FLOOR, CAULKING, WHITE, LOC:9255, BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped: 2026/01/21
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif



BUREAU
VERITAS

Bureau Veritas Job #: C607072
Report Date: 2026/01/28

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZGH75
Sample ID: S0011B FLOOR,CAULKING,WHITE,LOC:9255,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH76
Sample ID: S0011C FLOOR,CAULKING,WHITE,LOC:9253,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH77
Sample ID: S0012A FLOOR,VINYL FLOOR TILE AND MASTIC,12X12 BEIGE WITH BROWN AND WHITE FLECK,208,MALE STAFF WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH78
Sample ID: S0012B FLOOR,VINYL FLOOR TILE AND MASTIC,12X12 BEIGE WITH BROWN AND WHITE FLECK,208,MALE STAFF WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH79
Sample ID: S0012C FLOOR,VINYL FLOOR TILE AND MASTIC,12X12 BEIGE WITH BROWN AND WHITE FLECK,209,FEMALE STAFF WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH80
Sample ID: S0013A WINDOW,CAULKING,LIGHT GREY,LOC:9206,STAFF ROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH81
Sample ID: S0013B WINDOW,CAULKING,LIGHT GREY,LOC:9255,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif



BUREAU
VERITAS

Bureau Veritas Job #: C607072
Report Date: 2026/01/28

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZGH82
Sample ID: S0013C WINDOW,CAULKING,LIGHT GREY,LOC:9253,GIRL'S WASHROOM
Matrix: Solid

Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH83
Sample ID: S0014A DOOR,CAULKING,WHITE,LOC:9264,CORRIDOR
Matrix: Solid

Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH84
Sample ID: S0014B DOOR,CAULKING,WHITE,LOC:9183,CORRIDOR
Matrix: Solid

Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif

Bureau Veritas ID: AZGH85
Sample ID: S0014C DOOR,CAULKING,WHITE,LOC:9224,CORRIDOR
Matrix: Solid

Collected: 2026/01/21
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A093216	N/A		Dina Yousif



**BUREAU
VERITAS**

Bureau Veritas Job #: C607072
Report Date: 2026/01/28

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

GENERAL COMMENTS

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C607072
Report Date: 2026/01/28

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Dina Yousif, Analyst 2

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation, please refer to the Validation Signatures page if included, otherwise available by request. For Department specific Analyst/Supervisor validation names, please refer to the Test Summary section if included, otherwise available by request. This report is authorized by Rodney Major, General Manager responsible for Ontario Environmental laboratory operations.



**Pinchin Ltd. - Asbestos Laboratory
Internal Asbestos Bulk Sample Chain of Custody**

Special Instructions:

Client Name:		Project Address:	ON
Portfolio/Building No:		Pinchin File:	352293.015
Submitted by:	Ben Weir	Email:	bweir@pinchin.com
CC Email:	Jessica Cozzitorto	CC Email:	jcozzitorto@pinchin.com
Date Submitted:	January 21 2026	Required by:	January 28 2026
# of Samples:	48	Priority:	5 Day Turnaround
Year of Building Construction (Mandatory, Years ONLY):			
Do NOT Stop on Positive (Sample Numbers):			
Pinchin Group Company (Mandatory Field):	Pinchin		
HMIS2 Building Reference #:	159714/20260198935237		

To be Completed by Lab Personnel Only:

Lab Reference #:		Time: 14:27	24 hour clock		
Received by:	JAN 22 2026 <i>W</i>	Date: 2026/01/22	Month	Day	Year
Name(s) of Analyst(s):	<i>Sarah Susan Sweeney</i>				

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0001	A	Wall,Paint,On Block,Loc:9224,Corridor
S	0001	B	Wall,Paint,On Block,Loc:9210,Girl's Washroom
S	0001	C	Wall,Paint,On Block,Loc:9206,Staff Room
S	0001	D	Wall,Paint,On Block,Loc:9163,Girl's Washroom
S	0001	E	Wall,Paint,On Block,Loc:9183,Corridor
S	0001	F	Wall,Paint,On Block,Loc:9255,Boy's Washroom

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0001	G	Wall,Paint,On Block,Loc:9264,Corridor
S	0002	A	Floor,Thin-set,Loc:9213,Boy's Washroom Storage
S	0002	B	Floor,Thin-set,Loc:9163,Girl's Washroom
S	0002	C	Floor,Thin-set,Loc:9255,Boy's Washroom
S	0003	A	Ceiling,Drywall And Joint Compound,Loc:9212,Boy's Washroom
S	0003	B	Ceiling,Drywall And Joint Compound,Loc:9161,Boy's Washroom
S	0003	C	Ceiling,Drywall And Joint Compound,Loc:9255,Boy's Washroom
S	0003	D	Ceiling,Drywall And Joint Compound,Loc:9210,Girl's Washroom
S	0003	E	Ceiling,Drywall And Joint Compound,Loc:9163,Girl's Washroom
S	0004	A	Wall,Mastic,Black Baseboard,Loc:9208,Male Staff Washroom
S	0004	B	Wall,Mastic,Black Baseboard,Loc:9208,Male Staff Washroom
S	0004	C	Wall,Mastic,Black Baseboard,Loc:9209,Female Staff Washroom
S	0005	A	Sink,Mastic,White,Loc:9206,Staff Room
S	0005	B	Sink,Mastic,White,Loc:9206,Staff Room
S	0005	C	Sink,Mastic,White,Loc:9206,Staff Room

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0006	A	Floor,Vinyl Floor Tile And Mastic,9x9 Red And Yellow,Loc:9206,Staff Room
S	0006	B	Floor,Vinyl Floor Tile And Mastic,9x9 Red And Yellow,Loc:9206,Staff Room
S	0006	C	Floor,Vinyl Floor Tile And Mastic,9x9 Red And Yellow,Loc:9206,Staff Room
S	0007	A	Wall,Thin-set,Loc:9212,Boy's Washroom
S	0007	B	Wall,Thin-set,Loc:9161,Boy's Washroom
S	0007	C	Wall,Thin-set,Loc:9255,Boy's Washroom
S	0008	A	Piping,Sweatwrap,Loc:9162,Caretaker Area
S	0008	B	Piping,Sweatwrap,Loc:9162,Caretaker Area
S	0008	C	Piping,Sweatwrap,Loc:9254,Caretaker Area
S	0009	A	Floor,Vinyl Floor Tile And Mastic,12x12 Beige With White Fleck,Loc:9255,Boy's Washroom
S	0009	B	Floor,Vinyl Floor Tile And Mastic,12x12 Beige With White Fleck,Loc:9264,Corridor
S	0009	C	Floor,Vinyl Floor Tile And Mastic,12x12 Beige With White Fleck,Loc:9253,Girl's Washroom
S	0010	A	Wall,Mastic,Cream Baseboard,Loc:9264,Corridor
S	0010	B	Wall,Mastic,Cream Baseboard,Loc:9264,Corridor
S	0010	C	Wall,Mastic,Cream Baseboard,Loc:9264,Corridor

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0011	A	Floor,Caulking,White,Loc:9255,Boy's Washroom
S	0011	B	Floor,Caulking,White,Loc:9255,Boy's Washroom
S	0011	C	Floor,Caulking,White,Loc:9253,Girl's Washroom
S	0012	A	Floor,Vinyl Floor Tile And Mastic,12x12 Beige With Brown And White Fleck,Loc:9208,Male Staff Washroom
S	0012	B	Floor,Vinyl Floor Tile And Mastic,12x12 Beige With Brown And White Fleck,Loc:9208,Male Staff Washroom
S	0012	C	Floor,Vinyl Floor Tile And Mastic,12x12 Beige With Brown And White Fleck,Loc:9209,Female Staff Washroom
S	0013	A	Window,Caulking,Light Grey,Loc:9206,Staff Room
S	0013	B	Window,Caulking,Light Grey,Loc:9255,Boy's Washroom
S	0013	C	Window,Caulking,Light Grey,Loc:9253,Girl's Washroom
S	0014	A	Door,Caulking,White,Loc:9264,Corridor
S	0014	B	Door,Caulking,White,Loc:9183,Corridor
S	0014	C	Door,Caulking,White,Loc:9224,Corridor



Your Project #: 352293.015
Your C.O.C. #: NA

Attention: Jessica Cozzitorto

Pinchin Ltd
2360 Meadowpine Blvd
Unit # 2
Mississauga, ON
CANADA L5N 6S2

Report Date: 2026/02/13
Report #: R8695254
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C613142

Received: 2026/02/09, 14:19

Sample Matrix: Solid
Samples Received: 38

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Asbestos by PLM - 0.5 RDL (1)	38	N/A	2026/02/12	COR3SOP-00002	EPA 600R-93/116

Remarks:
Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

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Bureau Veritas' Asbestos Laboratory is accredited by NVLAP for bulk asbestos analysis by polarized light microscopy, NVLAP Code 600136-0.

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Bureau Veritas' scope of accreditation includes EPA -- 40 CFR Appendix E to Subpart E of Part 763, "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" and EPA-600/R-93/116: "Method for the Determination of Asbestos in Bulk Building Materials".

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) P.O.B. - Percent of Bulk

When Asbestos data is reported with other data, this report contains data that are not covered by the NVLAP accreditation.



Your Project #: 352293.015
Your C.O.C. #: NA

Attention: Jessica Cozzitorto

Pinchin Ltd
2360 Meadowpine Blvd
Unit # 2
Mississauga, ON
CANADA L5N 6S2

Report Date: 2026/02/13
Report #: R8695254
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C613142
Received: 2026/02/09, 14:19

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Elora Di Bratto, Project Manager
Email: Elora.Di-Bratto@bureauveritas.com
Phone# (905) 817-5700

=====

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Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0015A WALL,PAINT,NORTH WALL,LOC:9210,GIRL'S WASHROOM					
Bureau Veritas ID:		AZUG56	Date Analyzed:		2026/02/12
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

S0015B WALL,PAINT,EAST WALL,LOC:9210,GIRL'S WASHROOM					
Bureau Veritas ID:		AZUG57	Date Analyzed:		2026/02/12
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

S0015C WALL,PAINT,SOUTH WALL,LOC:9210,GIRL'S WASHROOM					
Bureau Veritas ID:		AZUG58	Date Analyzed:		2026/02/12
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0015D WALL,PAINT,WEST WALL,LOC:9210,GIRL'S WASHROOM					
Bureau Veritas ID:		AZUG59	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

S0016A WALL,PAINT,NORTH WALL,LOC:9211,GIRL'S WASHROOM STORAGE					
Bureau Veritas ID:		AZUG60	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

S0016B LL,PAINT,EAST WALL,LOC:9211,GIRL'S WASHROOM STORAGE					
Bureau Veritas ID:		AZUG61	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/yellow paint/block filler	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0016C WALL,PAINT,SOUTH WALL,LOC:9211,GIRL'S WASHROOM STORAGE					
Bureau Veritas ID: AZUG62		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

S0016D WALL,PAINT,WEST WALL,LOC:9211,GIRL'S WASHROOM STORAGE					
Bureau Veritas ID: AZUG63		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/yellow paint/block filler	Not Detected		Non-Fibrous

S0017A WALL,PAINT,NORTH WALL,LOC:9212,BOY'S WASHROOM					
Bureau Veritas ID: AZUG64		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0017B WALL,PAINT,EAST WALL,LOC:9212,BOY'S WASHROOM					
Bureau Veritas ID:		AZUG65	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

S0017C WALL,PAINT,SOUTH WALL,LOC:9212,BOY'S WASHROOM					
Bureau Veritas ID:		AZUG66	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

S0017D WALL,PAINT,WEST WALL,LOC:9212,BOY'S WASHROOM					
Bureau Veritas ID:		AZUG67	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0018A WALL,PAINT,NORTH WALL,LOC:9213,BOY'S WASHROOM STORAGE					
Bureau Veritas ID: AZUG68		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

S0018B WALL,PAINT,EAST WALL,LOC:9213,BOY'S WASHROOM STORAGE					
Bureau Veritas ID: AZUG69		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

S0018C WALL,PAINT,SOUTH WALL,LOC:9213,BOY'S WASHROOM STORAGE					
Bureau Veritas ID: AZUG70		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0018D WALL,PAINT,WEST WALL,LOC:9213,BOY'S WASHROOM STORAGE					
Bureau Veritas ID: AZUG71		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/yellow paint/block filler	Not Detected		Non-Fibrous

S0019A WALL,PAINT,OUTSIDE GIRLS WASHROOM,LOC:9224,CORRIDOR					
Bureau Veritas ID: AZUG72		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous red/white paint/block filler	Not Detected		Non-Fibrous

S0019B WALL,PAINT,OUTSIDE BOYS WASHROOM,LOC:9224,CORRIDOR					
Bureau Veritas ID: AZUG73		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous light grey/white paint/block filler	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0020A WALL,PAINT,EAST WALL,LOC:9161,BOY'S WASHROOM					
Bureau Veritas ID:		AZUG74	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous blue/yellow paint/block filler	Not Detected		Non-Fibrous

S0020B WALL,PAINT,SOUTH WALL,LOC:9161,BOY'S WASHROOM					
Bureau Veritas ID:		AZUG75	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/yellow paint/block filler	Not Detected		Non-Fibrous

S0020C WALL,PAINT,WEST WALL,LOC:9161,BOY'S WASHROOM					
Bureau Veritas ID:		AZUG76	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige paint/block filler	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0020D WALL,PAINT,NORTH WALL,LOC:9161,BOY'S WASHROOM					
Bureau Veritas ID: AZUG77		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/white paint/block filler	Not Detected		Non-Fibrous

S0021A WALL,PAINT,EAST WALL,LOC:9163,GIRL'S WASHROOM					
Bureau Veritas ID: AZUG78		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/yellow paint/block filler	Not Detected		Non-Fibrous

S0021B WALL,PAINT,SOUTH WALL,LOC:9163,GIRL'S WASHROOM					
Bureau Veritas ID: AZUG79		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/yellow paint/block filler	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0021C WALL,PAINT,WEST WALL,LOC:9163,GIRL'S WASHROOM					
Bureau Veritas ID: AZUG80		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous blue/beige paint/block filler	Not Detected		Non-Fibrous

S0021D WALL,PAINT,NORTH WALL,LOC:9163,GIRL'S WASHROOM					
Bureau Veritas ID: AZUG81		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous blue paint	Not Detected		Non-Fibrous

S022A WALL,PAINT,OUTSIDE BOYS WASHROOM,LOC:9183,CORRIDOR					
Bureau Veritas ID: AZUG82		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous beige paint	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S022B WALL,PAINT,OUTSIDE GIRLS WASHROOM,LOC:9183,CORRIDOR					
Bureau Veritas ID: AZUG83		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous beige paint	Not Detected		Non-Fibrous

S0023A WALL,PAINT,EAST WALL,LOC:9253,GIRL'S WASHROOM					
Bureau Veritas ID: AZUG84		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/yellow paint/block filler	Not Detected		Non-Fibrous

S0023B ALL,PAINT,SOUTH WALL,LOC:9253,GIRL'S WASHROOM					
Bureau Veritas ID: AZUG85		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous grey/yellow paint/block filler	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0023C WALL,PAINT,WEST WALL,LOC:9253,GIRL'S WASHROOM					
Bureau Veritas ID:		AZUG86	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous blue/yellow paint/block filler	Not Detected		Non-Fibrous

S0023D WALL,PAINT,NORTH WALL,LOC:9253,GIRL'S WASHROOM					
Bureau Veritas ID:		AZUG87	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous beige paint	Not Detected		Non-Fibrous

S0024A WALL,PAINT,EAST WALL,LOC:9255,BOY'S WASHROOM					
Bureau Veritas ID:		AZUG88	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/yellow paint/block filler	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0024B WALL,PAINT,SOUTH WALL,LOC:9255,BOY'S WASHROOM					
Bureau Veritas ID: AZUG89		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige/yellow paint/block filler	Not Detected		Non-Fibrous

S0024C WALL,PAINT,WEST WALL,LOC:9255,BOY'S WASHROOM					
Bureau Veritas ID: AZUG90		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Non-homogeneous beige paint/block filler	Not Detected		Non-Fibrous

S0024D WALL,PAINT,NORTH WALL,LOC:9255,BOY'S WASHROOM					
Bureau Veritas ID: AZUG91		Date Analyzed: 2026/02/13			
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous blue paint	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
 Date Format : yyyy/mm/dd



BUREAU
VERITAS

Bureau Veritas Job #: C613142
Report Date: 2026/02/13

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

Asbestos Analytical Results

EPA/600R-93/116 by Polarized Light Microscopy

S0025A WALL,PAINT,OUTSIDE BOYS WASHROOM,LOC:9264,CORRIDOR					
Bureau Veritas ID:		AZUG92	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous beige paint	Not Detected		Non-Fibrous

S0025B WALL,PAINT,OUTSIDE GIRLS WASHROOM,LOC:9264,CORRIDOR					
Bureau Veritas ID:		AZUG93	Date Analyzed:		2026/02/13
	<u>P.O.B</u>	<u>Sample Morphology</u>	<u>Asbestos</u>	<u>Other Fibres</u>	<u>Particulate</u>
Layer 1	100	Homogeneous beige paint	Not Detected		Non-Fibrous

The limit of quantitation is 0.50%, although asbestos may be qualitatively detected at concentrations less than 0.50%. Samples for which asbestos is detected at <0.50% are reported as trace, "<0.50%". "Not Detected" indicates that no asbestos fibres were observed.

Calibrated Visual Estimate (%)
Date Format : yyyy/mm/dd



BUREAU
VERITAS

Bureau Veritas Job #: C613142
Report Date: 2026/02/13

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZUG56
Sample ID: S0015A WALL,PAINT,NORTH WALL,LOC:9210,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG57
Sample ID: S0015B WALL,PAINT,EAST WALL,LOC:9210,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG58
Sample ID: S0015C WALL,PAINT,SOUTH WALL,LOC:9210,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG59
Sample ID: S0015D WALL,PAINT,WEST WALL,LOC:9210,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG60
Sample ID: S0016A WALL,PAINT,NORTH WALL,LOC:9211,GIRL'S WASHROOM STORAGE
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG61
Sample ID: S0016B LL,PAINT,EAST WALL,LOC:9211,GIRL'S WASHROOM STORAGE
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG62
Sample ID: S0016C WALL,PAINT,SOUTH WALL,LOC:9211,GIRL'S WASHROOM STORAGE
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif



BUREAU
VERITAS

Bureau Veritas Job #: C613142
Report Date: 2026/02/13

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZUG63
Sample ID: S0016D WALL,PAINT,WEST WALL,LOC:9211,GIRL'S WASHROOM STORAGE
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG64
Sample ID: S0017A WALL,PAINT,NORTH WALL,LOC:9212,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG65
Sample ID: S0017B WALL,PAINT,EAST WALL,LOC:9212,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG65 Dup
Sample ID: S0017B WALL,PAINT,EAST WALL,LOC:9212,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG66
Sample ID: S0017C WALL,PAINT,SOUTH WALL,LOC:9212,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG67
Sample ID: S0017D WALL,PAINT,WEST WALL,LOC:9212,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG68
Sample ID: S0018A WALL,PAINT,NORTH WALL,LOC:9213,BOY'S WASHROOM STORAGE
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif



BUREAU
VERITAS

Bureau Veritas Job #: C613142
Report Date: 2026/02/13

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZUG69
Sample ID: S0018B WALL,PAINT,EAST WALL,LOC:9213,BOY'S WASHROOM STORAGE
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG70
Sample ID: S0018C WALL,PAINT,SOUTH WALL,LOC:9213,BOY'S WASHROOM STORAGE
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG71
Sample ID: S0018D WALL,PAINT,WEST WALL,LOC:9213,BOY'S WASHROOM STORAGE
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG72
Sample ID: S0019A WALL,PAINT,OUTSIDE GIRLS WASHROOM,LOC:9224,CORRIDOR
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG73
Sample ID: S0019B WALL,PAINT,OUTSIDE BOYS WASHROOM,LOC:9224,CORRIDOR
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG74
Sample ID: S0020A WALL,PAINT,EAST WALL,LOC:9161,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG75
Sample ID: S0020B WALL,PAINT,SOUTH WALL,LOC:9161,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif



BUREAU
VERITAS

Bureau Veritas Job #: C613142
Report Date: 2026/02/13

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZUG75 Dup
Sample ID: S0020B WALL,PAINT,SOUTH WALL,LOC:9161,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG76
Sample ID: S0020C WALL,PAINT,WEST WALL,LOC:9161,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG77
Sample ID: S0020D WALL,PAINT,NORTH WALL,LOC:9161,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG78
Sample ID: S0021A WALL,PAINT,EAST WALL,LOC:9163,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG79
Sample ID: S0021B WALL,PAINT,SOUTH WALL,LOC:9163,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG80
Sample ID: S0021C WALL,PAINT,WEST WALL,LOC:9163,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG81
Sample ID: S0021D WALL,PAINT,NORTH WALL,LOC:9163,GIRL'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif



BUREAU
VERITAS

Bureau Veritas Job #: C613142
Report Date: 2026/02/13

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZUG82
Sample ID: S022A WALL,PAINT,OUTSIDE BOYS WASHROOM,LOC:9183,CORRIDOR
Matrix: Solid

Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG83
Sample ID: S022B WALL,PAINT,OUTSIDE GIRLS WASHROOM,LOC:9183,CORRIDOR
Matrix: Solid

Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG84
Sample ID: S0023A WALL,PAINT,EAST WALL,LOC:9253,GIRL'S WASHROOM
Matrix: Solid

Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG85
Sample ID: S0023B ALL,PAINT,SOUTH WALL,LOC:9253,GIRL'S WASHROOM
Matrix: Solid

Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG85 Dup
Sample ID: S0023B ALL,PAINT,SOUTH WALL,LOC:9253,GIRL'S WASHROOM
Matrix: Solid

Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG86
Sample ID: S0023C WALL,PAINT,WEST WALL,LOC:9253,GIRL'S WASHROOM
Matrix: Solid

Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG87
Sample ID: S0023D WALL,PAINT,NORTH WALL,LOC:9253,GIRL'S WASHROOM
Matrix: Solid

Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif



BUREAU
VERITAS

Bureau Veritas Job #: C613142
Report Date: 2026/02/13

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZUG88
Sample ID: S0024A WALL,PAINT,EAST WALL,LOC:9255,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG89
Sample ID: S0024B WALL,PAINT,SOUTH WALL,LOC:9255,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG90
Sample ID: S0024C WALL,PAINT,WEST WALL,LOC:9255,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG91
Sample ID: S0024D WALL,PAINT,NORTH WALL,LOC:9255,BOY'S WASHROOM
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG92
Sample ID: S0025A WALL,PAINT,OUTSIDE BOYS WASHROOM,LOC:9264,CORRIDOR
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif

Bureau Veritas ID: AZUG93
Sample ID: S0025B WALL,PAINT,OUTSIDE GIRLS WASHROOM,LOC:9264,CORRIDOR
Matrix: Solid
Collected: 2026/02/06
Shipped:
Received: 2026/02/09

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	A100757	N/A	2026/02/12	Dina Yousif



**BUREAU
VERITAS**

Bureau Veritas Job #: C613142
Report Date: 2026/02/13

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

GENERAL COMMENTS

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C613142
Report Date: 2026/02/13

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Dina Yousif, Analyst 2

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NONT-2026-02-131C

Analyzed by: _____

Reviewed by: _____

Report Sent by: _____

Pinchin Ltd. - Asbestos Laboratory
Internal Asbestos Bulk Sample Chain of Custody

Special Instructions: PLEASE DO NOT STOP POSITIVE ON ALL SAMPLES (S0015-S0025). NEED EVERY SAMPLE ANALYZED.

Client Name:		Project Address:	ON
Portfolio/Building No:		Pinchin File:	352293.015
Submitted by:	Ben Weir	Email:	bweir@pinchin.com
CC Email:	Jessica Cozzitorto	CC Email:	jcozzitorto@pinchin.com
Date Submitted:	February 06 2026	Required by:	February 13 2026
# of Samples:	38	Priority:	5 Day Turnaround
Year of Building Construction (Mandatory, Years ONLY):			
Do NOT Stop on Positive (Sample Numbers):	S0015,S0016,S0017,S0018,S0019,S0020,S0021,S0022,S0023,S0024,S0025		
Pinchin Group Company (Mandatory Field):	Pinchin		
HMIS2 Building Reference #:	159714/20260198935237		

To be Completed by Lab Personnel Only:

Lab Reference #:		Time:	24 hour clock		
Received by:	FEB 09 2026 <i>WV</i>	Date:	Month	Day	Year
Name(s) of Analyst(s):					

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0015	A	Wall,Paint,North Wall,Loc:9210,Girl's Washroom
S	0015	B	Wall,Paint,East Wall,Loc:9210,Girl's Washroom
S	0015	C	Wall,Paint,South Wall,Loc:9210,Girl's Washroom
S	0015	D	Wall,Paint,West Wall,Loc:9210,Girl's Washroom
S	0016	A	Wall,Paint,North Wall,Loc:9211,Girl's Washroom Storage
S	0016	B	Wall,Paint,East Wall,Loc:9211,Girl's Washroom Storage

*AP APPROVED BY SIMON
2026 02 09 14:19*

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0016	C	Wall,Paint,South Wall,Loc:9211,Girl's Washroom Storage
S	0016	D	Wall,Paint,West Wall,Loc:9211,Girl's Washroom Storage
S	0017	A	Wall,Paint,North Wall,Loc:9212,Boy's Washroom
S	0017	B	Wall,Paint,East Wall,Loc:9212,Boy's Washroom
S	0017	C	Wall,Paint,South Wall,Loc:9212,Boy's Washroom
S	0017	D	Wall,Paint,West Wall,Loc:9212,Boy's Washroom
S	0018	A	Wall,Paint,North Wall,Loc:9213,Boy's Washroom Storage
S	0018	B	Wall,Paint,East Wall,Loc:9213,Boy's Washroom Storage
S	0018	C	Wall,Paint,South Wall,Loc:9213,Boy's Washroom Storage
S	0018	D	Wall,Paint,West Wall,Loc:9213,Boy's Washroom Storage
S	0019	A	Wall,Paint,Outside Girls Washroom,Loc:9224,Corridor
S	0019	B	Wall,Paint,Outside Boys Washroom,Loc:9224,Corridor
S	0020	A	Wall,Paint,East Wall,Loc:9161,Boy's Washroom
S	0020	B	Wall,Paint,South Wall,Loc:9161,Boy's Washroom
S	0020	C	Wall,Paint,West Wall,Loc:9161,Boy's Washroom

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0020	D	Wall,Paint,North Wall,Loc:9161,Boy's Washroom
S	0021	A	Wall,Paint,East Wall,Loc:9163,Girl's Washroom
S	0021	B	Wall,Paint,South Wall,Loc:9163,Girl's Washroom
S	0021	C	Wall,Paint,West Wall,Loc:9163,Girl's Washroom
S	0021	D	Wall,Paint,North Wall,Loc:9163,Girl's Washroom
S	0022	A	Wall,Paint,Outside Boys Washroom,Loc:9183,Corridor
S	0022	B	Wall,Paint,Outside Girls Washroom,Loc:9183,Corridor
S	0023	A	Wall,Paint,East Wall,Loc:9253,Girl's Washroom
S	0023	B	Wall,Paint,South Wall,Loc:9253,Girl's Washroom
S	0023	C	Wall,Paint,West Wall,Loc:9253,Girl's Washroom
S	0023	D	Wall,Paint,North Wall,Loc:9253,Girl's Washroom
S	0024	A	Wall,Paint,East Wall,Loc:9255,Boy's Washroom
S	0024	B	Wall,Paint,South Wall,Loc:9255,Boy's Washroom
S	0024	C	Wall,Paint,West Wall,Loc:9255,Boy's Washroom
S	0024	D	Wall,Paint,North Wall,Loc:9255,Boy's Washroom

Sample Prefix	Sample No.	Sample Suffix	Sample Description/Location (Mandatory)
S	0025	A	Wall,Paint,Outside Boys Washroom,Loc:9264,Corridor
S	0025	B	Wall,Paint,Outside Girls Washroom,Loc:9264,Corridor

APPENDIX II-B
Lead Analytical Certificates



Your Project #: 352293.015
Your C.O.C. #: N/A

Attention: Jessica Cozzitorto

Pinchin Ltd
2360 Meadowpine Blvd
Unit # 2
Mississauga, ON
CANADA L5N 6S2

Report Date: 2026/01/29
Report #: R8688122
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C606998

Received: 2026/01/22, 14:27

Sample Matrix: Bulk
Samples Received: 6

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Metals in Paint	5	2026/01/28	2026/01/28	CAM SOP-00408	EPA 6010D m
Metals in Paint	1	2026/01/28	2026/01/29	CAM SOP-00408	EPA 6010D m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, EPA, APHA or the Quebec Ministry of Environment.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your Project #: 352293.015
Your C.O.C. #: N/A

Attention: Jessica Cozzitorto

Pinchin Ltd
2360 Meadowpine Blvd
Unit # 2
Mississauga, ON
CANADA L5N 6S2

Report Date: 2026/01/29
Report #: R8688122
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C606998
Received: 2026/01/22, 14:27

Encryption Key

Please direct all questions regarding this Certificate of Analysis to:

Elora Di Bratto, Project Manager
Email: Elora.Di-Bratto@bureauveritas.com
Phone# (905) 817-5700

=====

This report has been generated and distributed using a secure automated process.

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BUREAU
VERITAS

Bureau Veritas Job #: C606998
Report Date: 2026/01/29

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

ELEMENTS BY ATOMIC SPECTROSCOPY (BULK)

Bureau Veritas ID		AZGE71	AZGE72			
Sampling Date		2026/01/19	2026/01/19			
COC Number		N/A	N/A			
	UNITS	L0001, Wall, Concrete Block, Light Grey, Loc:9224, Corridor	L0002, WALL, CONCRETE BLOCK, BEIGE, LOC:9210, GIRL'S WASHROOM	RDL	MDL	QC Batch

Metals						
Lead (Pb)	%	0.00021	0.00022	0.00010	0.000030	A093345
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						

Bureau Veritas ID		AZGE73			AZGE74			
Sampling Date		2026/01/19			2026/01/19			
COC Number		N/A			N/A			
	UNITS	L0003, WALL, CONCRETE BLOCK, BLUE, LOC:9206, STAFF ROOM	RDL	MDL	L0004, WALL, CONCRETE BLOCK, MULTICOLOUR, LOC:9163, GIRL'S WASHROOM	RDL	MDL	QC Batch

Metals								
Lead (Pb)	%	0.15	0.0010	0.00030	0.00026	0.00010	0.000030	A093345
RDL = Reportable Detection Limit QC Batch = Quality Control Batch								

Bureau Veritas ID		AZGE75	AZGE76			
Sampling Date		2026/01/19	2026/01/19			
COC Number		N/A	N/A			
	UNITS	L0005, WALL, CONCRETE BLOCK, BEIGE, LOC:9264, CORRIDOR	L0006, CEILING, DRYWALL AND JOINT COMPOUND, WHITE, LOC:9163	RDL	MDL	QC Batch

Metals						
Lead (Pb)	%	0.0011	0.00011	0.00010	0.000030	A093345
RDL = Reportable Detection Limit QC Batch = Quality Control Batch						



BUREAU
VERITAS

Bureau Veritas Job #: C606998
Report Date: 2026/01/29

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

TEST SUMMARY

Bureau Veritas ID: AZGE71
Sample ID: L0001, Wall, Concrete Block, Light Grey, Loc:9224, Corridor
Matrix: Bulk
Collected: 2026/01/19
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	A093345	2026/01/28	2026/01/28	Medhat Nasr

Bureau Veritas ID: AZGE72
Sample ID: L0002, WALL, CONCRETE BLOCK, BEIGE, LOC:9210, GIRL'S WASHROOM
Matrix: Bulk
Collected: 2026/01/19
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	A093345	2026/01/28	2026/01/28	Medhat Nasr

Bureau Veritas ID: AZGE73
Sample ID: L0003, WALL, CONCRETE BLOCK, BLUE, LOC:9206, STAFF ROOM
Matrix: Bulk
Collected: 2026/01/19
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	A093345	2026/01/28	2026/01/29	Medhat Nasr

Bureau Veritas ID: AZGE74
Sample ID: L0004, WALL, CONCRETE BLOCK, MULTICOLOUR, LOC:/;9163, GIRL'S WASHROOM
Matrix: Bulk
Collected: 2026/01/19
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	A093345	2026/01/28	2026/01/28	Medhat Nasr

Bureau Veritas ID: AZGE75
Sample ID: L0005, WALL, CONCRET BLOCK, BIEGE, LOC:9264, CORRIDOR
Matrix: Bulk
Collected: 2026/01/19
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	A093345	2026/01/28	2026/01/28	Medhat Nasr

Bureau Veritas ID: AZGE76
Sample ID: L0006, CEILING, DRYWALL AND JOINT COMAOUND, WHITE, LOC:9163
Matrix: Bulk
Collected: 2026/01/19
Shipped:
Received: 2026/01/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Metals in Paint	ICP	A093345	2026/01/28	2026/01/28	Medhat Nasr



**BUREAU
VERITAS**

Bureau Veritas Job #: C606998
Report Date: 2026/01/29

Pinchin Ltd
Client Project #: 352293.015
Sampler Initials: BW

GENERAL COMMENTS

Results relate only to the items tested.



BUREAU
VERITAS

Bureau Veritas Job #: C606998

Report Date: 2026/01/29

QUALITY ASSURANCE REPORT

Pinchin Ltd

Client Project #: 352293.015

Sampler Initials: BW

QC Batch	Parameter	Date	Method Blank		QC Standard	
			Value	UNITS	% Recovery	QC Limits
A093345	Lead (Pb)	2026/01/29	<0.00010	%	98	75 - 125

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.



BUREAU
VERITAS

Bureau Veritas Job #: C606998

Report Date: 2026/01/29

Pinchin Ltd

Client Project #: 352293.015

Sampler Initials: BW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in cursive script that reads "Louise A. Harding".

Louise Harding, Scientific Specialist

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6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266
CAM FCD-01191/6

CHAIN OF CUSTODY RECORD

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required								
Company Name: Pinchin Ltd.		Company Name: _____		Quotation #: _____		<input checked="" type="checkbox"/> Regular TAT (5-7 days) Most analyses								
Contact Name: Ben Weir Jessica Cozzitorto		Contact Name: _____		P.O. #/ AFE#: _____		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS								
Address: _____		Address: _____		Project #: 352293.015		Rush TAT (Surcharges will be applied)								
Phone: _____ Fax: _____		Phone: _____ Fax: _____		Site Location: _____		<input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days								
Email: bweir@pinchin.com jcozzitorto@pinchin.com		Email: _____		Site #: _____		Date Required: 2026-01-28								
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS DRINKING WATER CHAIN OF CUSTODY				Site Location Province: _____ ON		Rush Confirmation #: _____								
<input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/ Fine <input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/ Other <input type="checkbox"/> Table _____ FOR RSC (PLEASE CIRCLE) Y / N		Other Regulations <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> PWQO Region _____ <input type="checkbox"/> Other (Specify) _____ <input type="checkbox"/> REG 558 (MIN. 3 DAY TAT REQUIRED) <input type="checkbox"/> REG 406 Table _____		Analysis Requested # OF CONTAINERS SUBMITTED FIELD FILTERED (CIRCLE) Metals / Hg / Cr-VI BTEX/PHCF1 PHCF2 - F4 VOCs REG 153 METALS & INORGANICS REG 153 ICPMS METALS REG 153 METALS (Hg, Cr-VI, ICPMS Metals, HWS - B) Lead (Pb) in Paints PCBs HOLD-DO NOT ANALYZE		LABORATORY USE ONLY CUSTODY SEAL Y / N Present Intact COOLER TEMPERATURES COOLING MEDIA PRESENT: Y / N COMMENTS								
Include Criteria on Certificate of Analysis: Y / N SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS														
SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX	# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / Cr-VI	BTEX/PHCF1	PHCF2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr-VI, ICPMS Metals, HWS - B)	Lead (Pb) in Paints	PCBs	HOLD-DO NOT ANALYZE
L0001, Wall, Masonry, Light Grey, Loc:9241, Corridor	2026-01-19		BULK									X		
L0001, Wall, Concrete Block, Light Grey, Loc:9224, Corridor	2026-01-19		BULK									X		
L0002, Wall, Concrete Block, Beige, Loc:9210, Girl's Washroom	2026-01-19		BULK									X		
L0003, Wall, Concrete Block, Blue, Loc:9206, Staff Room	2026-01-19		BULK									X		
L0004, Wall, Concrete Block, Multicolour, Loc:9163, Girl's Washroom	2026-01-19		BULK									X		
L0005, Wall, Concrete Block, Beige, Loc:9264, Corridor	2026-01-19		BULK									X		
L0006, Ceiling, Drywall and joint compound, White, Loc:9163	2026-01-19		BULK									X		
RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #								
Ben Weir	2026-01-21		<i>Suzanne SHAWAN</i>	2026/01/22	14:27									



Unless otherwise agreed to in writing, work submitted on this Chain of Custody is subject to Bureau Veritas' standard Terms and Conditions. Signing of this Chain of Custody document is acknowledgment and acceptance of our terms available at <https://www.bvna.com/coc-terms-and-conditions>

APPENDIX III
Methodology



1.0 GENERAL

An investigation was conducted to identify the type of Hazardous Building Materials incorporated in the structure and its finishes.

Information regarding the location and condition of hazardous building materials encountered and visually estimated quantities were recorded. The locations of any samples collected were recorded on small-scale plans. As-built drawings and previous reports were referenced where provided.

Sample collection was conducted in accordance with our Standard Operating Procedures.

1.1 Asbestos

The investigation for asbestos included friable and non-friable asbestos-containing materials (ACM). A friable material is a material that when dry can be crumbled, pulverized or powdered by hand pressure, or a material that has already become crushed, pulverized, or powdered.

A separate set of samples was collected of each type of homogenous material suspected to contain asbestos. A homogenous material is defined by the US EPA as material that is uniform in texture and appearance, was installed at one time, and is unlikely to consist of more than one type or formulation of material. The homogeneous materials were determined by visual examination and available information on the phases of construction and prior renovations.

Samples were collected at a rate that is in compliance with the requirements of local regulations and guidelines. The sampling strategy was also based on known ban dates and phase out dates of the use of asbestos; sampling of certain building materials is not conducted after specific construction dates. In addition, to be conservative, several years past these dates are added to account for some uncertainty in the exact start / finish date of construction and associated usage of ACM. In some cases, manufactured products such as asbestos cement pipe were visually identified without sample confirmation.

The asbestos analysis of select materials was completed using a stop-positive approach. Only one result meeting the regulated criteria was required to determine that a material is asbestos-containing, but all samples must be analyzed to conclusively determine that a material is non-asbestos. The laboratory stopped analyzing samples from a homogeneous material once a result equal to or greater than the regulated criteria is detected in any of the samples of that material. All samples of a homogeneous material were analyzed if no asbestos is detected. In some cases, all samples were analyzed in the sample set regardless of result.

The analysis was performed in accordance with Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, July 1993.

Analytical results were compared to the following criteria:

Jurisdiction*	Friable	Non-Friable
BC	0.5% ¹	0.5%
Alberta	Any Amount ²	Any Amount ²
Saskatchewan	>0.5% ¹	>1%
Manitoba	0.1% ¹	1%
Ontario	0.5%	0.5%
Nova Scotia	0.5% ¹	0.5%
New Brunswick	1%	1%
Prince Edward Island	1%	1%
Newfoundland and Labrador	1%	1%
Yukon	1%	1%
Nunavut	1%	1%
Northwest Territories	1%	1%
Federal	1%	1%

* If there is a conflict between federal and provincial criteria, the more stringent will apply.

Where building materials are described in the report as “non-asbestos” or “does not contain asbestos”, this means that either no asbestos was detected by the analytical method utilized in any of the multiple samples or, if detected, it is below the lower limit of an asbestos-containing material in the applicable regulation. Additionally, these terms are used for materials which historically are known to not include asbestos in their manufacturing.

Asbestos materials were evaluated in order to make recommendations regarding any remedial work. The priority for remedial action was based on several factors:

- Friability (friable or non-friable)
- Condition (good, fair, poor, debris)
- Accessibility (ranking from accessible to all building users to inaccessible)
- Visibility (whether the material is obscured by other building components)
- Efficiency of the work (for example, if damaged ACM is being removed in an area, it may be most practical to remove all ACM in the area even if it is in good condition)

¹ Or any amount if vermiculite

² The Government of Alberta in their guideline document entitled the “Alberta Asbestos Abatement Manual” (August 2019), defines an Asbestos-Containing Material as a product or building material that contains asbestos in any quantity or percentage.

1.2 Lead

Samples of distinctive paint finishes, and surface coatings present in more than a limited application, where removal of the paint is possible were collected. The samples were collected by scraping the painted finish to include base and covering applications.

Analytical results were compared to the following criteria.

Jurisdiction*	Units (%)	Units (ppm) / (mg/kg)
British Columbia**	0.009	90
Alberta	0.009	90
Saskatchewan	0.009	90
Manitoba	0.009	90
Ontario	0.009	90
Nova Scotia	0.009	90
New Brunswick	0.009	90
Prince Edward Island	0.009	90
Newfoundland	0.009	90
Yukon	0.009	90
Nunavut	0.1	1,000
Northwest Territories	0.1	1,000
Federal	0.009	90

* If there is a conflict between federal and provincial criteria, the more stringent will apply.

** WorkSafe BC health and safety regulations do not numerically define what would be considered a lead-containing paint or coating. In general, paints containing lead >0.009% may require work procedures if disturbed.

Other lead building products (e.g. batteries, lead sheeting, flashing) were identified by visual observation only.

1.3 Silica

Building materials known to contain crystalline silica (e.g. concrete, cement, tile, brick, masonry, mortar) were identified by visual inspection only. Pinchin did not perform sampling of these materials for laboratory analysis of crystalline silica content.



1.4 Mercury

Building materials, products or equipment (e.g. thermostats, barometers, pressure gauges, lamp tubes), suspected to contain mercury were identified by visual inspection only. Dismantling of equipment suspected of containing mercury was not performed. Sampling of these materials for laboratory analysis of mercury content was not performed.

1.5 Polychlorinated Biphenyls

The potential for light ballast and oil filled transformers to contain PCBs was based on the age of the building, a review of maintenance records, and examination of labels or nameplates on equipment, where present and accessible. The information was compared to known ban dates of PCBs and Environment Canada publications.

Dry type transformers were presumed to be free of dielectric fluids and hence non-PCB.

Fluids (mineral oil, hydraulic, Aroclor or Askarel) in transformers or other equipment were not sampled for PCB content.

1.6 Visible Mould

The presence of mould or water damage was determined by visual inspection of exposed building surfaces. If any mould growth or water damage was concealed within building cavities it was not addressed in this assessment.

Template: Methodology for Hazardous Building Materials Assessment, HAZ, November 13 2024

APPENDIX IV
Location Summary Report

Client: Hamilton-Wentworth District School Board
Building Name: Chedoke Elementary School
Survey Date: 2026-01-19
Building Phases: A: 1969 , B: 2003 , C: 2012

Site: 500 Bendamere Avenue, Hamilton, ON
Last Re-Assessment:

Location No.	Name or Description	Area ft ²	Floor No.	Bldg. Phase	Notes
9161	Boy's Washroom, room no. 116	350	1	A	
9162	Caretaker Area, room no. 117	50	1	A	
9163	Girl's Washroom, room no. 118	350	1	A	
9183	Corridor, room no. 110	300	1	A	
9206	Staff Room, room no. 134	550	1	A	
9207	Caretaker Area, room no. 135	20	1	A	
9208	Male Staff Washroom, room no. 137	80	1	A	
9209	Female Staff Washroom, room no. 138	80	1	A	
9210	Girl's Washroom, room no. 139	300	1	A	
9211	Girl's Washroom Storage, room no. 139A	200	1	A	
9212	Boy's Washroom, room no. 140	300	1	A	
9213	Boy's Washroom Storage, room no. 140A	200	1	A	
9214	Staff Washroom, room no. 143	75	1	A	
9215	Storage Room, room no. 142	35	1	A	
9216	Storage Room, room no. 141	35	1	A	
9224	Corridor, room no. 136	660	1	A	
9241	Corridor, room no. 130	215	1	A	
9253	Girl's Washroom, room no. 211	360	2	A	
9254	Caretaker Area, room no. 210	50	2	A	
9255	Boy's Washroom, room no. 209	360	2	A	
9264	Corridor, room no. 201	350	2	A	

APPENDIX V
Hazardous Materials Summary Report / Sample Log

Client: Hamilton-Wentworth District School Board

Site: 500 Bendamere Avenue, Hamilton, ON

Building Name: Chedoke Elementary School

Survey Date: 2026-01-19

HAZMAT	Sample No	System/Component/Material/Sample Description	Locations	Bldg. Phase	LF	SF	EA	%	Type	Positive	Friability
Asbestos	S0001 C	Wall Paint On Block	9206	A	0	1100	0	0	Chrysotile	Yes	NF
Asbestos	S0002 ABC	Floor Thin-set	9161,9162,9163,9207,9210,9211,9212,9213,9214 9215,9216,9253,9254,9255	A	0	2735	0	0	None Detected	No	
Asbestos	S0003 ABCDE	Ceiling Drywall And Joint Compound	9161,9163,9210,9211,9212,9213,9253,9255	A	0	2360	0	0	None Detected	No	
Asbestos	S0004 ABC	Wall Mastic Black Baseboard	9208,9209	A	40	0	0	0	None Detected	No	
Asbestos	S0005 ABC	Other Sink Mastic White	9206	A	0	0	1	0	Chrysotile	No	
Asbestos	S0006 ABC	Floor Vinyl Floor Tile And Mastic 9x9 Red And Yellow	9206	A	0	550	0	0	Chrysotile	Yes	NF
Asbestos	S0007 ABC	Wall Thin-set	9161,9212,9255	A	0	100	0	0	None Detected	No	
Asbestos	S0008 ABC	Piping Sweatwrap	9162,9254	A	30	0	0	0	None Detected	No	
Asbestos	S0009 ABC	Floor Vinyl Floor Tile And Mastic 12x12 Beige With White Fleck	9253,9255,9264	A	0	375	0	0	None Detected	No	
Asbestos	S0010 ABC	Wall Mastic Cream Baseboard	9264	A	60	0	0	0	None Detected	No	
Asbestos	S0011 ABC	Floor Caulking White	9253,9255	A	30	0	0	0	None Detected	No	
Asbestos	S0012 ABC	Floor Vinyl Floor Tile And Mastic 12x12 Beige With Brown And White Fleck	9208,9209	A	0	160	0	0	None Detected	No	
Asbestos	S0013 ABC	Other Window Caulking Light Grey	9161,9163,9206,9253,9255	A	190	0	0	0	None Detected	No	
Asbestos	S0014 ABC	Other Door Caulking White	9183,9224,9264	A	45	0	0	0	None Detected	No	
Asbestos	S0015 ABCD	Wall Paint	9210	A	0	600	0	0	None Detected	No	
Asbestos	S0016 ABCD	Wall Paint	9211	A	0	400	0	0	None Detected	No	
Asbestos	S0017 ABCD	Wall Paint	9212	A	0	600	0	0	None Detected	No	
Asbestos	S0018 ABCD	Wall Paint	9213	A	0	400	0	0	None Detected	No	
Asbestos	S0019 AB	Wall Paint	9224,9241	A	0	1030	0	0	None Detected	No	
Asbestos	S0020 ABCD	Wall Paint	9161	A	0	600	0	0	None Detected	No	
Asbestos	S0021 ABCD	Wall Paint	9163	A	0	400	0	0	None Detected	No	
Asbestos	S0022 AB	Wall Paint	9183	A	0	600	0	0	None Detected	No	
Asbestos	S0023 ABCD	Wall Paint	9253	A	0	600	0	0	None Detected	No	
Asbestos	S0024 ABCD	Wall Paint	9255	A	0	600	0	0	None Detected	No	
Asbestos	S0025 AB	Wall Paint	9264	A	0	300	0	0	None Detected	No	
Asbestos	V9500	Floor Terrazzo	9183,9224,9241	A	0	1175	0	0	Presumed Asbestos	Yes	NF
Asbestos	V9500	Other Mirror Mastic	9161,9163,9208,9209,9210,9212,9214,9253,9255	A	0	40	0	0	Presumed Asbestos	Yes	NF
Asbestos	V0000	Ceiling Acoustic Tile Ceiling Tiles (lay-in) 24x48 Pinhole And Fissure	9183,9206,9208,9209,9214,9224,9241,9264	A	0	0	0	100	Non Asbestos	No	
Paint	L0001	Wall Concrete Block Light Grey	9214,9224,9241	A	0	660	0	0		No	-
Paint	L0002	Wall Concrete Block Beige	9162,9207,9208,9209,9210,9211,9212,9213,9215 9216	A	0	3660	0	0		No	-

HAZMAT	Sample No	System/Component/Material/Sample Description	Locations	Bldg. Phase	LF	SF	EA	%	Type	Positive	Friability
Paint	L0003	Wall Concrete Block Blue	9206	A	0	1100	0	0		Lead (High)	-
Paint	L0004	Wall Concrete Block Multicolour	9161,9163,9253,9255	A	0	2800	0	0		No	-
Paint	L0005	Wall Concrete Block Beige	9254,9264	A	0	800	0	0		No	-
Paint	L0006	Ceiling Drywall And Joint Compound White	9161,9163,9210,9211,9212,9213,9253,9255	A	0	1000	0	0		No	-
Paint	V9500	Structure Steel red on structural steel	9264	A	0	300	0	0	Presumed Lead	Yes	-
Lead Product	V9500	Batteries In Emer. Lights	9208,9264	A	0	0	2	0	Presumed Lead Product	Yes	-
Mould	V9500	Drywall And Joint Compound	9163	A	0	7	0	0	Water Damage	Yes	-
Hg	V9500	Mercury Vapour Lamp	9161,9163,9183,9206,9208,9209,9210,9211,9212,9213,9214,9224,9241,9253,9255,9264	A	0	0	76	0	Presumed Hg	Yes	-
Hg	V0000	Light Fixture	9162,9207,9215,9216,9254	A	0	0	5	0	-	No	-

Sample number		Units		
S####	Asbestos sample collected	SF	Square feet	NF Non Friable material.
L####	Paint sample collected	LF	Linear feet	F Friable material
P####	PCB sample collected	EA	Each	PF Potentially Friable material
M####	Mould sample collected	%	Percentage	
V####	Material visually similar to numbered sample collected			
V0000	Known non Hazardous Material			
V9000	Material is visually identified as Hazardous Material			
V9500	Material is presumed to be Hazardous Material			
[Loc. No.]	Abated Material			

APPENDIX VI
All Data Report

Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9161 : Boy's Washroom **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 116 **Area (sqft):** 350
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9161 : Boy's Washroom **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 116 **Area (sqft):** 350
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9161 : Boy's Washroom **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 116 **Area (sqft):** 350
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board Site: Schools
 Location: #9162 : Caretaker Area Floor: 1
 Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
 Room #: 117 Area (sqft): 50
 Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board Site: Schools
 Location: #9162 : Caretaker Area Floor: 1
 Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
 Room #: 117 Area (sqft): 50
 Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board Site: Schools
 Location: #9162 : Caretaker Area Floor: 1
 Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
 Room #: 117 Area (sqft): 50
 Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9183 : Corridor **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 110 **Area (sqft):** 300
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9183 : Corridor **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 110 **Area (sqft):** 300
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board Site: Schools
 Location: #9206 : Staff Room Floor: 1
 Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
 Room #: 134 Area (sqft): 550
 Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board Site: Schools
 Location: #9206 : Staff Room Floor: 1
 Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
 Room #: 134 Area (sqft): 550
 Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board Site: Schools
 Location: #9206 : Staff Room Floor: 1
 Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
 Room #: 134 Area (sqft): 550
 Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9208 : Male Staff Washroom **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 137 **Area (sqft):** 80
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9208 : Male Staff Washroom **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 137 **Area (sqft):** 80
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9208 : Male Staff Washroom **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 137 **Area (sqft):** 80
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9208 : Male Staff Washroom **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 137 **Area (sqft):** 80
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9209 : Female Staff Washroom **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 138 **Area (sqft):** 80
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9209 : Female Staff Washroom **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 138 **Area (sqft):** 80
Last Re-Assessment: 0000-00-00

Table 2: Inventory Data														
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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9209 : Female Staff Washroom **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 138 **Area (sqft):** 80
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9224 : Corridor **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 136 **Area (sqft):** 660
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9224 : Corridor **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 136 **Area (sqft):** 660
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9224 : Corridor **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 136 **Area (sqft):** 660
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9241 : Corridor **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 130 **Area (sqft):** 215
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9241 : Corridor **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 130 **Area (sqft):** 215
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9241 : Corridor **Floor:** 1
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 130 **Area (sqft):** 215
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9255 : Boy's Washroom **Floor:** 2
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 209 **Area (sqft):** 360
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9255 : Boy's Washroom **Floor:** 2
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 209 **Area (sqft):** 360
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board **Site:** Schools
Location: #9255 : Boy's Washroom **Floor:** 2
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 209 **Area (sqft):** 360
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board Site: Schools
Location: #9264 : Corridor Floor: 2
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 201 Area (sqft): 350
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board Site: Schools
Location: #9264 : Corridor Floor: 2
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 201 Area (sqft): 350
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board Site: Schools
Location: #9264 : Corridor Floor: 2
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 201 Area (sqft): 350
Last Re-Assessment: 0000-00-00

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Client: Hamilton-Wentworth District School Board Site: Schools
Location: #9264 : Corridor Floor: 2
Survey Date: 2026-01-19

Building Name: Chedoke Elementary School
Room #: 201 Area (sqft): 350
Last Re-Assessment: 0000-00-00

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Sample number		Units		Other	
S####	Asbestos sample collected	SF	Square feet	A	Access
L####	Paint sample collected	LF	Linear feet	V	Visible
P####	PCB sample collected	EA	Each	AP	Air Plenum
M####	Mould sample collected	%	Percentage	F	Friable material
V####	Material is visually identified to be identical to S####	LF	Linear feet	NF	Non Friable material
V0000	Known non hazardous material			PF	Potentially Friable material
V9000	Material visually identified as a Hazardous Material			Pb	Lead
V9500	Material is presumed to be a hazardous material			Hg	Mercury
				As	Arsenic
				Cr	Chromium

Access	
A	Accessible to all building occupants
B	Accessible to maintenance and operations staff without a ladder
C	Accessible to maintenance and operations staff with a ladder. Also rarely entered, locked areas
D	Not normally accessible

Condition	
Good	No visible damage or deterioration
Fair	Minor, repairable damage, cracking, delamination or deterioration
Poor	Irreparable damage or deterioration with exposed and missing material

Visible	
Y	The material is visible when standing on the floor of the room, without the removal or opening of other building components (e.g. ceiling tiles or access panels).
N	The material is not visible to view when standing on the floor of the room and requires the removal of a building component (e.g. ceilings tiles or access panels) to view and access. Includes rarely entered crawlspaces, attic spaces, etc. Observations will be limited to the extent visible from the access points.
L	The material is partially visible to view when standing on the floor of the room and requires the removal of a building component (e.g. ceiling system or access panels) to view completely and access. Includes partially viewed access points to crawlspaces, attic spaces, etc. without entering. Observations are limited to the extent visible from the access points.

Air Plenum	
Yes or No	The material is in a return air plenum or in a direct airstream or there is evidence of air erosion (e.g. duct for heating or cooling blowing directly on or across an ACM). This field is only completed where Air Plenum consideration is required by regulation.

Colour Coding	
	The material is a hazardous material, either by analytical results or by visible identification.
	The material is presumed to be a hazardous material, based on visual appearance, and was not sampled due to limited access or the non-destructive nature of sampling.

Action					
(1)	Clean up of ACM Debris	(2)	Precautions for Access Which may Disturb ACM Debris	(3)	ACM removal
(4)	Precautions for Work Which may Disturb ACM in Poor Condition	(5)	Proactive ACM removal (Minimum repair required for fair condition)	(6)	ACM repair
(7)	Management program and surveillance				

APPENDIX VII
Photographs



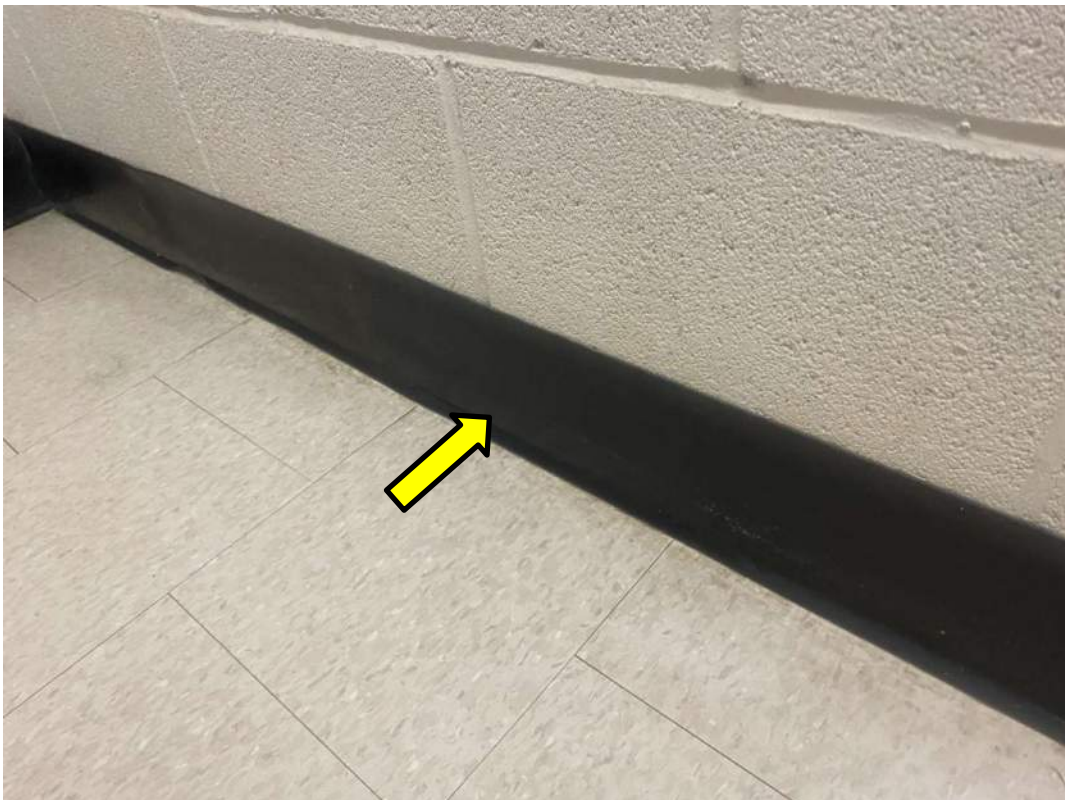
S0001C (Confirmed Asbestos), On block, Wall, Paint, Staff Room (Location #: 9206)



S0002A (None), Floor, Thin-set, Boy's Washroom Storage (Location #: 9213)



S0003A (None), Ceiling, Drywall and joint compound, Boy's Washroom (Location #: 9212)



S0004A (None), black baseboard, Wall, Mastic, Male Staff Washroom (Location #: 9208)



S0005A (None), white, Other, Sink, Mastic, Staff Room (Location #: 9206)



S0006A (Confirmed Asbestos), 9x9 red and yellow, Floor, Vinyl Floor Tile and Mastic, Staff Room (Location #: 9206)



S0007C (None), Wall, Thin-set, Boy's Washroom (Location #: 9255)



S0008A (None), Piping, Sweatwrap, Caretaker Area (Location #: 9162)



S0009C (None), 12x12 beige with white fleck, Floor, Vinyl Floor Tile and Mastic, Girl's Washroom (Location #: 9253)



S0010A (None), cream baseboard, Wall, Mastic, Corridor (Location #: 9264)



S0011A (None), white, Floor, Caulking, Boy's Washroom (Location #: 9255)



S0012A (None), 12x12 beige with brown and white fleck, Floor, Vinyl Floor Tile and Mastic, Male Staff Washroom (Location #: 9208)



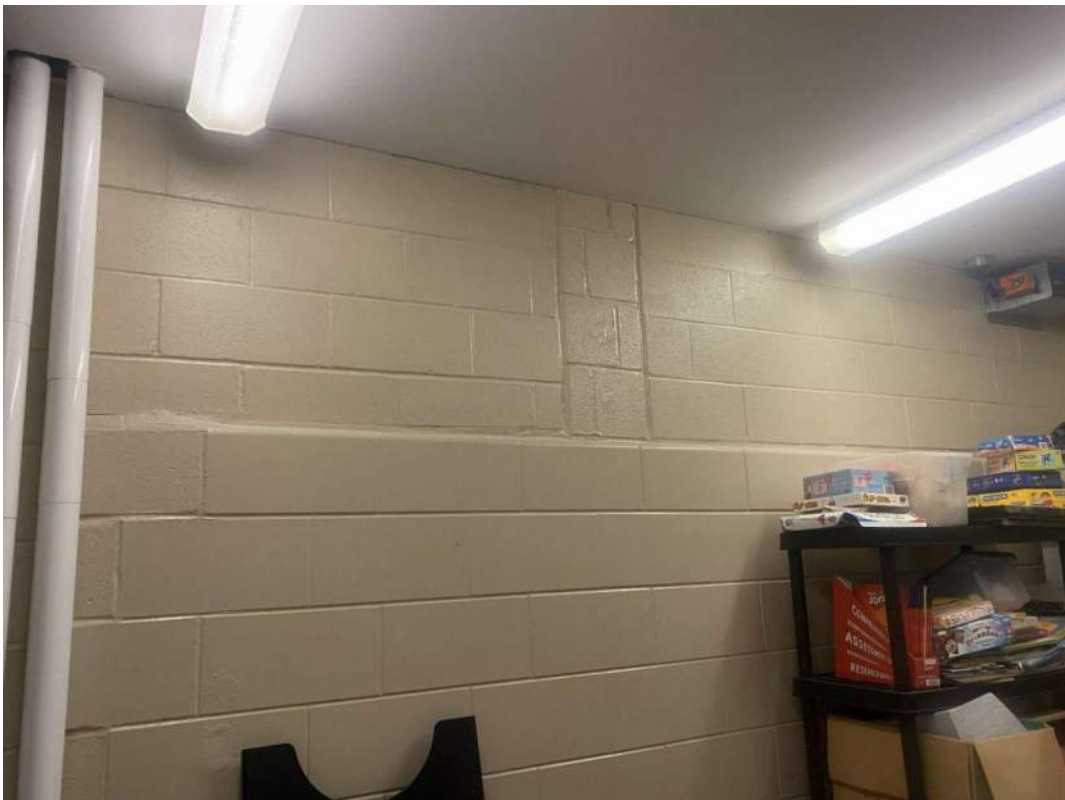
S0013A (None), light grey, Other, Window, Caulking, Staff Room (Location #: 9206)



S0014A (None), white, Other, Door, Caulking, Corridor (Location #: 9264)



S0015A (None), North Wall, Wall, Paint, Girl's Washroom (Location #: 9210)



S0016A (None), North wall, Wall, Paint, Girl's Washroom Storage (Location #: 9211)



S0017A (None), North Wall, Wall, Paint, Boy's Washroom (Location #: 9212)



S0018C (None), South wall, Wall, Paint, Boy's Washroom Storage (Location #: 9213)



S0019A (None), outside girl's washroom door, Wall, Paint, Corridor (Location #: 9224)



S0020A (None), East wall, Wall, Paint, Boy's Washroom (Location #: 9161)



S0021B (None), South wall, Wall, Paint, Girl's Washroom (Location #: 9163)



S0022B (None), outside girl's washroom, Wall, Paint, Corridor (Location #: 9183)



S0023C (None), West wall, Wall, Paint, Girl's Washroom (Location #: 9253)



S0024B (None), South wall, Wall, Paint, Boy's Washroom (Location #: 9255)



S0025A (None), Outside boys washroom, Wall, Paint, Corridor (Location #: 9264)



V9500 (Presumed Asbestos), Other, Mirror, Mastic, Female Staff Washroom (Location #: 9209)



V0000 (None), 24x48 pinhole and fissure, Ceiling, ACOUSTIC TILE, Ceiling Tiles (lay-in), Male Staff Washroom (Location #: 9208)
07/29/05



V0000 (None), 24x48 pinhole and fissure, Ceiling, ACOUSTIC TILE, Ceiling Tiles (lay-in), Staff Washroom (Location #: 9214)
08/22/11



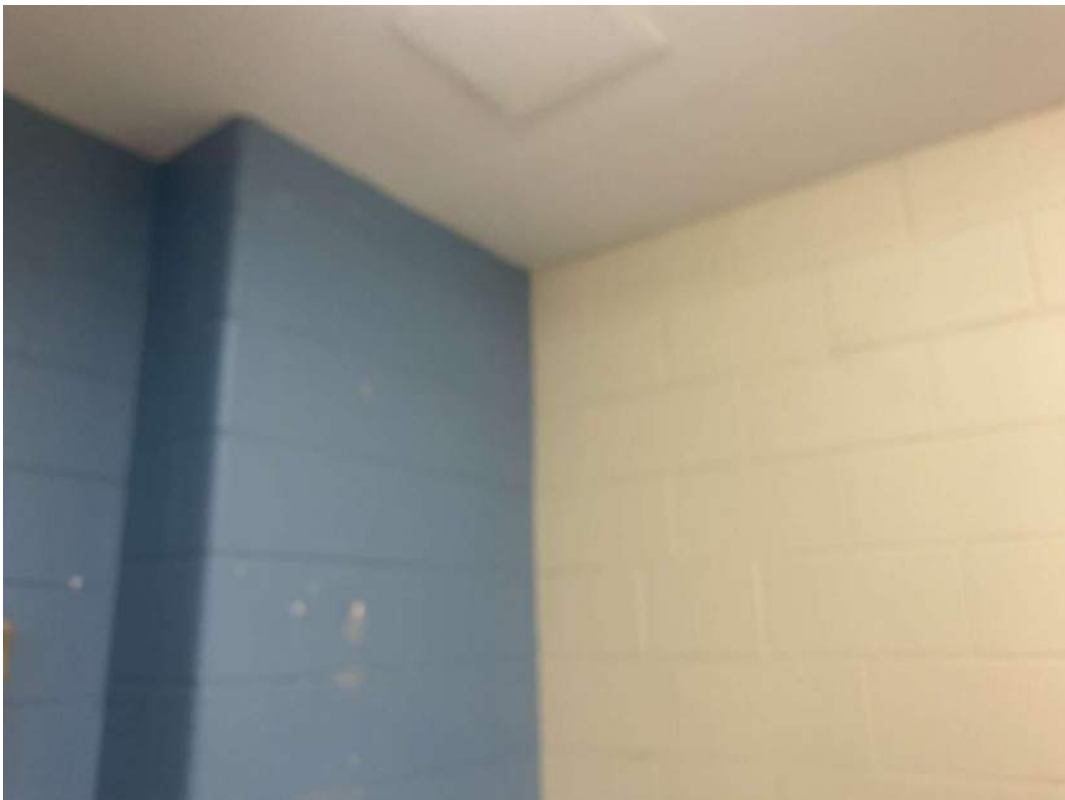
L0001(Lead, None), light grey, Wall, Corridor (Location #: 9224)



L0002(Lead, None), beige, Wall, Girl's Washroom (Location #: 9210)



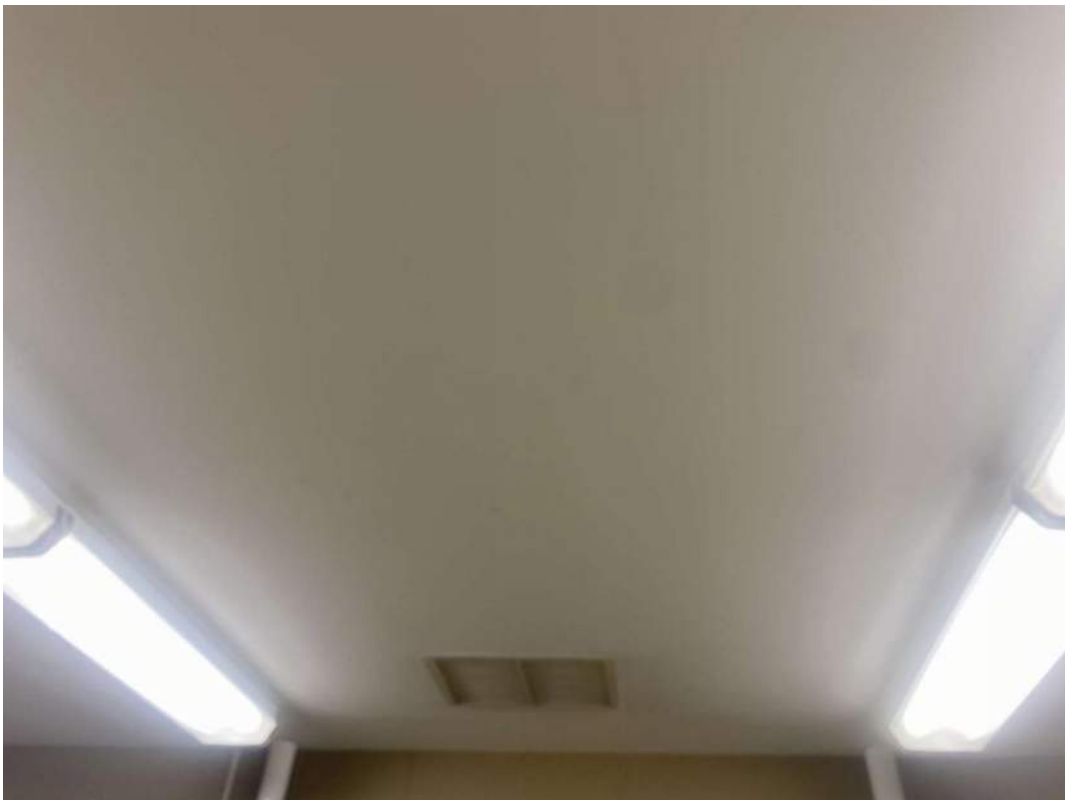
L0003(Lead, High), blue, Wall, Staff Room (Location #: 9206)



L0004(Lead, None), multicolour, Wall, Girl's Washroom (Location #: 9163)



L0005(Lead, None), beige, Wall, Corridor (Location #: 9264)



L0006(Lead, None), white, Ceiling, Girl's Washroom (Location #: 9163)



V9500(Presumed Lead), red on structural steel, Structure, Corridor (Location #: 9264)



Water damage, (Presumed), Ceiling, Drywall and joint compound, Girl's Washroom (Location #: 9163)

1. Definitions

1. The following Section of this Specification are of the abbreviated type and include incomplete sentences. Definite and indefinite articles have often been omitted and sentences are written in the form of direct instructions to the Contractor without using the phrase 'the Contractor shall.' Standard specifications and other quality references inserted govern materials and workmanship without using phrases 'conform with,' 'conformity therewith,' etc. Omitted words and phrases to be supplied in the same manner as they are when a note appears on the Drawings.
2. The Specifications are separated into Sections for reference convenience only. Such separation must in no instance make Owner or his Consultants arbiter to establish subcontract limits between Contractor and Subcontractor.
3. Provide all items, articles, materials, operations or methods listed, mentioned or scheduled on Drawings and/or in Specifications, including all labour, materials, equipment, tools, services, and incidentals necessary and required to complete the work. Responsibility for breakdown into and extension of subcontracts, including co-ordination of same, rests entirely with the Contractor.
4. Standard Specifications referred to are editions in force at Tender Closing Date.

2. Terminology

1. Consultants are the team of Architects, Engineers and other experts commissioned by the Owner, directly or indirectly, to execute design, contract documents and supervision for the project, including any of their agents or employees.
2. Prime Consultant is the Architect.
3. Contractor is the Firm or Corporation who, having signed the Agreement, has the sole legal responsibility to carry out the work shown or described in the Contract Documents for the Owner, whether contractually assigned to a Subcontractor or supplier, or not.

3. Minimum Standards

1. Nothing contained in the Drawings and Specifications shall be so construed as to be in conflict with any law, by-law or regulation of the municipal, provincial or other authorities having jurisdiction.
2. Unless otherwise specified, work and material to conform or exceed the minimum standards set out in the editions of the Canadian Government Specification Board, Canadian Standards Associations, the Ontario Building Code, Underwriters' Laboratories of Canada, the Canadian Electrical Code, the Local Building Code in force, whichever is applicable.
3. Abide by all the requirements of the Municipal Building By-Laws and other amendments thereto, including but not limited to: the Ontario Building Code (Ontario Reg.413/90); Canadian Electrical Code (CEC); CSA-W59 Welded Steel Construction (Metal Arc Welding); the Occupational Health & Safety Act, Ontario; the National Fire Code; the

local Municipal Fire Code; and all other applicable Codes and building by-laws having jurisdiction.

4. Copies of Standard Specifications referred to in this Specification to be kept on the site.
3. The use of the name (or its abbreviation) of any of the following bodies, accompanied by the reference number of a specification of that body to mean that the entire specification of the body to apply as noted:

AISC: American Institute of Steel Construction;
ASHREA: American Society of Heating, Refrigerating and Air-Conditioning Engineers;
ASTM: American Society for Testing Materials;
CAN/CSA-B44-94: Safety Code for Elevator
CEC: Canadian Electric Code;
CGSB: Canadian Government Specification Board;
CISC: Canadian Institute of Steel Construction;
CRCA: Canadian Roofing Contractors' Association;
CSA: Canadian Standards Association;
OBC: Ontario Building Code;
ULC: Underwriters' Laboratories of Canada;
CLA: Canadian Lumbermen's Association.

4. Cooperation

1. Each trade to co-operate with the trades of adjacent or affected work. Supply in good time requirements affecting adjacent and underlying work in writing and items to be set or built in. Similarly, heed requirements and build-in items provided by other trades.
2. Take necessary precautions to protect work of other trades from contamination, marring or other damage due to application or installation processes, methods and activities.
3. General Contractor and each trade to co-operate with Contractors which may be assigned or selected by the Owner to perform work under Cash Allowances. Owner reserves the right to assign non-unionized labour to perform work under Cash Allowances, at Owners discretion.
4. Cooperate with and assist in coordinating work by Owner's own forces or other contractors engaged by the Owner, in the interest of the school.

5. Coordination

1. Co-ordinate the work of all trades in such a manner that each trade co-operates with the trade of adjacent work.
2. Organize weekly job site meetings and send out notices stating time and place to Consultants, subcontractors, Suppliers and all others whose presence is required at the meetings.

3. Take note of all persons attending these meetings and submit to Consultants and Owner, Minutes of these Meetings showing any major decisions made and instructions or information required.
4. Co-ordinate the Work in this Contract with the work of others awarded work under Cash Allowances.

6. Building Dimensions and Co-ordination

1. Ensure that all necessary job dimensions are taken, and all trades are coordinated for the proper execution of the work. Assume complete responsibility for the accuracy and completeness of such dimensions, and for co-ordination.
2. Verify that all work, as it proceeds, is executed in accordance with dimensions and positions indicated which maintain levels and clearances to adjacent work, as set out by requirements of the drawings, and ensure that work installed in error is rectified before construction resumes.
3. Check and verify all dimensions referring to the work and the interfacing of all services. Verify all dimensions with the trade concerned when pertaining to the work of other trades. Be responsible to see that Subcontractors for various trades co-operate for the proper performance of the Work.
4. Avoid scaling directly from the drawings. If there is ambiguity or lack of information, immediately inform the Consultant. Be responsible for any change through the disregarding of this clause.
5. All details and measurements of any work which is to fit or to conform with work installed shall be taken at the building.
6. Advise Consultant of discrepancies and if there are omissions on drawings, particularly reflected ceiling plans and jointing patterns for paving, ceramic tile, or carpet tile layouts, which affect aesthetics, or which interfere with services, equipment or surfaces. DO NOT PROCEED without direction from the Consultant.
7. Ensure that each Subcontractor communicates requirements for site conditions and surfaces necessary for the execution of the Subcontractor's work, and that he provides setting drawings, templates and all other information necessary for the location and installation of material, holes, sleeves, insets, anchors, accessories, fastenings, connections and access panels. Inform other Subcontractors whose work is affected by these requirements and preparatory work.
8. Prepare interference drawings to properly co-ordinate the work where necessitated. Refer to Section 01340.

Interferences

1. Prior to commencement of the Work, coordinate placement of Products to ensure components are properly accommodated within designed spaces. Prepare and submit interference drawings

2. Be responsible for additional work and costs necessitated by failure to coordinate the parts of the Work.
3. Provide adequate access and clearances around Products and required by authorities having jurisdiction, and as required for maintenance purposes by manufacturers.
4. Notify Consultant if Contract Documents are in conflict with access and clearance.

Location of fixtures, outlets and devices

1. Consider location of fixtures, outlets, and devices indicated on Drawings as approximate.
2. Locate fixtures, outlets and devices is for minimum interference, maximum usable space, and as required to meet safety, access, maintenance, acoustic, and regulatory, including barrier free, requirements.
3. Promptly notify Consultant in writing of conflicting installation requirements for fixtures, outlets and devices. If requested, indicate proposed locations and obtain approval for actual locations.

7. Use of Premises Before Substantial Performance

1. The Owner shall have the right to enter and occupy the building, in whole or in part, for the purpose of placing fittings and equipment, or for other use, before completion of the Contract if, in the opinion of the Consultant, such entry and occupancy does not prevent or interfere with the Contractor in the performance of the Contract. Such entry shall in no way be considered as an acceptance of the Work in whole, or in part, nor shall it imply acknowledgment that terms of the Agreement are fulfilled.

8. Layout of Work

1. Layout work with respect to the work of all trades. Arrange mechanical and electrical work such as piping, ducts, conduits, panels, equipment and the like to suit the architectural and structural details.
2. Alterations necessary due to conflict and interference between trades, to be executed at no cost to the Owner unless notification is given in writing before Tender Closing Date.

9. By-Laws and Regulations

1. Nothing contained in the Drawings and Specifications are to be so construed as to be knowingly in conflict with any law, by-law or regulation of municipal, provincial or other authorities having jurisdiction.
2. Perform work in conformity with such laws, by-laws and regulations and make any necessary changes or deviations from the Drawings and Specifications subsequently required as directed and at no cost to the Owner unless notification is given in writing before Tender Closing Date.
3. Furnish inspection certificates and/or permits as may be applicable as evidence, that installed work conforms with laws, by-laws, and regulations of authorities having jurisdiction.

10. Protection

1. Take necessary precautions and provide and install required coverings to protect material, work and finishes from contamination, damage, the elements, water and frost.
2. Make good any damage or replace damaged materials, as directed. Repairs to be made by the trade having originally installed or fabricated the damaged material, finish or item. Protect electrical equipment from water and the elements.
3. Protect adjacent private and public property from damage and contamination.
4. Protect curbs and sidewalks from damage from trucking by means of boards and the like. Repair or pay or repair of damage to existing roads and sidewalks.
5. Mark glass after glazing in an acceptable manner and leave in place until final clean-up.
6. Protect floor finishes from construction traffic and transport of construction materials and equipment by means of 6 mm plywood panels.

11. Delivery, Handling and Storage of Materials

1. Schedule material delivery to keep storage at site to the absolute minimum, but without causing delays due to late delivery.
2. All deliveries to the school premises must be scheduled to arrive when no students are outside. This includes avoiding times when students are arriving, departing, or during outdoor activities.
3. Any maneuvering of vehicles or equipment within or around the school premises must be conducted while students are in class. This excludes maneuvering during breaks, lunch periods, or any other times when students might be outside.
4. All site maneuvering activities must be accompanied by a flag person to ensure the safety of students and staff.
5. Store materials which will be damaged by weather in suitable dry accommodation. Provide heat, as required, to maintain temperatures recommended by material manufacturer.
6. Store highly combustible or volatile materials separately from other materials, and under no circumstances, within the building. Protect against open flame and other fire hazards. Limit volume of supply on the site to minimum required for one day's operations.
7. Handle and store material so as to prevent damage to material, structure and finishes.
8. Avoid undue loading stresses in materials or overloading of floors. Do not store materials in building or utilize it for construction purposes in any manner which would exceed design loading on any building element. Temporarily support or strengthen parts of the structure subjected to excessive loads during construction.

9. Do not store material and equipment detrimental to finished surfaces within areas of the building where finishing has commenced or has been completed. No storage will be available within the school. Contractor to make necessary arrangements exterior to the school in storage containers as needed. Coordinate locations with school prior to placement and protect all existing surfaces.
10. Deliver package material in original, and Storage of unopened and undamaged containers with manufacturer's labels and seals intact.

12. Debris

1. Assign clean-up duties to a crew with own Foremen which will be of sufficient size to prevent accumulation of debris and dirt in any part of the structure or on the site.
2. Remove construction debris on a daily basis and dispose of this debris in a legal manner so as to avoid causing a hazard to occupants and visitors on site.
3. Do not dispose of any waste in the Owner's facilities unless specifically directed to do so by authorised personnel. Under no circumstances shall the Contractor use the school's garbage disposal containers including those in the classrooms and interior spaces of the school.
4. Perform a scan of the ground areas adjacent to the work area by use of metal detector daily. Any construction debris is to be removed from the grounds on a daily basis.
5. Under no circumstances should debris, rubbish or trash be burned or buried on the site.

13. Cutting, Fitting and Patching

1. Required cutting to be done by General Contractor. Patching and painting of work to be executed by the General Contractor.
2. All sub-trades are to notify the General Contractors bidding as to the extent of the cutting, patching, and painting of their respective trades.
3. Drilling, cutting, fitting and patching necessary due to failure to deliver items to be built-in time, or installation in wrong location to be executed, as directed, at no cost to the Owner.
4. Give written notification prior to commencement of drilling and cutting of load bearing structural members and finished surfaces.
5. Cut holes with smooth, true, clean edges, after they are approved by applicable trade. Size holes and openings for hot water and steam pipes, so as to allow for expansion and contraction of such pipes.

14. Fastenings

1. Supply all fastenings, anchors and accessories required for fabrication and erection or work.

2. Metal fastenings to be of the same material as the metal component they are anchoring, or of a metal which will not set up an electrolysis action which would cause damage to the fastening or metal component under moist conditions.
3. Exposed metal fastenings and accessories to be of the same texture, color, and finish as base metal on which they occur. Keep to a minimum; evenly space and lay out.
4. Fastenings to be permanent, of such a type and size and installed in such a manner to provide positive anchorage of the unit to be secured. Wood plugs are not acceptable. Install anchors at required spacing to provide required load bearing or shear capacity.
5. Power actuated fastenings are not to be used without prior written approval for specific use.

15. Surplus Materials

1. Surplus materials specifically so specified, to remain property of the Owner and be neatly stockpiled or stored, as directed.
2. All other surplus materials to become property of the Contractor; to be removed from the site and legally disposed of.

16. Documents Required and General Duties

1. At Commencement of Contract

- .1 The Owner has paid for the cost of the Building Permit. Mechanical Subcontractor will pay the cost of other Fees related to the Work Specified under Mechanical Scope. Electrical Subcontractor will pay the cost of all permits and fees related to the Work specified under Electrical Scope.
- .2 The General Contractor is to pay all other fees and refundable deposits if applicable.

2. During Construction

- .1 Adjust Allowances, as required.
- .2 Organize Job Meetings in accordance with Section 01200.
- .3 Supply Monthly Progress Reports and Construction Schedule in accordance with Section 01200.
- .4 Confirm that payments are being made to subcontractors and suppliers by submission of receipts with the second and subsequent Progress Payment Application. No payment will be made for unincorporated material on the site, unless Bill of Sale in proper format is provided.

3. Upon Completion

1. Upon completion of work before the Final Certificate of Payment is issued, the following to be observed, executed and submitted:
 - .1 All deficiencies to have been completed in a satisfactory manner.
 - .2 All final clean-up to have been executed, as specified in Section 01710.
 - .3 Finishing Hardware, Inspection and Verification.
 - .4 Organize a Final Inspection tour at which to be present:
 - the Owner's authorized representative;

- the Architectural, Structural, Mechanical and Electrical Consultants, and their supervisory personnel, if any;
- the Contractor and his superintendent.
- .5 Where the above procedure is impossible or where any deficiencies remain outstanding, the Owner's representative and the Consultant concerned, to inspect and accept the affected work and/or material upon notification by the Contractor, that all deficiencies involving this Consultant have been made good.
- .6 A complete release of all liens arising out of this Contract, other than his own. If a subcontractor or supplier refuses to furnish a release of such a lien, furnish a bond satisfactory to the Owner to indemnify him against any claim under such a lien.
- .7 Certificates of good standing from the Workers' Compensation board, for the General Contractor and all Subcontractors.
- .8 All reference records, as specified, under Section 01720.
- .9 Certificate of Inspection from Mechanical and Electrical Engineers.
- .10 Copies of all Lists of Deficiencies with each Deficiency verified when complete by only this project's job Superintendent. The Final List of Deficiencies to be signed, completed by all concerned, if accepted.
- .11 Statement of Completion from General Contractor.
- .12 Final adjustment of all Allowances.
- .13 H.E.P.C. Inspection Certificate and all other Inspection Certificates required by Provincial, Municipal and other authorities having jurisdiction.
- .14 Balancing Reports.
- .15 As-Built Drawings. – Digital pdf files and AutoCAD v2018 or higher.
- .16 A digital copy (pdf file) of all closeout documents to be provided on USB memory stick format.

17. Progress Reports

1. Submit to the Architect, Monthly Progress Reports consisting of a concise narrative and a marked-up summary schedule showing physical percentage complete by item and in total. These progress calculations must agree with the Progress Payment Claims.
2. Keep permanent written daily records on the site on the progress of work. Record to be open to inspection at reasonable times and copies to be furnished upon request. Records to show notes of commencement and completion of different trades and parts of work; daily high and low temperatures and other weather particulars; number of men engaged on the site (including sub-trades) broken down in groups for each type of construction work, and particulars about excavation and shoring; erection and removal of form work; pouring and curing of concrete; floor finishing; placing and compaction of backfill, masonry work; roofing.
3. Daily progress to give particulars on commencement and completion of each trade or part of work; form work erections and removal; concrete pouring and curing; floor finishing; masonry work; roofing; waterproofing; finishing trades, tests and inspection and the like.

18. Inspection and Testing

1. The contractor is responsible to provide his own quality control in order to meet or exceed the requirements of specified standards, codes, design criteria and referenced documents.

End of Section

1. Selection of Products

- 1.1. If requested by the Consultant, provide the following services and/or information:
- 1.1.1. Assist the Consultant in determining qualified suppliers.
 - 1.1.2. Obtain proposals from suppliers.
 - 1.1.3. Make appropriate recommendations for consideration of Consultant.
 - 1.1.4. Notify Consultant of any effect anticipated by selection of product or supplier under consideration, on construction schedule and contract sum.
- 1.2. On notification of selection, enter into purchase agreement with designated supplier.

2. Cash Allowances

- 2.1. Comply with requirements of CCDC 2 G.C. 4.1 Cash Allowances.
- 2.2. Include in the Stipulated Price quoted, a Cash Allowance in the amount of
----- Dollars (\$7,000.00) – Provide CA Dollar Amount from Tender Price.
To be allocated as follows:
- 2.2.1 Inspection & Testing and Door Hardware
- 2.3. Include the Cash Allowances identified in the Tender Price Schedule in the Contract Price. These allowances shall be expended in whole or in part, when authorized by the Consultant in writing. The unused portion of the Allowances shall be credited to the Owner.
- 2.4. The Contract Price and not the cash allowance, includes the Contractor's overhead and profit in connection with such cash allowance.
- 2.5. No refund of overhead and profit will be expected on any unspent portion of Cash Allowances. Likewise, no overhead and profit will be allowed on total amount by which all Cash Allowances are exceeded.
- 2.6. Expend cash allowance as directed by the Consultant in writing. Allowance will be adjusted to actual cost but no adjustment will be made to Contractor's charges including overhead and profit which are included in the Contract Price.
- 2.7. Cash allowances are designed for work and services deemed to be necessary by the Owner, 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 the Contract documents, it shall be assumed to cover work or services in addition to that included, unless specifically indicated otherwise.
- 2.8. Contractor may be required from time to time, to assist in tendering of certain items of work or services covered by allowance, as directed by Consultant.
- 2.9. Material Supply Items:
- 2.9.1. Scope for material supply items covered by Cash Allowance includes:

- 2.9.2. Net cost of material.
- 2.9.3. Applicable taxes and duties excluding HST.
- 2.9.4. Delivery to site.
- 2.9.5. In addition to above scope covered by Cash Allowance include in Contract Price costs for:
 - 2.9.5.1. Handling at site, including unloading, uncrating, storage and hoisting
 - 2.9.5.2. Protection from elements, from damage.
 - 2.9.5.3. Labour, installation and finishing.
 - 2.9.5.4. Other expenses required to do cash allowance work (i.e. contract co-ordination)
 - 2.9.5.5. Overhead and Profit.

2.10. Material and Installation Items:

- 2.10.1. cope of each material and installation item covered by Cash Allowance includes:
- 2.10.2. Net cost of material.
- 2.10.3. Applicable taxes and duties excluding HST.
- 2.10.4. Delivery to site.
- 2.10.5. Handling at site, including unloading, uncrating, storage and hoisting.
- 2.10.6. Labour, installation and finishing.

2.11. In addition to above scope covered by Cash Allowance include in Contract Price costs for:

- 2.11.1. Protection from elements, from damage.
- 2.11.2. Overhead and Profit.

2.12. Other expenses required to do cash allowance work (i.e. contract co-ordination Inspection and Testing Work:

- 2.12.1. Scope for inspecting and testing covered by Cash Allowance includes:
 - 2.12.1.1. Net cost of testing laboratory services and field inspection.

2.13. In addition to above scope covered by Cash Allowance include in Contract Prices:

- 2.13.1. Overhead and Profit.
- 2.13.2. Supply of material tested, patching and completion of work tested.
- 2.13.3. Other testing on re-testing work specified in Section 01005
- 2.13.4. Other expenses required to do cash allowance work (i.e. contract co-ordination).
- 2.13.5. Applicable taxes and duties excluding HST.

End of Section

1. Project Meetings for Coordination

1. Following the pre-construction meeting/construction phase kick-off meeting, arrange for site meetings every 2 weeks as appropriate to the stage of construction, for project coordination. Such meetings shall fall at the same time each week the meeting is scheduled. Prior to substantial performance, meetings shall be scheduled for every week in an effort to effectively complete all obligations under the contract in a timely manner.
2. General contractor's site supervisor and project manager as well as other responsible representatives of the Contractor's and Subcontractor's office and field forces and suppliers shall be obliged to attend.
3. Inform the Owner, Consultant, and those others whose attendance is obligatory, of the date of each meeting, in sufficient time to ensure their attendance.
4. Provide physical space for meetings within the construction office, prepare an agenda, chair and record the minutes of each meeting. Relevant information must be made available to all concerned, in order that problems to be discussed may be expeditiously resolved. Identify "action by: _____".
5. Within three days after each meeting, distribute digital copies of the minutes to each invited person, regardless of attendance.

2. Pre-construction Meeting

1. Within 5 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

3. Project Meetings for Progress of Work

1. Conduct progress meetings in accordance with the schedule and/or decisions made at Pre-construction meeting.
2. Inform the Owner, Consultant, project consultants, Subcontractors and suppliers and those whose attendance is obligatory, of the date of the meeting, in sufficient time to ensure their attendance.
3. Include in the agenda the following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revisions to construction schedule.

- .8 Progress during the preceding work period.
- .9 Look ahead for the succeeding two-week work period.
- .10 Review submittal schedules: expedite as required.
- .11 Maintenance of quality standards.
- .12 Pending changes and substitutions.
- .13 Review proposed changes for effect on construction schedule and on completion date.
- .14 Other business

4. Progress Records

1. Maintain a permanent written record on the site of the progress of the work using standard OGCA form. This record shall be available to the Consultant at the site, and a copy shall be furnished to same on request. The record shall contain:
 - .1 Daily weather conditions, including maximum and minimum temperatures.
 - .2 Dates of the commencement and completion of stage or portion of the work of each trade in each area of the project.
 - .3 Conditions encountered during excavation.
 - .4 Dates of erection and removal of formwork, in each area of the project.
 - .5 Dates of pouring the concrete in each area of the project, with quantity and particulars of the concrete.
 - .6 Work force on project daily per trade.
 - .7 Visits to site by personnel of Consultant, Jurisdictional Authorities and testing companies.

End of Section

1. General

1. Submit to Architect, for review, shop drawings, product data and samples specified.
2. Until the submission is reviewed, work involving relevant products must not proceed.

2. Shop Drawings

1. Drawings to be originals prepared by Contractor, Subcontractor, Supplier or Distributor, which illustrate the appropriate portion of work; showing fabrication, layout, setting or erection details as specified in appropriate Sections.
2. Identify details by reference to sheet and detail numbers shown on Contract Drawings.
3. Maximum sheet size 24" x 36" as a PDF.
4. General Contractor shall provide and maintain an up-to-date shop drawing tracking log, which shall be reviewed at each construction meeting.

3. Project Data

1. Certain specification Sections specify that manufacturer's standard schematic drawings, catalogue sheets, diagrams schedules, performance charts, illustrations and other standard descriptive data will be accepted in lieu of shop drawings.
2. Above will only be accepted if they conform to following:
 - .1 Delete information which is not applicable to project.
 - .2 Supplement standard information to provide additional information applicable to project.
 - .3 Show dimensions and clearances required.
 - .4 Show performance characteristics and capacities.
 - .5 Show wiring diagrams (when requested) and controls.

4. Coordination of Submissions

1. Review shop drawings, product data and samples prior to submission.
2. Verify:
 - .1 Field measurements.
 - .2 Field construction criteria.
 - .3 Catalogue numbers and similar data.
3. Coordinate each submission with requirement of work and Contract documents. Individual shop drawings will not be reviewed until all related drawings are available.
4. Contractor's responsibility for errors and omissions in submission is not relieved by Architect's review of submittals.

5. Contractor's responsibility for deviations in submission from requirements of Contract documents is not relieved by Architect's review of submission, unless Architect gives written acceptance of specified deviations.
6. Notify Architect, in writing at time of submission, of deviations from requirements of Contract documents.
7. After Architect's review, distribute copies.

5. Submission Requirements

1. Schedule submissions at least fourteen (14) days before dates that reviewed submissions will be required to be returned.
2. Submit a digital copy (PDF) of shop drawings, product data to Architect for review.
3. Accompany submissions with transmittal letter, in duplicate, containing:
 - .1 Date.
 - .2 Project title and number.
 - .3 Contractor's name and address.
 - .4 Number of each shop drawing, product data and sample submitted.
 - .5 Other pertinent data.
4. Submissions must include:
 - .1 Date and revision dates.
 - .2 Project title and number.
 - .3 Name of:
 - .1 Contractor.
 - .2 Subcontractor.
 - .3 Supplier.
 - .4 Manufacturer.
 - .5 Separate detailer when pertinent.
5. Identification of product or material.
 - .1 Relation to adjacent structure or materials.
 - .2 Field dimensions, clearly identified as such.
 - .3 Specification Section number.
 - .4 Applicable standards, such as CSA or CGSB numbers.
 - .5 Contractor's stamp, initialed or signed, certifying review of submission, verification of field measurements and compliance with Contract documents.
6. Interference Drawings
 - .1 Prepare interference drawings for all work in confined space ie: ceiling space.

End of Section

1. Access

1. Provide and maintain adequate service roads to project site to provide safe and convenient access for deliveries.
2. Provide and maintain adequate access, ensuring continuous access by emergency vehicles.

2. Contractor's Site Office

1. Contractor's trailer will be used as site office during construction and to accommodate site meetings. It shall be furnished with a drawing layout table and remain for the duration of the project. Coordinate location with Owner and obtain approval.
2. Maintain in clean condition.
3. Provide and maintain in clean condition: two separate plans layout tables, minimum 48" x 72" each. One table shall be used by the General Contractor, and Subcontractors, at their discretion. The second shall be provided for use by subcontractors and by the consultant or Inspection and Testing Companies during site visits or project meetings.
4. The contractors and/or subcontractors are not permitted to use school spaces/areas form a site office/s at any time.

3. Storage Sheds

1. Provide adequate weather-tight sheds with raised floors, for storage of materials, tools and equipment. Coordinate location with Owner and obtain approval.
2. The contractors and/or subcontractors are not permitted to use school spaces/areas for storage at any time.
3. At no time may Contractor store any Products or Construction equipment inside existing boiler rooms or custodial rooms. If Products or Construction Equipment are found stored in such locations, Owner will issue one Notice in Writing to Contractor, instruction them to remove such items. If items are not removed within 24 hours, Owner will remove items and cannot guarantee safe storage.

4. Sanitary Facilities

1. Provide portable toilets and other washroom facilities as required. Coordinate location with Owner and obtain approval. Keep area and premises in sanitary condition.
2. Portable toilets to be properly secured by lock and in a fenced in area, as described in Section 6. Site enclosures, to protect against vandalism and misuse.
3. The contractors and/or subcontractors are not permitted to use school sanitary facilities at any time.

5. Parking

1. The contractors and/or subcontractors are responsible for coordinating parking with the local municipality.

6. Site Enclosures

1. Erect temporary site enclosures, hoarding, using prefabricated lock fence system. Fencing shall be mechanically fastened to the ground using secure spikes on the construction side of the fence. Alternatively, construction fencing shall be mechanically fastened to the vertical t-bar piled into the ground. The ground shall be repaired to its original condition matching adjacent surfaces once the fence is no longer required and removed off site. Exterior fencing shall include visual barrier using geotextile fastened to the fence. Access into this fenced area shall be controlled by the general contractor.
2. Maintain fence at all times for the duration of the project. Conduct a daily review of all construction fencing at beginning of each shift to ensure construction fencing is secure and safely separating the defined areas of construction from occupied facility and outdoor play areas.
3. Interior hoarding walls shall be erected at all locations where existing occupied spaces are in the vicinity and adjacent to the construction area. All interior hoarding walls shall be constructed using stud framing and drywall. Alternatively, good-one-side plywood can be used. All hoarding walls shall include a properly latching and lockable main door complete with locking handset/lever or orbit hardware. Contractor is solely responsible for maintaining and preventing unauthorized access into defined areas of construction. Access through this door shall be controlled by the general contractor. Maintain hoarding walls at all times for the duration of the project.
4. Size and location of enclosure to suit area of construction.

7. Enclosure of Structure

1. Provide temporary weather-tight enclosures protection for exterior openings until permanently enclosed.
2. Erect enclosures to allow access for installation of materials and working inside enclosures.
3. Design enclosures to withstand wind pressure.
4. Erect dust barriers to prevent dust migration to non-renovated areas. Provide boot dust mats at each interior connection to occupied areas from the construction entrances/exits. If contractor is not able to prevent dust migration to non-renovated areas, the contractor shall provide negative air units and maintain for the duration of the project until such time where dust migration can be prevented.

8. Power supply

1. Electrical power is available in existing building and will be provided at no charge for construction purpose.

9. Water Supply

1. Water is available in existing building and will be provided at no charge for construction purpose.

10. Scaffolding

1. Construct and maintain scaffolding in rigid, secure and safe manner.
2. Scaffoldings to be erected in a manner that persons not authorized to use structure cannot climb or access structure. Any scaffolding on premises unattended must be properly secured by fence or other structure to prevent access.
3. Scaffolding to include tarping where necessary to ensure safety of structure.
4. Erect scaffolding independent of walls. Remove promptly when no longer required.
5. Scaffolding to be designed by a professional Engineer when required under the Occupational Health and Safety act.

11. Heat and Ventilating

1. Not applicable.

End of Section

1. Construction Safety Measures

1. Observe and enforce construction safety measures required by the National Building Code; the O.B.C.; The Provincial Government; Workers' Compensation Board; and Municipal authorities.
2. In particular, the Occupational Health and Safety Act (Ont. Re. 213/91), the Occupational Health and Safety Act, the regulations of the Ontario Ministry of Labour and Ontario Hydro Safety requirements shall be strictly enforced.
3. Contractor shall ensure that copies of all applicable construction safety regulations, codes and standards are available on the job-site throughout the period of construction. All workers are to be informed that these documents are available for reference at any time.
4. The Contractor shall ensure that all supervisory personnel on the job-site are fully aware of the contents of the Occupational Health and safety Act (Ontario Regulation 213/91 - Construction Projects) the Workers' Compensation Act, and, that they comply with all requirements and procedures prescribed therein. These documents include, but are not limited to, the following construction safety requirements:
 - .1 Contractor to register with the Director of the Occupational Health and Safety Division before or within 30 days of the commencement of the project, (O.Reg. 213/91, sec 5).
 - .2 File a notice of project with a Director before beginning work on the project, (O.Reg 313/91, sec 6).
 - .3 Notification prior to trenching deeper than 1.2m, (O.Reg. 213/91, sec 7).
 - .4 Accident Notices and Reports, (O.Reg. 213/91, sec 8 through sec 12).
 - .5 General Safety Requirements, (O.Reg. 213/91, sec 13 through sec 19).
 - .6 General Construction Requirements, e.g. protective clothing, hygiene practices, housekeeping, temporary heat, fire safety, access to the job-site, machine and equipment guarding and coverings, scaffolds and platforms, electrical hazards, roofing, et al, (O.Reg. 213/91, sec 20 through sec 221).
 - .7 Establish a Joint Health and Safety Committee where more than 19 workers are employed for more than 3 months
 - .8 Establish a Worker Trades Committee for all projects employing more than 49 workers for more than 3 months
 - .9 Ensure that all activities arising out of (.07) and (.08) above are recorded and that minutes are available to an inspector of the Ontario Ministry of Labour.
5. The Contractor shall be considered as the "Constructor" in consideration of the rights and responsibilities for all construction safety requirements, procedures, facilities and inspection of all work performed by the Contractor, Subcontractors/Sub-trades and other Contractors engaged on this project.
6. In the event of a conflict between any of the provisions of the above authorities the most stringent provisions are to be applied.

2. Safety Data Sheet

1. Safety Data Sheets (SDS) must be available at the job-site for any product listed on the Hazardous Ingredients List prior to being used, installed or applied inside of the building.
2. A Safety Data Sheet is to be submitted to the Architect for any product which is known to create, or suspected of creating, a health hazard or discomfort during construction or upon commissioning of the project including, but not limited to, the following:
 - .1 adhesives
 - .2 solvents
 - .3 sealants, (caulking, vapour seals, etc.)
 - .4 sprayed-on fireproofing
 - .5 resilient flooring
 - .6 carpet, paint, varnish or other coatings
 - .7 exposed membrane waterproofing
 - .8 special coatings, (terrazo sealants, chafing coatings, etc.)
 - .9 solder, brazing and welding and other filler metal
 - .10 other products whose particles or vapours may become air borne after installation.
 - .11 any other product as directed by the Consultant.
3. Comply with WHMIS regulation, Workplace Hazardous Material Information System.

3. Fire Safety Requirements

1. Comply with requirements for Building Construction, the Ontario Building Code, the Ontario Fire Code, the requirements of Local Fire Authorities and of the requirements of the Office of the Fire Marshal.

4. Overloading

1. Ensure no part of Work is subjected to a load which will endanger its safety or will cause permanent deformation.

5. Falsework

1. Design and construct falsework in accordance with CSA S269.1.

6. Scaffolding

1. Design and construct scaffolding in accordance with CSA S269.2.
2. Scaffolding to be designed by a Professional Engineer when required under the Occupational Health and Safety Act.

7. Materials Specifically Excluded

1. Asbestos and/or asbestos-containing products are not permitted. Submit Safety Data Sheets for any product suspected of containing asbestos if so requested by Consultant. Examples of some materials requiring close scrutiny and/or confirmation include:

- .1 Transite drainage pipe - whether buried or above grade - not permitted.
 - .2 Composite floor tile containing asbestos - not permitted.
 - .3 Lay-in ceiling tiles containing asbestos - not permitted.
 - .4 Insulation and/or jacketing for pipes, ducts, motors, pumps, etc. - not permitted if any asbestos is present.
2. Solder for all piping is to be lead-free.
- .1 "Lead Free" shall mean solder which contains less than 0.030% of lead when dissolved in fluoroboric and nitric acids and tested by inductively coupled argon plasma atomic emission spectroscopy. "Steelbond 281" and "Silverbrite" are acceptable solder products.
 - .2 The mechanical contractor shall provide an affidavit signed by the Principal of the company, on company letterhead, that all of the solder used on the project was either one of the two acceptable products or that the solder used (identified by brand name) meets or exceeds the testing criteria.
 - .3 The Owner shall undertake random testing of the soldered joints. Should testing prove that the solder used was not as specified, the Owner shall take action against the contractor to the full extent of the law.
3. All paint and finish coatings are to be lead and mercury-free. Submit Safety Data Sheets confirming that these products are free of all lead and/or mercury compounds.

End of Section

PART 1 - GENERAL

1.1 Related Work

1. These specifications apply to all 16 divisions of the 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. It is recognized that currently specified materials and methods may conflict with the basic intention of this section. Where reasonable alternate materials and methods exist that are not specified here, and that do not compromise quality or create additional cost for the owner, notify the Architect of such alternate materials or methods. Do not proceed to use alternate materials or methods to those specified without the express approval of the Architect.
3. Elsewhere, apply the provisions of this section to all work. Exceptions can only be made when signed off by the Architect. Suitability of all products used is the responsibility of the contractor.

1.2 Compliance Specifications

1. The contractor must comply with all applicable health, safety and environmental regulations.

1.3 Beyond Compliance Specifications

1. These specifications apply in addition to all applicable health, safety and environmental compliance regulations. They are incorporated here to reflect the Owner's intention to develop a specification which maximizes environmentally "friendly" materials and methods wherever possible within current technical and budget limitations.
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. The primary goal of beyond compliance specification is to reduce the use of products or methods which have negative health and environmental impacts both during and after construction. These considerations may include full life cycle impacts, associated with raw materials, manufacturing, transport, deconstruction and their eventual fate.
4. These specifications will specifically address primary categories of readily identifiable products, ingredients and methods.
5. These provisions apply to both indoor and outdoor applications equally.

1.4 Exceptions

1. These specifications recognize that not all substitutes are equal and therefore exceptions can be made based on substantive evidence of necessary and superior performance. Special considerations may be given to restricted substances when secondary provisions are made such as sealed in place (contained) applications. All such exceptions must be approved in writing by the Architect.

PART 2 - MATERIALS

2.1 Products or Substances to be Avoided or Limited in Use

1. No product containing the following substances may be used on this project when an equivalent product without or with a lower concentration of this substance is suitable and available. All products containing substances which are known to cause health effects including but not limited to cancer, mutagenic, neurological, or behavioral effects should be avoided if suitable substitutes not containing or containing lower concentrations are available. This provision shall be limited to information contained on Safety Data Sheets, therefore SDS sheets must be reviewed for all products for which such sheets are required. Applications for exceptions must be accompanied by related SDS and product application and performance sheets, clearly showing a need for the exception.

2.2 Volatile Organic Compounds

1. No product containing volatile organic compounds (in over simplified terms volatile petro chemical or similar plant derived solvents) may be used on this project when a suitable non VOC or failing that a low VOC substitute is available. Manufacturers may refer to the U.S. EPA definition of VOC's for guidance or alternatively use the low molecular weight organic compound descriptor.

Example: Paints, Coatings, Primer, Adhesives, Chalks, Firestops, etc.

2. Waterborne equivalents are available for most of the solvent borne products used in construction and in most cases would be the preferred alternative. Waterborne products may in some instances have high VOC contents, therefore the fact that a product is waterborne does not automatically make it acceptable.

2.3 Chlorinated Substances

1. Poly Vinyl Chloride (vinyl) and other chlorinated products should be avoided if suitable substitutes are available.

2.4 Plasticizers

1. Plasticisers which offgass (low molecular weight) should be avoided.

2.5 Man Made Mineral Fibres

1. Products containing mineral fibres which can be emitted or abraded should be avoided.

Examples: duct liner, mineral fibre ceiling tiles, etc.

2.6 Radiation

1. Products or methods which result in the lowest emission of Electro Magnetic Fields are preferred.

2.7 Biocides

1. Products containing biocides (pesticides, miticides, mildewicides, fungicides, rodenticides, etc.) are not to be used if suitable alternatives are available. Highly stable, low human toxicity biocides such as Portercept may be acceptable substitutes. Biocide formulas which break down, emit powders or offgass should be avoided.

2.8 Heavy Metals

1. Heavy metals such as lead, cadmium, mercury etc. should be avoided.

2.9 Aluminum

1. Raw aluminum should be avoided, anodized or factory painted aluminum is acceptable. This is particularly applicable to surfaces which people can touch.

2.10 Ozone Depleting Substances

1. Products which contain or which use Ozone Depleting Substances such as Bromide, Chlorofluorocarbons (CFC) or Hydrofluorocarbons (HFC) etc. should be avoided if suitable substitutes are available.

2.11 Greenhouse Gasses

1. Products which contain, use or generate Greenhouse gasses such as CO₂ should be avoided if suitable substitutes are available.

2.12 Bituminous (tar) Products

1. Products containing tar compounds should not be used if suitable substitutes are available.

2.13 Chemical Compounds

1. Products containing the following chemical compounds should not be used if suitable substitutes are available: Neoprene, Latex, Butyl, ABS, Formaldehyde.

2.14 Adhesives

1. Adhesives containing solvents or other non preferred ingredients should be avoided if suitable substitutes are available, including systems designs which do not need adhesives or can use mechanical etc. fastening alternatives

2.15 Composite Products

1. Some composite products contain adhesives such as formaldehyde which are not preferred, and some composites such as Fibre Reinforced Plastics are not practical for recycling. These products should be avoided if suitable substitutes are available.

2.16 Cleaners and Solvents

1. Products, equipment, and methods which require the use of cleaners and solvents are not preferred if suitable substitutes are available. Examples of preferred products would include No Wax floors, or primerless caulks and adhesives, or products not requiring caulks and adhesives.

End of Section

1. General

1. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
2. Store volatile waste in covered metal containers and remove from premises daily.
3. Prevent accumulation of waste, which create hazardous conditions.
4. Provide adequate ventilation during use of volatile or noxious substances.
5. At no time shall waste be stored inside the school building. All waste and waste containers must be separated from general public and school occupants using properly secured and locking construction hoarding.

2. Materials

1. Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.
2. Provide on-site construction specific dump containers for collection of waste materials, and rubbish. The school waste bins, and garbage collection shall not be used to dispose of construction related waste materials, debris and/or rubbish.

3. Cleaning During Construction

1. Maintain project grounds, and public properties free from accumulations of waste materials and rubbish.
2. Remove waste materials, and rubbish from site.
3. Vacuum clean interior building areas when ready to receive finish painting and continue vacuum cleaning on an as-needed basis until building is ready for substantial completion or occupancy.
4. Schedule cleaning operations so that resulting dust and other contaminants will not fall on wet, newly painted surfaces.

4. Final Cleaning

1. At completion of Work, remove waste materials, rubbish, tools, equipment, machinery, and surplus materials, and clean all surfaces and leave project clean and ready for occupancy.
2. Employ experienced professional cleaners, for final cleaning.
3. In preparation for Substantial Performance or Fitness for Occupancy status, whichever occurs first, conduct final inspection of interior and exterior surfaces and of concealed spaces.

4. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials from all interior and exterior finished surfaces; polish resilient and ceramic surfaces so designated to shine finish. Vacuum carpet.
5. Clean and polish glass and mirrors.
6. Repair, patch and touch-up marred surfaces to specified finish and to match new adjacent surfaces.
7. Broom-clean, magnet roll, and pressure wash all concrete and asphalt paved surfaces; rake clean other surfaces of grounds.
8. Clean exposed ductwork and structure.
9. Replace filters.
10. Clean bulbs and lamps and replace those burned out.
11. Clean diffusers and grilles.
12. Clean sinks, faucets, and water closets and controls.
13. Maintain cleaning until project, or portion thereof, is occupied by Owner.

End of Section

1. Requirements Included

1. Record documents, samples, and specifications.
2. Equipment and systems.
3. Product data, materials and finishes, and related information.

2. Quality Assurance

1. Prepare instructions and data by personnel experienced in maintenance and operation of described products.

3. Format

1. Organize data in the form of an instructional manual.
2. Binders: commercial quality, 8½" x 11" maximum 2½" ring size.
3. When multiple binders are used, correlate data into related consistent groupings.
4. Cover: Identify each binder with type or printed title "Project Record Documents", list title of Project, identify subject matter of contents.
5. Arrange content under Section numbers and sequence of Table of Contents.
6. Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
7. Drawings: provide with reinforced punched binder tab. Bind in with text, fold larger drawings to size of text pages.

4. Contents, Each Volume

1. Table of Contents: Provide title of project; names, addresses, and telephone numbers of Consultant and Contractor with name of responsible parties; schedule of products and systems, indexed to content of the volume.
2. For each Product or System: list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.
3. Product Data: mark sheet to clearly identify specific products and component parts, and data applicable to installation; delete inapplicable information.
4. Drawings: supplement product data to illustrate relations of component parts of equipment and systems, to show control and flow diagrams.
5. Typed Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions.

5. Submission

1. Submit for review a digital pdf file of completed closeout documents in final form 15 days prior to substantial performance. For equipment put into use with Owner's permission during construction, submit Operating and Maintenance Manuals within 10 days after start-up. For items of Work delayed materially beyond date of Substantial Performance, provide updated submittal within ten days after acceptance, listing date of acceptance as start of warranty period.
2. Consultant comments will be returned, and the contractor is to revise the content of documents as required prior to final submittal.
3. Submit one (1) digital copy of revised volumes of data in final form within ten days after final inspection.
4. For contract drawings (architectural, landscaping, structural, mechanical, electrical), transfer neatly as-built notations onto a digital set and submit to consultant.
5. Prepare digital pdf file for submission on USB of completed closeout documents.

6. Record Documents and Samples

1. In addition to requirements in General Conditions, maintain at the site for Owner one record copy of:
 - .1 Contract Drawings.
 - .2 Specifications.
 - .3 Addenda
 - .4 Change Orders and other modifications to the Contract.
 - .5 Reviewed shop drawings, product data and samples.
 - .6 Field test records.
 - .7 Inspection certificates.
 - .8 Manufacturer's certificates.
2. Store Record Documents and Samples in Field Office apart from documents used for construction. Provide files, racks, and secure storage.
3. Label and file in accordance with Section number listings in List of Contents of this Project Manual. Label each document "Project Record" in neat, large, printed letters.
4. Maintain Record Documents in a clean, dry, and legible condition. Do not use Record Documents for construction purposes.
5. Keep Record Documents and samples available for inspection by Consultant.

7. Recording As-Built Conditions

1. The consultant will provide electronic copies of project drawings in PDF format. Make one (1) hardcopy of the project drawings for the purpose of recording as-built conditions. Mark and record changes on an on-going basis as construction proceeds. **Near the end of the construction period transfer all marks to the supplied electronic documents and submit for consultant review as project record as-built documents.**
2. Refer to drawings/specifications for additional mechanical and electrical requirements.
3. Record information concurrently with construction progress. Do not conceal work until required information is recorded.
4. Contract Drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .1 Measure depths of elements of foundation in relation to finish first floor datum.
 - .2 Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
 - .3 Measured locations of internal utilities and appurtenances, referenced to visible and accessible features of construction.
 - .4 Field changes of dimension and detail.
 - .5 Changes made by change orders.
 - .6 Details not on original Contract Drawings.
 - .7 References to related shop drawings and modifications.
5. Specifications: legibly mark each item to record actual construction, including:
 - .1 Manufacturer, trade name, and catalog number of each project actually installed particularly optional items and substitute items.
 - .2 Changes made by Addenda and Change Orders.
6. Other Documents: maintain manufacturer's certifications, inspection certifications, field test records, required by individual specifications sections.

8. Digital As-Built Drawings

1. Retain the services of a CAD drafting company acceptable to the consultant to prepare digital CAD As-Built documents for all Architectural and Engineering drawings.
2. After the consultant has found the Redlined As-Built drawings to be acceptable, transfer to digital file all information recorded on As-Built drawings. Layering of information as per consultant's instructions.

9. Equipment and Systems

1. Each Item of Equipment and Each System: include description of unit or system, and component parts. Give function, normal operation characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and commercial number of replaceable parts.
2. Panelboard Circuit Directories: provide electrical service characteristics, controls, and communications.

3. Include installed colour coded wiring diagrams.
4. Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shutdown, and emergency instruction. Include summer, winter, and any special operating instructions.
5. Maintain Requirements: include routine procedures and guide for troubleshooting; disassembly, repair and reassemble instructions; and alignment, adjusting, balancing, and checking instructions.
6. Provide servicing and lubrication schedule, and list of lubricants required.
7. Include manufacturer's printed operation and maintenance instructions.
8. Include sequence of operation by controls manufacturer.
9. Provide original manufacturer's parts lists, illustrations, assembly drawings, and diagrams required for maintenance.
10. Provide installed control diagrams by controls manufacturer.
11. Provide Contractor's co-ordination drawings, with installed colour coded piping diagrams.
12. Provide charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
13. Provide a list of the original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
14. Include test balancing reports as specified in mechanical specifications.
15. Additional Requirements: As specified in individual specification sections.

10. Materials and Finishes

1. Building Products, Applied Materials, and Finishes: include product data, with catalog number, size, composition, and colour and texture designations. Provide information for re-ordering custom manufactured products.
2. Instructions for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
3. Moisture-protection and Weather-exposed Products: include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommend schedule for cleaning and maintenance.
4. Additional Requirements: as specified in individual specifications sections.

11. Guarantees, Warranties and Bonds

1. Separate each warranty or bond with index tab sheets keyed to the List of Contents listing.
2. List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal. Use Guarantee/Warranty Form as provided in Section 01721 whenever standard preprinted trade or manufacturer's Guarantee/Warranty forms are not available.
3. Obtain warranties and bonds, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.
4. Except for items put into use with Owner's permission, leave date of beginning of time of warranty until the Date of Substantial Performance is determined.
5. Verify that documents are in proper form, contain full information, and are notarized.
6. Co-execute submittals when required.
7. Retain warranties and bonds until time specified for submittal.

End of Section

1. Notes

1. To be made out on the letterhead of Guarantor or Warrantor which usually is a Subcontractor.
2. This format is to be used only when standard preprinted trade or manufacturer's forms are not available. Preprinted forms are to include all elements of information shown on this sample or as a minimum.
3. Comply with Requirements for Guarantee/Warranty as specified in Section 01720, Article 10.

To: Hamilton-Wentworth District School Board
20 Education Court
Hamilton, ON L9A 0B9

Date: _____

SECTION _____

TITLE _____

GUARANTEE/WARRANTY TO:

OWNER Hamilton-Wentworth District School Board

PROJECT *Chedoke Elementary School , Washroom Renovations*

ARCHITECT *AMRA J Architects Inc.*

REFERENCE (to specifications or drawings)

TIME Period of Guarantee/Warranty: _____ years

GUARANTEE/ Starting Date: Substantial Performance as certified by Architect

WARRANTY Date: _____

(Description of Guarantee/Warranty)

Upon written notification from the Owner or the Consultant that the above work is defective any repair or replacement work required shall be to the Consultant's satisfaction at no cost to the Owner.

This guarantee shall not apply to defects caused by the work of others, maltreatment of materials, negligence or Acts of God.

SUBCONTRACTOR

	_____	_____
	Signature	Date
Authorized Signing Officer:	_____	
	(Name Printed)	

	Title	
Name of Firm:	_____	
Address:	_____	
Telephone Number	_____	

CONTRACTOR

	_____	_____
	Signature	Date
Authorized Signing Officer:	_____	_____
	(Name Printed)	

	Title	
Name of Firm:	_____	SEAL
Address:	_____	
Telephone Number	_____	

End of Section

1. Notes

1. To be made out on the letterhead of Guarantor or Warrantor which usually is a Subcontractor.
2. This format is to be used only when standard preprinted trade or manufacturer's forms are not available. Preprinted forms are to include all elements of information shown on this sample or as a minimum.
3. Comply with Requirements for Guarantee/Warranty as specified in Section 01720, Article 10.

To: Hamilton-Wentworth District School Board
20 Education Court
Hamilton, ON L9A 0B9

Date: _____
SECTION _____
TITLE _____

GUARANTEE/WARRANTY TO:

OWNER Hamilton-Wentworth District School Board
PROJECT Sir Wilfrid Laurier Elementary School, Washroom Renovations
ARCHITECT AMRA J Architects Inc.
REFERENCE (to specifications or drawings)
TIME Period of Guarantee/Warranty: _____ years
GUARANTEE/
WARRANTY Starting Date: Substantial Performance as certified by Architect
Date: _____

(Description of Guarantee/Warranty)

Upon written notification from the Owner or the Consultant that the above work is defective any repair or replacement work required shall be to the Consultant's satisfaction at no cost to the Owner.

This guarantee shall not apply to defects caused by the work of others, maltreatment of materials, negligence or Acts of God.

SUBCONTRACTOR

Signature

Date

Authorized Signing
Officer:

(Name Printed)

Title

Name of Firm:

Address:

Telephone Number

CONTRACTOR

Signature

Date

Authorized Signing
Officer:

(Name Printed)

Title

Name of Firm:

SEAL

Address:

Telephone Number

End of Section

1. Maintenance Manual

1. On completion of project, submit to the Owner one (1) digital copy of Operations Data and Maintenance Manual in English, made up as follows:

1.1. Enclose title sheet, labeled "Operation Data and Maintenance Manual", project name, date and list of contents.

1.2. Organize content folders into applicable sections of work to parallel project specification break-down. Mark each section by labeled folder similar to the following example:

Name

- 00000 Title Page and Table Contents
- 00001 Vendor Contact Forms
- 00002 Warranty Forms
- 02050 Demolition
- 04200 Masonry
- 06100 Rough Carpentry
- 07270 Fire Stopping Smoke Seals Sealants
- 09000 Finishes
- 09111 Metal Stud Systems
- 09250 Gypsum Board
- 09600 Flooring and Rubber Base
- 09700 Epoxy Flooring
- 09900 Painting
- 10165 Toilet Partitions
- 10800 Washroom Accessories

1.3.

1.4. The digital copy of all documents in the operations and manuals must be provided on a USB, format to be PDF.

2. Include the following information, plus data specified.

- .1 Maintenance instructions for finished surface and materials.
- .2 Copy of hardware and paint schedules.
- .3 Description, operation and maintenance instructions for equipment and systems, including complete list of equipment and parts list. Indicate nameplate information such as make, size, capacity, serial number.
- .4 Names, addresses and phone numbers of sub-contractors and suppliers.
- .5 Guarantees, Warranties and bonds showing:
 - .1 Name and address of project.
 - .2 Guarantee commencement date (date of Final Certificate of Completion).
 - .3 Duration of guarantee.
 - .4 Clear indication of what is being guaranteed and what remedial action will be taken under guarantee.
 - .5 Signature and seal of Contractor.
 - .6 Additional material used in project listed under various Sections showing name of manufacturer and source of supply.

3. Neatly type lists and notes. Use clear drawings, diagrams or manufacturers' literature.

4. Include in the Manuals a complete set of final shop drawings indicating corrections and changes made during fabrication and installation.
5. Include in the manuals a complete set of final as-built red line drawings. Include each drawing sheet and indicate on the title block "As-Build Drawing"

End of Section

1. General

1. **Bonds:** Refer to Supplementary General Conditions and to Standard Contract Document CCDC No. 2 for bonding requirements for this project, both at the time of tender submission and throughout the duration of the construction period.

2. Standard Warranty

1. Refer to Supplementary General Conditions and to Standard Contract Document CCDC No. 2 for warranty requirements and conditions for the standard warranty which is required for the work of this contract.

3. Extended Warranties

1. Refer to individual specification sections for requirements of extended warranties required for particular sections or items of work.
2. Extended warranties are required to be issued by manufacturers, fabricators, suppliers and/or installers, sometimes jointly, due to their unique position in the construction process and their ability to guarantee a particular section of work. Refer to individual requirements of extended warranties requested.
3. Unless specifically noted otherwise, all extended warranties shall commence on the date of Substantial Performance of the Work as certified by the Consultant.
4. All Extended Warranties shall be listed separately and included as a separate section in the operations and maintenance manuals provided to the HWDSB at project close out. Each Extended Warranty document shall include the vendor's contact information, date of warranty commencement and expiry as well as listing the specific product with extended warranty. This document shall clearly indicate if the warranty includes or excludes labour.
5. Listed below is a summary of extended warranties required for individual Sections. This list, if inconsistent with the specified requirements of individual extended warranties, shall be deemed correct with respect to the length of extended warranties. Extended warranties required shall include, but not be limited to, the following:

Extended warranties (total warranty period listed, including entire building warranty)

Sealants (Section 07 92 00)	5 years
Painting (Section 09 91 00)	2 years
Ceramic Tiling (Section 09 30 00)	3 years
Floor Porcelain Tile (Section 09 30 00)	3 years
Gypsum Board Ceiling System (Section 09 29 00)	2 years
Toilet partitions (Section 10 21 13)	5 years
Washroom Accessories (Section 10 28 00)	5 years
Plumbing Fixtures (Section 22 00 00)	5 years
Lighting (Section 26 00 00)	5 years

End of Section

PART 1 - GENERAL

1.1. SUMMARY

- 1.1.1. Section Includes: Provide selective removal in phases, including but not limited to following:
- 1.1.1.1. Gypsum Board & Acoustical ceilings including tee bars, suspension and support framing, light fixtures, exit signs and speakers.
 - 1.1.1.2. Flooring.
 - 1.1.1.3. Masonry Walls and wood door panels & HM frames
 - 1.1.1.4. Washroom toilet partitions including accessories
 - 1.1.1.5. Washroom sinks and urinals
 - 1.1.1.6. Selective demolition to accommodate new plumbing and electrical services.
 - 1.1.1.7. Items for Salvage: as noted on drawings

1.2. REFERENCES

- 1.2.1. Review "Designated Substance Report" and take appropriate precautions.
- 1.2.2. Definitions:
- 1.2.2.1. Hand Demolition: Systematic demolition of structures by workers using hand-held tools.
 - 1.2.2.2. Mechanical Demolition: Systematic demolition of structures using powered equipment.
 - 1.2.2.3. Systematic Demolition: Methodical dismantling of structure piece by piece, usually carried out in reverse order of construction.
 - 1.2.2.4. Hazardous Materials: dangerous substances, dangerous goods, hazardous commodities and hazardous products, may include but not limited to: poisons, corrosive agents, flammable substances, ammunition, explosives, radioactive substances, or other material that can endanger human health or well being or environment if handled improperly.

1.3. ADMINISTRATIVE REQUIREMENTS

- 1.3.1. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, inspection of construction to be demolished, methods to be used, sequence and quality control, Project staffing, restrictions due to environmental protection requirements and other matters affecting demolition, to permit compliance with intent of this Section.
- 1.3.2. Scheduling:
- 1.3.2.1. Where practicable, remove or neutralize hazardous or toxic materials before demolition begins.
 - 1.3.2.2. Phase selective demolition to be coordinated with Owner's on-going occupancy of the school.

1.4. QUALITY ASSURANCE

- 1.4.1. Comply with National Building Code, Part 8, Construction Safety Measures at Construction and Demolition Sites.
- 1.4.2. Do work in accordance with CSA S350 and comply with pertinent codes, regulations and insurance carriers providing coverage for this work.
- 1.4.3. Execute the work in strict accordance with The Occupational Health and Safety Act and Regulations for Construction Projects, latest addition. Keep copy of the Act at the place of the Work at all times.

1.4.4. Restrictions: Restrict demolition activities to hours in accordance with Section Division 01 – General Requirements

1.5. SITE CONDITIONS

1.5.1. Demolition performed on this Project in school areas adjacent to occupied areas. Every part of the demolition work must be carefully planned, scheduled, and coordinated with the HWDSB Protect Manager, including:

1.5.1.1. Hours of operation

1.5.1.2. Dust control, infection prevention and control.

1.5.1.3. Disruption to existing mechanical or electrical services, fire alarm, sprinkler, communications systems.

1.5.1.4. Noise control.

1.5.1.5. Protection to existing building

1.5.1.6. Access to the work area including procedures for movement and removal of materials.

PART 2 - PRODUCTS

2.1. MATERIALS

2.1.1. Description:

2.1.1.1. Regulatory Requirements:

2.1.1.1.1. Conform to The Occupational Health and Safety Act and Regulation for Construction Projects

2.1.1.1.2. Conform to OBC, especially Division C, Part 1, Article 1.2.2.3 as applicable.

2.1.1.1.3. Conform to Fire Code, Regulation under Fire Marshal Act especially Part 8.

2.1.2. Materials and Products Removed From Existing Building

2.1.2.1. Refer to drawings for existing items that are designated to be carefully removed and reinstalled or relocated.

2.1.2.2. Refer to drawings for existing items that are to be carefully removed and handed over to the Owner.

2.1.2.3. Materials resulting from demolition and not required to be retained shall be removed promptly from site in accordance with requirements of authorities having jurisdiction and in safe manner to minimize danger at site and during disposal.

2.1.2.4. Materials that are to be removed from the site and can be reused should be sent to the appropriate facility.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Review audit of hazardous materials and designated substances of existing construction provided by Owner.

3.1.2. Consultant does not guarantee that existing conditions are the same as those indicated in Construction Documents.

3.1.3. Preliminary Survey:

-
- 3.1.3.1. Before commencing demolition operations, examine building to determine type of construction, condition of structure and site conditions. Assess strength and stability of damaged or deteriorated structures.
 - 3.1.3.2. Assess potential effect of removal of any part or parts on remainder of structure before such part(s) are removed.
 - 3.1.3.3. Investigate for presence of hazardous materials not identified in the construction documents.
 - 3.1.3.4. Prepare a complete photographic record of all finishes and equipment to remain. Note any damages, missing items, breaches in fire rated construction, potential hazardous materials, conditions that are different from what is shown in the Construction Documents, and any other items of concern that could impact the construction. Submit report of existing conditions before start of demolition operations, for each work area.
 - 3.1.4. Existing Services:
 - 3.1.4.1. When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element.
 - 3.1.4.2. Identify all services and systems exposed as part of the demolition.
 - 3.1.4.3. Verify services are cut off and properly capped before commencing associated or effected demolition.
 - 3.1.4.4. Provide and maintain temporary fire alarm and fire protection services required during demolition to satisfaction of authorities having jurisdiction, fire departments and HWDSB Project Manager.
 - 3.1.4.5. Verify prior to commencement work of this Section that disconnection and capping of electrical and mechanical services have been carried out.
 - 3.1.4.6. Verify that dust control hoardings have been completed, inspected and accepted before proceeding.
 - 3.2. PREPARATION**
 - 3.2.1. Protection of In-Place Conditions:
 - 3.2.1.1. Post suitable warning signs outside of work area for protection of staff and public. Supervise entrance to work area to prevent entrance by unauthorized persons. If requested, provide lockable doors to prevent public entering danger zone.
 - 3.2.1.2. Post warning signs on electrical lines and equipment which must remain energized to serve other portions of the building during period of demolition.
 - 3.2.1.3. Provide fire extinguishers acceptable to fire prevention authorities in locations and of type suitable to enable personnel to deal with fire occurring during progress of work.
 - 3.2.1.4. Provide suitable protection to existing lockers, doors, walls and finishes to remain. This includes a sealed 6 mil poly cover to prevent dust getting into equipment and fixtures.
 - 3.2.2. Environmental Protection:
 - 3.2.2.1. Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
 - 3.2.2.2. Removal of all demolition materials shall be in sealed containers. Removal of transite panels from work area shall be in approved sealed bags.
 - 3.2.3. Protection to Existing Services:
 - 3.2.3.1. Provide protection required to enable existing building services, systems and equipment to remain in continuous and normal operations.

- 3.2.3.2. Demolition shall be carried out in a manner to ensure the minimum of disruption to Owner, and other contractors working in the building.

3.3. DEMOLITION — GENERAL

- 3.3.1. Execute work in conformance to Hamilton Wentworth School Board Standards. Notify HWDSB Project Manager before disrupting building access or services.
- 3.3.2. Carry out demolition in accordance with CSA S350-M. Demolish structure and remove materials from site. Use hand tools only. Adhere to manufacturer's recommendations in use of hand held tools while conforming to the Occupational Health and Safety Act requirements.
- 3.3.3. Do not demolish spray or trowel-applied friable materials, materials suspected of containing PCBs or other hazardous materials. Where such materials are encountered notify HWDSB Project Manager immediately. Do not proceed until instructions have been received from Consultant.
- 3.3.4. Remove mechanical and electrical items indicated to be removed. Remove all abandoned services, communication lines, electrical wiring, plumbing, and ductwork.
- 3.3.5. The use of pneumatic or electrical jack hammers is not permitted.
- 3.3.6. Report any existing conditions uncovered by the demolition work that require remediation. This includes:
- 3.3.6.1. Damaged or unsafe services.
- 3.3.6.2. Unsupported services, structural members or missing hangers.
- 3.3.6.3. Incomplete insulation, vapour retarder or air barrier.
- 3.3.6.4. Incomplete or unacceptable fire separation, missing seals, fire dampers, fireproofing or firestopping.
- 3.3.7. Minimize noise. Avoid use of noisy equipment. Proposed methods for demolition to be reviewed at the pre-construction meetings ahead of the work in each work area.
- 3.3.8. Firestopping and Smoke Seal: In event work of this Section impacts on integrity of fire separations, ensure trade performing firestopping is notified.
- 3.3.9. Demolition for new services:
- 3.3.9.1. Cut openings through existing walls, partitions, roofs and floors. Establish exact location of steel reinforcing and conduits in existing concrete slabs or walls before cutting. Locate using non destructive, non ionizing radio frequency locators, magnetic scanning or X-ray. Scanning procedures and proposed methods and equipment to be reviewed with HWDSB Project Manager before proceeding. Be responsible for damage to existing steel reinforcing and be liable for structural failure.
- 3.3.9.2. Neatly cut openings and holes plumb, square and true to dimensions required. Use cutting methods least likely to damage remaining or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
- 3.3.9.3. Openings to allow passage of ducts shall be closed tight to perimeters of duct at all locations where fire dampers are required.
- 3.3.10. Where items are to be removed from existing structure or surfaces that are to remain in place, remove those items complete with hangers, brackets and other readily removable supports and fastenings:
- 3.3.11. Building Services:
- 3.3.11.1. Arrange with HWDSB Project Manager to disconnect or interrupt existing building services. Cut-off and cap existing building services under Owner's supervision.

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- 3.3.11.2. Coordinate with Mechanical and Electrical respectively for removal, relocation and reinstallation of mechanical and electrical items.
 - 3.3.11.3. Prevent demolition debris from entering building drains.
 - 3.3.12. Relocation of Salvaged Items:
 - 3.3.12.1. Carefully remove, store, protect and re-install where applicable existing materials and equipment noted on Drawings to be retained and relocated. Relocate items to be retained and store them in areas directed by Consultant. In addition to items indicated on Drawings, Owner still reserves the right to retain any items or materials.
 - 3.4. REMOVAL OF CEILINGS**
 - 3.4.1. Remove existing ceilings as shown in drawings. Acoustical ceiling panels and electrical light fixtures to be recycled rather than disposed as waste, as much as possible.
 - 3.4.2. Support structure for ceiling systems including hangers and framing used for support of light fixtures shall be removed.
 - 3.4.3. Carefully remove exit signs, speakers and other ceiling mounted fixtures.
 - 3.4.4. Provide temporary support as required for sprinklers, fire alarm bells, smoke and heat detectors, and HVAC ductwork.
 - 3.4.5. Take precautions to adequately support structure, provide bracing required for safety and execution of the work. Coordinate with structural requirements.
 - 3.5. REMOVAL OF RESILIENT FLOOR FINISHES**
 - 3.5.1. Remove vinyl composite tile where shown. Strip all adhesive, underlayment or other cleavage membranes.
 - 3.5.2. Remove resilient base.
 - 3.5.3. Coordinate surface preparation of concrete slab with flooring trades in Division 09. Leave substrate flush, smooth and level suitable for new floor finish.
 - 3.6. REMOVAL OF CERAMIC AND QUARRY TILE**
 - 3.6.1. Remove mortar setting bed.
 - 3.6.2. Strip all adhesive, underlayment or other cleavage membranes.
 - 3.6.3. Leave substrate suitable for new floor finish and underlayment.
 - 3.7. REMOVAL OF TERRAZZO FLOORING**
 - 3.7.1. Remove as indicated on demolition drawings.
 - 3.8. EXISTING SLAB PREPARATION**
 - 3.8.1. Remove existing floor finishes and bases as noted above.
 - 3.8.2. At existing locations where flooring and base, has been removed, where concrete curbs, bases, steps and pads have been removed, grind and patch existing concrete slabs as required and clean slab and base surfaces, remove ridges, bumps, adhesives and other matter detrimental to bond of levelling coat, new finish application or underlayment. Surfaces shall be smooth, level and free of gouges; prepare for levelling coat and/or new finish application specified in respective Sections or underlayment.
 - 3.8.3. At existing locations designated to receive new flooring, remove paint, old adhesives, and hard applied finishes by grinding or other approved means, as required to accommodate new flooring. Prepare for flooring application. Coordinate requirements with Work specified in flooring Sections.
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3.8.4. At existing locations where slabs have been contaminated with oil, grease, resins or other such material not compatible with subsequent applied underlayment or flooring, remove contaminants by blast tracking or prepare existing surfaces by other approved means.

3.8.5. Rinse subfloor and vacuum clean.

3.9. MISCELLANEOUS DEMOLITION

3.9.1. Remove heaters items, washroom accessories, fitments, projectors and screens, and other such components as indicated on the drawings.

3.9.2. Remove fixtures, tracks, shelves, doors, frames, and railings that are attached to partitions and ceilings identified to be removed in the drawings.

3.10. CUTTING AND PATCHING

3.10.1. Obtain Consultant's approval before cutting, boring or sleeving load-bearing members.

3.10.2. Cut and patch as required to make work fit.

3.10.3. Make cuts with clean, true, smooth edges.

3.10.4. Where new work connects with existing and where existing work is altered, cut, patch and make good to match existing work.

3.10.5. Patch openings created where mechanical and electrical services are removed in existing building.

3.10.6. Use specialists in affected materials to execute cutting, fitting and remedial work.

3.10.7. Make good surfaces exposed or disturbed by work with material and finish to match existing adjoining surfaces.

3.11. CLEANING

3.11.1. Waste Management:

3.11.1.1. Clear away dirt, rubbish and loose litter resulting from work of this Section, minimum daily. Keep dust to a minimum. When necessary and practical demolition works shall be sprayed periodically with water to reduce dust. Wet down debris from time to time to control dust.

3.11.1.2. Selling or burning of materials on site is not permitted.

3.11.1.3. Conform to requirements of authorities having jurisdiction regarding disposal of waste materials.

3.11.1.4. Materials prohibited from municipality waste management facilities shall be removed from site and dispose of at recycling companies specializing in recyclable materials.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

- 1.1.1. Section Includes: Work requirements for flooring restoration including but not limited to following:
- 1.1.1.1. Repair existing concrete floors where walls and flooring has been removed.
 - 1.1.1.2. Repair existing floors where the plumbing fixtures has been removed.
 - 1.1.1.3. Chipping and breaking out all deteriorated, spalled and delaminated concrete, defective cold joints, and the subsequent filling of voids, cracks and holes in concrete floor slabs.
 - 1.1.1.4. Concrete levelling underlayment.

1.2. ADMINISTRATIVE REQUIREMENTS

- 1.2.1. Coordination:
- 1.2.1.1. Coordinate with trades responsible for concrete mix design including type of cement, water cement ratio, aggregates and placement technique.
 - 1.2.1.2. Ensure that concrete supplied for slabs contains no admixtures that would be incompatible with concrete leveller, topping, fillers, or adhesives proposed for use by this Section or flooring trades.
- 1.2.2. Pre-Installation Meetings:
- 1.2.2.1. Prior to commencement of work, arrange for Project site meeting of all parties associated with work of this Section in accordance with project meetings specified in Division 01 – General Requirements
 - 1.2.2.2. Include Contractor, Installers performing work of this Section, subcontractors installing finishes over these products (if applicable).
 - 1.2.2.3. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of placement and other matters affecting construction.

1.3. SUBMITTALS

- 1.3.1. Submittals in accordance with Submittal Procedures specified in Section Division 01 – General Requirements
- 1.3.2. Product Data:
- 1.3.2.1. Submit manufacturer's Product data, performance criteria, application instructions, and other documentation for each material specified in this Section proposed for use, including:
 - 1.3.2.1.1. Liquid curing/sealing and curing/hardener.
 - 1.3.2.1.2. Joint sealant and primer.
 - 1.3.2.1.3. Leveller.
 - 1.3.2.2. Safety: Provide WHMIS Safety Data Sheets.

1.4. QUALITY ASSURANCE

- 1.4.1. Perform Work in accordance with ACI 302.1
- 1.4.2. Installers Qualifications:

- 1.4.2.1. Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.
- 1.4.2.2. Submit letter signed by manufacturer naming the installers and certifying that they have been trained in the application and safety measures for the products of this Section, and have 5 years experience.
- 1.4.2.3. Submit name and qualifications for the on-site lead supervisor who will be in full time attendance on site and directing the work of this Section.
- 1.4.3. Mock-Ups:
 - 1.4.3.1. Provide site mock-up for concrete finishes indicating methods and materials, and procedures proposed to achieve concrete finishes and to comply with following requirements, using materials indicated for completed work:
 - 1.4.3.1.1. Build mock-ups in location and of size as directed by Consultant.
 - 1.4.3.1.2. Obtain Consultant's acceptance of mock-ups before continuing construction;
 - 1.4.3.1.3. Mock-up to be used throughout construction period and used as standard of acceptance for subsequent concrete refurbishing work.
 - 1.4.3.1.4. Mock-up may form part of permanent structure when accepted by Consultant. Repair or replace unacceptable mock-ups at no additional cost to Owner.

1.5. DELIVERY, STORAGE AND HANDLING

- 1.5.1. Storage and Handling Requirements: Store materials on site in manner to prevent damage. Protect materials from inclement weather. Comply with CSA A23.1, Clause 7.1.
- 1.5.2. Deliver materials in manufacturer's packaging including application instructions.

1.6. SITE CONDITIONS

- 1.6.1. Temporary Lighting: Minimum 1-200 W light source, placed 2.5 m (8') above floor surface, for each 40 m² (430 sq ft) floor being finished.
- 1.6.2. Electrical power: Provide sufficient electrical power to operate equipment normally used during construction
- 1.6.3. Make work area water tight protected against rain and detrimental weather conditions.
- 1.6.4. Temperature: Maintain minimum 10 degrees C ambient temperature for 7 days before installation and minimum 48 hours after completion of work and maintain relative humidity maximum 40% during same period.

PART 2 - PRODUCTS

2.1. JOINT SEALERS

- 2.1.1. For exposed locations: 2 component, chemically reactive polyurethane or polysulfide modified sealant over premoulded joint filler; self-levelling, grey colour. Acceptable products:
 - 2.1.1.1. "Mapeflex P2 SL" by Mapei Corporation
 - 2.1.1.2. "Sikaflex 2C/SL" by Sika Canada Inc..
- 2.1.2. For slabs to receive architectural flooring finish: mix 1 part cement 2 parts sand 1 part additive. Additive: "Albitol" by Sika Canada Inc.
- 2.1.3. For expansion joints:
 - 2.1.3.1. "Mapeflex P2 SL/NS" by Mapei Corporation

- 2.1.3.2. "Sikaflex 2C NS/SL" polyurethane sealant by Sika Canada Inc.
- 2.1.4. For control joints which will not receive a resinous flooring finish:
 - 2.1.4.1. "Mapeflex Joint Filler PO 95/100" by Mapei Corporation
 - 2.1.4.2. "Sikafloor 524 EZ Polyurea" by Sika Canada Inc.
- 2.1.5. For isolation joints:
 - 2.1.5.1. "Mapeflex P2 SL" by Mapei Corporation
 - 2.1.5.2. "Sikaflex 2C SL" polyurethane sealant by Sika Canada Inc.

2.2. PATCHING AND CRACK REPAIR

- 2.2.1. Crack filler: Provide 1 of following:
 - 2.2.1.1. "Planiseal VS Fast" by Mapei
 - 2.2.1.2. "Lextile Patch" by Flextile Ltd

2.3. SELF LEVELING UNDERLAYMENT

- 2.3.1. Self-levelling, polymer-modified Portland cement based compound mixed with either a latex additive or water only depending on substrate conditions and Product instructions.
 - 2.3.1.1. Primer: As recommended by the manufacturer, if required.
 - 2.3.1.2. Compressive strength at 28 days: 38 MPa (5500 psi), to ASTM C109/C109M, or 36.5 MPa (5300 psi) tested to ASTM C1708.
 - 2.3.1.3. Acceptable products:
 - 2.3.1.3.1. "Flex-Flo" up to 12 mm (15/32") or "Flex-Flo Plus" up to 50 mm (2") by Flextile Ltd.,
 - 2.3.1.3.2. "NXT Level Plus" up to 50 mm (2") or "NXT Level" up to 76 mm (3/4") by Laticrete International, Inc.,
 - 2.3.1.3.3. "Ardex K-15" up to 40 mm (1-1/2") by Ardex Canada, Inc.,
 - 2.3.1.3.4. "UltraPlan 1 Plus with primer" up to 38 mm (1-1/2") or "UltraPlan M20 Plus with primer" up to 50 mm (2") by Mapei Corporation
 - 2.3.1.3.5. "Sikafloor Level-25" where resinous flooring or tiles to be installed, or "Sikafloor Level-125" where resilient flooring to be installed.
 - 2.3.1.4. Water: clean, potable.
 - 2.3.1.5. Mechanically mix in accordance with manufacturer's printed instructions.

PART 3 - EXECUTION

3.1. EXAMINATION

- 3.1.1. Verification of Conditions:
 - 3.1.1.1. Verify that the surface conditions are smooth, sound, dry, and free from conditions that will adversely affect execution, permanence, or quality of the work of this section and in accordance with manufacturer's printed instructions. Refer to Section 09 05 61 Common Work Results for Flooring Preparation
 - 3.1.1.2. Ensure substrates are structurally sound, solid, stable, level, plumb and true to a tolerance in plane of 6 mm in 3 m (1/4" in 10' - 0") in accordance with ANSI A108/A118/A136.1 specification requirements. Ensure substrates are clean and free of dust, oil, grease, paint,

tar, wax, curing agent, primer, sealer, form release agent or any deleterious substance and debris which may prevent or reduce adhesion.

- 3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

- 3.2.1.1. Mechanically sand, shot blast or scarify substrate to ICRI CSP-3 as required to completely remove paint, loosely bonded topping, loose particles and contaminants. Surface etching or contaminant removal by chemical means is not permitted. When sanding or scarifying surfaces that may contain silica sand, wear an approved dust mask.
- 3.2.1.2. Review setting out point with Consultant for each location, verify patterns and edge condition.
- 3.2.1.3. Cover and protect work of other sections and property from damage and dust.
- 3.2.1.4. Containment: Close and seal floor openings. Install dams at edges of floor area to receive treatment as necessary to contain self-leveling underlayment while in plastic state.
- 3.2.1.5. Use a digital level device to determine elevations on a 1200 mm x 1200 mm (4 x 4 foot) grid to establish and set self-adhering pegs at heights to indicate installation depths and top surface of underlayment application.
- 3.2.1.6. Erect barriers to prevent entry and presence of personnel not performing work of this section during application of topping or grout.
- 3.2.1.7. Joint Preparation:
- 3.2.1.7.1. Expansion and Isolation Joints: Mark and saw cut after self-leveling application.
 - 3.2.1.7.2. Static (Non-Moving) Saw Cuts and Control Joints: to be patched or filled with joint sealer to Section 03 35 00 – Concrete Finishing.
 - 3.2.1.7.3. Dynamic (Active) Cracks: Notify Consultant.
- 3.2.1.8. Cleaning: Broom clean and vacuum surfaces to pick up dust and debris.

3.3. CRACK FILLER TREATMENT

- 3.3.1. After existing flooring has been removed, examine concrete floor surfaces and repair cracks.
- 3.3.2. Using a diamond concrete cutting blade overcut the crack width to obtain a sound, clean edge. Clean cracks or joints with compressed air and/or vacuum with a dustless collection system. Follow ACI RAP Bulletin 2, "Crack Repair by Gravity Feed with Resin".
- 3.3.3. Mix components in accordance with manufacturer's recommendations
- 3.3.4. Fill joint with to full depth of crack and flush with concrete surface. Ensure that all voids and pinholes are filled/sealed.

3.4. LEVELLING UNDERLAYMENT

- 3.4.1. Priming:
- 3.4.1.1. Maintain ambient conditions as specified, with adequate ventilation during and following primer application to promote faster drying.
 - 3.4.1.2. Prepare and apply primer in accordance with manufacturer's written instructions.
- 3.4.2. Embedded cable systems such as electric radiant heating, static dissipative wires, or hearing loop wire:
- 3.4.2.1. Install cable or wire prior to priming; attach securely to substrate along the entire length of the cable or wire every 150 mm (6 inches).

- 3.4.2.2. Self-Leveller Thickness: Ensure minimum of 12 mm (½ inch) over highest point of embedded cable or wire.
- 3.4.3. Pump or pour self levellers onto substrate within single lift thickness limit recommended by manufacturer.
- 3.4.4. Immediately following placement, lightly smooth the surface and pour lines
- 3.4.5. Provide levelling bed to achieve Floor Flatness value as described in this Section, to ASTM E1155.
- 3.4.6. Feathered edge: Steel trowel the edge after initial set but before it is completely hard.
- 3.4.7. Provide minimum 1.6 mm (1/16") levelling bed to surfaces to receive waterproofing and/or tiling uncoupling membrane, in accordance with manufacturer's instructions. Refer to Sectio 09 30 00 – Tiling.
- 3.4.8. Provide ramped levelling bed beneath finish flooring adjacent to ceramic tile, for minimum 600 mm (24") strip, to achieve flush finished surfaces at finished flooring transition.
- 3.4.9. Apply leveller with care to ensure that no laps, voids, or other marks or irregularities are visible, and with an appearance of uniform level and texture, within limitations of materials and areas concerned.
- 3.4.10. Make clean true junctions with no visible overlap between adjoining applications of topping.
- 3.4.11. Do not cover or bridge expansion joints or control joints. Provide 3 mm (1/8") wide movement joints over concrete slab control joints.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

- 1.1.1. Section Includes: Work requirements for masonry wall restoration including but not limited to following:
- 1.1.1.1. Repair existing masonry units where indicated in the drawings
 - 1.1.1.2. Repair the existing masonry where the mechanical and electrical equipment have been removed or replaced or added.

1.2. REFERENCES

- 1.2.1. Abbreviations and Acronyms:
- 1.2.1.1. OMCA: Ontario Masonry Contractors' Association; www.canadamasonrycentre.com.
- 1.2.2. Reference Standards:
- 1.2.2.1. ASTM C270-24 - Standard Specification for Mortar for Unit Masonry
 - 1.2.2.2. CAN/CSA-A179-14 - Mortar and grout for unit masonry
 - 1.2.2.3. CSA A3000:23 - Cementitious materials compendium

1.3. ADMINISTRATIVE REQUIREMENTS

- 1.3.1. Pre-Installation Meetings:
- 1.3.1.1. Prior to commencement of work, arrange for Project site meeting of all parties associated with work of this Section in accordance with project meetings specified in Division 01 – General Requirements.
 - 1.3.1.2. Include Contractor, Installers performing work of this Section, subcontractors installing finishes over these products (if applicable).
 - 1.3.1.3. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of placement and other matters affecting construction.

1.4. SUBMITTALS

- 1.4.1. Submittals in accordance with Submittal Procedures specified in Division 01 – General Requirements.
- 1.4.2. Product Data:
- 1.4.2.1. Submit manufacturer's Product data. Include product characteristics and performance criteria.
 - 1.4.2.2. Safety: Provide WHMIS Safety Data Sheets.

1.5. QUALITY ASSURANCE

- 1.5.1. Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.
- 1.5.2. Membership in good standing in OMCA.

1.6. DELIVERY, STORAGE AND HANDLING

- 1.6.1. Storage and Handling Requirements:

- 1.6.1.1. Handle, stack and store masonry units to avoid chipping, protect against staining and moisture entry.
- 1.6.1.2. Do not store or locate materials, plant and equipment in areas which will obstruct access to work by others.

1.7. SITE CONDITIONS

1.7.1. Ambient Conditions:

- 1.7.1.1. Provide uniformly distributed and continuous heating. Prevent stratification and cold spots.
- 1.7.1.2. Maintain masonry continuously at minimum 4 deg C (39 deg F) during placement and for 48 hours after placement.
- 1.7.1.3. Employ protection and heating methods which will prevent evaporation of moisture from masonry during curing.

PART 2 - PRODUCTS

2.1. MATERIALS

- 2.1.1. Replacement Concrete Masonry Unit (CMU): To match existing concrete block in all respects, modular size, with special shapes and sizes as detailed.
 - 2.1.1.1. Acceptable Products: "Carbon Cure®" by Brampton Brick Limited, Permacon, or "Autoclave Block" by Day & Campbell Limited or "Carbo Cure" by Richvale
- 2.1.2. Ensure exposed surfaces are free of cracks, chips or other blemishes and broken corners. Include required sash blocks for control joints, solid block where noted and concrete block lintels over openings in concrete block walls unless steel lintels are shown.
- 2.1.3. Cement:
 - 2.1.3.1. Portland cement: to CAN/CSA-A3000, Type GU - General use hydraulic cement (Type 10). For exposed mortar, maintain uniformity of cement manufacturer and batch for colour uniformity.
 - 2.1.3.2. Masonry cement: to CAN/CSA-A3000 and CAN/CSA A179, Type N for non load bearing and and Type S for load bearing.
- 2.1.4. Hydrated lime: to CAN/CSA A179, Type S.
- 2.1.5. Sand: Clean, sharp, washed and conforming in all respects to requirements of CAN/CSA-A179.
- 2.1.6. Course aggregate to CAN/CSA A179.
- 2.1.7. Water for Mortar Mixing: Potable, free from any deleterious substances.
- 2.1.8. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification, for job-mixed mortar; and ASTM C1142 for ready-mixed mortar.
- 2.1.9. Control Joints (Movement Joints) Filler: PVC control joint filler purpose designed for concrete masonry unit construction.
 - 2.1.9.1. Durometer hardness between of 85 +/- 5 tested to ASTM D2240 of sizes and shapes required.
 - 2.1.9.2. Acceptable products:
 - 2.1.9.2.1. "VS Series PVC Control Joint" by Blok-Lok Limited.
 - 2.1.9.2.2. "PVC Control Joint" by Masonpro Inc.
 - 2.1.9.2.3. "PVC Control Joint" by Wire-Bond.

PART 3 - EXECUTION

3.1. PREPARATION

- 3.1.1. Surface Preparation: prepare surface in accordance with manufacturer's written recommendations.
- 3.1.2. Thoroughly clean surfaces by scrubbing to remove dirt, dust, and wax. Use stripper in accordance with manufacturer's printed instructions.
 - 3.1.2.1. Remove dirty solution with wet vacuum or mop.
 - 3.1.2.2. Rinse with clean water and allow to dry thoroughly.
- 3.1.3. Establish and protect lines, levels, and coursing.
- 3.1.4. Protect adjacent materials from damage and disfiguration.

3.2. GENERAL REQUIREMENTS

- 3.2.1. Workmanship:
 - 3.2.1.1. Build masonry plumb, level, and true to line, with vertical joints in proper alignment. Do masonry work in accordance with CSA S304, CSA A370 and CSA A371.
 - 3.2.1.2. Do masonry mortar and grout work in accordance with CSA A179 except where otherwise specified.
 - 3.2.1.3. Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.
- 3.2.2. Remove and replace existing masonry units that are loose, chipped, broken, stained, or otherwise damaged. Install new CMU to match existing; install in fresh mortar or grout, pointed to eliminate evidence of replacement.
- 3.2.3. Pointing: During the tooling of joints, enlarge voids and holes and completely fill with mortar. Point-up joints, including corners, openings, and adjacent construction, to provide a neat, uniform appearance. Prepare joints for application of paint.

3.3. LAYING MASONRY UNITS

- 3.3.1. Install products in accordance with product manufacturer's written requirements.
- 3.3.2. Provide control joints between new and existing concrete unit masonry. Do not tooth new CMU walls into existing block walls.
- 3.3.3. Coursing Design: To match existing. When new work is not attached to existing construction, half running bond for concrete masonry units with vertical joint in each course centered on units in courses above and below.
- 3.3.4. Lay walls to comply with specified construction tolerances, with courses accurately spaced and coordinated with existing construction.
- 3.3.5. Locate bearings and piers as Indicated on drawings. Provide solid masonry units at bearings. Grout under bearing plates installed on masonry with non-shrink grout.
- 3.3.6. Extend masonry and partitions to deck, slab or structural members, except where otherwise noted in the drawings. Incorporate both lateral support and deflection space at termination of walls as required.
- 3.3.7. Lay masonry in full bed of mortar, properly jointed with other work. Buttering corners of joints, and deep or excessive furrowing of mortar joints are not permitted.
- 3.3.8. Fully bond intersections, and external corners.
- 3.3.9. Tool with non-staining pointing tool to provide smooth, compressed, uniformly formed joints:
 - 3.3.9.1. Concave for concrete unit masonry exposed to view.

- 3.3.9.2. For concrete unit masonry concealed from view:
 - 3.3.9.2.1. Strike flush joints concealed in walls and joints in walls to receive plaster, stucco, tile, insulation, resilient bases, or other applied material except paint or similar thin finish coating. Ensure that no mortar protrudes from joints on wall surfaces to receive materials and coatings.
- 3.3.10. Maintain mortar joint thickness of 9 mm (3/8"), unless otherwise specified or indicated on drawings. Not to exceed 12 mm (1/2").
- 3.3.11. Form control joints in concrete masonry as follows:
 - 3.3.11.1. Fit bond-breaker strips into hollow contour in ends of block units on one side of control joint. Fill the resultant core with grout and rake joints in exposed faces.
 - 3.3.11.2. Install temporary foam plastic filler in head joints and remove when unit masonry is complete.

3.4. INSTALLATION OF TUCK POINTING MORTAR

- 3.4.1. Repointing and Tuckpointing: Repoint defective joints as follows:
 - 3.4.1.1. Cut back joints 13 mm (1/2") taking care not to damage units. Remove dust and loose materials by brushing or by water jet. If water jet is used, allow excess water to drain before repointing.
 - 3.4.1.2. Repoint with same mix and colour as original.
 - 3.4.1.3. Pack mortar tightly in thin layers and tool joint to match non-defective joints.
- 3.4.2. Immediately prior to application of mortar, dampen joints to be tuck pointed. Prior to application of pointing mortar, allow masonry units to absorb surface water.
- 3.4.3. Tightly pack mortar into joints in thin layers, approximately 6 mm (1/4") thick maximum.
- 3.4.4. Allow layer to become "thumbprint hard" before applying next layer.
- 3.4.5. Pack final layer flush with surfaces of masonry units. When mortar becomes "thumbprint hard", tool joints.

3.5. REPLACEMENT OF MASONRY UNITS

- 3.5.1. Cut out mortar joints surrounding masonry units to be removed and replaced as follows:
 - 3.5.1.1. Units removed may be broken and removed, providing surrounding units to remain are not damaged.
 - 3.5.1.2. Once units are removed, carefully chisel out old mortar and remove dust and debris.
 - 3.5.1.3. If units are located in exterior wythe of a cavity or veneer wall, exercise care to prevent debris falling into cavity.
- 3.5.2. Dampen surfaces of surrounding units before new units are placed as follows:
 - 3.5.2.1. Allow existing masonry to absorb surface moisture prior to starting installation of new replacement units.
 - 3.5.2.2. Butter contact surfaces of existing masonry and new replacement masonry units with mortar.
 - 3.5.2.3. Centre replacement masonry units in opening and press into position.
 - 3.5.2.4. Remove excess mortar with a trowel.
 - 3.5.2.5. Point around replacement masonry units to ensure full head and bed joints.
 - 3.5.2.6. When mortar becomes "thumbprint hard", tool joints.

3.6. CLEANING

- 3.6.1. In-Progress Cleaning: Clean unit masonry as work progresses by dry brushing to remove mortar fins and smears prior to tooling joints.
- 3.6.2. Stain Prevention: Prevent grout, mortar, and soil from staining the face of masonry to be left exposed or painted. Immediately remove grout, mortar, and soil that come in contact with such masonry.
- 3.6.3. Protect masonry and adjacent work from damage from cleaning work.
- 3.6.4. Clean masonry in strict accordance with masonry manufacturer's printed instructions and referenced standards. Remove masonry and install new masonry if masonry is damaged by cleaning work.
- 3.6.5. Soak wall with clean water and flush off loose dirt and mortar.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

- 1.1.1. Section Includes: Provide masonry units including but not limited to following:
 - 1.1.1.1. Concrete block masonry with sequestered carbon dioxide.
- 1.1.2. Products installed but not supplied under this section:
 - 1.1.2.1. Loose steel lintels.
- 1.1.3. Ambient Conditions:
 - 1.1.3.1. Provide uniformly distributed and continuous heating. Prevent stratification and cold spots.
 - 1.1.3.2. Maintain masonry continuously at minimum 4 deg C (39 deg F) during placement and for 48 hours after placement.
 - 1.1.3.3. Employ protection and heating methods which will prevent evaporation of moisture from masonry during curing.

PART 2 - PRODUCTS

2.1. PERFORMANCE/DESIGN CRITERIA

- 2.1.1. Provide only stainless steel reinforcement for exterior envelope walls.
- 2.1.2. Conform to requirements of CSA S304.1 for determination of loads acting on connectors and design requirements and to CSA A370 and CSA A371 for construction requirements, except where more stringent requirements are noted and/or indicated on Drawings and specified herein.
- 2.1.3. Obtain each masonry unit from 1 manufacturer. Provide units of uniform texture and colour for each kind required.
- 2.1.4. General: Do not use admixtures, including pigments, air-entraining agents, accelerators, retarders, water-repellent agents, antifreeze compounds, or other admixtures, unless otherwise indicated.
- 2.1.5. Do not use calcium chloride in mortar or grout.
- 2.1.6. Add cold-weather admixture (if used) at the same rate for all mortar, regardless of weather conditions, in order to ensure that mortar color is consistent.

2.2. MATERIALS

- 2.2.1. Concrete Blocks: Normal and lightweight units, metric modular units with low carbon footprint conforming to CSA A165.1,
 - 2.2.1.1. Normal Type(s) Hollow Units: H/15/A/O
 - 2.2.1.2. Full Solid Units: SF/15/A/O
 - 2.2.1.3. Semi-Solid Units: SS/15/A/O
 - 2.2.1.4. Lightweight Type(s) Hollow Units: Type H/15/C/O, Full Solid Units: Type SF/15/C/O and Semi-Solid Units: Type SS/15/C/O.
 - 2.2.1.5. Provide bullnose corner block for all exposed corners.
 - 2.2.1.6. Acceptable Products: "Carbon Cure®" by Brampton Brick Limited, or "Autoclave Block" by Day & Campbell Limited or "Carbo Cure" by Richvale.
- 2.2.2. Lateral Support and Anchorage for Masonry Walls: In accordance with CSA S304.1 and as specified and supplied as part of work of Section 05 50 00.

2.2.3. Cement:

2.2.3.1. Portland cement: to CAN/CSA-A3000, Type GU - General use hydraulic cement (Type 10). For exposed mortar, maintain uniformity of cement manufacturer and batch for colour uniformity.

2.2.3.2. Masonry cement: to CAN/CSA-A3000 and CAN/CSA A179, Type N and Type S.

2.2.4. Hydrated lime: to CAN/CSA A179, Type S.

2.2.5. Sand: Clean, sharp, washed and conforming in all respects to requirements of CAN/CSA-A179.

2.2.6. Course aggregate to CAN/CSA A179.

2.2.7. Water for Mortar Mixing: Potable, free from any deleterious substances.

2.2.8. Water Repellent Admixture: For exterior CMU with water repellent admixture:

2.2.8.1. Integral liquid or dry polymer admixture for mortar added during mixing or at the factory, compatible with integral water repellent admixture used in concrete masonry units.

2.2.8.2. Performance Requirements:

2.2.8.2.1. Water Permeance: Capable of achieving a Class E Rating when evaluated using ASTM E514.

2.2.8.3. Acceptable manufacturers and products:

2.2.8.3.1. "Dry Block" by GCP Applied Technologies.

2.2.8.3.2. Spec Mix

2.2.8.3.3. "RainBloc® for Mortar Admixture", by ACM Chemistries Inc

2.2.8.3.4. Substitutions in accordance with Section 01 25 00 – Substitution Procedures.

2.3. MORTAR TYPES

2.3.1. Mortar for Unit Masonry: Comply with ASTM C270, Proportion Specification, for job-mixed mortar; and ASTM C1142 for ready-mixed mortar.

2.3.2. Mortar Types:

2.3.2.1. Loadbearing: Type S based on property specifications.

2.3.2.2. Non-loadbearing: Type N based on property specifications.

2.4. MORTAR MIXING

2.4.1. Use pre-blended, pre-coloured mortar prepackaged under controlled factory conditions. Ingredients batching limitations to be within 1% accuracy.

2.4.2. Colour of mortar shall be:

2.4.2.1. Concrete masonry units: Natural gray colour.

2.4.3. Mix mortar ingredients in accordance with CAN/CSA A179 in quantities needed for immediate use.

2.4.4. Maintain sand uniformly damp immediately before mixing process.

2.4.5. Add mortar colour and admixtures in accordance with product manufacturer's instructions. Provide uniformity of mix and colouration.

2.4.6. Do not use anti-freeze compounds including calcium chloride or chloride based compounds.

2.4.7. Do not add air entraining admixture to mortar mix.

2.4.8. Use a batch type mixer in accordance with CAN/CSA A179.

- 2.4.9. Re-temper mortar only within two hours of mixing, when water is lost by evaporation.
- 2.4.10. Use mortar within 2 hours after mixing at temperatures of 32°C or higher, or 2-1/2 hours at temperatures under 10°C.

2.5. GROUT TYPES

- 2.5.1. Grout shall comply with CSA A179. Use grout of consistency indicated or, if not otherwise indicated, of consistency (fine or coarse) at time of placement that will completely fill spaces intended to receive grout
 - 2.5.1.1. Use fine grout in grout spaces less than 2 inches in horizontal dimension, unless otherwise indicated.
 - 2.5.1.2. Use coarse grout in grout spaces 2 inches or more in least horizontal dimension, unless otherwise indicated.
- 2.5.2. Bond Beams:
 - 2.5.2.1. Grout mix 10 to 12.5 MPa strength at twenty-eight (28) days; 200-250 mm slump; or premixed type in accordance with CAN/CSA-A23.1 or mixed in accordance with CAN/CSA A179 fine grout.
- 2.5.3. Lintels:
 - 2.5.3.1. Grout mix 10 to 12.5 MPa strength at twenty-eight (28) days; 200-250 mm slump; or premixed type in accordance with CAN/CSA-A23.1 or mixed in accordance with CAN/CSA A179 fine grout.
- 2.5.4. Block Filler:
 - 2.5.4.1. Dry pack grout to consist of 1 part Portland Cement, 1-1/2 parts sand, 2 parts 9 mm (3/8") pea gravel with only sufficient water to dampen mixture.
 - 2.5.4.2. Measure and mix block filler in accordance with CAN/CSA-A179; mix filler to consistency in accordance with manufacturer's recommendations; do not mix different types of grout in same mixer used for mixing of mortar unless mixer is thoroughly cleaned. Use and place grout in its final position within 2-1/2 hours of mixing it. Discard grout not used within 2-1/2 hours. Use coarse grout where required, in spaces 50 mm (2") or more in least horizontal dimension. Use fine grout in spaces less than 50 mm (2") in horizontal dimension.
- 2.5.5. Grout for hollow metal frames:
 - 2.5.5.1. Fine grout to CSA A179.
 - 2.5.5.2. Minimum compressive strength of 15 MPa.

2.6. GROUT MIXING

- 2.6.1. Mix batched and delivered grout in accordance with CAN/CSA-A23.1 transit mixed.
- 2.6.2. Mix grout ingredients in quantities needed for immediate use in accordance with CAN/CSA A179 fine grout.
- 2.6.3. Add admixtures in accordance with product manufacturer's instructions; mix uniformly. Do not use calcium chloride or chloride based admixtures.

PART 3 - EXECUTION

3.1. EXAMINATION

- 3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant via email of any conditions which would be detrimental to the installation.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

3.2.1. Protection of In-Place Conditions:

3.2.1.1. Provide temporary bracing for masonry work during erection to prevent damage due to winds or other lateral loads until permanent structure provides adequate bracing.

3.2.1.2. Cold Weather Protection:

3.2.1.2.1. During cold weather, provide temporary enclosures and coverings in order to protect masonry work and to allow laying of masonry during inclement weather.

3.2.1.2.2. Provide temporary sheltering of freshly built masonry work, during installation and not less than 96 hours after erection to ensure required ambient temperatures.

3.2.1.2.3. Provide temporary wind bracing for newly laid masonry walls.

3.2.1.2.4. Completely cover open tops of freshly built walls each night with waterproof tarpaulins or plastic sheet coverings. Apply coverings to tops and faces of walls during rain or snow or upon stoppage of work.

3.2.1.3. Cold Weather Masonry: Provide temporary heated enclosures in accordance with Section 01 50 00 if necessary to maintain:

3.2.1.3.1. Product manufacturer's recommended temperatures for following, before, during and after installation until full cure: Ambient air, substrate, stored Products, installed Products.

3.2.1.3.2. Conform to CSA A371 for Cold Weather Requirements, which applies to mixing, enclosure, placing and curing of masonry materials.

3.2.1.3.3. Cementitious materials storage in accordance with CAN/CSA-A3000.

3.2.1.3.4. Aggregate materials storage in accordance with CSA A23.1.

3.2.1.4. Conform to CSA A371 for temporary wind bracing for masonry during construction. Provide temporary bracing for masonry work during erection to prevent damage due to winds or other lateral loads until permanent structure provides adequate bracing.

3.2.1.5. Protect masonry units and mortar ingredients before use from rain, snow, ice and freezing in accordance with requirements of CSA A371.

3.2.2. Surface Preparation for new masonry work:

3.2.2.1. Apply bituminous paint to steel buried in masonry.

3.2.2.2. When ambient air temperature is at or below 4 deg C (39 deg F), preheat

3.2.2.2.1. Masonry units to 15 deg C (59 deg F).

3.2.2.2.2. Cement and aggregate to 15 deg C (59 deg F).

3.2.2.2.3. Water to minimum 10 deg C (50 deg F), maximum 15 deg C (59 deg F).

3.2.2.2.4. Mixers, reinforcement and ties to 15 deg C (59 deg F).

3.2.2.3. Just prior to installing masonry remove snow, surface frost and ice from surfaces masonry is to be constructed against.

3.2.2.4. Do not mix in water until cement and aggregate have been combined.

3.2.2.5. Do not allow frozen lumps, ice or snow to contaminate mortar mix.

- 3.2.2.6. Maintain mortar continuously at minimum 10 deg C (50 deg F) during mixture.
- 3.2.2.7. Do not provide chemicals, additives or other contaminants to mortar mixture without review by Consultant.
- 3.2.2.8. Wet exposed masonry surfaces minimum once every 24 hours for 14 Days to minimize and retard surface evaporation. Do not allow surface freezing.

3.3. INSTALLATION

- 3.3.1. Provide scaffolding required to complete work of this Section. Provide scaffolding independently supported from floor or ground.
- 3.3.2. Conform to the OHSA; erect scaffolding adequate for proper execution of work, maintain and remove on completion. Lay masonry from scaffolds erected on same side as face work. Do not support scaffolding from finished building surfaces.
- 3.3.3. Conform to CSA S304.1 and CSA A371 for masonry work.
- 3.3.4. Do masonry mortar and grout work in accordance with CAN/CSA-A179 and CSA A371 except where specified otherwise.
- 3.3.5. Execute masonry work under continuous supervision and direction of a competent foreman.
- 3.3.6. Lay and set masonry units using experienced tradesmen.
- 3.3.7. Do not erect more than 1500 mm (5') in height of any wall in any 1 Working Day and do not raise any part of wall more than 600 mm (24") above remainder at any time.
- 3.3.8. Do not tooth at wall terminations. Rake back 1/2 unit length where stop-off occurs in horizontal run of masonry.
- 3.3.9. Lay up units true to line with accurately spaced courses. Keep bond plumb throughout. Provide corners and reveals plumb and true. Provide horizontal and vertical joints of uniform thickness in straight lines. Keep exposed faces free from stains, chips and cracks. Keep tolerance in plane 3 mm in 2400 mm (1/8" in 8').
- 3.3.10. Provide running bond unless indicated otherwise.
- 3.3.11. Avoid overplumbing and pounding of masonry corners and jambs after setting position. After mortar has set, if adjustment is required, remove mortar and replace with new mortar.
- 3.3.12. Install masonry wall base anchors in masonry foundation walls to line up with voids in masonry walls above as indicated on Drawings. Solidly fill voids between anchors and masonry with mortar.
- 3.3.13. Laying Concrete Block:
 - 3.3.13.1. Do not wet concrete block before laying. Lay first course of block work in full beds of mortar with joints of uniform thickness. Provide 100% solid blocks at following locations:
 - 3.3.13.1.1. top course of interior block walls and block back-up wythes.
 - 3.3.13.1.2. at sills of openings e.g. windows, louvres, etc.
 - 3.3.13.1.3. top course of block below beams, joists and lintels bearing on walls.
 - 3.3.13.1.4. at top of parapet walls.
 - 3.3.13.2. Provide square end blocks at jambs of openings.
 - 3.3.13.3. Provide concrete masonry units with face shells and end joints fully filled with mortar. Do not slush mortar into joints.
 - 3.3.13.4. Provide damming and grout fill to vertical concrete block wall cavities at control joints.
 - 3.3.13.5. Extend block partitions, both fire rated and non-fire rated, up to within 25 mm (1") of underside of structure above unless otherwise indicated, to allow for structural deflection.

- 3.3.13.6. Where gypsum board is applied directly to block walls, level walls to 3 mm in 3000 mm (1/8" in 10').
- 3.3.14. Concrete Block Lintels:
- 3.3.14.1. Unless indicated otherwise on Structural Drawings, provide concrete block lintels over openings in masonry walls. Refer to Mechanical and Electrical Drawings for location of ducts and equipment mounted in or projecting through masonry walls. Refer to Structural Drawings for Lintel Schedules.
- 3.3.14.2. Unless otherwise noted in Door [and Frame] Schedule, set precast U-shaped reinforced block lintels for full thickness of wall plus minimum 200 mm (8") bearing. Provide reinforcement as indicated on Structural Drawings.
- 3.3.14.3. Fill lintels with concrete and leave shoring in place for minimum 10 Days before removal.
- 3.3.14.4. Set concrete blocks over lintel unit in a full mortar bedding.
- 3.3.15. Lateral Support Angles:
- 3.3.15.1. Install lateral support angles to underside of structure, at 2000 mm (6' - 6") oc, for lateral stability of interior masonry walls.
- 3.3.15.2. Install lateral supports at either horizontal or vertical intervals spaced at not more than:
- 3.3.15.2.1. 20 x wall thickness for solid wall of solid units.
- 3.3.15.2.2. 18 x wall thickness for solid wall of hollow units.
- 3.3.15.2.3. 36 x wall thickness for partitions.
- 3.3.16. Joint Tooling:
- 3.3.16.1. Provide joints in masonry, firmly pointed, compacted and tooled.
- 3.3.16.2. Interior Masonry Joint Tooling:
- 3.3.16.2.1. Concrete Block:
- 3.3.16.2.1.1. Exposed: Concave joints.
- 3.3.16.2.1.2. Concealed: Flush joints.
- 3.3.17. Built-In Work:
- 3.3.17.1. Solidly build items of hollow metal work and miscellaneous metal work, including but not limited to grilles, hose cabinets, electrical panels into masonry work, and ensure they are set square and true in walls and partitions.
- 3.3.17.2. Cut for and build into masonry, anchors, sleeves, inserts, reglets, piping, conduit, outlet boxes, metal flashings and leave chases, slots or openings required for fixing of work of other Sections. Build chases into masonry walls; do not cut.

3.4. CLEANING

- 3.4.1. Obtain cleaning materials in accordance with manufacturer's instructions and brick manufacturer's written instructions for cleaning and verify cleaning procedures outlined in CSA A371 with manufacturers. Follow brick manufacturer's written instructions for cleaning masonry. Test sample area, 10 m² (100 sq ft), to judge effectiveness of cleaning procedures and obtain Consultant's review with no objections recorded.
- 3.4.2. Keep wall clean and free of mortar stains during laying. Allow mortar droppings which adhere to wall to dry out but not set. Then rub with small piece of masonry followed by brushing to remove all traces. On completion of masonry construction, after mortar is thoroughly set and cured, clean masonry thoroughly.

- 3.4.3. Protect windows, trim and metal from cleaning agents.
 - 3.4.4. Remove mortar with wood paddles and scrapers before wetting. Saturate masonry with clean water and flush off loose mortar and dirt. Clean blockwork using water, scrubbing brushes and wood paddles only.
 - 3.4.5. Clean masonry to be left exposed, using procedures as outlined herein and, where this is inadequate, try following recommendations outlined in BIA's Technical Note No. 20, June 2006.
 - 3.4.6. Particular care should be taken when cleaning lighter coloured clay bricks even with non-acid based cleaning solutions. Dark red or brown residue resulting from cleaning operations when allowed to run down face of brick could streak and discolour exterior facing. Protect lighter coloured Products by masking them from run off or by taking measures recommended by brick manufacturers.
 - 3.4.7. Should these methods prove inadequate consult masonry manufacturer before undertaking unusual cleaning procedures and obtain Consultant's prior consent.
 - 3.4.8. Clean adjacent surfaces completely, which have been soiled or otherwise marred.
- 3.5. PROTECTION**
- 3.5.1. Protect masonry from absorbing water from precipitation and condensation.
 - 3.5.2. Keep masonry materials and Products completely free from frost, snow and ice.
 - 3.5.3. Protect masonry with protective coverings continuously from placement to 10 Days after placement.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes:

- 1.1.1.1. Design, labour, Products, equipment, and services necessary for metal fabrications Work in accordance with the Contract Documents.

1.2. REFERENCES

- 1.2.1. ASTM A53/A53M, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
- 1.2.2. ASTM A123/A123M, Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
- 1.2.3. ASTM A153/A153M, Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
- 1.2.4. ASTM A307, Standard Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60000 PSI Tensile Strength.
- 1.2.5. ASTM A500-03a, Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
- 1.2.6. ASTM A525-91be1, Standard Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process
- 1.2.7. ASTM A572/A572M, Standard Specification for High-Strength Low-Alloy Columbium Vanadium Structural Steel.
- 1.2.8. ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- 1.2.9. ASTM A992/A992M, Standard Specification for Structural Steel Shapes.
- 1.2.10. ASTM D7396, Standard Guide for Preparation of New, Continuous Zinc-Coated (Galvanized) Steel Surfaces for Painting.
- 1.2.11. ASTM F593, Standard Specification for Stainless Steel Bolts, Hex Cap Screws, and Studs.
- 1.2.12. ASTM F3125/F3125M, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi and 150 ksi Minimum Tensile Strength, Inch and Metric Dimensions, 830 MPa and 1040 MPa Minimum Tensile Strength.
- 1.2.13. AWS D1.6/D1.6M, Structural Welding Code – Stainless Steel.
- 1.2.14. AWS D10.4, Recommended Practices for Welding Austenitic Chromium-Nickel Stainless Steel Piping and Tubing
- 1.2.15. CAN/CSA W117.2, Safety in Welding, Cutting, and Allied Processes.
- 1.2.16. CISC/CPMA 1-73a, A Quick-Drying One-Coat Paint for Use on Structural Steel.
- 1.2.17. CSA G40.20/G40.21, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- 1.2.18. CSA S16, Design of Steel Structures.
- 1.2.19. CSA S136-16, North American specification for the design of cold-formed steel structural members

- 1.2.20. S304-14, Design of masonry structures
- 1.2.21. CSA W47.1, Certification of Companies for Fusion Welding of Steel.
- 1.2.22. CSA W48, Filler Metals and Allied Materials for Metal Arc Welding.
- 1.2.23. CSA W55.3-08, Certification of companies for resistance welding of steel and aluminum
- 1.2.24. CSA W59, Welded Steel Construction (Metal Arc Welding).
- 1.2.25. Occupational Health and Safety Act (OHSA) Regulation 851: Industrial Establishments.
- 1.2.26. OBC, Ontario Building Code.
- 1.2.27. Ontario Ministry of Labour, Engineering Data Sheet 2-04.
- 1.2.28. OPSD 406.010, Ontario Provincial Standard Drawing, Aluminum Ladder.
- 1.2.29. SSPC-PS Paint 20, Zinc-Rich Primers (Type I, Inorganic and Type II, Inorganic).
- 1.2.30. SSPC-PS Guide 12.00, Guide to Zinc-Rich Coating Systems.
- 1.2.31. SSPC-PS Guide 12.01, One Coat Zinc-Rich Painting System.
- 1.2.32. SSPC-PS Guide 22.00, Guide for Selecting One-Coat Preconstruction or Prefabrication Painting Systems.
- 1.2.33. SSPC SP 2, Hand Tool Cleaning.
- 1.2.34. SSPC SP 3, Power Tool Cleaning.
- 1.2.35. SSPC SP 6/NACE No. 3, Commercial Blast Cleaning

1.3. DESIGN REQUIREMENTS

- 1.3.1. Design metal fabrications to resist dead, live, wind, lateral, seismic, and additional applicable loading in accordance with OBC and as follows:
- 1.3.2. Include additional design requirements for specific metal fabrications as indicated in Part 2 of this Section.
- 1.3.3. Consider additional loading requirements as indicated on Contract Drawings.
- 1.3.4. Design details and connections in accordance with CSA S16 and CSA S136 to resist forces indicated or implied, including handling, transportation, and erection loads.
- 1.3.5. Design anchorage into concrete and masonry in accordance with CSA A23.3 and CSA S304.1.
- 1.3.6. Connections, anchorage, size, and number of anchors or bolts, size, and thickness of members: As required by design but not less than indicated on Contract Drawings

1.4. SUBMITTALS

- 1.4.1. Shop Drawings:
 - 1.4.1.1. Shop Drawings to indicate the following:
 - 1.4.1.1.1. For support of each type and size of manufactured equipment units:
 - 1.4.1.1.1.1. Catalogue cut sheets with manufacturer's
 - 1.4.1.1.1.2. name and model number.
 - 1.4.1.1.1.3. Technical data and standard details.

- 1.4.1.1.2. Manufacturer's installation instruction.
 - 1.4.1.1.2.1. Requirements for transportation, storage, and handling.
 - 1.4.1.1.2.2. Layouts, plans, elevations, and connection details necessary for installation.
 - 1.4.1.1.2.3. Materials, member sizes, material thicknesses, finishes, joints, number and type of anchors, supports, reinforcement details, and accessories.

1.4.1.1.2.4. Reactions acting on the structural element and building structure at each connection point of the unit support.

1.4.1.1.2.5. Weight and location of equipment.

1.4.1.1.3. For other miscellaneous metal fabrications:

1.4.1.1.3.1. Design loading, plans, elevations, sections, material, finishes, joints, holes for connections, weep holes for galvanizing, shop and field splices, welding, anchorage details to the structure, number and type of anchors, including embedment, cut sheets, technical data, details, and accessories as applicable.

1.4.1.1.3.2. Design calculations.

1.4.1.2. Verify that Shop Drawings are based on field measurements.

1.5. QUALITY ASSURANCE SUBMITTALS

1.5.1. Submit letter of certification by the Canadian Welding Bureau (CWB) that confirms qualifications and certification of welders are in good standing.

1.5.2. Submit certification of welding companies for steel in accordance with CSA W47.1 and CSA W55.3.

1.5.3. Submit inspection reports and letters in accordance with Paragraph 1.6.1 requirements.

1.6. QUALITY ASSURANCE

1.6.1. Retain a Professional Engineer, licensed in the Province of Ontario, with minimum 5 years' experience in design, fabrication, and installation of metal fabrication work of comparable complexity and scope to perform the following services:

1.6.1.1. Design of metal fabrications, anchorage and connections.

1.6.1.2. Prepare, seal, and sign reports, Shop Drawings, associated design calculations, and amendments.

1.6.1.3. Inspect Work on Site and provide inspection reports for each site visit, in a timely manner, verifying that work designed by the Engineer is in accordance with the Contract Documents and reviewed Shop Drawings.

1.6.1.4. Inspect completed Work and prepare signed and sealed letter confirming that installation is in accordance with Contract Drawings and reviewed Shop Drawings.

1.6.2. Provide steel welding in accordance with CSA W59 and stainless-steel welding in accordance with AWS D1.6/D1.6M and AWS D10.4 performed by fabricators and mechanics fully approved by CWB.

1.7. DELIVERY, STORAGE AND HANDLING

1.7.1. Do not request submittals if this specification section or drawings sufficiently describe the products of this section - or if proprietary specifying is used. This requested review of submittals increases the possibility of unintended variations to the contract documents, thus increasing a consultant's liability. The following submittals are intended for review to determine eligibility for the project.

1.7.2. Exercise care in handling galvanized or primer finished materials. Do not handle steel until finish has cured sufficiently to handle without damaging.

1.7.3. Transport, handle, and store assembled Products and their component parts in a manner to avoid damage and bending. Keep handling on Site to a minimum.

- 1.7.4. Deliver Products and fabricated items in manufacturer's original packaging, marked with manufacturer's name, Product names, and other related information. Store in clean, dry location, and off the ground.

1.8. INSTALLATION

- 1.8.1. Install in strict accordance with manufacturer's detailed installation instructions and procedures.
- 1.8.2. Install so that openings are completely filled and material is securely adhered.
- 1.8.3. Where firestopping surface will be exposed to view, finish to a smooth, uniform surface flush with adjacent surfaces.
- 1.8.4. After installation is complete, remove combustible forming materials and accessories that are not part of the listed system.
- 1.8.5. Repair or replace defective installations in accordance with manufacturer's recommendations, listed systems details and applicable code requirements.
- 1.8.6. At each through penetration or fire-resistive joint system, attach identification labels on both sides in location where label will be visible to anyone seeking to remove penetrating items or firestopping.
- 1.8.7. Clean firestop materials off surfaces adjacent to openings as work progresses, using methods and cleaning materials approved in writing by firestop system manufacturer and which will not damage the surfaces being cleaned.
- 1.8.8. Notify Authority Having Jurisdiction when firestopping installation is ready for inspection; obtain advance approval of anticipated inspection dates and phasing, if any, required to allow subsequent construction to proceed.
- 1.8.9. Do not cover firestopping with other construction until approval of authority having jurisdiction has been received.

PART 2 - PRODUCTS

2.1. MATERIALS

- 2.1.1. Rolled structural steel shape Products: In accordance with CSA G40.20/G40.21, Grade 350W or ASTM A992/A992M, ASTM A572/A572M Grade 50 (Fy=345 MPa).
- 2.1.2. Steel bars, plates, and similar items: In accordance with CSA G40.20/G40.21, Grade 300W.
- 2.1.3. Hollow Structural Sections (HSS): In accordance with ASTM A500 Grade C.
- 2.1.4. Cold formed steel: In accordance with CSA S136 and ASTM A653/A653M, structural steel (SS) designation, Grade 50, Z275 commercial quality zinc coating.
- 2.1.5. Welding materials: In accordance with CSA W48 and CSA W59.
- 2.1.6. Steel pipe: In accordance with ASTM A53/A53M, Type S, Schedule 40 (STD), Grade B pipe.

2.2. MANUFACTURED UNITS

- 2.2.1. General Support Brackets:
- 2.2.1.1. Design frame and anchorage to support assembly dead, live, and lateral loads attributable to normal operation, and to allow for additional dynamic load factor of 1.3 for misuse and vandalism.
- 2.2.1.2. Hot-dip galvanized steel, form rolled and continuously welded and securely anchored to structure.

2.2.1.3. Size and shape: As required by design and in accordance with Contract Drawings. Buff welds smooth and flush to same finish as metal.

2.2.2. Fixed Access Ladders:

2.2.2.1. Structural design and detailing of ladder, safety cage, loading and load factors, anchorage system and components to be in accordance with Ontario Ministry of Labour Engineering Data Sheet 2-04.

2.2.2.2. Materials: In accordance with Article 2.1.

2.2.2.3. Steel ladder:

2.2.2.4. Complete with steel stiffeners, non-slip rungs, angle side rails, bent plate straps or angle brackets as required by design, and in accordance with Contract Drawings.

2.2.2.5. Provide brackets and stainless steel anchor bolts to secure ladder to structure as required by design and in accordance with Contract Drawings.

2.2.2.6. Finish: Hot-dip galvanized.

2.3. ACCESSORIES

2.3.1. Fasteners:

2.3.1.1. Include bolts, nuts, washers, lock washers, machine screws, and machine bolts in accordance with ASTM A307 and ASTM

2.3.1.2. F3125/F3125M Grade A325/A325M, hot-dip galvanized or zinc-coated in accordance with ASTM A153/A153M.

2.3.1.3. Supply fasteners in lengths as required to suit material being joined.

2.3.1.3.1. Bolt length: Flush with nut when installed.

2.3.1.4. Use lock washer, lock nuts for fastener assembly.

2.3.1.4.1. Treat fastener threaded components (for example, bolt and nut) with same process as fastener assembly.

2.3.1.5. Provide stainless steel fasteners, bolts, nuts, washers, lock washers, machine screws in accordance with ASTM F593, for joining stainless steel components and where indicated on Contract Drawings.

2.3.1.6. Design fastener assembly to avoid galvanic corrosion when in contact with dissimilar metals or materials.

2.3.2. Drilled anchors:

2.3.2.1. Stainless steel, sizes as required by design but not smaller than indicated on Contract Drawings.

2.3.2.2. Mechanical or adhesive anchors suited for application and exposure.

2.3.2.3. Product(s) and Manufacturer(s): Hilti Canada Corporation.

2.3.3. Primers:

2.3.3.1. Primer for steel: As recommended by manufacturer and compatible with top coat.

2.3.3.2. Field touch up primer for galvanized steel: Refer to Section 09 91 00, Painting and Finishing Schedule, EXT-MISC

2.4. FABRICATION

- 2.4.1. Verify dimensions of existing Work before commencing fabrication and report discrepancies to the Consultant.
- 2.4.2. Fabricate Work in accordance with Contract Drawings and reviewed Shop Drawings.
- 2.4.3. Fit and assemble Work in shop where possible. Where complete shop assembly is not possible, make trial assembly in shop.
- 2.4.4. Use bolted connections or self-tapping shake-proof screws for interior metal Work unless otherwise indicated on Contract Drawings.
- 2.4.5. Use welded connections for exterior metal Work unless otherwise indicated on Contract Drawings.
- 2.4.6. Seal exterior metal fabrication components against corrosion in accordance with CSA S16. Fabricate joints exposed to weather in a manner to exclude water. Provide weep holes where water may accumulate.
- 2.4.7. Carefully make and fit details. Take special care with exposed finished Work to produce neat and correct appearance for review by Consultant.
- 2.4.8. Countersink exposed fastenings, cut off bolts flush with nuts. Make exposed fastenings and accessories of same material, colour, and finish as base material on which they occur.
- 2.4.9. Prior to fabrication, determine correct size holes for connecting Work with other trades. Indicate holes on Shop Drawings.
- 2.4.10. Do not make holes in members if not indicated on reviewed Shop Drawings.

2.5. WELDING

- 2.5.1. Execute welding to avoid damage or distortion to Work and in accordance with the following standards:
 - 2.5.1.1. CSA W48 for electrodes. If rods are used, only coated rods are permitted.
 - 2.5.1.2. CSA W59 for design of connections and workmanship.
 - 2.5.1.3. CAN/CSA W117.2 for safety.
- 2.5.2. Thoroughly clean welded joints and expose steel for sufficient distance to perform welding operations.
- 2.5.3. Smooth finish welds.
- 2.5.4. Ensure welds are continuous for length of joint. File or grind exposed welds smooth and flush.
- 2.5.5. Test welds for conformance, remove Work not meeting specified standards, and replace to meet the review by the Consultant.

2.6. FINISHES

- 2.6.1. General:
 - 2.6.1.1. Clean steel in accordance with SSPC SP 6/NACE No. 3 to remove mill scale, oil, grease, weld flux, and splatter.
 - 2.6.1.2. Mask field weld edges.
 - 2.6.1.3. Shop prime steel with one coat of primer paint to dry film thickness of 70 µm (0.07 mm), except items to be galvanized or concrete encased.
 - 2.6.1.4. Primer paint: In accordance with CISC/CPMA 1-73a.
 - 2.6.1.5. Shop primer for steel: As recommended by manufacturer.
- 2.6.2. Field touch-ups:

- 2.6.2.1. Field touch-up paint for factory-applied finish.
- 2.6.2.2. Field touch-up primer: In accordance with Section 09 91 00, Painting and Finishing Schedules EXT-MISC.
- 2.6.3. Hot-dip galvanizing:
 - 2.6.3.1. Rolled, pressed, and forged steel shapes, plates, bars, and strips: In accordance with ASTM A123/A123M.
 - 2.6.3.2. Iron and steel hardware: Minimum mass of zinc coating for bolt, nuts, washer, and fasteners in accordance with ASTM A153/A153M.
 - 2.6.3.3. Hot-dip galvanize metal fabrications in accordance with Contract Drawings after fabrication. Plug relief vents air-tight.
 - 2.6.3.4. After galvanizing, remove plugs, ream holes to proper size and re tap threads.
 - 2.6.3.5. Straighten shapes and assemblies true to line and plane after galvanizing.
 - 2.6.3.6. Repair damaged galvanized surfaces with zinc-rich primer in accordance with manufacturer's recommendations.
- 2.6.4. Zinc-rich painting:
 - 2.6.4.1. Use for items when hot-dip galvanizing is not applicable or possible. Do not use lacquers or alkyd based topcoats.
 - 2.6.4.2. In accordance with SSPC-PS Guide 12.00, SSPC-PS Guide 22.00 and SSPC PS Paint 20, and SSPC PS Guide 12.01.
 - 2.6.4.3. Coating thickness: 15.24 to 127.00 μm (0.6 to 5.0 mil).
 - 2.6.4.4. Apply using spray roller or brush.

2.7. PREPARATION OF HOT-DIP GALVANIZED SURFACES FOR PAINTING

- 2.7.1. Surface smoothing:
 - 2.7.1.1. After galvanizing, examine surface. Where high spots of zinc are visible on parts to be painted, remove zinc build-up in accordance with SSPC SP2 or SSPC SP3. Remove just enough build up so that zinc coating is level with the surrounding area.
 - 2.7.1.2. Inspect surface for conformance to zinc thickness in accordance with ASTM A123/A123M or ASTM A153/A153M.
 - 2.7.1.3. If zinc thickness falls below the specified level, repair in accordance with ASTM A780/A780M.
- 2.7.2. Clean surface in accordance with ASTM D7396.

PART 3 - EXECUTION

3.1. EXAMINATION

- 3.1.1. Examine previously installed Work, upon which this Section depends, and verify dimensions and condition of existing Work. Coordinate repairs, alterations, and rectification if necessary. Commencement of Work of this Section means acceptance of existing conditions.
- 3.1.2. Obtain written approval from the Consultant prior to field cutting, drilling or altering of structural members.

3.2. INSTALLATION

- 3.2.1. Install each type of manufactured units in accordance with Contract Drawings and reviewed Shop Drawings.
- 3.2.2. Fit joints and intersecting members accurately.
- 3.2.3. Make Work in true planes with adequate fastenings.
- 3.2.4.
- 3.2.5. Build and erect Work plumb, true, square, straight, level, and accurate to sizes detailed, free from distortion or defects detrimental to appearance or performance.
- 3.2.6. Install fixed guard rails rigid and secure.
- 3.2.7. Supply instructions, templates, and if necessary, supervised installation of fastenings or accessories required to be built-in by other Sections of the Work.

3.3. ANCHORS AND FASTENING

- 3.3.1. Provide anchor bolts, drilled anchors, or other means of fastenings required for building into slabs, walls, and structure as required and in accordance with Contract Drawings and reviewed Shop Drawings.
- 3.3.2. Perform drilling of steel structure to fasten Work.
 - 3.3.2.1. Coordinate drilling of structure with electrical cables, conduits, pipes, or other concealed items. Drill holes for anchors in locations, and to size indicated on Contract Drawings and reviewed Shop Drawings.
 - 3.3.2.2. Do not cut or damage embedded items when drilling and fastening.
- 3.3.3. Properly secure anchor bolts and provide adequate reinforcing to ensure safe, rigid installation for Work.
- 3.3.4. Do not secure items to steel deck.

3.4. FIELD WELDING

- 3.4.1. Field weld Work in accordance with CSA W59 unless specified otherwise.

3.5. FIELD PAINTING

- 3.5.1. In accordance with as follows:
 - 3.5.1.1. Paint bolt heads, washers, nuts, field welds, and previously unpainted items.
 - 3.5.1.2. Repair primer paint damaged during delivery and installation with colour match touch up primer. Work primer well into joints, crevices, interstices, and open spaces.
 - 3.5.1.3. Touch up field welds on galvanized surfaces; clean abraded galvanized area to white metal using a power rotary steel brush, and touch up with specified zinc rich or epoxy primer.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes:

- 1.1.1.1. Provide firestopping and smoke seals at penetrations and at joints in fire rated assemblies.
- 1.1.1.2. Make repairs to existing fire rated assemblies as necessary.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

- 1.2.1.1. Coordinate construction of openings and penetrating items to ensure that through-penetration fire-stop systems are installed according to specified requirements.
- 1.2.1.2. Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration fire-stop systems.
- 1.2.1.3. Do not cover up through-penetration fire-stop system installations that will become concealed behind other construction until manufacturer's representative and building inspector, if required by Authorities Having Jurisdiction, have examined each installation.

1.2.2. Preinstallation Meetings:

- 1.2.2.1. Arrange preinstallation meeting 1 week prior to commencing work with all parties associated with trade as designated in Contract Documents or as requested by Consultant. Presided over by Contractor include Consultant who may attend, Subcontractor performing work of this trade, Owner's representative, testing company's representative and consultants of applicable discipline.

1.3. SUBMITTALS

1.3.1. Product Data:

- 1.3.1.1. Submit manufacturers' specifications and technical data for each material including compositions, limitations, documentation conforming ULC and/or cUL firestop system proposed for this Project and manufacturers' installation instructions.

1.4. QUALITY ASSURANCE

- 1.4.1. Ensure firestopping systems conform to requirements of CAN/ULC-S115 tested assemblies that provide fire rating as shown.

1.5. SITE CONDITIONS

1.5.1. Ambient Conditions:

- 1.5.1.1. Comply with manufacturer's recommended requirements for temperature, relative humidity, moisture content and presence of any sealer or release agents on substrate during application and curing of materials. Ensure surfaces are dry and frost free.
- 1.5.1.2. Maintain minimum temperature of 5 deg C (40 deg F) for minimum period of 1 week before application, during application and until application is fully cured.
- 1.5.1.3. Ventilate areas in which firestopping is being applied. Protect water-soluble material from wetting until fully cured.

PART 2 - PRODUCTS

2.1. FIRE RESISTIVE JOINT PRODUCTS

- 2.1.1. For pipe penetrations in vertical assemblies, horizontal assemblies and smoke barrier:
 - 2.1.1.1. 3M Fire Barrier Sealant FD 150+: Single-part, acrylic latex sealant. No-sag, low-shrinkage, low VOC.
 - 2.1.1.2. Fire Resistance: For use in 1, 2, 3 or 4-hour fire-rated systems.
 - 2.1.1.3. Compression/Extension Recovery: Up to +/- 19 percent of original joint width.
 - 2.1.1.4. Meets optional L rating requirements.
 - 2.1.1.5. STC rating of 56 when tested in STC 56-rated wall assembly.
- 2.1.2. For filling voids in concrete gypsum, metal, plastic, wood and insulation:
 - 2.1.2.1. 3M Fire Barrier Water Tight Sealant 3000 WT: intumescent silicone firestop sealant.
 - 2.1.2.2. Fire Resistance: For use in 1, 2 or 3 hour fire rated systems.
 - 2.1.2.3. Meets UL Water Leakage Test, W Rating – Class 1 requirements.
 - 2.1.2.4. STC-Rating of 53 when tested in STC-53-rated wall assembly.
- 2.1.3. For horizontal floor openings:
 - 2.1.3.1. 3M Fire Barrier Water Tight Sealant 1003 SL: Single-part, self-leveling elastomeric silicone sealant. Sag-resistant, low VOC.
 - 2.1.3.2. Fire Resistance: For use in 1, 2, 3 or 4 hour fire rated systems.
 - 2.1.3.3. Meets UL Water Leakage Test, W Rating – Class 1 requirements.
 - 2.1.3.4. Compression/Extension Recovery: Up to +/- 15 percent of original joint width.
 - 2.1.3.5. STC-Rating of 56 when tested in STC-56-rated wall assembly.
- 2.1.4. For mechanical, electrical and plumbing pipe, conduit, communication cabling, and telephone wiring in vertical and horizontal assemblies:
 - 2.1.4.1. 3M Fire Barrier Sealant 2000 NS: Silicone Sealant: Single-part, elastomeric silicone sealant. Sag-resistant, low VOC.
 - 2.1.4.2. Fire Resistance: For use in 1, 2, 3 or 4-hour fire rated systems.
 - 2.1.4.3. Compression/Extension Recovery: Up to +/- 13 percent of original joint width.
- 2.1.5. For pipes, cables, cable tray, blank opening and other penetrations along with mineral wool or other fire-rated assembly products in vertical assemblies, horizontal assemblies and smoke barrier:
 - 2.1.5.1. 3M Fire Barrier Moldable Putty+: one-part, 100 percent solids intumescent firestop
 - 2.1.5.2. Fire Resistance: For use in 1, 2, or 3-hour fire rated systems
 - 2.1.5.3. For sealing large or complex openings such as cable bundles, cable trays and conduit banks:
 - 2.1.5.4. 3M Fire Barrier 2001 Silicone RTV Foam, Two-part, liquid-silicone elastomer foam
 - 2.1.5.5. Fire Resistance: For use in 1, 2, or 3-hour fire rated systems
- 2.1.6. For use at head-of-wall, wall-to-wall, floor-to-floor, bottom-of-wall, floor-to-wall and perimeter joints:
 - 2.1.6.1. 3M FireDam Spray 200, Water-based, paintable, low VOC, freeze/thaw resistant spray applied fire resistive product. Applied with conventional airless spray equipment:
 - 2.1.6.2. Fire Resistance: For use in 1, 2, 3 or 4-hour fire rated systems.
 - 2.1.6.3. Compression/Extension Recovery: Up to +/- 50 percent of joint width.
 - 2.1.6.4. STC-Rating of 56 when tested in STC 56-rated wall assembly.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

- 3.1.1.1. Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.
- 3.1.1.2. Verify openings, dimensions and surfaces conform to fire and smoke seal assembly.
- 3.1.1.3. Examine sizes of penetrating service, percentage fill and sleeve or opening sizes with exact annular space calculations, anticipated movement and conditions necessary to establish correct type, thickness and installation of back-up materials and seals.
- 3.1.1.4. Since firestop systems do not re-establish structural integrity of load bearing partitions/assemblies, or support live loads and traffic, consult structural engineer prior to penetrating any load bearing assembly.

3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

3.2.1. Surface Preparation:

- 3.2.1.1. Provide primer or surface conditioner if required by Product manufacturer. Prime surfaces in accordance with manufacturer's directions.
- 3.2.1.2. Remove combustible material and loose material detrimental to bond from edges of penetration. Clean, prime or otherwise prepare substrate material to manufacturer's recommendation.
- 3.2.1.3. Remove insulation from insulated pipe and duct where such pipes or ducts penetrate a fire separation unless ULC certified assembly permits such insulation to remain within assembly, or where mechanical trades have installed special fire rated insulated sleeves. Ensure continuity of thermal and vapour barriers where such are removed, altered or replaced, to satisfaction of Mechanical and Electrical and Consultant.
- 3.2.1.4. Alternatively, ensure pipe and duct insulation and wrappings occurring within openings to receive firestopping and smoke seals under this Section are installed prior to work of this Section and insulation and wrappings within fire seals are ULC listed components of system to be installed under this Section, unless ULC certified assembly permits such other insulation and wrappings to remain within assembly. Coordinate work of this Section with Mechanical and Electrical.
- 3.2.1.5. Clean bonding surfaces to remove deleterious substances including dust, paint, rust, oil, grease, moisture, frost and other foreign matter which may otherwise impair effective bonding.

3.3. INSTALLATION

- 3.3.1. Install in strict accordance with manufacturer's detailed installation instructions and procedures.
- 3.3.2. Install so that openings are completely filled and material is securely adhered.
- 3.3.3. Where firestopping surface will be exposed to view, finish to a smooth, uniform surface flush with adjacent surfaces.
- 3.3.4. After installation is complete, remove combustible forming materials and accessories that are not part of the listed system.

- 3.3.5. Repair or replace defective installations in accordance with manufacturer's recommendations, listed systems details and applicable code requirements.
- 3.3.6. At each through penetration or fire-resistive joint system, attach identification labels on both sides in location where label will be visible to anyone seeking to remove penetrating items or firestopping.
- 3.3.7. Clean firestop materials off surfaces adjacent to openings as work progresses, using methods and cleaning materials approved in writing by firestop system manufacturer and which will not damage the surfaces being cleaned.
- 3.3.8. Notify Authority Having Jurisdiction when firestopping installation is ready for inspection; obtain advance approval of anticipated inspection dates and phasing, if any, required to allow subsequent construction to proceed.
- 3.3.9. Do not cover firestopping with other construction until approval of authority having jurisdiction has been received.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide joints sealants including but not limited to following:

1.1.1.1. Control joints between new brick masonry and existing

1.1.1.2. Interior control joints, joints in tiling, joints between millwork and walls, joints around door frames, and where shown in the drawings.

1.1.1.3. Acoustical joint sealants.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Coordinate installation of joint sealants with sequence of work by other Sections.

1.2.2. Preinstallation Meeting:

1.2.2.1. Prior to start of work, arrange for Project site meeting of parties associated with work of this Section. Presided over by Contractor, include Consultant who may attend, Subcontractor performing work of this trade, Contractor's consultants of applicable discipline and Owner's representative.

1.2.2.2. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of this Section. Discuss also following items:

1.2.2.2.1. Verify with sealant manufacturer that specified sealants are compatible with and will satisfactorily adhere to substrates.

1.2.2.2.2. Weather conditions under which work will be done.

1.2.2.2.3. Anticipated frequency and extent of joint movement.

1.2.2.2.4. Joint design.

1.2.2.2.5. Suitability of durometer hardness and other properties of material to be used.

1.2.2.2.6. Recommendations of manufacturer for mixing of multi-component sealants.

1.2.2.2.7. Number of beads to be used in sealing operation and priming operation if required.

1.3. ACTION SUBMITTALS

1.3.1. Product Data:

1.3.1.1. Submit Product information from sealant manufacturer prior to commencement of work of this Section including:

1.3.1.1.1. Preparation instructions and recommendations.

1.3.1.1.2. Standard drawings illustrating manufacturer's recommended sealant joint profiles and dimensions applicable to Project.

1.3.1.1.3. Composition and physical characteristics.

1.3.1.1.4. Surface preparation requirements.

1.3.1.1.5. Priming and application procedures.

1.3.1.1.6. Suitability of sealants for purposes intended and joint design.

1.3.1.2. Joint sealant schedule: indicating application, joint location, sealant type, manufacturer and product name, and colour, for each application. Utilize joint sealant designations included in this Section.

1.4. QUALITY ASSURANCE

1.4.1. Qualifications:

1.4.1.1. Installers: Provide work of this Section executed by competent installers who have a membership in good standing with SWRI and have minimum of 5 years experience in application of Products, systems and assemblies specified and with approval and training of sealant manufacturer.

1.5. DELIVERY, STORAGE AND HANDLING

1.5.1. Delivery and Acceptance Requirements: Deliver caulking and sealant materials to site in original, unopened containers with manufacturers' labels and seals intact. Labels to identify manufacturer's name, brand name of Product, grade and type, application directions and shelf life or expiry date of Product.

1.6. PROJECT CONDITIONS

1.6.1. Ambient Conditions:

1.6.1.1. Do not apply any sealant under adverse weather conditions, when joints to be sealed are damp, wet or frozen or when at ambient temperatures below 5 deg C (40 deg F). Maintain minimum temperature of application during application and for 8 hours after application. Consult manufacturer for specific instructions before proceeding and obtain Consultant's approval.

1.6.1.2. Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated and until contaminants capable of interfering with adhesion are removed from joint substrates.

1.6.2. Joint-Width Conditions: Do not proceed with installation of joint sealants where joint widths are less than those allowed by joint sealant manufacturer for applications indicated.

1.6.3. Joint-Substrate Conditions: Do not proceed with installation of joint sealants until contaminants capable of interfering with adhesion are removed from joint substrates.

PART 2 - PRODUCTS

2.1. PERFORMANCE/DESIGN CRITERIA

2.1.1. Compatibility:

2.1.1.1. 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 demonstrated by sealant manufacturer based on testing and field experience.

2.1.2. Provide Products with capability, when tested for adhesion and cohesion under maximum cyclic movement in accordance with ASTM C719, to withstand required percentage change in joint width existing at time of installation and remain in compliance with other requirements of ASTM C920 for uses indicated.

2.2. JOINT SEALANTS

2.2.1. Exterior control joints in unit masonry: Nonsag, Neutral-Curing Silicone Joint Sealant:

2.2.1.1. Hardness, ASTM C661: 15 durometer Shore A.

- 2.2.1.2. Volatile Organic Compound (VOC) Content: 26 g/L maximum.
- 2.2.1.3. Staining, ASTM C1248: None on concrete, granite, limestone, and brick.
- 2.2.1.4. Color: As selected by Consultant.
- 2.2.1.1. Basis of Design Product: "DOWSIL 790 Silicone Building Sealant" by Dow.
- 2.2.1.2. Acceptable Alternatives:
 - 2.2.1.2.1. "Spectrem 1" by Tremco
 - 2.2.1.2.2. "SCS2700 SilPruf LM" by Momentive Performance Materials
 - 2.2.1.2.3. "890NST" by Pecora
 - 2.2.1.2.4. "290 DC PRO" by Sika Canada
- 2.2.2. Interior control joints in masonry and gypsum board: Single-Component, Nonsag, Neutral-Curing Silicone Joint Sealant.
 - 2.2.2.1. Hardness, ASTM C661: 15 durometer Shore A.
 - 2.2.2.2. Volatile Organic Compound (VOC) Content: 22 g/L maximum
 - 2.2.2.3. Staining, ASTM C510: None.
 - 2.2.2.4. Color: As selected by Consultant.
 - 2.2.2.5. Basis of Design Product: "DOWSIL CCS" by Dow.
 - 2.2.2.6. Acceptable Alternatives:
 - 2.2.2.6.1. "Dymonic FC", by Tremco
 - 2.2.2.6.2. "Sikaflex 1a" by Sika
- 2.2.3. Interior joints in ceramic tile, at sinks, urinals, and casework: Mildew-Resistant, Single-Component, Nonsag, Acid-Curing Silicone Joint Sealant:
 - 2.2.3.1. Basis of Design Product: "DOWSIL 786 Silicone Sealant" by Dow.
 - 2.2.3.2. Hardness, ASTM D2240: 25 durometer Shore A
 - 2.2.3.3. Volatile Organic Compound (VOC) Content: 36 g/L maximum.
 - 2.2.3.4. Color: As selected by Consultant.
 - 2.2.3.5. Basis of Design Product: "DOWSIL 786 Silicone Sealant" by Dow.
 - 2.2.3.6. Acceptable Alternatives:
 - 2.2.3.6.1. "Tremsil 200" by Tremco
 - 2.2.3.6.2. "SCS1700 Sanitary" by Momentive Performance Materials
 - 2.2.3.6.3. "KB 4800" by Adfast
- 2.2.4. Interior non-moving paintable joints: Acrylic Latex or Siliconized Acrylic Latex Products: Single-Component, comply with ASTM C834.
 - 2.2.4.1. Products: provide products by one of the following:
 - 2.2.4.1.1. "Chem-Calk 600"; by Bostik Inc.
 - 2.2.4.1.2. "AC-20+"; by Pecora Corporation
 - 2.2.4.1.3. "Sonolac"; BASF Building Systems
 - 2.2.4.1.4. "Tremflex 834"; by Tremco Incorporated.

- 2.2.4.1.5. “Bondaflex 600”; by May National Associates, Inc.
- 2.2.4.1.6. “EcoTex 25”; by Everkem Diversified Products, Inc.
- 2.2.4.1.7. “Titebond GREENchoice Acoustical Smoke and Sound Sealant”; by Franklin International, Inc.
- 2.2.4.1.8. “White Lightning Bolt Quick Dry Siliconized Acrylic Latex Sealant”; by Sherwin-Williams Company.
- 2.2.4.2. Colour: as selected by Consultant.
- 2.2.5. Interior concealed joints in acoustic assemblies: Acoustical Joint Sealant Standard: Manufacturer’s standard non-sag, paintable, non-staining latex sealant:
 - 2.2.5.1. Volatile Organic Compound (VOC) Content: 31 g/L maximum
 - 2.2.5.2. Products: provide products by one of the following:
 - 2.2.5.2.1. “AC-20 FTR” or “AIS-919”; by Pecora Corporation.
 - 2.2.5.2.2. “SHEETROCK Acoustical Sealant”; by USG Corporation.

2.3. JOINT-SEALANT BACKING

- 2.3.1. General: Provide sealant backings of material and type that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by sealant manufacturer based on field experience and laboratory testing.
- 2.3.2. Cylindrical Sealant Backings: ASTM C1330, of type indicated below and of size and density to control sealant depth and otherwise contribute to producing optimum sealant performance. Provide any Type schedule below, as approved in writing by joint-sealant manufacturer for joint application indicated.

2.4. MISCELLANEOUS MATERIALS

- 2.4.1. Primer: Material recommended by joint sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.
- 2.4.2. Bond Breaker Tape: As recommended by sealant manufacturer for preventing sealant from adhering to rigid, inflexible joint-filler materials or joint surfaces at back of joint where such adhesion would result in sealant failure. Provide self-adhesive tape where applicable.
- 2.4.3. Cleaners for Nonporous Surfaces: Chemical cleaners acceptable to manufacturers of sealants and sealant backing materials, free of oily residues or other substances capable of staining or harming joint substrates and adjacent nonporous surfaces in any way, and formulated to promote optimum adhesion of sealants with joint substrates.
- 2.4.4. Masking Tape: Nonstaining, nonabsorbent material compatible with joint sealants and surfaces adjacent to joints. Leave no residue.

PART 3 - EXECUTION

3.1. EXAMINATION

- 3.1.1. Verification of Conditions:
 - 3.1.1.1. Examine joints for compliance with requirements for joint configuration, installation tolerances and other conditions affecting joint sealant performance. Ensure joints are suitable to accept and receive sealants.
 - 3.1.1.2. Examine joint sizes and where depth of joint exceed required depth of sealant correct to achieve proper following width/depth ratio:

- 3.1.1.2.1. Maintain 2:1 Width/Depth Ratio: Ensure maximum sealant depth is 13 mm (1/2") and minimum contact width with each substrate is 6 mm (1/4"). Confirm width/depth ratios with sealant manufacturers.
- 3.1.1.3. Verify joint surfaces are clean, sound, free of defects and dimensions are within sealant manufacturer's size requirements.
- 3.1.1.4. Proceed with installation only after unsatisfactory conditions have been corrected.
- 3.1.1.5. Do not apply sealant to masonry until mortar has cured.
- 3.1.2. Preinstallation Testing: Before any sealing work is commenced, test materials for indications of staining or poor adhesion.
- 3.1.3. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

- 3.2.1. Protection of In-Place Conditions: Use masking tape where required to prevent contact of sealant with adjoining surfaces that otherwise would be permanently stained or damaged by such contact or by cleaning methods required to remove sealant smears. Remove tape immediately after tooling without disturbing joint seal.
- 3.2.2. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint sealant manufacturer's written instructions and the following requirements:
 - 3.2.2.1. Remove all foreign material from joint substrates that could interfere with adhesion of joint sealant, including dust, paints (except for permanent, protective coatings tested and approved for sealant adhesion and compatibility by sealant manufacturer), old joint sealants, oil, grease, waterproofing, water repellents, water, surface dirt, and frost.
 - 3.2.2.2. Clean porous joint substrate surfaces by brushing, grinding, blast cleaning, mechanical abrading, or a combination of these methods to produce a clean, sound substrate capable of developing optimum bond with joint sealants. Remove loose particles remaining from above cleaning operations by vacuuming or blowing out joints with oil-free compressed air.
- 3.2.3. Joint Priming: Prime joint substrates where recommended in writing by joint sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint sealant manufacturer's written instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

3.3. INSTALLATION OF JOINT SEALANTS

- 3.3.1. General: Comply with joint sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- 3.3.2. Sealant Installation Standard: Comply with recommendations of ASTM C1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- 3.3.3. Install sealant backings of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
 - 3.3.3.1. Do not leave gaps between ends of sealant backings.
 - 3.3.3.2. Do not stretch, twist, puncture, or tear sealant backings.
 - 3.3.3.3. Remove absorbent sealant backings that have become wet before sealant application and replace them with dry materials.
- 3.3.4. Install bond-breaker tape behind sealants where sealant backings are not used between sealants and back of joints.

- 3.3.5. Install sealants by proven techniques to comply with the following and at the same time backings are installed:
- 3.3.5.1. Place sealants so they directly contact and fully wet joint substrates.
 - 3.3.5.2. Completely fill recesses provided for each joint configuration.
 - 3.3.5.3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- 3.3.6. Force sealant into joint and against sides of joints to obtain uniform adhesion. Use sufficient pressure to completely fill voids in joint regardless of variation in joint widths and to proper joint depth as prepared. Ensure full firm contact with interfaces of joint. Superficial pointing with skin bead is not acceptable.
- 3.3.7. Finish face of compound to form smooth, uniform beads. At recesses in angular surfaces, finish compound with flat face, flush with face of materials at each side. At recesses in flush surfaces, finish compound with concave face flush with face of materials at each side.
- 3.3.8. Compound may be tooled, provided such tooling does not damage seal or tear compound. Avoid pulling of sealant from sides.
- 3.3.9. Tool surfaces as soon as possible after sealant application or before any skin formation has occurred, particularly when using silicone sealants.
- 3.3.10. Ensure joint surfaces are straight, neatly finished, free from ridges, wrinkles, sags, dirt, stains, air pockets and embedded foreign matter or other defacement and be uniform in colour, free from marbling and/or colour streaking due to improper mixing or use of out of shelf life Products.
- 3.3.11. Tooling of Non sag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
- 3.3.11.1. Remove excess sealants from surfaces adjacent to joint.
 - 3.3.11.2. Use tooling agents that are approved in writing by sealant manufacturer and that do not discolor sealants or adjacent surfaces.
 - 3.3.11.3. Provide concave joint configuration per Figure 8A in ASTM C1193, unless otherwise indicated.

3.4. CLEANING

- 3.4.1. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved in writing by manufacturers of joint sealants and of products in which joints occur.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide access doors and frames including but not limited to following:

1.1.1.1. Access doors and frames for walls.

1.1.1.2. Access doors and frames for ceilings.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

1.2.1.1. Verification: Determine specific locations and sizes for access doors needed to gain access to concealed equipment and indicate on schedule specified in "Submittals" Article.

1.2.2. Preinstallation Meetings:

1.2.2.1. Conduct a pre-installation meeting in accordance with requirements of Division 01 – General Requirements.

1.2.2.2. The following minimum items shall be reviewed at the pre-installation meeting:

1.2.2.2.1. Verify project requirements.

1.2.2.2.2. Review installation conditions under which work is to be performed including possible site concerns.

1.2.2.2.3. Inspection of surfaces to receive the work.

1.2.2.2.4. Coordination requirements with other subtrades.

1.3. ACTION SUBMITTALS

1.3.1. Product Data Sheets:

1.3.1.1. Submit manufacturer's product data sheets for products to be used in the work of this section.

1.3.2. Shop Drawings:

1.3.2.1. Submit Shop Drawings for work of this Section. In addition to the minimum requirements indicate following:

1.3.2.1.1. Face or ceiling placement.

1.3.2.1.2. Tolerances and clearances.

1.3.2.1.3. Method of attaching door frames to surrounding construction.

1.3.2.1.4. Finishes.

1.3.2.1.5. Hardware.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1. Acudor Products, Inc.; www.acudor.com

2.1.1.2. Bar-Co, Inc. by Alfab, Inc.; www.alfabinc.com

- 2.1.1.3. Cendrex Inc.; www.cendrex.com
- 2.1.1.4. Cesco Products; www.cescoproducts.com
- 2.1.1.5. Elmdor/Stoneman Manufacturing Company; www.elmdorstoneman.com
- 2.1.1.6. Jensen Industries; www.jensen-ind.com
- 2.1.1.7. Karp Associates, Inc.; www.karpinc.com
- 2.1.1.8. Larsen's Manufacturing Company; www.larsensmfg.com
- 2.1.1.9. Nystrom Building Products Co.; www.nystrom.com
- 2.1.1.10. Williams Brothers Corporation of America; www.wbdoors.com

2.2. MATERIALS

- 2.2.1. Steel Plates, Shapes and Bars: ASTM A36/A36M.
- 2.2.2. Hot-Dip Galvanized Steel: Coat to comply with ASTM A123/A123M for steel and iron products and ASTM A153/A153M for steel and iron hardware.
- 2.2.3. Steel Sheet:
 - 2.2.3.1. Hot-Rolled: ASTM A1011/A1011M, Commercial Steel (CS), Type B; free of scale, pitting, and surface defects; pickled and oiled.
 - 2.2.3.2. Cold-Rolled: ASTM A1008/A1008M, Commercial Steel (CS); stretcher-leveled standard of flatness.
 - 2.2.3.3. Electrolytic Zinc Coated: ASTM A879/A879M, Commercial Steel (CS), with Class C coating and phosphate treatment to prepare surface for painting.
 - 2.2.3.4. Metallic Coated: ASTM A653/A653M, Commercial Steel (CS), Type B, with A60 zinc-iron-alloy (galvannealed) coating or G60 mill-phosphatized zinc coating; stretcher-leveled standard of flatness.
- 2.2.4. Drywall Beads: Edge trim formed from 0.759 mm (22 ga) zinc-coated steel sheet formed to receive joint compound and in size to suit thickness of gypsum panels indicated.

2.3. MANUFACTURED UNITS

- 2.3.1. Flush Access Doors and Frames with Exposed Trim (AD-ET):
 - 2.3.1.1. Material: Prime-painted steel sheet.
 - 2.3.1.2. Surface Type: Masonry/Tile Finish
 - 2.3.1.3. Locations: Walls and ceilings.
 - 2.3.1.4. Door: Minimum 0.912 mm (20 ga) thick sheet metal, set flush with exposed face flange of frame.
 - 2.3.1.5. Frame: Minimum 1.519 mm (16 ga) thick sheet metal with 32 mm (1-1/4") wide, surface-mounted trim.
 - 2.3.1.6. Hinges: Spring-loaded concealed pin type.
 - 2.3.1.7. Latch: Screwdriver- operated cam latch.
- 2.3.2. Flush Access Doors and Trimless Frames (AD-TL):
 - 2.3.2.1. Material: Prime-painted steel sheet.
 - 2.3.2.2. Surface Type: Gypsum board.

- 2.3.2.3. Locations: Walls and ceilings.
- 2.3.2.4. Door: Minimum 1.519 mm (16 ga) thick sheet metal, set flush with surrounding finish surfaces.
- 2.3.2.5. Frame: Minimum 1.519 mm (16 ga) thick sheet metal with bead for type of surface indicated.
- 2.3.2.6. Hinges: Spring-loaded concealed pin type.
- 2.3.2.7. Latch: Screwdriver- operated cam latch.

2.4. FABRICATION

- 2.4.1. Shop Assembly: Latching Mechanisms: Furnish number required to hold doors in flush, smooth plane when closed as follows:
 - 2.4.1.1. For cylinder lock, furnish 2 keys per lock and key locks alike.
 - 2.4.1.2. For recessed panel doors, provide access sleeves for each locking device. Furnish plastic grommets and install in holes cut through finish.

2.5. FINISHES

- 2.5.1.1. Shop Primer for Ferrous Metal: Fast-curing, lead- and chromate-free, universal modified-alkyd primer complying with performance requirements in SSPC-Paint 25; selected for good resistance to normal atmospheric corrosion, compatibility with finish paint systems indicated and capability to provide sound foundation for field-applied topcoats despite prolonged exposure.
- 2.5.1.2. Shop Primer for Metallic-Coated Steel: Organic zinc-rich primer complying with SSPC-Paint 20 and compatible with topcoat.
- 2.5.1.3. Galvanizing Repair Paint: High-zinc-dust-content paint for re-galvanizing welds in steel, complying with SSPC-Paint 20.

PART 3 - EXECUTION

3.1. EXAMINATION

- 3.1.1. Verification of Conditions:
 - 3.1.1.1. Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.
 - 3.1.1.2. Size and Location Verification: Determine specific locations and sizes for access doors needed to gain access to concealed equipment and indicate on schedule.
- 3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

- 3.2.1. Advise installers of other work about specific requirements relating to access door and floor door installation, including sizes of openings to receive access door and frame, as well as locations of supports, inserts and anchoring devices.
- 3.2.2. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent finish surfaces.
- 3.2.3. Install access doors flush with adjacent finish surfaces or recessed to receive finish material.

3.3. ADJUSTING

3.3.1. Adjust doors and hardware after installation for proper operation.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

- 1.1.1. Section Includes: Work requirements for flooring restoration including but not limited to following:
1.1.1.1. Refurbish and repair existing terrazzo flooring where indicated in the drawings

1.2. REFERENCES

- 1.2.1. Terrazzo, Tile and Marble Association of Canada: Specification Guide, Tile Installation Manual

1.3. ADMINISTRATIVE REQUIREMENTS

- 1.3.1. Pre-Installation Meetings:
1.3.1.1. Prior to commencement of work, arrange for Project site meeting of all parties associated with work of this Section in accordance with project meetings specified in Section 01 10 00.
1.3.1.2. Include manufacturer's technical representative, Contractor, Installers performing work of this Section, subcontractors installing finishes over these products (if applicable).
1.3.1.3. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of placement and other matters affecting construction.

1.4. SUBMITTALS

- 1.4.1. Submittals in accordance with Submittal Procedures specified in Section 01 10 00.
1.4.2. Product Data:
1.4.2.1. Submit manufacturer's Product data, performance criteria, application instructions, and other documentation for each material specified in this Section proposed for use.
1.4.2.2. Include product characteristics, performance criteria, finish and limitations.
1.4.2.3. Safety: Provide WHMIS Safety Data Sheets.

1.5. QUALITY ASSURANCE

- 1.5.1. Execute work of this Section by professionals who are specialized in the use of specific equipment and materials, trained in terrazzo finishing, and have minimum 5 years experience in this work.
1.5.2. Applicator to be a member of the Terrazzo, Tile and Marble Association of Canada (TTMAC). Submit evidence of this if requested.

1.6. DELIVERY, STORAGE AND HANDLING

- 1.6.1. Deliver materials in manufacturer's packaging including application instructions.

1.7. SITE CONDITIONS

- 1.7.1. Ventilation: Provide continuous ventilation during and after coating application.

PART 2 - PRODUCTS

2.1. MATERIALS

- 2.1.1. Terrazzo refurbishing materials:
2.1.1.1. Stripper: propose environmentally friendly cleaner.

2.1.1.2. Grout: General Polymers 5271 Terrazzo Grout Filler.

2.1.1.3. Sealer: General Polymers 4401 Terrazzo Sealer.

2.1.1.4. Water: clean and potable.

PART 3 - EXECUTION

3.1. PREPARATION

3.1.1.1. Thoroughly clean surfaces by scrubbing to remove dirt, dust, and wax. Use stripper in accordance with manufacturer's printed instructions.

3.1.1.2. Remove dirty solution with wet vacuum or mop.

3.1.1.3. Rinse with clean water and allow to dry thoroughly.

3.2. REFURBISH EXISTING TERRAZZO

3.2.1. Grind existing terrazzo floor and base with No. 80 grit abrasive stones using floor machine and base grinding machine for base. Keep area wet with water at all times. Wash surfaces with clean water.

3.2.2. Remove excess rinse water and apply grout to fill pinholes, cracks and voids. Allow grout to remain on surface and cure for minimum 24 hours before final grinding.

3.2.3. Grind existing terrazzo floor and base with No. 120 grit carborundum using floor machine and base grinding machine for base. Keep area wet with water at all times. Wash surfaces with a neutral cleaner. Rinse with clean water and allow to dry thoroughly.

3.2.4. Apply 2 coats sealer.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes:

- 1.1.1.1. Testing and preparation of substrate for installation of flooring.
- 1.1.1.2. Moisture vapour control topping.

1.1.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:

- 1.1.2.1. Filling of major holes, crack repairs, patching chases and trenches in concrete substrate
Flatness and levelness requirements for floor to receive resilient sheet flooring: Section 03 01 30 – Repairs to Concrete.
- 1.1.2.2. Ceramic and porcelain tile: Section 09 30 00 - Tiling

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

- 1.2.1.1. Coordinate preparation of concrete flooring with installation of flooring materials. Ensure that proposed materials are compatible and will achieve correct results.
- 1.2.1.2. Determine acceptable limits for moisture vapour emissions, and pH with each of the finish flooring manufacturers.
- 1.2.1.3. Schedule surface preparation work with the concrete trade and flooring installation trade.

1.2.2. Preinstallation Meeting:

- 1.2.2.1. Prior to start of concrete work, arrange for Project site meeting of all parties associated with work of this Section, including Contractor, various flooring installers, and concrete finisher.
- 1.2.2.2. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions flooring installation and other matters affecting construction, to permit compliance with intent of this Section. Ensure Division 03 requirements for concrete are compatible with requirements of this Section; floor flatness and floor levelness requirements for various floor finishes and their acceptability by flooring manufacturer; surface texture of finished floor required for various floor finishes; acceptable approaches to remediation of high moisture and high pH floors; adhesive application and floor covering installation.

1.3. SUBMITTALS

1.3.1. Product Data Sheets:

- 1.3.1.1. Submit product data sheets for all products proposed for use in this Section.
- 1.3.1.2. Submit WHMIS Safety Data Sheets for each product.

1.3.2. Shop Drawing: submit floor plan showing the locations of all field testing of concrete floors.

1.3.3. Test and Evaluation Reports: submit field test reports from recognized approved independent testing laboratory for following requirements:

- 1.3.3.1. Submit letters of acceptance from each manufacturer of flooring products specified in related Sections that the combination of products and methods used in the overall flooring preparation and installation are compatible and appropriate for their intended application.

- 1.3.3.2. Submit moisture vapour emissions testing for all concrete floor areas.
- 1.3.3.3. Submit calcium chloride test results in accordance with requirements specified herein.
- 1.3.3.4. Submit pH test results and verify their acceptability to resilient sheet flooring manufacturer in accordance with requirements specified herein.

1.4. CLOSEOUT SUBMITTALS

- 1.4.1. Update floor plan shop drawing with notes to confirm field testing locations and final test readings.

1.5. QUALITY ASSURANCE

1.5.1. Qualifications:

- 1.5.1.1. Field Testing Inspectors: Independent 3rd party inspectors with minimum three years experience with concrete testing.
- 1.5.1.2. Installers: Provide work of this Section executed by competent installers with minimum of 5 years experience in concrete preparation and application of concrete Products specified.

1.6. DELIVERY, STORAGE AND HANDLING

1.6.1. Delivery and Acceptance Requirements:

- 1.6.1.1. Deliver materials in good condition to site in manufacturer's original unopened containers that bears name and brand of manufacturer, Project identification, shipping and handling instructions.

1.7. SITE CONDITIONS

1.7.1. Ambient Conditions:

- 1.7.1.1. Maintain appropriate environmental conditions and protect work during and after installation. Comply with trade standards and manufacturer's Product instructions. Follow Product SDS and label instructions concerning safety, health and other related precautionary and environmental protection.
- 1.7.1.2. Maintain relative humidity in accordance with manufacturer's instructions.
- 1.7.1.3. Exhaust temporary heaters to building exterior to prevent health hazards and damage to work from toxic fumes and emanations.
- 1.7.1.4. Maintain ambient air temperature and temperature of floor covering areas at not less than 10 deg C (50 deg F) or more than 29 deg C (85 deg F) 48 hours before, during installation and for 48 hours after application unless otherwise required in Product instructions.

1.8. WARRANTY

- 1.8.1. Manufacturer Warranty: Warrant work of this Section for period of 25 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, at no expense to Owner.
- 1.8.2. Defects include but are not limited to; failure of floor finish remaining in place and bonding to structural slab and finish becoming defective and spalling and/or cracking.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

- 2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

- 2.1.1.1. Ardex Canada, Inc.; www.ardex.ca
- 2.1.1.2. Flextile Ltd.; www.flextile.net
- 2.1.1.3. Laticrete International, Inc.; www.laticrete.com
- 2.1.1.4. Mapei Corporation; www.mapei.ca

2.2. MATERIALS

- 2.2.1. Concrete Moisture Emission Reducer: Characteristics, performance requirements:
 - 2.2.1.1. Epoxy cement, compliant with ASTM F3010.
 - 2.2.1.2. Antimicrobial additive
 - 2.2.1.3. Reduce the moisture vapour emission rate of concrete slabs \leq 3 lbs. per 1,000 ft² per 24 hours.
 - 2.2.1.4. Reduce the surface alkalinity of concrete slabs down to pH levels of 9
 - 2.2.1.5. Provide 1 of following:
 - 2.2.1.5.1. "Planiseal™ VS" by Mapei Corporation.
 - 2.2.1.5.2. "Sikafloor® 81 EpoCemCA" by Sika Canada Inc.
 - 2.2.1.5.3. "Ardex MC Rapid" by Ardex Canada
- 2.2.2. Primer:
 - 2.2.2.1. Provide 1 of following:
 - 2.2.2.1.1. "4040 Acrylic Primer" by Flextile Ltd except where epoxy moisture mitigation systems.
 - 2.2.2.1.2. "Primer X" by Mapei Corporation
 - 2.2.2.1.3. "Sikafloor 155 WN" by Sika Canada
 - 2.2.2.1.4. "Ardex P4" by Ardex Canada

PART 3 - EXECUTION

3.1. EXAMINATION

- 3.1.1. Verification of Conditions for New Concrete:
 - 3.1.1.1. Ensure new concrete slab has been properly cured and dry for minimum of 28 Days and has reached minimum compressive strength of 25 MPa (3625 psi) and a minimum of 1.5 MPa (218 psi) in tension.
 - 3.1.1.2. Ensure no curing and sealing compounds, hardeners or other chemical additives have been used on concrete.
 - 3.1.1.3. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.2. TESTING FOR ALL CONCRETE FLOORS:

- 3.2.1. Conduct concrete testing on all concrete floors prior to application of moisture vapour control topping and following corrective work.
- 3.2.2. Moisture Vapour Testing:
 - 3.2.2.1. Perform calcium chloride test no earlier than 28 Days after concrete has been placed in accordance with requirements of ASTM F1869 for new and existing concrete floors, and in-

situ probe RH testing in accordance with ASTM F2170 for new concrete prior to installation of flooring material.

- 3.2.2.2. Conduct 3 tests for each of the RH test methods for first 93 m² (1000 sq ft) and 1 additional test for every 93 m² (1000 sq ft) of flooring. Ensure moisture emission from concrete floor does not exceed 2.27 kg/93 m² (5 lbs/1000 sq ft) in 24 hours or has a maximum RH of 80%.
- 3.2.2.3. Provide results to Consultant prior to commencement of installation including diagram of area tested showing location of each moisture test.
- 3.2.2.4. When concrete moisture emission rate is between 2.27 kg/93 m² (5 lbs/1000 sq ft) and 6.79 kg/93 m² (15 lbs/1000 sq ft) and in 24 hours use a concrete moisture emission reducer.
- 3.2.2.5. Do not proceed with installation until moisture problem has been corrected.
- 3.2.3. Alkalinity Testing (pH):
 - 3.2.3.1. Measure pH of concrete in accordance with ACI PRC-364.17: How to Measure pH of a Concrete Surface Prior to Installation of a Floor Covering.
 - 3.2.3.2. Perform pH test no earlier than 28 Days after concrete has been placed to ensure alkali salt residue is within limitation acceptable to manufacturer and to avoid adhesive failure, discoloration, shrinkage and softening of floor covering. If pH results are higher than 9.0, report to Consultant, Contractor or Owner for investigation and remedial work.
 - 3.2.3.3. Perform at least three pH tests must be performed for the first 93 m² (1,000 square feet) of space. One additional test should be performed for each additional 93 m² (1,000 square feet) thereafter.
 - 3.2.3.4. Refer to manufacturer for ways to neutralize floor prior to beginning of installation. Neutralize by sanding, vacuuming and/or by water plus mild sulfuric or sulfamic acid application as recommended by manufacturer.
 - 3.2.3.5. Retest to assure pH has been neutralized.
- 3.2.4. Capillary Moisture Testing:
 - 3.2.4.1. Moisture content of concrete substrate must be ≤ 4 % by mass (PBW – part by weight) as measured with a Tramex®CME / CMExpert type concrete moisture meter.
 - 3.2.4.2. Before proceeding with application, test surfaces for moisture content in accordance with ASTM D4263 and in consultation with manufacturer to ensure they are suitable for application.
 - 3.2.4.3. Provide all test results to Consultant prior to commencement of installation including diagram of area tested showing location of each moisture test, alkalinity test and capillary moisture test.
- 3.2.5. Evaluation and Assessment:
 - 3.2.5.1. Report all testing results to manufacturer's representative and submit written acceptance of these results approval before proceeding.
 - 3.2.5.2. Commencement of work implies acceptance of previously completed work.

3.3. SURFACE PREPARATION

- 3.3.1. For all new and existing concrete floor areas:
 - 3.3.1.1. Prepare existing and new concrete floors over entire area with steel shot blasting or other method recommended by manufacturer. Remove uneven joints, rough areas, foreign and projection off surfaces. Surface to be hard, sound and roughened to irregular surface with

weak concrete removed and surface holes and voids exposed. Equip dry blasting machine with vacuum to minimize dust.

- 3.3.1.2. Shot blast floor to remove soft material and to achieve a profile equivalent to ICRI / CSP 3 – 4.
- 3.3.1.3. Shot blast to expose cracks in concrete surface. For cracks lesser than 1.5 mm (1/16") employ crack reinforcing tape in accordance manufacturer's recommendations. Repair cracks, holes or other deficiencies in accordance with manufacturer's recommendations.
- 3.3.1.4. Blow clean control joints, sawcuts and cracks with compressed air.
- 3.3.1.5. Prepare concrete floors to receive sheet flooring in accordance with requirements of ASTM F710. Achieve CSP of #2 - #3. Consult individual manufacturer for their specific recommendations and follow them as required.

3.4. MOISTURE BARRIER APPLICATION

- 3.4.1. If moisture levels exceed acceptable limit, apply moisture emission reducer in accordance with ASTM F710 and ASTM F3010.
- 3.4.2. Follow manufacturer's recommendations to determine whether cracks are filled before or after application of moisture barrier cement.
- 3.4.3. Mix moisture barrier in accordance with manufacturer's printed instructions.
- 3.4.4. Material components minimum 15°C (60°F) at time of mixing.
- 3.4.5. Apply coating using roller to achieve thickness as per manufacturer's instructions. Allow to cure.
- 3.4.6. Apply second coat of moisture barrier coating, dry film thickness of 12.8 mils. Allow to cure.
- 3.4.7. Re-test for moisture vapour emission and pH level.

3.5. CLEANING

- 3.5.1. Remove excess adhesive from floor, base and wall surfaces without damage.
- 3.5.2. Clean floor and base surface to flooring manufacturer's instructions.

3.6. PROTECTION

- 3.6.1. Protect installed flooring as recommended by flooring manufacturer against damage from rolling loads, other trades or placement of fixtures and equipment.
- 3.6.2. Prohibit foot traffic on floor for 24 hours after installation. Prohibit heavy traffic, rolling loads and furniture or appliance placement for a minimum of 72 hours after installation.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

- 1.1.1. Section Includes: Provide gypsum board assemblies work including but not limited to following:
 - 1.1.1.1. Interior metal support systems for ceilings and other assemblies as Indicated on drawings.
 - 1.1.1.2. Supplementary steel supports for ceilings.
 - 1.1.1.3. Reinforcement for suspension systems for lighting fixtures.
 - 1.1.1.4. Concealed sheet steel reinforcing for mounting accessories
- 1.1.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:
 - 1.1.2.1. Miscellaneous steel sections and/or framing required to provide additional structural support to suit Project requirements: Section 05 50 00 Metal Fabrications.
 - 1.1.2.2. Firestopping, smoke seals and penetration firestopping: Section 07 84 00 Firestopping and Smoke Seals.
 - 1.1.2.3. Gypsum board, acoustic insulation: Section 09 29 00 Gypsum Board.

1.2. ADMINISTRATIVE REQUIREMENTS

- 1.2.1. Coordination:
 - 1.2.1.1. Coordinate wall mounted equipment requirements and locations with HWDSB Project Manager. Provide suitable blocking to support equipment and unistruct mounting supports.
- 1.2.2. Sequencing:
 - 1.2.2.1. Coordinate installation and cooperate with mechanical and electrical trades to accommodate mechanical electrical items and any other work required to be incorporated into or coordinated with ceiling systems.
 - 1.2.2.2. Cooperate and coordinate with Sections applying wet trades and trades installing mechanical and electrical services. Coordinate stud layout at partitions accommodating wall mounted fixtures by other trades.

1.3. INFORMATIONAL SUBMITTALS

- 1.3.1. Submit submittals in accordance with Submittal Procedures specified in Division 01 – General Requirements.
- 1.3.2. Product Data Sheets:
 - 1.3.2.1. Submit manufacturer's product data sheets for products to be for used in the work of this section. Manufacturer's product data sheets shall include:
 - 1.3.2.1.1. Material and product physical properties and characteristics including physical size, finish.
 - 1.3.2.1.2. Performance criteria.
 - 1.3.2.1.3. Limitations of products.
- 1.3.3. Shop Drawings:
 - 1.3.3.1. Submit engineered shop drawings prepared, stamped, and signed by Professional Structural Engineer for non-structural metal framing.

- 1.3.3.2. Submit engineered shop drawings prepared, stamped, and signed by Professional Structural Engineer for the seismic design of connections and restraint of the non-structural metal framing.
- 1.3.3.3. Include the manufacturer's load test data and design tables for the metal support system and hanger supports.
- 1.3.3.4. Submit drawings to locate all expansion and control joints in partitions and ceilings.
- 1.3.3.5. Submit drawings to locate all fire rated partitions.

1.4. QUALITY ASSURANCE

1.4.1. Qualifications:

- 1.4.1.1. Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

PART 2 - PRODUCTS

2.1. DESIGN / PERFORMANCE REQUIREMENTS

2.1.1. Design Requirements:

- 2.1.1.1. Design non-structural metal framing to withstand own dead load, super-imposed dead loads, to maximum allowable deflection of L/360, without permanent deformation.
- 2.1.1.2. Design steel stud reinforcements from hollow structural steel, stud, angle and steel plate sections, galvanized sheet steel minimum 1.214 mm (18 ga) where required to support of manufactured components without limitations items such as washroom accessories, expansion control covers and similar items. Design weld connections ensuring rigid and secure installation capable of offering resistance to minimum 227 kg (500 lb) pull force. Do not design using wood blocking for this purpose.
- 2.1.1.3. Sound rated construction shall have STC rating tested in accordance with ASTM E90. Coordinate with Section 09 29 00 Gypsum Board.

2.1.2. Structural Design:

- 2.1.2.1. Professional Structural Engineer shall design non-structural metal framing for work of this Section.
- 2.1.2.2. Professional Structural Engineer shall design seismic connections and restraint of the non-structural metal framing for work of this Section.
- 2.1.2.3. Ceiling suspension systems:
 - 2.1.2.3.1. Design ceiling suspension system in accordance with manufacturer's printed directions and conforming to ASTM C754 requirements. Do not suspend and items from structural steel deck. Do not support work of this Section from, nor make attachments to, ducts, pipes, conduits or support framing of other trades.
 - 2.1.2.3.2. Design suspended ceiling systems for adequate support of electrical fixtures as required by current bulletin of Electrical Inspection Department of Ontario Hydro.
 - 2.1.2.3.3. Design hanger anchor and entire suspension system static loading not to exceed 25% of their ultimate capacity including lighting fixture dead loads.
 - 2.1.2.3.4. Design suspension system to support weight of mechanical and electrical items such as air grilles, lighting fixtures, drapery track, drapes and with adequate support to allow rotation/ relocation of light fixtures.

- 2.1.2.4. Design interior partitions and ceilings using a maximum deflection criteria of L/240 with a minimum lateral load of 0.239 kPa (5 psf) unless otherwise specified herein. Where tile is being applied or height is greater than 3 m (10') use L/360 with a minimum lateral load of 0.239 kPa (5 psf).
- 2.1.2.5. Determine appropriate steel stud size and thickness as required for height and loading.
- 2.1.2.6. Ensure partitions acting as guards, including walls around shafts or where floor elevation on 1 side of a wall is more than 600 mm (23-5/8") higher than elevation of floor or ground on other side complies with OBC, Division B, Part 4, Article 4.1.5.16. Provide Shop Drawings bearing seal of a licensed engineer registered in Province of Ontario confirming this requirement.
- 2.1.2.7. Design sub-framing as necessary to accommodate and circumvent conflicts and interfaces where ducts or other equipment prevent regular spacing of hangers.

2.2. PARTITION SUPPORT MATERIALS

2.2.1. General:

- 2.2.1.1. Metal framing shall comply with ASTM C645 and as specified.
- 2.2.1.2. Metal framing shall be galvanized sheet steel, zinc coating designation Z120 (G40) unless otherwise specified.
- 2.2.1.3. Metal framing in shower rooms, other wet areas shall be galvanized sheet steel, zinc coating designation Z275 (G90) unless otherwise specified.

2.2.2. Steel Studs:

- 2.2.2.1. Steel Studs: CSA S136 and ASTM C645, galvanized sheet steel, minimum 18 mils designation thickness (0.455 mm (0.0179") minimum base steel thickness) (previously 25 ga), minimum Z120 (G40) zinc coating, screw able with crimped web and returned flange, of depth shown in maximum continuous lengths possible. Provide thicker steel where required due to height.
- 2.2.2.2. Heavy Duty Steel Studs at Openings: CSA S136 and ASTM C645, galvanized sheet steel, minimum 54 mils designation thickness 1.367 mm (0.0538") minimum base steel thickness) (previously 16 ga), minimum Z120 (G40) zinc coating, screw able with crimped web and returned flange, of depth shown in maximum continuous lengths possible. Provide thicker steel where required due to height.
- 2.2.2.3. Studs Supporting Cement Boards, Abuse Resistant Gypsum Boards: CSA S136 and ASTM C645, galvanized sheet steel, minimum 33 mils designation thickness (0.836 mm (0.0329") minimum base steel thickness) (previously 20 ga structural). Provide 50 mm (2") deep flanges on ceiling tracks to allow for deflection of structure. Use 92 mm (3-5/8") width unless otherwise noted. Use 0.914 mm (20 ga) solid web members at ceiling and floor tracks.
- 2.2.2.4. Provide knockout openings in web at 460 mm (18") oc to accommodate (if required) horizontal mechanical and electrical service lines and bracing.

2.2.3. Floor and Ceiling Partition Track for Gypsum Board:

- 2.2.3.1. CSA S136 and ASTM C645, galvanized sheet steel, minimum 18 mils designation thickness (0.455 mm (0.0179") minimum base steel thickness) (previously 25 ga), minimum Z120 (G40) zinc coating, with minimum 30 mm (1-1/4") legs, top track having longer legs where required to compensate for deflection of structure above. Width to suit steel studs.
- 2.2.3.2. For openings wider than 914 mm (3'-0"), provide 0.91 mm (0.035") (20 gauge) minimum thickness for header except at heavy duty studs, header shall match metal thickness of heavy duty studs.

2.2.4. Runner Fasteners:

- 2.2.4.1. To concrete and masonry: Use stub nails or power-driven fasteners.
- 2.2.4.2. To metal concrete inserts: Use 10 mm (0.393") Type S-12 pan head screws.
- 2.2.4.3. To suspended ceilings: Use prefinished clips to match ceiling grid in accordance with Section 09 51 13 - Acoustical Panel Ceilings

2.2.5. Bracing Channels:

- 2.2.5.1. 19 mm (3/4") x 10 mm (0.393") x 1.22 mm (0.048") cold rolled galvanized steel.

2.3. CEILING SUPPORT MATERIALS

2.3.1. General:

- 2.3.1.1. Metal framing and support materials shall comply with ASTM C645 and as specified.
- 2.3.1.2. Metal framing shall be galvanized sheet steel, zinc coating designation Z120 (G40) unless otherwise specified.
- 2.3.1.3. Size ceiling support components to comply with ASTM C754 unless otherwise Indicated on drawings or specified.

2.3.2. Main Runners:

- 2.3.2.1. Steel channels, hot or cold rolled; galvanized where used in shower rooms, other wet areas, with rust inhibitive paint finish where used elsewhere indoors.

2.3.3. Hanger Wire:

- 2.3.3.1. ASTM A641/A641M, soft, Class 1 galvanized, minimum 3.26 mm (0.128") (8 AWG).

2.3.4. Hanger Rods and Flats:

- 2.3.4.1. Galvanized steel.
- 2.3.4.2. Size devices for 5 times load imposed by completed system as determined in accordance with ASTM E488/E488M.
- 2.3.4.3. Inserts for Concrete Slabs: Tie wire anchors, "Red Head TW-1614" by ITW Canada Inc., "Parabolt Wire Hanger" distributed by Acrow-Richmond Ltd., "T-14 Eyebolt" by Ramset Ltd. or "Tie Wire Drive TW-932" by Isometric Ltd. Powder actuated fastening systems are not permitted.
- 2.3.4.4. Screws, clips, bolts, concrete inserts or other devices for ceiling hangers whose suitability for use intended has been proven through standard construction practices or by certified test data.
- 2.3.4.5. Hangers: Comply with ASTM C754 for maximum ceiling area and loads to be supported.
- 2.3.4.6. Tie wire: 1.519 mm (16 ga) nominal diameter galvanized, soft annealed steel.
- 2.3.4.7. Zinc-plated or stainless steel fasteners exposed to condensation, and corrosion.
- 2.3.4.8. Runner (Carry) Channels:
 - 2.3.4.8.1. Minimum 1.50 mm (16 gauge) thick cold rolled steel, primer painted or zinc coated for interior locations:
 - 2.3.4.8.2. 38 mm (1.5") x 12.7 mm (1/2") where supported at maximum 914 mm (3'-0") on centre.
 - 2.3.4.8.3. 38 mm (1.5") x 19 mm (3/4") where supported at maximum 1,220 mm (4'-0") on centre.

2.3.5. Proprietary Direct Hung Ceiling Framing Suspension System (optional):

2.3.5.1. Fire rated and non-fire rated, provide factory fabricated, proprietary system in lieu of channel and cross furring framing system.

2.3.5.2. Provide interlocking cold-rolled sheet steel grid, ASTM C635/C635M, heavy duty.

2.4. FURRING SUPPORT MATERIALS

2.4.1. General:

2.4.1.1. Metal framing shall comply with ASTM C645 and as specified.

2.4.1.2. Metal framing shall be galvanized sheet steel, zinc coating designation Z120 (G40) unless otherwise specified.

2.4.2. Furring Channels:

2.4.2.1. CSA S136 and ASTM C645, galvanized sheet steel, minimum 33 mils designation thickness (0.836 mm (0.0329") minimum base steel thickness) (previously 20 ga structural) or minimum 18 mils designation thickness (0.455 mm (0.0179") minimum base steel thickness) (previously 25 ga), minimum Z120 (G40) zinc coating, screw channels, 67 mm (2-5/8") wide x 22 mm (7/8") deep.

2.4.3. Carrying Channels for Gypsum Board:

2.4.3.1. CSA S136 and ASTM C645, galvanized sheet steel, minimum 43 mils designation thickness (1.087 mm (0.0428") minimum base steel thickness) (previously 18 ga), minimum Z120 (G40) zinc coating, 38 mm (1-1/2") high with 19 mm (3/4") flanges, for primary carrying member in suspended ceilings and as horizontal stiffeners or bracing in steel stud systems.

2.4.4. Carrying Channels for Cement Board: CSA S136 and ASTM C645, galvanized sheet steel, minimum 54 mils designation thickness (1.367 mm (0.0538") minimum base steel thickness) (previously 16 ga), minimum Z120 (G40) zinc coating, 38 mm (1-1/2") high with 19 mm (3/4") flanges, for primary carrying member in suspended ceilings and as horizontal stiffeners or bracing in steel stud systems.

2.4.5. "Z"-Furring:

2.4.5.1. Manufacturer's standard screw type galvanized steel, z-shaped furring members; ASTM A653/A653M G60, 0.914 mm (0.035") (20 gauge) minimum thickness of base metal, of depth Indicated, designed for mechanical attachment of insulation boards or blankets.

2.4.6. Fasteners:

2.4.6.1. Type and size recommended by furring manufacturer for substrate and application Indicated.

2.4.7. Furring Isolator:

2.4.7.1. Basis of design:

2.4.7.1.1. "Kinetics IsoMax Sound Isolation Clips for Walls and Ceilings" by Kinetics Noise Control.

2.4.7.1.2. Substitutions in accordance with Section 01 25 00 Submittal Procedures.

2.4.8. Furring Anchorages:

2.4.8.1. 1.62 mm (16 AWG) galvanized wire ties, wire type clips, bolts, nails or screws as recommended by furring manufacturer.

2.5. ACCESSORIES

2.5.1. Backer Plates:

- 2.5.1.1. Galvanized steel, 1.214 mm (18 ga) thick minimum, Z275 (G90) zinc coated by hot-dip process, minimum 150 mm (6") wide x 1.50 mm (6") thick x lengths to suit size of items to be attached; fastened to studs for attachment of surface mounted fittings and accessories.
- 2.5.1.2. Elimination of backer plates or direct attachment of accessories or equipment to metal framing will not be permitted.
- 2.5.2. Insulating strip: rubberized, moisture resistant 3 mm thick foam strip, width equal to track width, with self sticking adhesive on one face, lengths as required.

PART 3 - EXECUTION

3.1. INSTALLATION

3.1.1. General:

- 3.1.1.1. Non-structural metal framing shall comply with ASTM C754 and product manufacturer's written requirements.
- 3.1.1.2. Do not bridge building expansion joints with support system; frame both sides of joints.
- 3.1.1.3. In double stud walls, do not bridge across the studs on the opposite sides of the wall with gypsum board or metal cross bracing.
- 3.1.1.4. Place studs vertically at 400 mm (16") oc unless otherwise specified, not more than 50 mm (2") from abutting walls, and at each side of openings and corners. Position studs in tracks. Cross brace studs as required to provide rigid installation.
- 3.1.1.5. Provide heavy duty double boxed studs at each side of openings to extend in 1 piece from floor to underside of structure above.
- 3.1.1.6. Thermally separate the metal studs from the exterior concrete or masonry.
- 3.1.1.7. Provide sufficient clearances between the work of this section and structural elements to prevent the transference of structural loads.
- 3.1.1.8. Attach backer plates to the framing to support the load of, and to withstand, the withdrawal and shear forces imposed by the items installed upon the work of this section.
- 3.1.1.9. Install insulating strip under stud shoe tracks of partitions on slabs on grade.

3.1.2. Furring:

- 3.1.2.1. Shim furring to achieve the required installation tolerances specified in this section.
- 3.1.2.2. Erect the resilient furring as follows:
 - 3.1.2.2.1. to a maximum of 610 mm (2'-0") on centre;
 - 3.1.2.2.2. not more than 150 mm (6") from a ceiling/wall juncture, unless otherwise specified on the drawings;
 - 3.1.2.2.3. secure to the framing support with 25 mm (1") gypsum board screws;
 - 3.1.2.2.4. with a 150 mm (6") continuous strip of 13 mm (1/2") interior gypsum board along the base of the partitions where resilient furring is installed unless otherwise required by resilient furring manufacturer's written installation requirements.
 - 3.1.2.2.5. with the resilient furring channel transverse to the framing members; and
 - 3.1.2.2.6. with the outer leg of the resilient furring oriented upwards on the partitions.

3.1.3. Suspended and Furred Ceilings:

- 3.1.3.1. Space the hangers at a maximum of 914 mm (3'-0") on centre along the runner channels and not more than 150 mm (6") from the ends unless otherwise required by engineered shop drawings.
- 3.1.3.2. Space the runner channels at a maximum of 1,220 mm (4'-0") on centre and not more than 150 mm (6") from boundary walls, interruptions in the continuity; and changes in direction unless otherwise required by engineered shop drawings
- 3.1.3.3. Run the runner channels transversely to the structural framing members.
- 3.1.3.4. Lap the members by at least 200 mm (8") and wire each end with two loops where there is splicing.
- 3.1.3.5. Stagger the splices throughout the framing system.
- 3.1.3.6. Bend the hanger sharply under the bottom flange of the runner channel and securely wire with a saddle tie to attach to the rod hangers.
- 3.1.3.7. Erect the cross furring channels transversely across the runner channels at a maximum of 400 mm (1-3.75") on centre except at a maximum of 305 mm (12") on centre at fire rated assemblies.
 - 3.1.3.7.1. Erect the cross furring channels not more than 150 mm (6") from boundary wall openings, interruptions in the ceiling continuity, and changes in direction.
- 3.1.3.8. Size GWB acoustic spring hangers to suit design loads in accordance with reviewed shop drawings.
- 3.1.4. Partition Framing Installation
 - 3.1.4.1. Install partition tracks at the floor and underside of the structure.
 - 3.1.4.2. Secure partition tracks to the concrete with screwed or shot fasteners located 50 mm (2") from each end and spaced at a maximum of 610 mm (2'-0") on centre.
 - 3.1.4.3. Extend one (1) runner to the end of the partition corner and butt the other runner to it, minus the clearance for the gypsum board thickness.
 - 3.1.4.4. Place interior studs as follows, unless otherwise Indicated on drawings:
 - 3.1.4.4.1. A minimum of 400 mm (1-3.75") on centre;
 - 3.1.4.4.2. A maximum of 50 mm (2") from abutting walls, abutting openings and each side of corners;
 - 3.1.4.4.3. A minimum of 19 mm (3/4") on centre for the deflection under beams and structural slabs to avoid the transmission of structural loads to the studs, or install 50 mm leg ceiling tracks.
 - 3.1.4.5. Install three studs at the corners and intermediate intersections of the partitions.
 - 3.1.4.6. Extend partition framing above the ceilings to the underside of the structure, unless otherwise Indicated on the drawings.
 - 3.1.4.7. Install chase walls consisting of two parallel steel stud partitions.
 - 3.1.4.8. Install lateral support bracing channels:
 - 3.1.4.8.1. For partitions over 3 m (10'-0") in vertical span;
 - 3.1.4.8.2. At mid-height to a maximum vertical spacing of 2,440 mm (8'-0") on centre;
 - 3.1.4.8.3. With at least one (1) 19 mm (3/4") horizontal bracing channel;
 - 3.1.4.8.4. To extend the full length of the partition; and
 - 3.1.4.8.5. To overlap at least two (2) stud spaces at the ends of the bracing channels.

- 3.1.4.9. Stiffen partitions a maximum of 150 mm (6") from the top and bottom of the openings and across two full stud spaces at each side of the openings with a horizontal bracing channel.
- 3.1.5. Concrete Anchors:
 - 3.1.5.1. Provide anchorage points in reinforced concrete floor slab underside in accordance with gypsum board manufacturer's written suspension requirements.
 - 3.1.5.2. Provide anchors; minimum installation depth, and method of expansion as recommended by the anchor manufacturer's written requirements.
- 3.1.6. Installation Tolerances:
 - 3.1.6.1. Install non-structural metal framing plumb, level, straight, tight and secured, to the following maximum tolerances:
 - 3.1.6.1.1. Plumb and level: 3 mm (1/8") in 3 m (10'-0").
 - 3.1.6.1.2. Variation from Indicated position: 10 mm (3/8").
 - 3.1.6.1.3. Variation between the planes of abutting edges or ends: 1.5 mm (1/16")

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

- 1.1.1. Section Includes: Provide gypsum board assemblies work including but not limited to following:
- 1.1.1.1. Gypsum board ceilings, partitions and repairs to existing gypsum board.
 - 1.1.1.2. Corner beads, casing beads, trim, control joints and corner reinforcement.
 - 1.1.1.3. Taping and filling.
 - 1.1.1.4. Sound attenuation batts.
 - 1.1.1.5. Installation of access doors, and panels supplied by other Sections in gypsum board walls and ceilings as required.

1.2. QUALITY ASSURANCE

- 1.2.1. Qualifications:
- 1.2.1.1. Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.3. DELIVERY, STORAGE AND HANDLING

- 1.3.1. Storage and Handling Requirements:
- 1.3.1.1. No outside storage permitted. Store in clean, dry area, off ground. Provide adequate ventilation to avoid excess moisture, surface relative humidity and mold or fungal growth. Remove immediately any board showing signs of mold, mildew or fungal growth.
 - 1.3.1.2. Stack gypsum board flat on level and dry surface without overhanging boards. Prevent sagging and damage to edges, ends and surfaces. Protect bagged Products from moisture or wetting.

1.4. SITE CONDITIONS

- 1.4.1. Ambient Conditions:
- 1.4.1.1. Do not install work of this Section in any area unless satisfied that work in place has dried out and that no further installation of materials requiring wetness, moisture or dampness is contemplated. Ensure relative humidity in area of work of this Section does not exceed 55% for duration of Project.
 - 1.4.1.2. Ensure temperature of surrounding areas is min 13 deg C (55 deg F) and max 21 deg C (70 deg F) for 7 Days before and during application of gypsum board; maintain for 4 Days thereafter. Ensure heat is provided at appropriate time before work has started to bring surrounding and adjacent materials up to required temperature and maintained as specified. Avoid concentrated or irregular heating during drying by means of deflectors or protective screens.
 - 1.4.1.3. Ensure ventilation is provided for proper drying of joint filler and adhesive and to prevent excessive humidity. Do not force dry adhesives and joint treatment.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

- 2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

- 2.1.1.1. Bailey Metal Products Ltd.; www.bmp-group.com
- 2.1.1.2. CertainTeed Corporation; www.certainteed.com
- 2.1.1.3. CGC Inc; www.cgcinc.com
- 2.1.1.4. Georgia-Pacific Canada, Inc.; www.gpgypsum.com
- 2.1.1.5. Johns Manville; www.jm.com
- 2.1.1.6. Roll Formed Specialty; www.rollformed.com
- 2.1.1.7. Trim-Tex Inc.; www.trim-tex.com

2.2. GYPSUM BOARD

- 2.2.1. Gypsum Board: Conforming to ASTM C1396/C1396M. Unless indicated otherwise use 1200 mm (4') wide standard facing board in maximum continuous lengths up to 3600 mm (12'), beveled and/or tapered edges to suit design requirements with butted square ends:
 - 2.2.1.1. Gypsum Board (Walls): Provide 15.9 mm (5/8") thick with tapered edges unless otherwise specified as follows:
 - 2.2.1.1.1. Provide 9.5 mm (3/8") thick gypsum board on curved walls.
 - 2.2.1.2. Gypsum Board (Ceiling): Provide 13mm (1/2") thick with tapered edges unless otherwise specified as follows:
 - 2.2.1.2.1. Use anti sag sheets.
- 2.2.2. Moisture Resistant Gypsum Board: ASTM C1658/C1658M, glass mat faced, silicone treated core gypsum board, ASTM D3273 with a rating of 10, no mould growth after 4 weeks exposure, 12.7 mm (1/2") or Type X, 15.9 mm (5/8"). Acceptable products:
 - 2.2.2.1. "DensArmor Plus® High Performance Interior Panel" by Georgia-Pacific Canada, Inc.
 - 2.2.2.2. "CGC Sheetrock® Brand Glass-Mat Panels Mold Tough®" by CGC Inc.
- 2.2.3. Fire Rated Gypsum Board having Testing Agency Fire Rating Identification Stamp on Each Sheet: ASTM C1396/C1396M, Type X, 12.7 mm (1/2") and/or 15.9 mm (5/8") thick gypsum board 1200 mm (4') wide, maximum practical length and tapered edge as required by each fire resistance assembly. Acceptable products:
 - 2.2.3.1. "Gyproc Fireguard Type X or Type C" by Georgia-Pacific Canada, Inc.,
 - 2.2.3.2. "CGC Sheetrock Firecode X or Firecode C" by CGC Inc.
 - 2.2.3.3. "ProRoc Type X or Type C" by CertainTeed Corporation.
- 2.2.4. Gypsum Board Tile Backer Board: ASTM C1178/C1178M, glass mat faced, water-resistant gypsum core board, with a rating of 10 in accordance with ASTM D3273, no mould growth after 4 weeks exposure, 15.9 mm (5/8") thick plain or Type X;. Acceptable products:
 - 2.2.4.1. "DensShield® Tile Backer" by Georgia-Pacific Canada, Inc.
 - 2.2.4.2. "Durock® Glass-Mat Tilebacker" by CGC Inc.
 - 2.2.4.3. "GlasRock® Diamondback® Tile Backer" by CertainTeed Corporation.
- 2.2.5. Abuse Resistant Gypsum Board: Provide 1 of following:
 - 2.2.5.1. Enhanced gypsum core encased in heavy duty paper facers on front and back, 15.9 mm (5/8"), conforming to ASTM C1396/C1396M and attaining a maximum of 0.014" as tested to ASTM D4060 (H-18 abrasion wheel, 500 grams, 200 cycles), a maximum of 0.123" indentation as tested to ASTM D5420 (72 in lbs) and a minimum of (133 ft lbs) as tested to ASTM E695 (50 lb bag) and ASTM C1629/C1629M Type X in fire rated assemblies. Acceptable products:

- 2.2.5.1.1. "Extreme Abuse with M2Tech" by CertainTeed Corporation
- 2.2.5.1.2. "CGC Sheetrock® Brand Mold Tough® AR Firecode Core" by CGC Inc.
- 2.2.5.2. Enhanced gypsum core encased in fibreglass facers on front and back, 15.9 mm (5/8"), conforming to ASTM C1396/C1396M and attaining a maximum of 0.014" as tested to ASTM D4060 (H-18 abrasion wheel, 500 grams, 200 cycles), a maximum of 0.123" indentation as tested to ASTM D5420 (72 in lbs) and a minimum of (133 ft lbs) as tested to ASTM E695 (50 lb bag) and ASTM C1629/C1629M Type X in fire rated assemblies. Acceptable products:
 - 2.2.5.2.1. "DensAmor Plus® Abuse Guard" by Georgia-Pacific Canada, Inc.
 - 2.2.5.2.2. "Sheetrock Mold Tough Glass Mat Abuse Resistant" by CGC Inc.

2.3. FASTENERS

- 2.3.1. Screws for Sheet Steel Members: ASTM C954, self-drilling, self-tapping gypsum board screws, 25 mm (1") long #6 for single layer application, 41 mm (1-5/8") long #7 for double layer application and as follows:
 - 2.3.1.1. For single layer application over steel framing; self-drilling, self-tapping, case hardened, No. 6 contoured Phillips head or Type S bugle head, sized for minimum 15.9 mm (5/8") penetration into steel framing. Ensure fasteners are corrosion resistant. Use drill point screws for abuse resistant gypsum fibre panels.
 - 2.3.1.2. For double layer application over gypsum backing board and existing gypsum board; 38 mm (1-1/2") Type G bugle head. For each additional layer of board, increase length of fasteners proportionally.
- 2.3.2. Screws; for exterior sheathing board: in accordance with manufacturer's installation instructions to comply with design wind loads.
- 2.3.3. Laminating Compound: Asbestos-free, as recommended by manufacturer. Manufacturer's standard, multi-purpose construction adhesive. At fire-rated construction, use adhesive which conforms to that used in applicable fire tests. Acceptable products:
 - 2.3.3.1. "Sheetrock Brand Laminating Compound" by CGC Inc.,
 - 2.3.3.2. "Dehydratine 9T" by Grace Construction Products
 - 2.3.3.3. "Stangard Foamastic" by Standard Chemicals Ltd.

2.4. JOINT TREATMENT MATERIALS

- 2.4.1. Joint Tape: Conforming to ASTM C475/C475M, provide following:
 - 2.4.1.1. Regular Gypsum Board: Use kraft paper joint tape with feathered edges and minute perforations 50 mm (2") wide.
 - 2.4.1.2. Moisture Resistant Gypsum Board or Cement Board: Use glass fibre tape only, open weave, with pressure sensitive adhesive 1 side. Acceptable products:
 - 2.4.1.2.1. "Durock Cement Board Tape" by CGC Inc.
- 2.4.2. Joint Fillers and Topping Compound: Either slow or fast setting, low shrinkage type free of asbestos fillers and as recommended by manufacturer. Use "Gyproc 90" by Georgia-Pacific Canada, Inc. or "Durabond 90" by CGC Inc. at exterior soffits.
- 2.4.3. Finish coat for level 5 finish: vinyl acrylic latex based coating to ASTM C840, spray applied, "Tuff-Hide Primer-Surfacer" by CGC Inc.

2.5. ACCESSORIES

- 2.5.1. Dust Barrier: Minimum 0.152 mm (6 mil) polyethylene, CAN/CGSB-51.33-M, Type 2.

- 2.5.2. Resilient Sponge Tape: Self-sticking adhesive on 1 side, closed cell neoprene sponge tape.
Acceptable products:
- 2.5.2.1. "Rubatex®" by Rubatex Corp.,
 - 2.5.2.2. "Foamflex # 1220" by Jacobs & Thompson Inc.; www.foamparts.com
 - 2.5.2.3. "Backerseal™ (Greyflex)™" by Emseal LLC; www.emseal.com.
- 2.5.3. Sealant for Moisture Resistant Gypsum Board Edges: "Sheetrock Brand W/R Sealant" by CGC Inc., or similar type acceptable to Consultant.
- 2.5.4. Corner Beads: "PG1 Platinum Square Nose Tape-On Trims" by Bailey Metal Products Ltd. "No-Coat®" by CertainTeed or "Fast Edge" paper by Trim-Tex at corners, reveals, or similar. Provide custom shapes of similar materials and design as noted.
- 2.5.5. Trim: "PG4 Platinum Tape-On L-Trims" by Bailey Metal Products Ltd.
- 2.5.6. Flexible Casing Beads: 0.531 mm (25 ga) steel, wipe coated, angle shaped in size to fit over edge of gypsum board, to suit curved applications.
- 2.5.7. Control Joints: Pre-fabricated control joints prepared to suit site conditions. Certified by manufacturer for use at fire resistance rated assemblies. Acceptable products:
- 2.5.7.1. "No. 093" zinc alloy control joint by CGC Inc.
 - 2.5.7.2. "DRM-50-25 2-PC" by Fry Reglet
 - 2.5.7.3. "093V Expansion Bead" by Trim-Tex Drywall Products Inc.
- 2.5.8. Access Doors and Panels:
- 2.5.8.1. Supplied as part of Section 08 31 13 and Divisions 21, 22, 23, 26, 27 and 28 for installation as part of this Section.
- 2.6. SOUND CONTROL MATERIALS**
- 2.6.1. Acoustical Insulation: CAN/ULC S702, Type 1, of sufficient thickness to meet required STC rating for sound-rated partitions and of width to suit metal framing spacing
- 2.6.1.1. Acoustical Insulation Batts in non-fire rated assemblies: glass fibre
 - 2.6.1.1.1. Acceptable Products:
 - 2.6.1.1.1.1. "EcoTouch™ QuietZone® PINK™ FIBERGLAS® Acoustical Insulation" by Owens Corning Canada LP; www.insulation-owenscorning.ca
- 2.6.2. Strip Impalement Clips: 25 mm (1") wide strip of "Insul-Hold" by Insul-Hold Co., Inc.; www.insulhold.com, fabricated from 0.531 mm (25 ga) galvanized sheet metal in 30 m (100') rolls with punch-out insulation securement arrows. Alternatively, use special studs with punch-out impalement strips.
- 2.6.3. Acoustic Sealant:
- 2.6.3.1. Concealed locations: Single component, non-hardening, non-skinning synthetic rubber sealant; "Tremco Acoustical Sealant" by Tremco Canada; www.tremcosealants.com.
 - 2.6.3.2. Fire resistance locations: Smoke-seal sealant with flame-spread not more than 25 and smoke developed classification not more than 50 to CAN/ULC-S102.
- 2.6.4. Elastomeric Sealant: As recommended by manufacturer of fibre-reinforced gypsum sheathing board.
- 2.6.5. Gaskets: Closed cell neoprene, 3 mm (1/8") thick x 64 mm (2-1/2") wide.

PART 3 - EXECUTION

3.1. EXAMINATION

- 3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.
- 3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. PREPARATION

- 3.2.1. Ensure that services, blocking and supports to be installed in partitions have been installed and inspected before closing in with gypsum board.
- 3.2.2. Vacuum clean stud track, suspended support framing, and spaces to be concealed before starting the days installation.

3.3. INSTALLATION

- 3.3.1. Gypsum Board Application:
 - 3.3.1.1. Provide gypsum board in accordance with manufacturer's written installation instructions and finish to requirements of ASTM C840. Install Moisture Resistant Gypsum Board on any wall/partition with a paint finish containing a plumbing fixture (i.e. water closets, sinks, tubs, etc.). Install gypsum board tile backer board on any wall partition or ceiling requiring a tile finish.
 - 3.3.1.2. Provide metal trim casing bead at junctions with dissimilar materials. Provide reveals at junctions with dissimilar materials where indicated.
 - 3.3.1.3. Provide finished work plumb, level and true, free from perceptible waves or ridges and square with adjoining work.
 - 3.3.1.4. Cut and fit gypsum board to accommodate or fit around other parts of the Work. Provide work of this Section accurately and neatly.
 - 3.3.1.5. Butt gypsum board sheets together in moderate contact. Do not force into place. Place tapered or wrapped edges next to 1 another.
 - 3.3.1.6. Provide gypsum board perpendicular to framing and in lengths that will span ceilings and walls without creating end (butt) joints. If butt joints do occur stagger and locate them as far from centre of walls and ceilings as possible. Accurately fit exposed butt joints together and make edges smooth.
 - 3.3.1.7. Support ends and edges on framing.
 - 3.3.1.8. Fasten gypsum board to metal furring and steel studs with screws. Space screws at 200 mm (8") oc at board edges and 300 mm (12") oc on board field.
 - 3.3.1.9. Gypsum Board - Single Layer:
 - 3.3.1.9.1. Ceilings: Apply gypsum board to metal furring with screws. Erect board with long dimension parallel to supports. Locate end joints over supporting members. Space screws at 200 mm (8") oc.
 - 3.3.1.9.2. Partitions: Apply gypsum board to steel studs with screws. Erect board with long dimension parallel to supports. Locate end joints over supporting members. Locate vertical joints at least 300 mm (12") from jamb lines of openings. Space screws at 200 mm (8") oc at board edges and 300 mm (12") oc on board field.
 - 3.3.1.9.3. Ceiling and Partition Fasteners: Ensure perimeter screws are not less than 9 mm (3/8") nor more than 13 mm (1/2") from edges and ends are opposite

screws on adjacent boards. Drive screws with power screw-gun and set with countersunk head slightly below surface of board.

3.3.1.9.4. Joints: Finish all joints unless specified otherwise.

3.3.1.10. Gypsum Board - Double Layer:

3.3.1.10.1. Lay out work to minimize end joints on face layer; to offset parallel joints between face and base layers by at least 250 mm (10") and to apply face layer at right angles to base layer.

3.3.1.10.2. Base Layer: Ensure base layer is same as face layer, or backing board, and applied at right angles to framing members. Secure base layer with screws spaced 300 mm (12") oc to each member. Ensure perimeter screws are not more than 13 mm (1/2") from edges and ends are opposite screws on adjacent boards. Ensure surface of erected base layer is straight, plumb or level and without protrusions before face layer is applied.

3.3.1.10.3. Face Layer: Apply face layer at right angles to base layer with screws.

3.3.1.10.4. Joints: Finish joints in face layers only, unless otherwise required to achieve fire resistant ratings indicated, as hereinafter specified. Ensure setting compound for fire rated construction conforms to requirements of authorities having jurisdiction to obtain fire rating shown on Drawings.

3.3.2. Interior Ceilings:

3.3.2.1. Comply with recommendations of CGC Drywall Steel-Framed Systems Folder 09250-SA 923.

3.3.2.2. Provide hanger wires spaced at maximum 1200 mm (4') oc along carrying channels and within 150 mm (6") of ends of carrying channel runs. Secure hanger wires to inserts in structure above.

3.3.2.3. Provide carrying channels maximum 1200 mm (4') oc and within 150 mm (6") of walls. Secure with hanger wire saddle-tied along channels. Provide 25 mm (1") clearance between runners and walls. Provide splicers behind joints. Level channels to a maximum tolerance of 3 mm (1/8") over 3600 mm (12').

3.3.2.4. Provide metal furring channels at right angles to carrying channels at maximum 600 mm (24") oc and within 150 mm (6") of walls. Provide 25 mm (1") clearance between furring ends and abutting walls. Attach furring channels to carrying channels with saddle-tie of double strand tie wire.

3.3.2.5. Provide additional cross-reinforcing at bulkheads and other openings.

3.3.2.6. Provide ceiling gypsum board, smooth and level. In areas with a high humidity content (ie. Washrooms, janitor closets, etc.) install MRGB.

3.3.3. Metal Trim and Accessories:

3.3.3.1. Provide metal trim casing beads at reveals; at ceiling-wall intersections and partition perimeters; and at intersection of dissimilar constructions such as gypsum board to concrete.

3.3.3.2. Provide metal trim casing beads where gypsum board abutts against a surface having no trim concealing junction.

3.3.3.3. Provide a 13 mm (1/2") separation gasket between metal trim casing beads and window frames or other cold surfaces or provide sponge tape between gypsum board partition or furring framing, where such framing abuts exterior door or window frame, sponge tape between floor and gypsum board partition track. Ensure tape is either full width or 1 strip 9 mm (3/8") wide on each side of framing member.

- 3.3.3.4. Provide casing bead and sponge tape where gypsum board abuts materials other than itself and acoustic tile ceilings including at exterior door and window frames, where juncture is not concealed with trim; or elsewhere where indicated on Drawings. Unless indicated otherwise, use tape 3 mm (1/8") narrower than casing bead to provide recess at exposed side. Compress tape by 25%.
- 3.3.3.5. Provide metal trim casing beads where indicated on Drawings.
- 3.3.3.6. Access Doors and Panels: Install access doors and panels supplied as part of work of Divisions 22, 23 and 26 and where required as part of work of this Section in walls, bulkheads, ceilings and soffits.
- 3.3.4. Control Joints:
 - 3.3.4.1. Provide either manufactured control joint devices or field fabricated control joints from suitable materials to suit site conditions in accordance with manufacturer's instructions and/or ASTM C840.
 - 3.3.4.2. Set in gypsum facing board, supporting control joints with studs or furring channels on both sides of joint. Ensure double studs with discontinuous tracks and double suspended ceiling furring channels have been installed prior to commencing board and bead application at control joints. Provide control joints as required to prevent cracks at following locations:
 - 3.3.4.2.1. Where a partition, wall or ceiling traverses a construction joint (expansion, seismic or building control element) in base building structure
 - 3.3.4.2.2. Where a wall or partition runs in an uninterrupted straight plane exceeding 9.1 m (30') (Note: A full height door frame may be considered a control joint).
 - 3.3.4.2.3. interior ceilings with perimeter relief: installed so linear dimensions between control joints do not exceed 15 m (50') and total area between control joints does not exceed 230 m² (2,500 sq ft).
 - 3.3.4.2.4. Interior ceilings without perimeter relief: installed so linear dimensions between control joints do not exceed 9.1 m (30') and total area between control joints does not exceed 84 m² (900 sq ft).
 - 3.3.4.2.5. Exterior ceilings and soffits: installed so linear dimensions between control joints do not exceed 15 m (50') and total area between control joints does not exceed 230 m² (2,500 sq ft).
 - 3.3.4.2.6. At stress points (ie corners of openings or changes in direction of surfaces).
 - 3.3.4.3. Provide additional control joints at long and narrow surfaces.
 - 3.3.4.4. Provide control joints full height floor to ceiling or door header to ceiling in partitions and furring runs.
 - 3.3.4.5. Provide control joints from wall to wall in ceiling areas.
 - 3.3.4.6. Provide continuous polyethylene dust barrier behind and across control joints.
 - 3.3.4.7. Ensure Consultant reviews exact locations of control joints.
- 3.3.5. Sound Control:
 - 3.3.5.1. Where indicated on Drawings, provide sound rated partitions and ceiling in locations indicated to meet required minimum STC rating. Apply gypsum board on both sides of sound-proofed partitions. Follow manufacturer's details and recommendations.
 - 3.3.5.2. Provide sound attenuation insulation to completely fill height of stud cavities. Tightly butt ends and sides of blankets within cavities. Cut blankets to fit small spaces. Carefully fit blankets behind electrical outlets, bracing, fixture attachments and mechanical and electrical services.

- 3.3.5.3. Mechanically fasten blankets to back of gypsum board as recommended by gypsum board manufacturer.
- 3.3.5.4. At sound attenuating suspended ceiling and enclosures having spring isolator hangers, terminate ceiling or enclosure at adjacent construction by providing continuous isolator strip and sealed joint.
- 3.3.6. Joint Treatment - Gypsum Board:
 - 3.3.6.1. Verify board is firm against framing members and screw heads are properly depressed.
 - 3.3.6.2. Mix joint compound or ready-to-use compounds according to manufacturer's directions. Use pure, unadulterated, clean water for mixing. Permit mixed material to stand 30 minutes before using. Do not mix more material than can be used within 1 hour. Do not use set or hardened compound. Clean tools and equipment after mixing each batch.
 - 3.3.6.3. Tape and fill joints and corners in accordance with gypsum board manufacturer's printed instructions. Fill either manually, using hand tools of trade, or by a mechanical taping and filling machine of proven efficiency.
 - 3.3.6.4. Remove plastic tape from control joints after finishing with joint compound.
 - 3.3.6.5. After final coats of filler have dried at least 24 hours, sand surface lightly with No. 00 sandpaper to leave it smooth, ready for decoration.
 - 3.3.6.6. Provide finished work smooth, seamless, plumb and true, flush and with square plumb neat corners.
 - 3.3.6.7. Levels of Finish: Provide Level 4 finish in accordance with ASTM C840.
- 3.3.7. Cutting and Patching: Cooperate and coordinate with other Sections to obtain satisfactory gypsum board finish work. Do cutting, patching and Make Good as required by installation of work of other Sections.
- 3.4. CLEANING**
 - 3.4.1. Clean off beads, casings, joint cement droppings and similar items and remove surplus materials and rubbish on completion and as directed.
- 3.5. PROTECTION**
 - 3.5.1. Provide protection of materials and work of this Section from damage by weather and other causes. Perform work in areas closed and protected from damage due to weather. Protect work of other trades from damage resulting from work of this Section. Make Good such damage immediately.

END OF SECTION

PART 1 - GENERAL

1.1. SUMMARY

1.1.1. Section Includes: Provide tiling including but not limited to following:

- 1.1.1.1. Grouting control joints in floor slab under tile.
- 1.1.1.2. Uncoupling membrane.
- 1.1.1.3. Thin-set mortar bond coat.
- 1.1.1.4. Floor tile, base and fittings.
- 1.1.1.5. Wall tile.
- 1.1.1.6. Movement joints.
- 1.1.1.7. Grouting tile joints.
- 1.1.1.8. Caulking tile control joints.
- 1.1.1.9. Caulking penetrations through wall and floor tile.

1.2. ADMINISTRATIVE REQUIREMENTS

1.2.1. Coordination:

- 1.2.1.1. Provide Floor Flatness (FL) and Floor Levelness (FL) requirements to Section 03 01 30 – Repairs to Concrete.
- 1.2.1.2. Provide requirements to Section 09 05 61 – Common Work Results for Flooring Preparation for concrete testing. Coordinate testing, confirm acceptance of final preparations.

1.2.2. Preinstallation Meeting:

- 1.2.2.1. Prior to start of work, arrange for site meeting of parties associated with work of this Section. Attendance to include Contractor, Subcontractor, and manufacturer's representative.
- 1.2.2.2. Review work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials to be used, installation, methods and procedures, quality control, Project staffing, restrictions on areas of work and other matters affecting construction, to permit compliance with intent of this Section. Also discuss following items:
 - 1.2.2.2.1. Substrate and backing surfaces flatness requirements
 - 1.2.2.2.2. Installation techniques associated with specified materials
 - 1.2.2.2.3. Compatibility between specified materials and between adjacent materials
 - 1.2.2.2.4. Concerns arising from site conditions
 - 1.2.2.2.5. Concerns of the installer or supplier arising from as-constructed conditions

1.3. SUBMITTALS

1.3.1. Product Data:

- 1.3.1.1. Submit manufacturer's technical data sheets, SDS and installation instructions for specified materials.
- 1.3.1.2. Where more than 1 manufacturer's Products are part of single tile assembly, arrange for each manufacturer to submit a written statement of compatibility with respect to other manufacturer's materials.

- 1.3.2. Shop Drawings: In addition to minimum requirements indicate following:
- 1.3.2.1. Special tile patterns or conditions affecting installation
 - 1.3.2.2. Locations transitions and intersections between differing materials
 - 1.3.2.3. Widths, details, and locations of expansion and contraction joints, and control and isolation joints in tile substrates and finished tile surfaces
- 1.3.3. Samples: Submit individual sample panels of each colour of ceramic and porcelain tile, set with adhesive, grouting and bonding method as specified, showing quality, colour and finish of material, grout and pattern of tiles. Ensure each panel is minimum 600 mm x 600 mm (24" x 24").

1.4. QUALITY ASSURANCE

- 1.4.1. Project Quality Standard:
- 1.4.1.1. Tile Installation Manual published by the TTMAC, together with authorized additions and amendments will be used as a reference standard and forms part of this project specification
- 1.4.2. Qualifications:
- 1.4.2.1. Manufacturers: Obtain each specified material from one source with resources to provide products from the same production run for each contiguous area consistent in quality, appearance and physical properties.
 - 1.4.2.2. Installers: Execute work of this Section using a company who is a member in good standing with TTMAC and has minimum 5 years successful experience in application of Products, systems and assemblies specified. Perform tile work using skilled mechanics trained and experienced in work of this complexity. Install waterproofing system using an applicator approved by system manufacturer.

1.5. SITE CONDITIONS

- 1.5.1. Ambient Conditions: Apply tile after completion of work by other Sections is complete; to surfaces sufficiently dry, clean, firm, level, plumb and free from oil or wax or any other material harmful to tile adhesion and as follows:
- 1.5.1.1. Temperature: Maintain tile materials and substrate temperature between TTMAC recommended minimum and maximum temperature range; unless indicated otherwise by manufacturer, as follows:
 - 1.5.1.1.1. Tile and Cementitious Materials: Install tiles between 12 degrees C and 38 degrees C, meeting installation material manufacturer's written recommendations.
 - 1.5.1.1.2. Epoxy Materials: Install epoxy mortar and grouts between 18 degrees C and 35 degrees C, meeting installation material manufacturer's written recommendations.
 - 1.5.1.1.3. Curing Time: Maintain temperature range for 48 hours before and during installation and maintain temperature range until materials are fully set and cured in accordance with manufacturer's recommendations, and as follows:
 - 1.5.1.1.3.1. Provide additional heat when there is a risk that surface temperatures may drop below minimum recommended temperatures.
 - 1.5.1.1.3.2. Provide cooling or wait until temperature range is below maximum recommended temperatures; do not install materials when temperature is at or above maximum recommended temperature.

1.5.2. Ventilation: Maintain adequate ventilation where Work of this Section generates toxic gases or where there is a risk of raising relative humidity to levels that could damage building finishes and assemblies.

1.6. WARRANTY

1.6.1. Manufacturer Warranty:

1.6.1.1. Warrant work of this Section against defects, excessive wear and loss of adhesion including replacement of defective tiling, materials, labour costs for demolition of defective work, accessories and installation systems at Owner's convenience. Cracks arising from normal shrinkage and/or expansion of concrete are not considered as structural failure. Hairline cracks in grout joints which result from these causes are considered normal and warranty is not voided as a result of these minor defects.

PART 2 - Products

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1. Ardex Canada, Inc.; www.ardex.ca

2.1.1.2. Centura; www.centura.ca

2.1.1.3. Flextile Ltd.; www.flextile.net

2.1.1.4. Interstyle Ceramic & Glass Tile; www.interstyle.ca

2.1.1.5. Laticrete International, Inc.; www.laticrete.com

2.1.1.6. Mapei Corporation; www.mapei.ca

2.1.1.7. Schluter Systems (Canada) Inc.; www.schluter.com

2.1.1.8. TEC: <https://www.tecspecialty.com/>

2.1.2. Use proprietary Products in full compliance with manufacturer's recommendations. As far as possible obtain Product from single manufacturer ensuring compatibility with adjacent components while maintaining quality.

2.2. PERFORMANCE REQUIREMENTS:

2.2.1. Select suitable systems for tile setting according to TTMAC design details and tile manufacturer's recommendations.

2.2.2. Provide tile products manufactured and tested in accordance with ANSI A108/A118/A136.1, ANSI A137.1 as appropriate to the Basis-of-Design Materials listed in this Section.

2.2.3. Substrate and Backing Surface Flatness Tolerances: final measurement for flatness and level using mortar bed or self levelling screed materials to achieve minimum of FF50; equivalent to 3 mm with no more than 2 gaps under 3000 mm straightedge measurement. in accordance with ASTM E1155. Same requirement for wall tiles.

2.3. UNDERLAYMENTS

2.3.1. Uncoupling Membrane: Ensure membrane conforms to definition for uncoupling membranes in TTMAC's Specification Guide 09 30 00 Tile Installation Manual and meets or exceeds requirements of ANSI A108/A118/A136.1. Membrane uncouples the floorcovering from the substrate and prevents the transfer of stresses to the tiled surface, providing Shear Stress Control. Cracks in the substrate are bridged and not transferred to the tile installed. Membrane to allow for installations of both latex-modified and unmodified tile mortars, for proper installation and maximum strength of large format porcelain, tile and stone. Provide 1 of following:

- 2.3.1.1. "Schluter®-DITRA-XL" by Schluter Systems (Canada) Inc.; 7 mm (9/32") thick, orange, high-density polyethylene membrane with a grid structure of 12 mm x 12 mm (1/2" x 1/2") square cavities, each cut back in a dovetail configuration and a polypropylene anchoring fleece laminated to its underside.
- 2.3.1.2. "FLEXMAT" by Flexite Ltd; High Performance Universal Uncoupling Membrane, 0.5 mm (0.02") thickness.
- 2.3.1.3. "Mapeguard UM" by Mapei Corporation; 3 mm (1/8") thick, light green, polypropylene membrane with a tri-layered design of textured foil, backing fleece and mesh.
- 2.3.1.4. "Strata Matt Uncoupling Mat" by Laticrete International, Inc
- 2.3.2. Site Prepared Sanded Cement Mortar Mixture (Dry Pack):
 - 2.3.2.1. Mortar Bed for Quarry Tile: A mixture of cement, sand and water (latex additive may be included) installed to thickness as required to provide an even substrate on which to apply tiling. Use mortar to correct irregularities in subsurface planes and slope accurately as required to meet design requirements. Reinforce mortar beds on floors with 50 mm x 50 mm x 1.6 mm (2" x 2" x 1/16") galvanized or stainless steel square wire mesh and on walls expanded metal lath weighing not less than 1.4 kg/m² (0.287 lbs/sq ft). Apply scratch coat where expanded metal lath is used before mortar bed is applied.
 - 2.3.2.2. Conform to admixture manufacturer's recommendations for Products and mixtures.
 - 2.3.2.3. Cement: CAN/CSA-A3000 grey or white Portland cement; white for grout.
 - 2.3.2.4. "Fast-Setting", Shrinkage Compensating, HCT Cement Binder for Interior Floors. Acceptable products:
 - 2.3.2.4.1. "Ardex EB 2™ Fast Setting Screed Cement" by Ardex Canada, Inc.
 - 2.3.2.4.2. "Mapecem Premix®" by Mapei Corporation.
 - 2.3.2.4.3. "3701 Fortified Mortar Bed – Premixed" or "3701 Lite Mortar R – Rapid Curing & Lightweight" by Laticrete International, Inc.
 - 2.3.2.5. Sand: ASTM C144 or CSA A23.1, sharp, screened mortar sand free from organic and deleterious materials.
 - 2.3.2.6. Water: Potable.
 - 2.3.2.7. Lime: ASTM C207, Type S, hydrated lime, except for "Mapecem®" products by Mapei Corporation.
 - 2.3.2.8. Reinforcing Mesh: Conform to ASTM A1064/A1064M.
 - 2.3.2.9. Reinforcing Metal Lath: Conform to ASTM C847.
 - 2.3.2.10. Cleavage Membrane: CAN/CGSB-51.34-M, 0.10 mm (4 mil) thick polyethylene film or CSA A123.3, Type 1, asphalt saturated roofing felt.

2.4. ADHESIVES

2.4.1. Setting Bed and Thin-Set Adhesive:

- 2.4.1.1. Latex Mortar Bond Coat: ISO 13007-1 performance level (C2ES2P2); ANSI A108/A118/A136.1; for improved (C2) cement adhesive with (E) extended open time (S2) high-deformability (>5 mm) and improved (P2) for adherence to EGP characteristics, conforming to ANSI A108/A118/A136.1 requirements. Acceptable products:
 - 2.4.1.1.1. "Ardex X 77™ Microtec® Premium Microfiber Reinforced Polymer Modified Thin Set Mortar" by Ardex Canada, Inc.,

- 2.4.1.1.2. "Thin-Set Mortar 254 Platinum One-Step Thinset" by Laticrete International, Inc.,
- 2.4.1.1.3. "Kerabond/Keralastic" by Mapei Corporation
- 2.4.1.1.4. "#51 Floor and Wall Mix Thin-Set Mortar" and "#44 High Solids Latex Thin-Set Mortar Additive" by Flextile Ltd.
- 2.4.1.2. Latex Cement Mortars:
 - 2.4.1.2.1. ISO 13007-1 (C2) performance level for improved cement adhesive with specific additional characteristics according to specified basis of design Project requirements; ANSI A108/A118/A136.1.
 - 2.4.1.2.2. Full Contact Polymer-Modified Thin-Set Mortar Bond Coat for Horizontal Applications: ISO 13007-1 (C2) performance level improved cement adhesive; ANSI A108/A118/A136.1for EGP mortar installation over Plywood). Acceptable products:
 - 2.4.1.2.2.1. "Ardex FB 9 L Pourable ShearFlex® Mortar" by Ardex Canada, Inc.
 - 2.4.1.2.2.2. ""Keraflex Plus" Professional, Extra Smooth Large and Heavy Tile Polymer-Modified Mortar" by Mapei Corporation.
 - 2.4.1.2.2.3. "61 Polymer Modified Full Coverage Mortar" by Flextile Ltd.
 - 2.4.1.2.3. Polymer-Modified Thin-Set Mortar Bond Coat for Vertical Application of Large Modular Tiling: (300 mm x 300 mm (12" x 12") and larger) ISO 13007-1 performance level (C2TES1) for improved cementitious (C2) for adhesive with (T) slip-resistant (E) extended open time (S1) deformable characteristics conforming to ANSI A108/A118/A136.1for single component latex cement mortar. Acceptable products:
 - 2.4.1.2.3.1. "Ardex X 77™ Microtec® Premium Microfiber Reinforced Polymer Modified Thin Set Mortar" by Ardex Canada, In.
 - 2.4.1.2.3.2. "Ultraflex™ LFT" by Mapei Corporation.
 - 2.4.1.2.3.3. "56SR Premium Sag-Resistant LHT Mortar" by Flextile Ltd.
 - 2.4.1.2.3.4. "4-XLT Polymer Fortified Adhesive Mortar" by Laticrete International, Inc.
 - 2.4.1.2.4. Fast-setting Full Contact Polymer-Modified Thin-Set Mortar Bond Coat for Horizontal Applications: ISO 13007-1 performance level (C2FS1P1) for improved (C2) for cementitious adhesive (F) for fast-setting (S1) deformable (2.5 mm to 4.9 mm) with normal adherence (P1) for adherence to EGP characteristics, conforming to ANSI A108/A118/A136.1for EGP mortar installation over plywood). Acceptable products:
 - 2.4.1.2.4.1. ""Keraflex RS" Rapid-Setting Extra Smooth Large & Heavy Tile Mortar" by Mapei Corporation
 - 2.4.1.2.4.2. "62 Full Coverage Fast Set Mortar" by Flextile Ltd.
 - 2.4.1.2.5. Polymer-Modified Thin-Set Mortar Bond Coat: ISO 13007-1 performance level (C2ES1P1) for improved (C2) for cementitious adhesive with (E) extended open time, (S1) deformable (2.5 mm to 4.9 mm) and normal (P1) for adherence to EGP characteristics, conforming to ANSI A108/A118/A136.1. Acceptable products:
 - 2.4.1.2.5.1. "Ardex X 5™ Thin Set Mortar" by Ardex Canada, Inc.
 - 2.4.1.2.5.2. "Ultraflex™ LFT" by Mapei Corporation.

- 2.4.1.2.5.3. “52 Versatile Premium-Grade, Polymer-Modified Mortar” by Flextile Ltd.
- 2.4.1.2.6. Fast-setting Polymer-Modified Thin-Set Mortar Bond Coat: ISO 13007-1 performance level (C2FS1P1) for improved (C2) for cementitious adhesive with (F) for fast-setting (S1) deformable (2.5 mm to 4.9 mm) and normal adherence (P1) for adherence to EGP characteristics, conforming to ANSI A108/A118/A136.1. Acceptable products:
 - 2.4.1.2.6.1. “Ultraflex™ RS Premium-Grade, Rapid Setting, Single Component Polymer-Modified HCT™ Mortar” by Mapei Corporation.
 - 2.4.1.2.6.2. “58 Fast-Set Polymer-Modified Mortar” by Flextile Ltd.

2.5. TILE

- 2.5.1. Wall tile: “Ceramic Wall Tile – La Fabbrica – Up green mate and Up blue mate” by Centura
 - 2.5.1.1. Product number: 192006, 192007
 - 2.5.1.2. Size: 4 in x 4 in
 - 2.5.1.3. Colour: Up green mate and Up blue mate
 - 2.5.1.4. Grout: TEC GROUT, color 953 Starry Night
- 2.5.2. Floor tile: ACCADEMIA full body by Ariostea
 - 2.5.2.1. Size and layout: as noted in drawings
 - 2.5.2.2. Finish: PORCELAIN
 - 2.5.2.3. Colour: Tiepolo, Soft
 - 2.5.2.4. Grout colour to match tile
 - 2.5.2.5. Base: 100mm tall, same field colour

2.6. GROUT

- 2.6.1. Epoxy Grout: Conforming to ANSI A108/A118/A136.1 and ISO 13007-3 (RG) performance level for reactive resin grouts; 100% solids, 2 component water washable epoxy grout. Acceptable products:
 - 2.6.1.1. “ArDEX WA Easy to Use Epoxy Grout and Adhesive” by ArDEX Canada, Inc.,
 - 2.6.1.2. “100 Flex-Epoxy 100% Solids Epoxy Grout” by Flextile Ltd.,
 - 2.6.1.3. “SpectraLOCK® PRO Premium Grout” by Laticrete International, Inc.
 - 2.6.1.4. “Kerapoxy” by Mapei Inc.
- 2.6.2. Polymer-Modified Un-sanded Cement Wall Grout: Conforming to ANSI A108/A118/A136.1 and ISO 13007-3 (CG1) performance level for normal cementitious grout, joint width less than 3 mm (1/8") for porous and absorbent body glazed tiles, marbles or soft glazed wall tiles. Acceptable products:
 - 2.6.2.1. “ArDEX FG-C™ Microtec® Unsanded Floor & Wall Grout” by ArDEX Canada, Inc.,
 - 2.6.2.2. “500 Polymer Modified Unsanded Grout” by Flextile Ltd.,
 - 2.6.2.3. “Laticrete 1600 Unsanded Grout, with “Stonetech Grout Up Additive” by Laticrete International, Inc.
 - 2.6.2.4. “Power Grout” by TEC.
- 2.6.3. Polymer-Modified Sanded Cement Tile Grout:

- 2.6.3.1. Normal Setting Grout: Conforming to ANSI A118.7 and ISO 13007-3 (CG2A) performance level for improved cementitious grout with high abrasion resistance for joint width 3 mm (1/8") to 9 mm (3/8") for impervious and vitreous type tiles. Acceptable products:
 - 2.6.3.1.1. "600 Polymer Modified Sanded Grout" by Flextile Ltd.,
 - 2.6.3.1.2. "Laticrete 1500 Sanded Grout" with optional "Stonetech GroutUp Additive" by Laticrete International, Inc
 - 2.6.3.1.3. "Keracolor-S" by Mapei Corporation.
- 2.6.4. Do not add water or other materials to dilute mortar or grout additives unless recommended by admixture manufacturer.

2.7. MOVEMENT JOINT PROFILES

2.7.1. Field Joint Profile:

- 2.7.1.1. Provide profile with integrated trapezoid-perforated anchoring legs, connected by a 11 mm (7/16") wide replaceable thermoplastic rubber movement zone, which together form the visible surface. Location as per manufacturer's recommendation. Acceptable Product:
 - 2.7.1.1.1. "Schluter®-DILEX-KSN (AKSN)" by Schluter Systems (Canada) Inc.
 - 2.7.1.1.2. "Expansion Movement Joint Profiles – Style 1 EJ1" by Laticrete International, Inc.
 - 2.7.1.1.3. "Equal Cerfix Projoint DIL NAN" by Mapei Corporation

2.7.2. Perimeter Joint Profile:

- 2.7.2.1. Provide profile with integrated trapezoid-perforated anchoring leg, connected by a 10 mm (3/8") wide replaceable thermoplastic rubber movement zone with self-adhesive backing strip, which together form the visible surface. Location as per manufacturer's recommendation. Acceptable Products:
 - 2.7.2.1.1. "Schluter®-DILEX-KSA (AKSA)" by Schluter Systems (Canada) Inc.
 - 2.7.2.1.2. "Perimeter Joint – Style 1 PJ1" by Laticrete International, Inc.
 - 2.7.2.1.3. "Equal Cerfix Projoint DIL NIL" by Mapei Corporation

2.8. EDGE PROTECTION PROFILES

- 2.8.1. Provide Schuler profiles as indicated on detail 3/A1.08. Thickness to match materials.
- 2.8.2. Provide 600 x 600mm Mock-up for approval by Architect, before proceeding with work.

2.9. TILE CLEANER

- 2.9.1. A neutral cleaner capable of removing soil and residue without harming tile and grout surfaces, specifically approved for materials and installations indicated by tile and grout manufacturers. Acceptable products:
 - 2.9.1.1. "Ultracare Concentrated Tile & Grout Cleaner" by Mapei Corporation.
 - 2.9.1.2. "Stonetech Stone & Tile Cleaner" by Laticrete International, Inc

2.10. MIXING MORTARS AND GROUT

- 2.10.1. Mix mortars and grouts to comply with referenced standards and mortar and grout manufacturers' written instructions.
- 2.10.2. Add materials, water, and additives in accurate proportions.

- 2.10.3. Obtain and use type of mixing equipment, mixer speeds, mixing containers, mixing time, and other procedures to produce mortars and grouts of uniform quality with optimum performance characteristics for installations indicated.

PART 3 - EXECUTION

3.1. EXAMINATION

3.1.1. Verification of Conditions:

- 3.1.1.1. Ensure new concrete slab has been properly cured and dry for minimum of 28 Days and has reached minimum compressive strength of 25 MPa (3625 psi) and a minimum of 1.5 MPa (218 psi) in tension.
- 3.1.1.2. Ensure no curing and sealing compounds, hardeners or other chemical additives have been used on concrete.
- 3.1.1.3. Notify Consultant in writing of any conditions which would be detrimental to the installation.

3.1.2. Preinstallation Testing for all Concrete Floors:

- 3.1.2.1. Refer to Section 09 05 61 - Common Work Results for Flooring Preparation
- 3.1.2.2. Proceed only when moisture levels and pH reading are within acceptable tolerances.

3.2. PREPARATION

3.2.1. Surface Preparation:

- 3.2.1.1. Ensure substrates are structurally sound, solid, stable, level, plumb and true to a tolerance in plane of 6 mm in 3 m (1/4" in 10' - 0") in accordance with ANSI A108/A118/A136.1 specification requirements. Ensure substrates are clean and free of dust, oil, grease, paint, tar, wax, curing agent, primer, sealer, form release agent or any deleterious substance and debris which may prevent or reduce adhesion.
- 3.2.1.2. Mechanically sand, shot blast or scarify substrate as required to completely remove paint, loosely bonded topping, loose particles and contaminants. Surface etching or contaminant removal by chemical means is not permitted. When sanding or scarifying surfaces that may contain silica sand, wear an approved dust mask.
- 3.2.1.3. In all cases, structural design of substrate shall not allow a deflection greater than L/360 when tested to 136 kg (300 lb) concentrated loads in accordance with ASTM C627 test method. Deflection and curvature should be uniform over length of the span.
- 3.2.1.4. Review setting out point with Consultant for each location, verify patterns and edge condition.
- 3.2.1.5. Verify substrate expansion joints have been installed properly.

3.3. UNCOUPLING MEMBRANE:

- 3.3.1. Apply a thin-set mortar suitable for substrate (mixed to a fairly fluid consistency, but still able to hold a notch) using uncoupling membrane manufacturer's recommend trowel.
- 3.3.2. Apply uncoupling membrane to floor, fleece side down. Solidly embed uncoupling membrane into thin-set mortar using a float, screed trowel or manufacturer's recommended roller.
- 3.3.3. When using a roller, place weight not to exceed 34 kg (75 lbs) on roller shelf. Slowly move roller from 1 end of uncoupling membrane to other, slightly overlapping successive passes.
- 3.3.4. Lift up a corner of uncoupling membrane to check coverage. Proper installation results in full contact between fleece webbing and thin-set mortar. Simply abut end and side sections of adjacent sheets.

3.4. INSTALLATION - TILES

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- 3.4.1. Provide tiling in accordance with TTMAC's "Specification Guide 09 30 00 Tile Installation" unless specified otherwise.
 - 3.4.2. Extend tile work into recesses and under or behind equipment and fixtures to form a complete covering without interruptions:
 - 3.4.2.1. Terminate Work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
 - 3.4.2.2. Make cut edges smooth, even and free from chipping.
 - 3.4.2.3. Do not split tile.
 - 3.4.3. Accurately form intersections and returns; perform cutting and drilling of tile without marring visible surfaces:
 - 3.4.3.1. Cut, drill, and fit tile to accommodate work of other subcontractors penetrating or abutting work of this Section.
 - 3.4.3.2. Carefully grind cut edges of tile abutting trim, finish, or built in items for straight aligned joints.
 - 3.4.3.3. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so that plates, collars, or covers overlap tile and to provide a uniform joint appearance.
 - 3.4.4. Lay tile in pattern indicated on Drawings and as follows:
 - 3.4.4.1. Align joints when adjoining tiles on floor, base, walls, and trim are the same size.
 - 3.4.4.2. Lay out tile Work and centre tile sites in both directions in each space or on each wall area.
 - 3.4.4.3. Centre tile patterns between control and movement joints; notify Consultant for further instructions where tile patterns do not align with control or movement joints.
 - 3.4.4.4. Cut tile accurately and without damage.
 - 3.4.4.5. Smooth exposed cut edges with abrasive stone, where exposed.
 - 3.4.4.6. Chipped or split edges are not acceptable.
 - 3.4.4.7. Minimum tile width is half unit size unless specifically indicated otherwise on Drawings.
 - 3.4.4.8. Adjust tile layout to minimize tile cutting.
 - 3.4.4.9. Provide uniform joint widths.
 - 3.4.4.10. Make joints between tile sheets the same width as joints within tile sheets so joints between sheets are not apparent in finished Work.
 - 3.4.4.11. Slope floor tile towards floor drains in thick-bed mortar installations.
 - 3.4.5. Bonding Bed: Set tile in place while bond coat is wet and tacky and as follows:
 - 3.4.5.1. With pressure, apply a coat of mortar by using the trowel's flat side to key the mortar into the substrate. Apply additional mortar, combing it in a single direction parallel to the tile's shortest dimension, with the trowel's notched side.
 - 3.4.5.2. Use sufficient bond coat to provide a minimum 80% contact for tiles smaller than 300 mm x 300 mm and areas having Residential or Light Load Bearing Performance requirements with bonding material evenly dispersed and pressed into back of tile; refer to back buttering requirements for larger materials and installations having Moderate or higher Load Bearing Performance requirements.
 - 3.4.5.3. Place tiles firmly into the wet mortar. Push the tiles back and forth in a direction perpendicular to trowel lines, to collapse the mortar ridges and to help achieve maximum coverage.

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- 3.4.5.4. Verify that corner and edges are fully supported by bonding material by periodically picking up freshly installed tile and inspecting.
 - 3.4.5.5. Set tiles to prevent lippage greater than 1 mm over a 3 mm grout joint.
 - 3.4.5.6. Keep two-thirds of grout joint depth free of bonding materials.
 - 3.4.5.7. Clean excess bonding materials from tile surface prior to final set.
 - 3.4.5.8. Sound tiles after bonding materials have cured and replace hollow sounding tile before grouting.
 - 3.4.6. Back Buttering: Obtain 100% mortar coverage in accordance with applicable requirements for back buttering of tile in referenced TTMAC and ANSI A108/A118/A136.1 series of tile installation standards.
 - 3.4.7. Install prefabricated edge strips and control at locations indicated or where exposed edge of floor tile meets different flooring materials and exposed substrates.
 - 3.4.8. Protect exposed edges of floor tile with properly sized transition strips, use sloped reducer strips where uneven transitions between 6 mm and 13 mm occur.
 - 3.4.9. Control and Movement Joints: Install control joints and expansion joints in tile work in accordance with TTMAC Detail 301MJ-2019-2021; keep control and expansion joints free of bonding materials and as follows:
 - 3.4.9.1. Cut tiles to establish line of joints; sawn joints after installation of tiles will not be acceptable to Consultant.
 - 3.4.9.2. Locate joints in tile surfaces directly above joints in concrete substrates.
 - 3.4.9.3. Provide floor control joints over structural control joints.
 - 3.4.9.4. Install prefabricated joint profiles in accordance with manufacturer's written instructions, set with top surface of joint profile slightly below top surface of tile.
 - 3.4.9.5. Prepare joints and apply sealants in accordance with requirements of Section 07 92 00.
 - 3.4.9.6. Keep control and movement joints free from setting materials.
 - 3.4.9.7. Form an open joint for sealant in tile wherever a change in backing material occurs, at all vertical interior corners, around penetrating pipes and fixtures, and where tile abuts other materials or fixtures.
 - 3.4.10. Grouting: Install grout in accordance with manufacturer's written instructions, the requirements of TTMAC, and as follows:
 - 3.4.10.1. Allow proper setting time before application of grout.
 - 3.4.10.2. Pre-seal or wax tiles requiring protection from grout staining.
 - 3.4.10.3. Force grout into the joints with a rubber grout float. Make sure all joints are well-compacted and free of voids and gaps.
 - 3.4.10.4. Remove excess grout in accordance with manufacturer's written instructions and polish tile with clean cloths.
 - 3.5. CLEANING**
 - 3.5.1. Remove grout and mortar residue immediately while work progresses and before materials harden on tiling surface.
 - 3.5.2. Clean tiling completely leaving no apparent cement laitance on the surface. Do not acid wash especially where pigmented grouts are specified.
 - 3.5.3. Clean adjacent surfaces that have been soiled or otherwise marred, to completely remove evidence of materials causing same.

3.5.4. Upon completion, remove protective coverings and clean down finished work of this Section leaving it in a correct condition according to industry standards. Correct defective jointing and grouting and other non-conformities.

3.6. PROTECTION

3.6.1. Remove and replace with new materials, sections of work that have become stained, soiled, broken, chipped or otherwise damaged.

3.6.2. Protect finished work from weather, freezing and complete water immersion for periods of at least 72 hours to 14 Days after completion of the Work depending on setting and grouting materials used. Follow Product instructions for requirements.

3.6.3. Walls: Protect walls from impact, vibration and hammering on adjacent and opposite walls for periods of at least 24 hours to 7 Days after installation depending on setting and grouting materials used. Follow Product instructions for requirements.

3.6.4. Floors: Protect floors from foot traffic for at least 4 hours to 48 hours after installation depending on the setting and grouting materials used. In all cases prohibit heavy commercial and equipment traffic for at least 48 hours to 7 Days depending on setting and grouting materials used. Follow product instructions for requirements.

3.6.5. Since temperature and humidity conditions during and after installation affect final curing time of cement based and epoxy materials, allow for extended periods of cure and protection when ambient and/or substrate temperatures drop below 15 deg C (60 deg F) and/or when relative humidity is higher than 70%.

3.6.6. Protect finished work from damage by other trades and general abuse until ready for takeover of the Work and acceptance.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

- 1.1.1.1. Division 01 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes: All labour, materials, tools and other equipment, services and supervision required to complete all exterior and interior painting work as indicated on Finish Schedules and to the full extent of the drawings and specifications.

1.2.2. Work under this contract shall also include, but not necessarily be limited to following:

- 1.2.2.1. Surface preparation of substrate: cleaning and preparation of surfaces for application of paint systems.
- 1.2.2.2. Priming except where pre-primed with an approved primer under other Sections of work and painting of structural steel, miscellaneous metal, ornamental metal and primed steel equipment.
- 1.2.2.3. Priming and back-priming of wood materials as noted herein.
- 1.2.2.4. Painting of all semi-concealed areas e.g. inside of light troughs and valances, behind grilles, and projecting edges above and below sight lines.
- 1.2.2.5. Painting and finishing of all exposed to view elevator equipment and components (i.e. doors and door frames) unless pre-finished.
- 1.2.2.6. Painting of exposed to view mechanical (heating, ventilating and plumbing) services and equipment, e.g., ducts, sprinkler piping, etc., and electrical work to extent noted on Finish Schedule unless pre-finished.
- 1.2.2.7. Provision of safe and adequate ventilation as required over and above temporary ventilation supplied by others, where toxic and/or volatile / flammable materials are being used.
- 1.2.2.8. Waste management and disposal of paint, stain and wood preservatives and other related hazardous materials.

1.2.3. Section Excludes: Painting of:

- 1.2.3.1. Pre-finished metal flashing and similar components. Refer to other sections for special finishes and their effects work of this section.
- 1.2.3.2. Chrome, stainless steel, vinyl, plastic laminate and aluminum surfaces throughout unless specified otherwise.
- 1.2.3.3. Wallcoverings unless otherwise noted.
- 1.2.3.4. Primed and finish painted equipment furnished by manufacturer unless required to be field painted in 1 common corporate colour as identified in room finish schedule.
- 1.2.3.5. Areas indicated as "unfinished" or "exposed" on room finish schedule.
- 1.2.3.6. Special finishes for cast-in-place concrete.
- 1.2.3.7. Sealers over concrete.
- 1.2.3.8. Shop priming of steel including structural steel, joists and steel decking.
- 1.2.3.9. Shop priming of metal fabrications and custom metal work.
- 1.2.3.10. Shop priming and finishing of finish woodwork.

- 1.2.3.11. Pre-finishing of wood doors and frames.
- 1.2.3.12. Electrostatic painting (powder coating).
- 1.2.3.13. Fluoropolymer thermal setting enamels or other organic coatings.
- 1.2.4. Related Sections: Following description of work is included for reference only and shall not be presumed complete:
 - 1.2.4.1. Surface preparation and shop priming of miscellaneous metal work: Section 05 50 00, Metal Fabrications.
 - 1.2.4.2. Priming and/or back painting of wood: Section 06 10 00 - Rough Carpentry.
 - 1.2.4.3. Shop priming of steel doors, frames and screens: Section 08 11 13 - Steel Doors and Frames.
 - 1.2.4.4. Application of Level 5 finish to gypsum board: Section 09 29 00 – Gypsum Board.
 - 1.2.4.5. Instructions on painting, stenciling and banding of mechanical and electrical work: Mechanical and Electrical.

1.3. REFERENCES

- 1.3.1. Abbreviations and Acronyms:
 - 1.3.1.1. DFT: Dry Film Thickness.
 - 1.3.1.2. SDS: Safety Data Sheets.
- 1.3.2. Definitions:
 - 1.3.2.1. Exposed: Visible in completed work. In case of closets, cabinets and drawers, it includes their interiors. Exposed surfaces in underground parking areas are considered “Exterior” for purpose of this Specification. Exposed surfaces in aboveground parking areas are considered “Interior” for the purpose of this Specification.
 - 1.3.2.2. Gloss or Sheen: Capacity of a finish on a surface to reflect light at specific angles as tested in accordance with ASTM D523.
 - 1.3.2.3. Hazardous Waste: Construction and demolition materials that are regulated for disposal by local, city, county, province or federal authorities having jurisdiction.
 - 1.3.2.4. Painting: In this Section refers to application of various types of paint, stain, varnishes and lacquers, etc.
 - 1.3.2.5. Surface Preparation: Cleaning or treating of surface to be painted to ensure best possible bond between surface and painting to be applied to surface; remove surface contaminants that will affect performance of painting, without limitations such as oil, grease, salts, dust, dirt, rust, rust scale, mill scale and old coatings where applicable; remove surface imperfections without limitation including but not limited to such as weld spatter, sharp edges, burrs, slivers, laminations, pits, porosities and crevices; prepare surfaces to provide anchor profile or surface profile which improve mechanical bonding of coating to prepared surface by increasing surface area.
- 1.3.3. Reference Standards:
 - 1.3.3.1. ASTM D523-14 - Standard Test Method for Specular Gloss
 - 1.3.3.2. CAN/CGSB-85.100 – Painting
 - 1.3.3.3. CAN/CGSB-1.500 - Methods of Test for Toxic Trace Elements in Protective Coatings
 - 1.3.3.4. SSPC-08 - Systems and Specifications - Steel Structures Painting Manual, Volume 1 & 2

1.4. ADMINISTRATIVE REQUIREMENTS

1.4.1. Preinstallation Meetings:

- 1.4.1.1. Review Drawings, details and Schedules, determine intent, extent, materials, types of surfaces, locations and be fully cognizant of intent of Work. Review Product literature, SDS, related safety data, proper disposal requirements and inform those involved in work of this Section.
- 1.4.1.2. Review Specifications and Drawings for work of other Sections regarding provisions for prime and finish coats and ensure compatibility with each other and substrate prior to application.
- 1.4.1.3. Prior to start of work, arrange for Project site meeting of parties associated with Work of this Section. Presided over by Consultant include HWDSB Project Manager, Consultant, Subcontractor, manufacturer's representative, any sub-trades whose work will be painted (including Mechanical and Electrical trades) or whose work is adjacent to, or whose work or schedule may be affected by work of this Section.
- 1.4.1.4. Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas requiring painting and other matters affecting construction, to permit compliance with intent of this Section.

1.4.2. Scheduling:

- 1.4.2.1. Schedule painting operations to prevent disruption of and by other trades. Ensure painting is completed for locations requiring application of finishes by other trades in a timely fashion to prevent delays.

1.5. SUBMITTALS

1.5.1. Submittals in accordance with Section 01 33 00 - Submittal Procedures.

1.5.2. Product Data:

- 1.5.2.1. Submit Product data and a Schedule of Finishes listing manufacturer's Product name, colour, textures, SDS and test reports requested for each paint system. Submit test reports for odourless, low or zero VOC Products when requested.
- 1.5.2.2. Painting Subcontractor to receive written confirmation of specific surface preparation procedures and primers used for fabricated steel items from fabricator/supplier to ensure appropriate and manufacturer compatible finish coat materials prior to commencement of painting.
- 1.5.2.3. Submit Product data for concrete and concrete block primers.

1.5.3. Samples: Submit samples 30 Days before materials are required.

- 1.5.3.1. Submit following samples in sizes indicated:
 - 1.5.3.1.1. 2 copies of brushouts minimum 200 mm x 250 mm (8" x 10") of each finish including colour, sheen and texture. Identify each sample with job, finish, colour name, number, sheen and gloss values, substrate to be applied to, date and name of Subcontractor.

1.5.4. Certificates:

- 1.5.4.1. Surface Preparation: Submit manufacturer's representative's written approval of surface preparation methods and any specific recommendations for alternative methods.

1.5.5. Site Quality Control Submittals:

- 1.5.5.1. Submit site instruction reports in accordance with 01 33 00 - Submittal Procedures containing information required by this Section.

- 1.5.5.2. Progress Reports: Arrange to have paint manufacturer's representative inspect work of this Section on a regular basis and prepare weekly job progress reports. Submit copy of reports to Consultant.

1.6. CLOSEOUT SUBMITTALS

- 1.6.1.1. Operation and Maintenance Data:
 - 1.6.1.1.1. Upon completion of Project, submit a coating maintenance manual, such as Dulux "Project Colour and Product Information" report or equal.
 - 1.6.1.1.2. Ensure manual includes an 'Area Summary' with finish schedule.
 - 1.6.1.1.3. 'Area Detail' designating where each Product/colour/finish was used.
 - 1.6.1.1.4. Product data pages.
 - 1.6.1.1.5. SDS.
 - 1.6.1.1.6. Care and cleaning instructions, touch-up procedures and colour samples of each colour and finish used.

1.7. MAINTENANCE MATERIAL SUBMITTALS

- 1.7.1. Extra Stock Materials: Submit to Owner 1 - unopened 4 litre (1 gal) can of each different type and colour and degree of gloss of paint used (batch mix) on this Project for touch-ups. Ensure paint is boxed and in sealed, unopened cans in undamaged condition, with name of manufacturer, contents, type and colour clearly indicated on a label securely adhered to can.
- 1.7.2. Label each can with locations where product was used.
- 1.7.3. If paint colour was a mix or custom blend, include complete formulae to achieve the same colour in the future.

1.8. QUALITY ASSURANCE

- 1.8.1. Qualifications:
 - 1.8.1.1. Applicators:
 - 1.8.1.1.1. Execute work of this Section by a firm which has adequate plant, equipment and skilled workers to perform work expeditiously and which is known to have been responsible, during immediate past 5 years, for installations similar to work contained herein. Ensure firm is fully conversant with applicable laws, bylaws, codes, fire, health and safety regulations and other regulations which govern.
 - 1.8.1.2. Mock-Ups:
 - 1.8.1.2.1. Provide mock-up at location established by Consultant, complete with required lighting. Mock-up to establish standard of workmanship, texture, gloss and coverage.
 - 1.8.1.2.2. Apply minimum 300 mm x 300 mm (12" x 12"), or where required, full size mock-up of each finish on each type of surface to be coated with correct material, number of coats, colour, texture and degree of gloss required.
 - 1.8.1.2.3. Provide additional mock-ups of each finish in modified colour, texture or degree of gloss when required, to obtain acceptance.
 - 1.8.1.2.4. Prepare surfaces and apply treatment to galvanized or other components as required for Consultant's review.
 - 1.8.1.2.5. Accepted mock-up to become standard of comparison for painting work on site. Correct and refinish work which does not compare with accepted finishes.

- 1.8.1.2.6. Accepted full size mock-up may become integral part of finished work if permitted by Consultant.

1.9. DELIVERY, STORAGE AND HANDLING

1.9.1. Delivery and Acceptance Requirements:

- 1.9.1.1. Deliver to site, materials manufacturer's original, sealed and labeled containers bearing manufacturer's name, brand name, type of paint or coating and colour designation, degree of gloss, batch number, standard compliance, materials content as well as mixing, reducing and application requirements.

1.9.2. Storage and Handling Requirements:

- 1.9.2.1. Store on site, materials in manufacturer's sealed and labeled containers.
- 1.9.2.2. Comply with applicable local fire and building code requirements during storage and application.
- 1.9.2.3. Store containers of paint, thinner and other volatile materials in secure, well ventilated location, heated to minimum 10 deg C (50 deg F), where they will not be exposed to excessive heat or direct solar radiation. Keep tightly closed when not in actual use.
- 1.9.2.4. Presence of any unauthorized materials or containers on site is sufficient cause for rejection of paint materials on site at that time.
- 1.9.2.5. Protect floor and wall surfaces in storage areas from paint drips and splatters.
- 1.9.2.6. Be totally responsible for prevention of fire or explosion caused by improper storage of paints, solvents, rags and similar items. Store fire hazardous materials in location and in manner approved by local fire authority. Post "No Smoking" signs in areas of storage and mixing and strictly enforce this requirement. Provide and maintain CO₂ fire extinguishers of minimum 9 kg (20 lb) capacity. Repair damage to storage area or surrounding area at no cost to Owner.

1.10. SITE CONDITIONS

1.10.1. Ambient Conditions:

- 1.10.1.1. Paint and finish in clean, dust-free, properly ventilated and adequately lit areas minimum 323 Lx (30 ft candles) on surfaces to be painted or decorated.
- 1.10.1.2. Provide each paint materials in accordance with manufacturer's recommended tolerances for:
- 1.10.1.2.1. Substrate Moisture Content: Perform tests with a properly calibrated electronic moisture meter to ensure compliance with manufacturer's recommendations. Without limitation, maximum moisture content as follows:
- 1.10.1.2.1.1. Concrete and Concrete Unit Masonry: Maximum 12 - 14% for solvent coatings and as recommended by manufacturer for each water based system.
- 1.10.1.2.1.2. Gypsum Based Board and Plaster: Maximum 12 - 14%.
- 1.10.1.2.1.3. Wood: Maximum 15%.
- 1.10.1.3. Temperature and Ventilation:
- 1.10.1.3.1. Do not provide paint under ambient and surface temperatures less those required below in any instance for 24 hours before, during and 7 Days after installation.
- 1.10.1.3.2. Provide ventilation to remove odours, evaporating solvents and moisture. Maintain adequate ventilation at all times to control excessive humidity.

1.10.1.3.3. Interior Paint:

1.10.1.3.3.1. Water Based Paints: Maintain minimum interior surface and ambient air temperature of between 18 deg C (65 deg F) and 32 deg C (90 deg F) during application and drying of paint and maintain until building occupancy occurs.

1.10.1.3.3.2. Solvent Based Paints: Maintain minimum interior surface and ambient air temperature of between 7 deg C (45 deg F) and 35 deg C (95 deg F) during application and drying of paint and maintain until building occupancy occurs.

1.10.1.3.3.3. Do not undertake interior painting on surfaces where condensation has or will form due to presence of high humidity and lack of proper ventilation.

1.10.1.3.4. Exterior Paint:

1.10.1.3.4.1. Do not undertake exterior painting if air and surface temperature are expected to fall below 10 deg C (50 deg F) before coating has dried. Avoid painting during winds, weather conditions which may affect paint application or following rain. Wait until frost, dew or condensation has evaporated. Avoid painting surfaces exposed directly to hot summer sun.

1.10.1.3.4.2. Do not apply paint in snow, rain, fog or mist or when relative humidity exceeds 85% or dew point is less than 3 deg C (5 deg F) difference between air and surface temperature, or damp or wet surfaces unless surface to be painted is enclosed and conditioned to required temperatures and ambient conditions required for application.

1.10.1.3.4.3. Where required, suitable weatherproof covering and sufficient heating facilities are to be provided which will enable required ambient and surface temperatures.

1.11. WARRANTY

1.11.1. Manufacturer Warranty: Warrant work of this Section for a period of 2 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to material and workmanship defects such as: improper cleaning and preparation of surfaces, entrapped dust and dirt, material shrinkage, cracking, splitting and defective workmanship including but are not limited to failure in bubbling, drips, runs, blistering, uneven coverage, misses, poor cutting in and delamination.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications

2.1.1.1. Dulux Paints www.dulux.ca

2.1.1.2. Sherwin Williams www.sherwin-williams.com

2.1.2. Basis of Design: for interior latex applications (PT-1, PT-2): "Promar 200 HP Zero VOC" by Sherwin Williams

2.1.3. Substitution Limitations: Substitution Limitations: Comparable Products from other manufacturers not listed herein will be accepted provided:

2.1.3.1. They are submitted in accordance with Section 01 25 00 - Substitution Procedures

2.1.3.2. Meet requirements of this Specification.

2.1.3.3. Acceptance by Consultant.

2.2. MATERIALS

2.2.1. Description:

2.2.1.1. Regulatory Requirements:

- 2.2.1.1.1. Conform to latest edition of Industrial Health and Safety Regulations issued by applicable authorities having jurisdiction in regard to site safety (ladders, scaffolding, ventilation, etc.).
- 2.2.1.1.2. Comply with more stringent of applicable laws, bylaws, codes, fire regulations, health and safety regulations of authorities having jurisdiction or requirements of this Specification. Ensure standards used for work of this Section are considered a minimum.
- 2.2.1.1.3. Where required, ensure paints and coatings meet flame spread and smoke developed ratings designated by local code requirements and/or authorities having jurisdiction.
- 2.2.1.1.4. Comply with toxic trace limitations stipulated by authorities having jurisdiction as tested in accordance with CAN/CGSB-1.500.
- 2.2.1.1.5. Conform to requirements of local authorities having jurisdiction in regard to storage, mixing, application and disposal of paint and related waste materials.

2.2.2. Performance/Design Criteria:

- 2.2.2.1. Provide best practices specified or recommended in CAN/CGSB-85.100.
- 2.2.2.2. Consultant reserves right to refuse any paint or finishing material if in its opinion it is not suitable or adequate for proposed use.
- 2.2.2.3. Provide paint and finishing materials of highest grade, top quality line of Products from manufacturer. Paint material containers not displaying manufacturer's Product identification will not be acceptable. Ensure paint is not diluted.
- 2.2.2.4. Use brand of paint chosen throughout work of this Section, except where specified otherwise. As far as practical, factory mix paint for immediate application without thinning or alteration at site.
- 2.2.2.5. Provide primers in recommended DFT/coat.
- 2.2.2.6. Only materials (primers, paints, coatings, varnishes, stains, lacquers, etc.) recommended by manufacturer are acceptable for use on this Project.
- 2.2.2.7. Ensure materials used are lead and mercury free and have low VOC content where possible.
- 2.2.2.8. Provide paint materials with good flowing and brushing properties and dry or cure free of blemishes, sags, air entrapment, etc.
- 2.2.2.9. Paint materials which from time to time will become hot, such as convector covers and similar item, a paint type approved by paint manufacturer for particular condition.

2.2.3. Finishes:

- 2.2.3.1. Colours: to be selected by Consultant
- 2.2.3.2. Gloss Values Definition, as determined by ASTM D523:

		Light Reflection Unit
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G1	Gloss Level 1 – Traditional matte finish, Flat	< 5
G2	Gloss Level 2 – High side sheen Flat, “Velvet-like” finish	< 10
G3	Gloss Level 3 – Traditional “Eggshell-like” finish	10 - 25
G4	Gloss Level 4 – “Satin-like” finish	20 - 35
G5	Gloss Level 5 – Traditional Semi-Gloss	35 - 70
G6	Gloss Level 6 – Traditional Gloss	70 - 85
G7	Gloss Level 7 – High Gloss	> 85

2.2.3.3. Gloss Values unless otherwise specified:

- 2.2.3.3.1. Walls: G4
- 2.2.3.3.2. Floors: G5 or G6
- 2.2.3.3.3. Ceilings: G1
- 2.2.3.3.4. Trim and Doors: G5
- 2.2.3.3.5. Signage: G1

2.2.4. Slip Resistant Additive: rubber aggregate, clean/washed silica sand for use with or as a component part of paint on horizontal surfaces as required to provide slip resistance. Where site applied, material to either mixed into paint (and mixed constantly to keep material in suspension) or broadcast into first or prime coat as required.

2.2.5. Equipment:

- 2.2.5.1. Painting and Decorating Equipment: to best trade standards for type of product and application.
- 2.2.5.2. Spray Painting Equipment: of ample capacity, suited to the type and consistency of paint or coating being applied and kept clean and in good working order at all times.

2.2.6. Mixing and Tinting:

- 2.2.6.1. Unless otherwise specified herein or pre-approved, all paint shall be ready-mixed and pre-tinted. Re-mix all paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and color and gloss uniformity.
- 2.2.6.2. Paste, powder or catalyzed paint mixes shall be mixed in strict accordance with manufacturer's written instructions.

2.2.7. Where thinner is used, addition shall not exceed paint manufacturer's recommendations. Do not use kerosene or any such organic solvents to thin water-based paints.

2.2.8. If required, thin paint for spraying according in strict accordance with paint manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Consultant.

2.3. INTERIOR FINISH SCHEDULE:

- 2.3.1. Concrete Masonry Units (CMU's): (concrete block and concrete brick):
 - 2.3.1.1. 1 coat latex block filler: Dulux X-Perm Acryluc

- 2.3.1.2. 2 coats latex: Dulux Lifemaster code 59311
- 2.3.1.3. Finish: (PT-1): "Promar 200 HP Zero VOC" by Sherwin Williams
- 2.3.2. Structural Steel and Metal Fabrications: (with existing shop coat primer):
 - 2.3.2.1. Unexposed: No further finishing required except for touch-up of damaged surfaces.
 - 2.3.2.2. Exposed:
 - 2.3.2.2.1. 1 coat quick dry metal primer: PPG Pitt-Tech Plus EP WB Acrylic Primer
 - 2.3.2.2.2. 2 coats quick dry enamel: PPG HPC Alkyd Industrial Semi-Gloss Enamel code 4336H
 - 2.3.2.2.3. Finish: G5 - Semi-Gloss.
- 2.3.3. Galvanized Metal (Not Chromate Passivated): (High contact/high traffic areas (doors, frames, railings, pipes, etc.) low contact/low traffic areas (overhead decking, pipes, ducts, etc.):
 - 2.3.3.1. 1 coat waterborne primer: PPG Pitt-Tech Plus EP WB Acrylic Primer
 - 2.3.3.2. 2 coats latex: Dulux acrylic eggshell code 14220
 - 2.3.3.3. Finish: G3 - Eggshell
- 2.3.4. Structural Steel, (underside roof deck, OWSJ, beams):
 - 2.3.4.1. 2 coats latex dry fall: Spraymaster Latex Dryfall code 10113 or PPG Speedhide Super Tech WB Interior Flat Latex Dry-Fog code 6-723XI
 - 2.3.4.2. Finish: G1 - Flat
- 2.3.5. Gypsum Board:
 - 2.3.5.1. 1 coat latex primer sealer: Dulux X-Pert code 11000
 - 2.3.5.2. 2 coats latex:
- 2.3.6. Walls: (PT-1, PT-2): "Promar 200 HP Zero VOC" by Sherwin Williams
 - 2.3.6.1.1.1. Finish: G3 - Eggshell
- 2.3.7. Ceilings: (PT-1, PT-2): "Promar 200 HP Zero VOC" by Sherwin Williams
 - 2.3.7.1.1.1. Finish: G1 - Flat.
- 2.3.8. Plywood Backer Panels:
 - 2.3.8.1. 2 coats Albi Cote FRL-X
 - 2.3.8.2. Finish: G1 – Flat
- 2.3.9. PT-2: WB Epoxy: Water based (W.B.) light industrial coating:
 - 2.3.9.1. Primer Coat: As recommended by top coat manufacturer unless otherwise specified.
 - 2.3.9.2. Top coats (2 coats unless otherwise specified):
 - 2.3.9.2.1. Benjamin Moore Corotech Pre-Catalyzed Waterborne Epoxy V341 / V342.
 - 2.3.9.2.2. Sherwin Williams Pre-Catalyzed Waterbased Epoxy K45 / K46-150 Series.
 - 2.3.9.2.3. PPG Pitt-Glaze WB1 Interior Pre-Catalyzed Water-Borne Epoxy 16-310 / 16-510.
- 2.3.10. Metal fabrications (steel doors and frames and miscellaneous items including pipes, ducts, equipment and related brackets and supports). Includes factory primed and galvanized or galvalume metal.
 - 2.3.10.1. Primer coat and tie coat: Acrylic DTM Rust Inhibitive Primer.
 - 2.3.10.1.1. Field applied, factory primed, or unpainted surfaces.

- 2.3.10.1.2. Acceptable Products as recommended by top coat manufacturer:
 - 2.3.10.1.2.1. Sherwin Williams B66W1 or B66W310 DTM Primer.
 - 2.3.10.1.2.2. PPG Pitt-Tech 90-712 or 90-912 Series DTM Primer.
- 2.3.10.2. Top coats:
 - 2.3.10.2.1. WB Epoxy.
- 2.3.11. Primed Miscellaneous Metals and Architectural Metals supplied by Division 05.
 - 2.3.11.1. Primer: in accordance with Section 05 50 00 and as recommended by top coat manufacturer.
 - 2.3.11.2. Touch up primer and tie coat: 100% Acrylic DTM Rust Inhibitive Primer for Interior or Exterior Surfaces.
 - 2.3.11.2.1. Field applied as required to repair damage, defects or contamination.
 - 2.3.11.2.2. Acceptable Products:
 - 2.3.11.2.2.1. Sherwin Williams B66W1 or B66W310 DTM Primer (spray applied).
 - 2.3.11.2.2.2. PPG Pitt-Tech 90-712 or 90-912 Series DTM Primer.
 - 2.3.11.2.3. Top coats:
 - 2.3.11.2.3.1. WB Epoxy.
- 2.3.12. Galvanized Miscellaneous Metals and Architectural Metals supplied by Division 05.
 - 2.3.12.1. Primer coat: 100% Acrylic DTM Rust Inhibitive Primer for Interior or Exterior Surfaces.
 - 2.3.12.1.1. Acceptable Products:
 - 2.3.12.1.1.1. Sherwin Williams B71Y1 DTM Wash Primer.
 - 2.3.12.1.1.2. Carboline Sanitile 120 Heavy Duty Bonding Primer.
 - 2.3.12.1.1.3. PPG Pitt-Tech 90-712 Series DTM Primer.
 - 2.3.12.2. Top coats:
 - 2.3.12.2.1. WB Epoxy.

PART 3 - EXECUTION

3.1. EXAMINATION

- 3.1.1. Verification of Conditions:
 - 3.1.1.1. Do work only when surfaces and conditions are satisfactory for production of quality work. Report to Consultant in writing any surfaces which are found to be unsatisfactory.
 - 3.1.1.2. Ensure temperature of surfaces to be finished are as required for application of finish. Refer to "Temperature and Ventilation" article specified herein. Ensure surfaces are dry and free of dirt, grease or other contaminants that may affect applied finish.
 - 3.1.1.3. Verify moisture content of surfaces with electronic moisture meter. Do not proceed without written directions if moisture reading is higher than as required for application. Refer to "Ambient Conditions" article specified herein for substrate moisture content requirements.
 - 3.1.1.4. If substrate is steel, do not apply coatings over moisture or when surface temperature is within 3 deg C (5 deg F) of dew point.
 - 3.1.1.5. If substrate is wood, do not stain or paint if moisture reading is higher than 15%. Inspect work to assure surfaces are smooth, free from machine marks and nail heads have been countersunk.

- 3.1.1.6. If substrate is cast-in-place concrete, allow to cure for 60 to 90 Days before proceeding with priming.
- 3.1.1.7. If substrate is precast prestressed concrete, inspect and accept or reject filled-in surface blow holes.
- 3.1.1.8. If substrate is new plaster or masonry, allow to cure for 30 to 90 Days. Ensure moisture content is between 12% and 14% and test for alkalinity and neutralize (pH 6.5 - 7.5) before proceeding with priming.
- 3.1.1.9. If substrate is gypsum board, inspect to ensure joints are completely filled and sanded smooth. Inspect surfaces for "nail popping", screw heads not recessed and taped, breaks in surface or other imperfections and have repaired as required.
- 3.1.1.10. Verify each substrate is dry and not frozen and free from tool and sandpaper marks, dust, rust, insects, grease and other foreign matter liable to impair finished work.
- 3.1.2. Evaluation and Assessment:
 - 3.1.2.1. Prior to commencement of work of this Section, thoroughly examine (and test as required) conditions and surfaces scheduled to be painted and report in writing to Contractor and Consultant any conditions or surfaces that will adversely affect work of this Section.
 - 3.1.2.2. Do not commence painting work until adverse conditions and defects have been corrected and surfaces and conditions are acceptable to this Subcontractor.
 - 3.1.2.3. Commencement of work does not imply acceptance of surfaces except as qualified herein. Surfaces such as concrete, masonry, structural steel and miscellaneous metal, wood, gypsum board and plaster, is not responsibility of this Subcontractor. Commencement of work implies acceptance of previously completed work.
- 3.2. PREPARATION**
 - 3.2.1. Protection of In-Place Conditions:
 - 3.2.1.1. Provide scaffolding, staging, platforms and ladders, as required for execution of work. Erect scaffolding to avoid interference with work of other trades. Comply with Occupational Health and Safety Act.
 - 3.2.1.2. During work of this Section, provide drop cloths, plastic, plywood or metal sheets to protect floors in areas assigned for storage and mixing of paints. Cover finished floors, walls, ceilings and other work in vicinity and protect from paint and damage.
 - 3.2.1.3. Protect work of other trades against paint splattering and Make Good at own expense any such damage.
 - 3.2.1.4. Remove and securely store miscellaneous and finish hardware and surface fittings, electrical switch and outlet covers, receptacle plates, louvres, fittings and fastenings, to protect from paint splatter. Mask items not removable. Use sufficient drop cloths and protective coverings for full protection of floors, furnishings, mechanical, electrical and special equipment, other components of building which do not require painting or to be removed, from paint spotting and other soiling. Carefully clean and re-install items when paint is dry. Clean any components that are paint spotted or soiled. Do not use solvent or reactive cleaning agents on items that will mar or remove finishes (e.g. lacquer finishes).
 - 3.2.1.5. Prohibit traffic, where possible, from areas where painting is being carried out and until paint is cured. Post "wet paint" or other warning signage during and on completion of work. Provide also warning signs at points of entry to areas where painting is applied and drying.
 - 3.2.2. Surface Preparation:
 - 3.2.2.1. Prepare defective surfaces to obtain a satisfactory substrate and in accordance with paint manufacturer's instructions.

- 3.2.2.2. Prior to painting, wipe down wall surfaces, vacuum clean floors, ensure all surfaces are dust-free.
- 3.2.2.3. Clean soiled surfaces to be painted.
- 3.2.2.4. Remove efflorescence, chalk, dust, dirt, oil, grease, rust, form oil, release agents, loose mill scale and other extraneous matter from surfaces.
- 3.2.2.5. Remove mildew by scrubbing affected area with solution of 150 g (5.3 oz) TSP and 125 g (4.4 oz) bleach in 3.5 ℓ (0.92 gal) water. Rinse well with clean water and allow to dry. If condition is serious, source out finishes with extra mildew resistance.
- 3.2.2.6. Be responsible for surface preparation to suit surface condition and conform to level of cleaning based on SSPC, recommended metal cleaning procedures most commonly used to suit site conditions.
- 3.2.2.7. Concrete and Masonry:
 - 3.2.2.7.1. Form Oil Removal: Remove with Xylol or TSP.
 - 3.2.2.7.2. Efflorescence Removal: Remove by dry brushing or washing with 1 part commercial muriatic acid to 20 parts water by volume and thoroughly rinse with clean water.
 - 3.2.2.7.3. Mildew Removal: Remove by scrubbing affected area with 1 part sodium hypochlorite to 3 parts water. Where dirt is also evident, add 1.36 kg (3 lbs) TSP to 6.8 ℓ (1.5 gal) of above solution.
 - 3.2.2.7.4. Concrete Vertical Surfaces: Use sand blasting, high pressure water blasting, high pressure water blasting with abrasives, vacuum blasting with abrasives or alternatively, needle guns or power grinders equipped with suitable grinding stone, to remove concrete, loose mortar, fins, projections and surface contaminants. Vacuum or blow down and remove dust and loose particles from surface. Fill large cracks and/or voids in consultation with design engineer using either polyester, epoxy or acrylic resin, block filler or cement sand mixture in accordance with design engineer's written instructions. Fill only flush to surface and allow to set.
 - 3.2.2.7.5. Concrete Block Masonry: Fill voids and cracks in masonry block wall to provide uniform surface for subsequent coats.
- 3.2.2.8. Metals:
 - 3.2.2.8.1. Ensure application of paint and coatings occurs within appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or manufacturer's paint specifications require earlier applications.
 - 3.2.2.8.2. SSPC-SP 3 (Power Tool Cleaning): Use of power sanders and wire brushes, impact tools, grinders and power chipping hammers to remove loose mill scale, loose rust, paint or other foreign matter. Do not employ power tool cleaning excessively causing burnished mill scale preventing primers to adhere properly.
 - 3.2.2.8.3. Ferrous Metal: Clean to SSPC-SP 1/2/3, to suit site conditions. Remove loose rust and prime bare metal with rust inhibitive steel primer. Touch-up damaged shop applied primer using compatible Product. Provide full coat primer only if damage is extensive. Treat weld areas with phosphoric acid (5% solution).
 - 3.2.2.8.4. Structural Steel/Miscellaneous Steel (previously painted and exposed by alterations work): Remove oil, grease, dirt, rust scale, loose mill scale, loose paint or coating by brush-off blast cleaning to SSPC-SP 7.

- 3.2.2.8.5. Hot Dipped Galvanized Steel (Unweathered): Allow to weather minimum of 26 weeks and Xylene clean to SSPC-SP 1 specified herein prior to coating to remove dust, dirt, grease, oxides and other foreign material. Remove silicates or similar surface treatments or any deposits of white rust by sanding or similar abrasive methods (bronze wool). Use of acetic acid to prepare galvanized surfaces is not acceptable.
- 3.2.2.8.6. Galvanized Steel (Weathered): Remove dust, dirt, grease, oxides and other foreign material and clean to SSPC-SP 1 specified herein prior to coating.
- 3.2.2.8.7. Galvanized Steel (Pre-Treated)(Non-Crystal Appearance): Follow manufacturer's recommendations for preparation, priming and coating of pre-treated galvanized steel.
- 3.2.2.8.8. Light Zinc Coated or Satin Coated Products (ZF075) mostly found in environmentally controlled areas. Follow manufacturer's recommendations for preparation, priming and coating.
- 3.2.2.8.9. Heavy Coated Zinc Z275 (G90) for high humidity areas and as specified. Follow manufacturer's recommendations for preparation, priming and coating.
- 3.2.2.8.10. Metal Doors: Remove doors before painting to paint bottom and top edges and re-hang once dry. Do not paint stainless steel or bronze door butts. Paint or finish top and bottom edges of doors. Touch-up or refinish tops and edges after fitting.
- 3.2.2.9. Previously Finished Surfaces:
 - 3.2.2.9.1. Clean existing interior and exterior surfaces to be repainted or varnished to provide bond. Remove rust, scale, oil, grease, mildew, chemicals and other foreign matter. Remove loose paint and fill flush with suitable patching material. Clean off bubbled, cracked, peeling or otherwise defective paint by stripping with suitable environmental strippers or by burning. Do not burn off paints suspected of having lead content. Treat residue from stripping as Hazardous Waste.
 - 3.2.2.9.2. Flatten gloss paint and varnish with sandpaper and wipe off dust. If previous coatings have failed so as to affect proper performance or appearance of coatings to be applied, remove previous coatings completely and prepare substrates properly and refinish as specified for new work.
 - 3.2.2.9.3. Leave entire surface suitable to receive designated finishes and in accordance with finish manufacturer's instructions.
- 3.2.2.10. Woodwork:
 - 3.2.2.10.1. Verify and determine wood species, grain direction and structure, properties of finish, application method and exposure to elements. Check moisture content to avoid movement of wood caused by expansion and contraction due to changes in moisture content. Verify grain cut as it may interfere with adhesion of paint.
 - 3.2.2.10.2. Apply wood finishing Product in following order and as needed for specific appearance and application specified herein. Sanding sealer to control penetration of subsequent coats to create more uniform finish. Stain to colour wood and highlight grain for final finish. Filler to fill pores of wood and control penetration of subsequent coats. Apply filler across grain forcing it into pores followed with rubbing and sanding when dried. For staining requirements mix stain with filler before applying for uniform finish. Finish coats to provide protection to wood.

- 3.2.2.10.3. Wood work for Opaque Coating: Seal knots and sapwood in surfaces to receive paint with alcohol-based primer-sealer. Seal door edges. Sand smooth rough surfaces of woodwork to be finished using No. 150 grit paper followed by a second sanding using No. 220 grit paper. Sand in direction of grain. Clean surfaces free of dust before applying first coat using brush, compressed air or tack rags. Fill nail holes, splits and scratches with non-shrinking filler after first coat is dry.
- 3.2.2.10.4. Prepare plywood surface by removing dirt and debris. Fill screw and nail holes or minor imperfections with recommended filler and sand properly to receive finish coating. Ensure plywood requiring stained or painted finish is primed with top quality alkyd primer. Use only penetrating quality stain over plywood.
- 3.2.2.10.5. Woodwork for Clear Finish or Stain: Sand smooth woodwork to be finished using No. 150 grit paper followed by a second sanding using No. 220 grit paper and clean surfaces free of dust using brush, compressed air or tack rags before applying first coat. Abrade surfaces with stiff brush to remove loose fibres and splinters. Fill nail holes, splits and scratches with non-shrinking filler tinted to match local grain condition after first coat is dry. Sand lightly between coats with No. 220 grit sandpaper and remove dust.
- 3.2.2.10.6. Remove salt deposits that may appear on wood surfaces treated with fire retarder.
- 3.2.2.10.7. Obtain inspection of glue laminated beams by assigned painting inspector to ensure shop sealer has been applied. Where non-specified shop sealer has been applied to beams or columns, remove and refinish in accordance with manufacturer's written instructions.
- 3.2.2.10.8. Wood Doors: Remove doors before painting to paint bottom and top edges and re-hang once dry. Paint or finish top and bottom edges of doors to be painted or stained. Touch-up or refinish tops and edges after fitting.
- 3.2.2.11. Plastics (PVC): Solvent clean to SSPC-SP 1. Sand lightly with No. 120 grit sandpaper and remove dust.
- 3.2.2.12. Gypsum Board:
 - 3.2.2.12.1. Examine and ensure gypsum board surfaces are without defects or deficiencies and suitable to receive painting applications. Commencement implies acceptance of gypsum board work. Examine surfaces after for imperfections showing through and fill small nicks or holes with patching compound and sand smooth. Examine surfaces after priming for imperfections showing through.
 - 3.2.2.12.2. Clean surfaces dry, free of dust, dirt, powdery residue, grease, oil, wax or any other contaminants.
- 3.2.2.13. Fire Resistive Coatings: Coordinate with coating manufacturer for surface preparation requirements to ensure proper adhesion of finish.
- 3.2.2.14. Asphalt Surfaces: Ensure surface is free of mud and deleterious materials, clean and dry.

3.3. APPLICATION

- 3.3.1. Safety Precautions: When handling solvent coating materials, wear approved vapour/particulate respirator as protection from vapours. Dust respirators do not provide protection from vapours.
- 3.3.2. Material Compatibility: Provide primers and finish coat materials compatible with each other and substrate including fillers.

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- 3.3.3. Obtain colour chart giving colour schemes and gloss value for various areas from Consultant. Ensure colour chart gives final selection of colours and surface textures of finishes and whether finishes are transparent (natural) or opaque (paint).
 - 3.3.4. Provide finish uniform in sheen, colour and texture, free from streaks, shiners and brush or roller marks or other defects.
 - 3.3.5. Apply materials in accordance with manufacturer's directions and specifications paying particular attention to appropriate time frame after cleaning when environmental conditions encourage flash-rusting, rusting, contamination or manufacturer's paint specifications require earlier applications. Do not use adulterants. Do any reduction of coating's viscosity in accordance with manufacturer's directions.
 - 3.3.6. Use up paints within period of shelf life recommended by paint manufacturer.
 - 3.3.7. Ensure successive coatings are harmonious chemical compositions and materials of same manufacturer.
 - 3.3.8. Sand and dust between each coat to provide an anchor for next coat and to remove defects visible from a distance up to 1 m (39").
 - 3.3.9. Ensure each coat is dry and hard before a following coat is applied.
 - 3.3.10. Continue through paint finish behind wall-mounted items (e.g. chalk and tack boards).
 - 3.3.11. Finish listed surfaces indicated on Room Finish Schedule(s) and/or noted on Drawing(s) and as specified. Refer to Finish Room Schedule for type, location and extent of finishes required and include touch-ups and field painting necessary to complete work shown, scheduled or specified.
 - 3.3.12. Finishes and number of coats specified in Room Finish Schedule are intended as minimum requirements guide only. Refer to manufacturer's recommendations for exact instructions for thickness of coating to obtain optimum coverage and appearance. Some materials and colours may require additional coats and deeper colours may require use of manufacturers' special tinted primers.
 - 3.3.13. Paint entire plane of areas exhibiting incomplete or unsatisfactory coverage and of areas which have been cut and patched. Patching is not acceptable. Vary each coat slightly in successively darker tones to permit supervision identity.
 - 3.3.14. Do not paint baked paint surface, chrome plated, stainless steel, aluminum or other surfaces finished with final finish in factory. Finish paint primed surfaces.
 - 3.3.15. Advise Consultant when each applied paint coat can be inspected. Do not recoat without inspection. Tint each coat slightly to differentiate between applied coats.
 - 3.3.16. Apply additional paint coats, beyond number of coats specified for any surface, to completely cover and hide substrate and to produce a solid, uniform appearance.
 - 3.3.17. Apply primer coat soon after surface preparation is completed to prevent contamination of substrate.
 - 3.3.18. Primer/Sealers: Apply primer-sealer coats by brush or roller. Permit to dry in accordance with manufacturer's recommendations before applying succeeding coats. Touch up suction spots and sand between coats with No. 120 sandpaper.
 - 3.3.19. Metals:
 - 3.3.19.1. Apply primer coat to unprimed ferrous metal surfaces. Where sandblast preparation is specified, apply specified primer immediately after blast cleaning.
 - 3.3.20. Woodwork:
 - 3.3.20.1. Fill open grain woods with filler tinted to match wood and work well into grain. Wipe excess from surface before filler sets.
 - 3.3.20.2. Sand smooth paint and varnish undercoats prior to recoating.

- 3.3.20.3. Prime woodwork designated for painting as soon as possible after delivery to site and before installation. Prime cut surfaces, whether exposed or not, i.e. 6 edges of wood doors, before installation. Prime cut surfaces of woodwork to receive transparent finish with 1 coat of transparent finish reduced 25% or as directed by manufacturer.
- 3.3.20.4. Apply final coats on smooth surfaces by roller or brush. Hand brush wood trim surfaces.
- 3.3.21. Allow each coat of paint to cure and become dry and hard before application of succeeding coats (unless manufacturer's directions require otherwise).
- 3.3.22. Before finishing paint coats are applied, inspect and touch-up shop coats of primers previously applied by other trades or fabricators.
- 3.3.23. Provide paint coating thicknesses indicated, measured as minimum DFT.
- 3.3.24. Apply a minimum of 4 coats of paint where deep or bright colours are used to achieve satisfactory results.
- 3.3.25. Ledges: Finish projecting ledges, both above and below sight lines, as specified for adjacent surfaces.
- 3.3.26. Light Coves: Paint light coves white whether a light lens is installed or not, unless otherwise indicated.
- 3.3.27. Interior Columns: Finish interior columns same as walls of room unless otherwise indicated.
- 3.3.28. Mechanical and Electrical Services:
 - 3.3.28.1. Co-ordinate painting of mechanical and electrical equipment, piping, conduit, system Identification with appropriate Mechanical and Electrical Specification Sections. Unless otherwise specified or noted, paint "unfinished" conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and texture to match adjacent surfaces, in following areas:
 - 3.3.28.1.1. Where exposed-to-view in exterior and interior areas.
 - 3.3.28.1.2. In interior high humidity interior areas.
 - 3.3.28.1.3. In mechanical and electrical rooms.
 - 3.3.28.2. Read Divisions 21, 22, 23, 26, 27 and 28 for their requirements and further instruction on painting Mechanical and Electrical work and perform such work under supervision of respective Mechanical and Electrical Divisions.
 - 3.3.28.3. Finish paint primed mechanical equipment: heaters, convectors, radiators, wall fin perimeter induction units, fan coil units and similar items. Ensure use of heat resistant paint on surfaces where operating surface temperature will exceed 65 deg C (150 deg F).
 - 3.3.28.4. Prime and paint exposed, unfinished electrical raceways, fittings, outlet boxes, junction boxes, pull boxes and similar items.
 - 3.3.28.5. Take steps to protect gauges, identification plates and similar items from being painted over or paint splattered.
 - 3.3.28.6. Remove grilles, covers, access panels for mechanical and electrical systems from installed location and paint separately, if these items are not factory finished. Paint adjacent surfaces after removal and reinstall when surfaces are dry.
 - 3.3.28.7. Paint work to match surfaces they are seen against unless directed otherwise.
 - 3.3.28.8. Paint interior surfaces of air ducts visible through grilles and louvres, with 1 coat of flat black metal paint to limit of sight line.
 - 3.3.28.9. In unfinished areas leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
 - 3.3.28.10. Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

- 3.3.28.11. Do not paint over nameplates.
- 3.3.28.12. Paint behind louvres grilles and diffusers for minimum of 460 mm (18") or beyond sight line, whichever is greater, to be painted with primer and 1 coat of matt black (non-reflecting) paint.
- 3.3.28.13. Paint each surface inside of light valances.
- 3.3.28.14. Paint disconnect switches for fire alarm system and exit light systems in red enamel.
- 3.3.28.15. Paint or band fire protection piping and sprinkler lines in accordance with mechanical requirements. Keep sprinkler heads free of paint.
- 3.3.28.16. Paint yellow or band natural gas piping in accordance with mechanical requirements.
- 3.3.28.17. Back prime and paint face and edges of plywood service panels for telephone and electrical equipment before installation to match adjacent wall surface. Leave equipment in original finish except for touch-up as required and paint conduits, mounting accessories and other unfinished items.

3.4. SITE QUALITY CONTROL

3.4.1. Site Tests and Inspections:

- 3.4.1.1. Provide and coordinate site inspection service by manufacturer's representative in advance of work commencing and during progress of work to ensure correct use and application of each specified material. Manufacturer's representative to review and submit approval of surface preparation methods in Specifications or obtain specific recommendations for alternative methods. Report such conditions to Consultant.
- 3.4.1.2. As work progresses and upon completion of work, submit written reports and manufacturers' confirmation that materials and application methods conform to manufacturers' requirements.
- 3.4.1.3. Inspect surfaces, preparation and paint applications.

3.4.2. Non-Conforming Work:

- 3.4.2.1. Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction to Consultant at no cost to Owner. Touch up small affected areas, repaint large affected areas or areas without sufficient DFT of paint. Remove runs, sags of damaged paint by scraper or by sanding prior to application of paint.
- 3.4.2.2. Following are considered non-conforming qualities:
 - 3.4.2.2.1. Lack of Uniformity:
 - 3.4.2.2.1.1. Brush/roller marks, streaks, laps, runs, sags, drips, heavy stippling, hiding or shadowing by inefficient application methods, skipped or missed areas and foreign materials in paint coatings.
 - 3.4.2.2.1.2. Evidence of poor coverage at rivet heads, plate edges, lap joints, crevices, pockets, corners and re-entrant angles.
 - 3.4.2.2.1.3. Damage due to touching before paint is sufficiently dry or any other contributory cause.
 - 3.4.2.2.1.4. Damage due to application on moist surfaces or caused by inadequate protection from weather.
 - 3.4.2.2.1.5. Damage and/or contamination of paint due to blown contaminants (dust, spray paint, etc.).
- 3.4.2.3. Aesthetic Problems: If following are evident under final lighting source (including daylight) for interior surfaces:

- 3.4.2.3.1.1. Visible defects are evident on vertical surfaces when viewed at normal viewing angles from a distance of not less than 1 m (39”).
 - 3.4.2.3.1.2. Visible defects are evident on horizontal surfaces when viewed at normal viewing angles from a distance of not less than 1 m (39”).
 - 3.4.2.3.1.3. Visible defects are evident on ceiling, soffit and other overhead surfaces when viewed at normal viewing angles.
 - 3.4.2.3.1.4. When final coat on any surface exhibits a lack of uniformity of colour, sheen, texture and hiding across full surface area.
- 3.4.3. Manufacturer Services: Arrange for manufacturer’s representative to visit site at intervals during surface preparation and paint coating application to ensure proper specified surface preparation is being performed, specified Product are being used, appropriate number of coats are being applied and specified finishing procedures are being carried out.

3.5. CLEANING

- 3.5.1. Keep waste rags in covered metal drums containing water and remove from building at end of each Day. Remove other combustible rubbish materials and empty paint cans each Day from site and safely dispose of same in accordance with requirements of authorities having jurisdiction.
- 3.5.2. Clean equipment and dispose of wash water/solvents as well as other cleaning and protective materials (e.g. rags, drop cloths, masking papers, etc.), paints, thinners, paint removers/strippers in accordance with safety requirements of authorities having jurisdiction.
- 3.5.3. Clean containers used for storage, mixing and application of materials free of foreign materials and residue.
- 3.5.4. Keep work area free from an unnecessary accumulation of tools, equipment, surplus materials and debris.
- 3.5.5. Clean adjacent surfaces which have been painted, soiled or otherwise marred. Remove spilled, splashed, splattered or sprayed paint as work progresses using means and materials that are not detrimental to affected surfaces.
- 3.5.6. Remove masking and other protection provided under this Section.
- 3.5.7. Remove temporary protective wrappings provided by others for protection of work after completion of painting operations unless instructed otherwise.
- 3.5.8. Painting work will not be considered complete until spatters, drippings, smears and overspray have been cleaned and removed to satisfaction of Consultant.
- 3.5.9. Make Good any damage to structure building surfaces or furnishings resulting from painting operations at no cost to Owner.
- 3.5.10. Waste Management:
 - 3.5.10.1. Dispose paint waste in accordance with local regulations.
 - 3.5.10.2. Set aside and protect surplus and uncontaminated finish materials not required by Owner and deliver or arrange collection for verifiable re-use or re-manufacturing.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

1.1.1. Read and conform to:

- 1.1.1.1. Division 01 requirements and documents referred to therein.

1.2. SUMMARY

1.2.1. Section Includes:

- 1.2.1.1. Headrail-braced metal toilet partitions
- 1.2.1.2. Urinal Privacy Screens (PS).
- 1.2.1.3. Barrier free type hardware.
- 1.2.1.4. Combined hook and bumper
- 1.2.1.5. Anchors, brackets and fastenings.

1.3. SUBMITTALS

1.3.1. Product Data:

- 1.3.1.1. Submit manufacturer's instructions, printed product literature and data sheets for metal toilet compartments and urinal screens and include product characteristics, performance criteria, physical size, finish and limitations

1.3.2. Shop Drawings: Submit Shop Drawings for work of this Section.

- 1.3.2.1. Indicate fabrication details, plans, elevations, hardware, and installation details

1.3.3. Samples: Submit following samples in sizes indicated:

- 1.3.3.1. One coat hook, top and bottom hinge, slide latch, stainless steel shoe, panel fitting, stirrup bracket and other hardware items and fasteners.
- 1.3.3.2. Corner section, 200 mm x 200 mm (8" x 8") showing corner, edge and core construction.

1.4. CLOSEOUT SUBMITTALS

- 1.4.1.1. Operation and Maintenance Data: Submit maintenance manual in accordance with Division 01.

- 1.4.1.1.1. The Manual shall consist of a hard cover three ring binder with the project name in the front. Include in the manual the following information: maintenance instructions, catalogue pages for each product, name/address and phone number of the manufacturer and their sales agent, copy of the final shop drawings.

1.5. QUALITY ASSURANCE

1.5.1. Qualifications:

- 1.5.1.1. Installers: Provide work of this Section executed by competent installers with minimum 5 years experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.6. DELIVERY, STORAGE AND HANDLING

- 1.6.1. Delivery and Acceptance Requirements: Deliver materials in sequence to meet installation schedule. Provide protection from marring or other damage.

1.6.2. Storage and Handling Requirements: Carefully unload materials; handle and store in a manner to prevent damage. Remove unsatisfactory materials and replace to Consultant's satisfaction at no cost to Owner.

1.7. WARRANTY

1.7.1. Manufacturer Warranty: Warrant work of this Section for period of 3 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant. Defects include but are not limited to; buckling, opening of seams, bond failure and extensive colour fading.

PART 2 - PRODUCTS

2.1. MANUFACTURERS

2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

2.1.1.1. ASI Global Partitions; www.asigroup-canada.com

2.1.1.2. Bradley Corporation; www.bradleycorp.com

2.1.1.3. Centar Industries ; www.centarind.com

2.1.1.4. Global Steel Products Corp.; www.globalpartitions.com

2.1.1.5. Hadrian Manufacturing Inc.; www.hadrian-inc.com

2.1.2. Substitution Limitations: This Specification is based on Hadrian. Comparable Products from other manufacturers listed herein will be considered provided they meet requirements of this Specification after full review by Consultant.

2.2. MATERIALS

2.2.1. Sheet Steel: Commercial quality to ASTM A653/A653M with ZF001 designation zinc coating.

2.2.2. Minimum base steel thickness:

2.2.2.1. Panels, Pilasters and Doors: 0.8 mm (22 gauge)

2.2.2.2. Reinforcement: 3.0 mm

2.2.3. Headrails: 25 mm x 41 mm x 1.5 mm thick, clear anodized, extruded aluminum with double-ridge anti grip design. (no headrail within stall's open space)

2.2.4. Pilaster shoe: welded one-piece design 0.8 mm (22 gauge) stainless steel with #4 brushed satin finish, 102 mm high.

2.2.5. Brackets: Chrome plated zinc die castings

2.2.6. Fasteners: tamperproof type screws and bolts.

2.3. COMPONENTS

2.3.1. Hinges:

2.3.1.1. Heavy duty, self-lubricating nylon sleeve.

2.3.1.2. Material/Finish: Chrome plated non-ferrous casting.

2.3.1.3. Swing:

2.3.1.3.1. Inward unless noted otherwise on the design drawings

2.3.1.4. Return Movement: Gravity action. Adjustable to hold door open at any angle up to 90 degrees.

- 2.3.1.5. Emergency access feature.
 - 2.3.2. Latch: concealed, chrome plated zinc die casting with face mortised flush with edge strip of door
 - 2.3.3. Combination door-stop, keeper and bumper, chrome plated non-ferrous, with emergency access feature.
 - 2.3.4. Wall and connecting brackets: chrome plated non-ferrous casting.
 - 2.3.5. Coat Hook: Combination hook and rubber door bumper, chrome plated non-ferrous.
 - 2.3.6. Door Pull: Barrier-free type suited for out swinging doors, chrome plated non-ferrous.
 - 2.3.7. Headrail: 25mm (1") x 41mm (1.625") extruded anodized aluminum with double-ridge anti-grip design. Wall thickness to be 1.5mm (0.060")
 - 2.3.8. Fasteners: zinc plated 12 x 1-3/4" and 12 x 5/8" TR-27 6-lobe security screws
- 2.4. FABRICATION**
- 2.4.1. Visit site and take necessary measurements required before fabrication.
 - 2.4.2. Accurately follow methods of fabrication reinforcement and anchorage shown on reviewed Shop Drawings.
 - 2.4.3. Cut, shear, straighten and work steel in a manner to prevent disfigurement of finished work.
 - 2.4.4. Ensure finished work is free of warp, open seams, buckles and other surface defects detrimental to appearance.
 - 2.4.5. Doors, panels and screens: 25 mm thick, two steel sheets faces pressure bonded to honeycomb core, to sizes indicated.
 - 2.4.6. Pilasters: 32 mm thick, constructed same as door, to sizes indicated.
 - 2.4.7. Ensure door hinges are fully concealed within thickness of door and adjustable to permit door to come to rest at any position when not latched.
 - 2.4.8. Include formed and closed edges for doors, panels and pilasters.
 - 2.4.8.1. Miter and weld corners and grind smooth.
 - 2.4.9. Include internal reinforcement at areas of attached hardware and fittings.
 - 2.4.9.1. Temporarily mark location of reinforcement for tissue holders and grab bars.
 - 2.4.10. Provide each door with a combined coat hook and bumper and concealed latch with face mortised flush with edge strip of door. Ensure combined stop and keeper have 19 mm (3/4") diameter bumper locked in place.
 - 2.4.11. Headrail to be securely attached to wall and pilasters with manufacturer's fittings in such a way as to make a strong and rigid installation. All joints in headrails shall be made at pilaster.
 - 2.4.12. Provide barrier free type of hardware for disabled stall unit without limitations as follows:
 - 2.4.12.1. Provide door capable of being locked from inside with locking mechanism operated by 1 hand. Include thumb turn lever to activate latch without fingertip grip application.
 - 2.4.12.2. Both standard and barrier-free latches shall have a turn slot designed to allow emergency access from exterior.
 - 2.4.12.3. Provide door with door pull on outside, near latch side of door.
 - 2.4.12.4. Equip stall with coat hook mounted not more than 1220 mm (48") above floor on side wall and projecting not more than 25 mm (1") from wall.
 - 2.4.13. Provide wall channels, factory formed and punched, 75 mm (3") deep, wide enough to fit pilasters and at least 1220 mm (48") long.

- 2.4.14. Provide both standard and barrier free latches with turn slot designed to allow emergency access from exterior.
- 2.4.15. Urinal Privacy Screens (PS): 610 mm x 1219 mm (24" x 48"), same construction as partitions, but wall hung with a minimum of 3 wrap-around brackets.
- 2.4.16. **FINISHES**
- 2.4.17. Clean, degrease, and neutralize steel components with phosphate or chromate treatment.
- 2.4.18. High performance powder coating, electrostatically applied and oven cured to provide a uniform, smooth finish.
- 2.4.19. Colour: no. 504 Linen.

PART 3 - EXECUTION

3.1. EXAMINATION

- 3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.
- 3.1.2. Verify that back-up supports and blocking are in place to secure work of this Section.
- 3.1.3. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

- 3.2.1. Do work in accordance with CSA B651
- 3.2.2. Install partitions and screens plumb and square to building lines and according to manufacturer's printed directions. Ensure gap between panel to panel, panel to door and panel to adjacent construction is not greater than 9 mm (3/8").
- 3.2.3. Partition erection.
 - 3.2.3.1. Install partitions secure, plumb and square.
 - 3.2.3.2. Anchor mounting brackets to masonry/concrete surfaces using screws and shields:
 - 3.2.3.3. Attach panel and pilaster to brackets with through type sleeve bolt and nut.
 - 3.2.3.4. Attach panel to wall using continuous 3" channel
 - 3.2.3.5. Allow for adjustment of floor-braced pilasters variations with screw jack through steel saddles made integral with pilaster.
 - 3.2.3.5.1. Conceal floor fixings with stainless steel shoes.
 - 3.2.3.6. Equip doors with hinges, latch set, and each stall with coat hook mounted on door, mounting heights as shown on drawings.
 - 3.2.3.6.1. Adjust and align hardware for easy, proper function. Set door open position at 30 degrees to front.
 - 3.2.3.6.2. Install door bumpers.
 - 3.2.3.7. Equip outswinging doors with door pulls on inside and outside of door in accordance with CSA B651.
- 3.2.4. Floor supported and overhead braced partition erection:
 - 3.2.4.1. Attach pilasters to floor with pilaster supports. Adjust and level, plumb, and tighten installation with levelling device.

- 3.2.4.1.1. Secure pilaster shoes in position.
- 3.2.4.1.2. Secure headrail to pilaster face with not less than two fasteners per face.
- 3.2.4.1.3. Set tops of doors parallel with overhead brace when doors are in closed position.
- 3.2.4.2. Floor supported partition erection.
 - 3.2.4.2.1. Secure pilasters to floor with pilaster supports anchored with minimum 50 mm penetration in structural floor.
 - 3.2.4.2.2. Level, plumb and tighten installation with levelling device.
 - 3.2.4.2.3. Secure pilaster shoes in position.
 - 3.2.4.2.4. Set tops of doors level with tops of pilasters when doors are in closed position.
- 3.2.4.3. Urinal screens erection:
 - 3.2.4.3.1. Anchor wall-hung screen panels to walls with 'double ear' brackets.
 - 3.2.4.3.2. Floor mounted post "Stirrup Bracket Installation" with post to be fastened to the panel with "U" brackets that are chrome plated zinc die cast.

3.3. ADJUSTING

- 3.3.1.1. Adjust doors and locks for optimum, smooth operating condition.
- 3.3.1.2. Lubricate hardware and other moving parts.

3.4. CLEANING

- 3.4.1.1. Perform cleaning after installation to remove construction and accumulated environmental dirt.
- 3.4.1.2. Final Cleaning: Upon completion remove surplus materials, rubbish, tools and equipment.
- 3.4.1.3. Clean surfaces after installation using manufacturer's recommended cleaning procedures.
- 3.4.1.4. Clean aluminum with damp rag and approved non-abrasive cleaner.
- 3.4.1.5. Clean and polish hardware and stainless components.

3.5. PROTECTION

- 3.5.1.1. Protect installed products and components from damage during construction.

END OF SECTION

PART 1 - GENERAL

1.1. GENERAL INSTRUCTIONS

- 1.1.1. Read and conform to:
 - 1.1.1.1. Division 01 requirements and documents referred to therein.

1.2. SUMMARY

- 1.2.1. Section Includes: supply and install washroom accessories
- 1.2.2. Install washroom accessories supplied by HWDSB
- 1.2.3. Related Sections: Following description of work is included for reference only and shall not be presumed complete:
 - 1.2.3.1. Reinforcing requirements for wall mounted accessories in gypsum board: Section 09 21 16, Non Structural Metal Framing.
 - 1.2.3.2. Plumbing connections: refer to mechanical drawings and specifications.
 - 1.2.3.3. Electrical connections: refer to electrical drawings and specifications.

1.3. ADMINISTRATIVE REQUIREMENTS

- 1.3.1. Coordination:
 - 1.3.1.1. Coordinate location of washroom accessories with other work to prevent interference with clearances required for access, proper installation, adjustment, operation, cleaning and servicing of washroom accessories.
 - 1.3.1.2. Provide templates and locations for backing and support framing for accessories.
 - 1.3.1.3. Coordinate service locations and connection requirements.

1.4. SUBMITTALS

- 1.4.1. Submittals in accordance with Section 01 33 00 - Submittal Procedures.
- 1.4.2. Shop Drawings:
 - 1.4.2.1. Submit Shop Drawings for work of this Section. Ensure Shop Drawings are in the form of catalogue cuts and fully illustrate specified materials with description of components, surface finishes, hardware and securement devices.
- 1.4.3. Samples:
 - 1.4.3.1. If requested, submit complete sample of accessory to Consultant for review of construction quality, materials and finish prior to delivery of required quantities of items. Submit sample of each colour where applicable. Remove trademark and/or labels on exposed finishes prior to acceptance.
 - 1.4.3.2. Samples will be returned for installation.

1.5. CLOSEOUT SUBMITTALS

- 1.5.1. Operational and Maintenance Data: Submit maintenance instructions in accordance with Closeout Submittals specified in Division 01. Submit an accessories schedule, keys and parts manual as part of Project closeout documents. Submit 2 sets of following items of manufacturer's literature:
 - 1.5.1.1. Technical Data Sheets of each item used for the Project.
 - 1.5.1.2. Service and Parts Manuals.

- 1.5.1.3. Name of local representative to be contacted in the event of need of field service of consultation.

1.6. DELIVERY, STORAGE AND HANDLING

- 1.6.1. Delivery and Acceptance Requirements: Deliver materials in sealed cartons and containers with manufacturer's name and Product description clearly marked thereon.

1.7. WARRANTY

- 1.7.1. Manufacturer Warranty: Warrant mirrors for a period of 10 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to; deterioration of mirror's silvering.
- 1.7.2. Float glass mirror shall be guaranteed for 15 years against silver spoilage.
- 1.7.3. Hand dryers: 5 years

PART 2 - PRODUCTS

2.1. MANUFACTURERS

- 2.1.1. Manufacturer List: Products of following manufacturers are acceptable subject to conformance to requirements of Drawings, Schedules and Specifications:

- 2.1.1.1. ASI Group Canada; www.asigroup-canada.com
- 2.1.1.2. Bobrick Washroom Equipment of Canada Ltd.; www.bobrick.com
- 2.1.1.3. Gamco; www.gamcousa.com
- 2.1.1.4. Elkay; www.elkay.com
- 2.1.1.5. Frost Products Limited; www.frostproductsltd.com
- 2.1.1.6. Murdock; www.murdockmfg.com
- 2.1.1.7. Bradley; www.bradleycorp.com

2.2. MATERIALS

- 2.2.1. Ensure washroom accessories are stainless steel Type 304 or Type 302, of 1 type throughout, NAAMM No. 4 mechanical brushed finish, of contemporary design, with minimum material thicknesses of components as specified herein. Arrange stainless steel sheet so grain of brushed finish runs vertically in finished installation.
- 2.2.1.1. Minimum thickness, any location or component: 0.607 mm (24 ga)
- 2.2.1.2. Hygienic accessory - exposed double pan doors and panels: 0.607 mm (24 ga)
- 2.2.1.3. Hygienic accessory - exposed single pan doors: 1.214 mm (18 ga)
- 2.2.1.4. Reinforcement: 1.214 mm (18 ga)
- 2.2.2. Provide washroom accessories as specified with options indicated. Model numbers may not reflect all options required.
- 2.2.3. Provide stainless steel collars to accommodate semi-recessed mounting of units whose depth exceeds wall cavity depth.
- 2.2.4. Units that have keyed tumbler locks shall be keyed alike.

2.3. MANUFACTURED UNITS

- 2.3.1. Accessories supplied by the Owner for installation by General Contractor follows this Section:

- 2.3.1.1. Paper Towel Dispenser (PTD)
- 2.3.1.2. Toilet Paper Dispenser (TPD)
- 2.3.1.3. Soap Dispenser (SD)
- 2.3.2. Mirror (MR):
 - 2.3.2.1. Mirror shall have a one-piece, 18-8 heavy-gauge stainless steel angle frame, 3/4" x 3/4" (19 x 19mm) with continuous integral stiffener on all sides and beveled front to hold frame tightly against mirror; corners shall be heliarc welded, ground, and polished smooth.
 - 2.3.2.2. All exposed surfaces shall have NAAMM No. 4 mechanical brushed satin finish.
 - 2.3.2.3. All edges shall be protected by plastic filler strips and the back shall be protected by full-size, shock-absorbing, water-resistant, nonabrasive, 3/16" (5mm) thick polyethylene padding.
 - 2.3.2.4. Galvanized steel back shall have integral horizontal hanging brackets located at top and bottom for mounting on concealed wall hanger and to prevent the mirror from pulling away from the wall.
 - 2.3.2.4.1. Snap Locking Design: Hang mirror on wall hanger with all four backplate louvers engaged behind horizontal wall hanger members.
 - 2.3.2.4.2. Mirror must be centered in front of the wall hanger horizontally, pressed flat against the wall approximately 1" (25mm) above final position and then lowered into final position.
 - 2.3.2.5. Mirror — No. 1 quality, 1/4" (6mm) select float glass (standard glass): selected for silvering, electrolytically copper-plated by the galvanic process
 - 2.3.2.6. Size: 610 mm x 910 mm (24" x 36")
 - 2.3.2.7. Basis of design: Model No, 7B1-0024360 by Bradley.
 - 2.3.2.8. Location: As shown on the drawings.
- 2.3.3. Sanitary Napkin Disposal (ND):
 - 2.3.3.1. Surface-mounted sanitary napkin disposal type-304 stainless steel with all-welded construction;
 - 2.3.3.2. Exposed surfaces shall have NAAMM No. 4 mechanical brushed satin finish.
 - 2.3.3.3. Door shall be secured to cabinet with a full-length stainless steel piano-hinge and equipped with keyed tumbler lock.
 - 2.3.3.4. Unit shall have a self-closing panel covering each disposal opening. Panel shall have bottom edge hemmed for safety, be secured to door with spring-loaded, full-length stainless steel piano-hinge, and equipped with international graphic symbols identifying sanitary napkin disposal.
 - 2.3.3.5. Unit shall be furnished with a removable, leak-proof molded polyethylene receptacle. Receptacle shall have a capacity of 1.2-gal. (4.6-L)
 - 2.3.3.6. Basis of design: Model No. 4A00 , 4A10-11 by Bradley.
 - 2.3.3.7. Location: one at each girls' and gender neutral washroom
- 2.3.4. Surface – Mounted Waste Receptacle (WR):
 - 2.3.4.1. Type-304, 22-gauge (0.8mm) stainless steel.
 - 2.3.4.2. Exposed surfaces shall have NAAMM No. 4 mechanical brushed satin finish.

- 2.3.4.3. Waste receptacle shall be equipped with four interior hooks, have reinforced mounting screw holes, and shall be furnished with a removable heavy-gauge vinyl liner.
- 2.3.4.4. Unit shall have a capacity of 20-gal. (75.7-L).
- 2.3.4.5. Basis of design: Model No. B-277 by Bobrick.
- 2.3.5. Clothes Hook (CH):
 - 2.3.5.1. Type 304 stainless steel with NAAMM No. 4 mechanical brushed satin finish
 - 2.3.5.2. Faceplate shall have sloped edges and be constructed of 14-gauge (2mm). Hook shall release at a load of 40lbs or greater.
 - 2.3.5.1. Unit shall be furnished with tamper-resistant mounting screws.
 - 2.3.5.2. Basis of Design: Model B-983 by Bobrick
- 2.3.6. Grab Bars (GB):
 - 2.3.6.1. Type 304 stainless steel with NAAMM Brushed No.4 finish with peened gripping surface.
 - 2.3.6.2. Grab bar shall have 18-gauge (1.2mm) wall thickness and 1-1/2" (38mm) outside diameter.
 - 2.3.6.3. Clearance between the grab bar and wall shall be 1-1/2" (38mm).
 - 2.3.6.4. Concealed mounting flanges shall be 11-gauge (3.2mm) thick stainless steel plate, 2" x 3-1/8" (50 x 80mm), and equipped with at least two screw holes for attachment to wall. Flange covers shall be 22 gauge (0.8mm), 3-1/4" (85mm) diameter x 1/2" (13mm) deep, and shall snap over mounting flange to conceal mounting screws and/or WingIt fasteners.
 - 2.3.6.5. Ends of grab bar shall pass through concealed mounting flanges and be heliarc welded to form one structural unit.
 - 2.3.6.6. Grab bar shall comply with accessible design for structural strength.
 - 2.3.6.7. Basis of Design: Bobrick:
 - 2.3.6.7.1. GB-1: STRAIGHT GRAB BAR BOBRICK MODEL B-5806 x 24: 24" (610MM)
 - 2.3.6.7.2. GB-2: L - SHAPED GRAB BAR BOBRICK MODEL B-6898.99, 30" x 30" (762MM X 762MM).
- 2.3.7. Hand Dryers (HD): Select one of the following:
 - 2.3.7.1. Surface-mounted, ADA compliant hand dryer, automatic activation "SLIMdri" model L-972 by World Dryer; www.globalindustrial.ca
 - 2.3.7.1.1. Size: Height: 270.9 mm, Width: 290.3 mm, Depth: 98.8 mm
 - 2.3.7.1.2. Polished stainless steel cover
 - 2.3.7.1.3. Wall mounting plate shall be constructed of die-cast aluminum
 - 2.3.7.1.4. Nozzle shall be constructed of die-cast aluminum finished with epoxy paint finish.
 - 2.3.7.1.5. The cover shall be attached to the wall mounting plate with tamper-proof screws.
 - 2.3.7.1.6. Motor shall be a thermally-protected universal brush type motor, 13,000 RPM, delivering 70 CFM air flow at a velocity of 140 MPH (12,320 LFM).
 - 2.3.7.1.7. 115 / 208 / 230VAC input.
 - 2.3.7.1.8. Sound rating: 83 db
 - 2.3.7.1.9. Heating element: chrome wire heating element protected by an automatic resetting thermal cutoff.

- 2.3.7.1.10. Activation: automatic infrared sensor with a 3 second run-on time and 60 second vandal shut-off.
- 2.3.7.1.11. Control board shall contain a heater control switch which can be controlled in either ON or OFF position. Dryer shall provide a 48°F temperature rise.

2.4. FABRICATION

- 2.4.1.1. Fabricate accessories true, square, rigid, free from distortion and from defects detrimental to appearance and performance. Assemble sheet metal accessories by welding in accordance with CSA W59. Conceal welds, or grind smooth such as to be undetectable in finished work. Unless approved by Owner, ensure assembly fastenings, hardware fixings and mounting or installation devices are concealed in finished work.
- 2.4.1.2. Use non-corrosive metal fasteners of expansion type, toggle type or other approved type of positive, mechanical anchor as required to suit construction to which accessory is to be mounted. Ensure exposed fasteners, where permitted, are finished to match adjacent accessory surface and countersunk. Where accessories are mounted to sheet metal, provide a 3 mm (1/8") thick minimum full-size metal back-up plate drilled and tapped to receive machine screws and finished to match adjacent sheet metal surface.
- 2.4.1.3. Ensure frameless accessories have 1 piece fronts with 90 degree formed returns at their edges and openings. Ensure returns are continuously welded and ground smooth at corners. Where accessory fronts are framed, ensure frame edges, both inside and outside, have 90 degree formed returns continuously welded and ground smooth at corners. Ensure doors also have 90 degree formed returns.
- 2.4.1.4. Use concealed stainless steel piano hinges which extend full-length of hinged element. Ensure hinged elements have concealed, mechanically-retained, rubber bumpers for silent closing, and close flush with faces of fronts or frames. Locate hinges to afford easy and unobstructed access to interiors taking into consideration location of accessory relative to surrounding and adjacent items and finishes.
- 2.4.1.5. Ensure portions of sheet metal accessory interiors visible in completed work are stainless steel. Ensure changes in plane are formed or continuously welded and ground smooth. Ensure sheet metal accessory parts concealed in finished installation are galvanized or stainless sheet steel. Ensure edges of sheet metal accessible by users or maintenance personnel are hemmed for safety with no sharp edges.
- 2.4.1.6. Ensure lettering or pressure sensitive international symbols on accessories is silk screened with durable paint to withstand wear or is engraved or embossed. Size, location and type face of lettering is subject to approval. Ensure edges of letters are straight and sharp.

PART 3 - EXECUTION

3.1. EXAMINATION

- 3.1.1. Verification of Conditions:
 - 3.1.1.1. Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.
 - 3.1.1.2. Verify gypsum board walls have been reinforced in accordance with Section 09 21 16 - Non-Structural Metal Framing for wall mounted accessories.
- 3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2. INSTALLATION

- 3.2.1. Provide necessary wall reinforcement for grab bars and towel bars as detailed for 227 kg (500 lbs) downward pull.
- 3.2.2. Install washroom accessories in accordance with manufacturer's printed installation instructions.
- 3.2.3. Provide fastenings and mounting kits for washroom accessories.
- 3.2.4. Verify wall opening for correct dimensions, plumbness of blocking or frames and other preparation that would affect installation of washroom accessories.
- 3.2.5. Verify spacing of plumbing fixtures and toilet partitions that affect installation of washroom accessories.
- 3.2.6. Securely fasten accessories, level and plumb using appropriate fastenings as recommended by manufacturer.
- 3.2.7. Provide corrosion resistant fastenings. Where fasteners are exposed, use tamper-proof fasteners finished to match items secured.
- 3.2.8. Locate washroom accessories where indicated on Drawings and where directed by Consultant. Obtain Consultant's acceptance of exact locations.
- 3.2.9. Provide manufacturer's recommended anchoring systems.
- 3.2.10. Fit flanges of accessories snug to wall surfaces.

3.3. SITE QUALITY CONTROL

- 3.3.1. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.4. ADJUSTING

- 3.4.1. Test mechanisms, hinges, locks and latches.
- 3.4.2. Adjust and lubricate to ensure washroom accessories are in perfect working order.

3.5. CLEANING

- 3.5.1. Clean and polish mirrors, aluminum and stainless steel surfaces.
- 3.5.2. Remove protective coatings and paper including adhesives.

END OF SECTION