BID DOCUMENTS & SPECIFICATIONS

**Issued for Tender, Permit
and Construction**

Renovations & Additions for Joint Admin Facility

for the

County of Frontenac
and
Cataraqui Region Conservation Authority

Date: **April 20, 2022**
Project Nº **20027**

COLBOURNE & KEMBEL , ARCHITECTS INC.
739D ARLINGTON PARK PLACE KINGSTON ONTARIO K7M 8M8 TEL 613-384-2240
E-MAIL info@ckai.ca FAX 613-384-1277

PROJECT

JOINT ADMIN FACILITY, RENOVATIONS & ADDITIONS TO
2069 BATTERSEA ROAD, GLENBURNIE, ON

OWNER

COUNTY OF FRONTENAC
2069 BATTERSEA ROAD,
GLENBURNIE, ON K0H 1S0

ARCHITECT

COLBOURNE & KEMBEL, ARCHITECTS INC.
739D Arlington Park Place
Kingston, Ontario K7M 8M8

MECHANICAL & ELECTRICAL ENGINEERING

MORRIS ENGINEERING LTD
68 WILLIAM ST, SUITE 206
BROCKVILLE, ON K6V 4V5

CIVIL & STRUCTURAL ENGINEERING

EASTERN ENGINEERING GROUP INC.
100 STROWGER BLVD. SUITE 207
BROCKVILLE, ON K6V 5J9

LANDSCAPE DESIGN

THE SCOTT WENTWORTH GROUP
13392 LOYALIST PARKWAY
RR#1 PICTON, ON K0K 2T0

END OF SECTION

Section	Title
Division 00 – Procurement and Contracting Requirements	
00 00 50	Project Team
00 01 11	List of Contents
00 10 00	Instructions to Bidders
00 20 00	Bid Form
00 30 00	Supplementary General Conditions
Division 01 – General Requirements	
01 11 00	Summary of Work
01 21 00	Allowances
01 29 83	Payment Procedures: Testing Laboratory Services
01 31 19	Project Meetings
01 32 00	Construction Progress Documentation
01 33 00	Submittal Procedures
01 45 00	Quality Control
01 51 00	Temporary Utilities
01 52 00	Construction Facilities
01 56 00	Temporary Barriers And Enclosures
01 61 00	Common Product Requirements
01 70 12	Safety Requirements
01 73 03	Execution Requirements
01 74 11	Cleaning
01 74 21	Construction / Demolition Waste Management And Disposal
01 77 00	Closeout Procedures
01 78 00	Closeout Submittals
01 91 00	Commissioning
Division 02 - Existing Conditions	
02 41 99	DEMOLITION FOR MINOR WORKS
Division 04 - Masonry	
04 05 00	COMMON WORK RESULTS FOR MASONRY
04 05 13	MASONRY MORTAR AND GROUT
04 05 19	MASONRY ANCHORAGE AND REINFORCING
04 05 23	MASONRY ACCESSORIES
04 22 00	CONCRETE UNIT MASONRY
Division 05 – Metals	
05 51 00	METAL STAIRS AND LADDERS
Division 06 - Wood, Plastics, and Composites	
06 10 10	ROUGH CARPENTRY
06 40 00	ARCHITECTURAL WOODWORK
06 47 00	PLASTIC LAMINATE FINISHING
06 61 16	SOLID SURFACING FABRICATIONS

Division 07 - Thermal and Moisture Protection
07 21 13 BOARD INSULATION
07 21 16 BLANKET INSULATION
07 26 00 AIR AND VAPOUR BARRIERS
07 46 15 ALUMINUM SIDING AND SOFFITS
07 51 00 BUILT-UP BITUMINOUS ROOFING
07 62 00 SHEET METAL FLASHING AND TRIM
07 84 00 FIRE STOPPING
07 92 10 JOINT SEALANTS

Division 08 - Openings
08 11 00 METAL DOORS AND FRAMES
08 11 16 ALUMINUM DOORS AND FRAMES
08 14 16 FLUSH WOOD DOORS
08 43 13 GLAZED ALUMINUM STOREFRONT
08 44 13 GLAZED ALUMINUM CURTAIN WALLS
08 50 00 WINDOWS
08 71 10 DOOR HARDWARE - GENERAL
08 80 50 GLAZING

Division 09 - Finishes
09 21 16 GYPSUM BOARD ASSEMBLIES
09 30 13 CERAMIC TILING
09 51 13 ACOUSTICAL PANEL CEILINGS
09 65 19 RESILIENT FLOORING
09 68 13 TILE CARPETING
09 91 23 PAINTING
09 96 46 Intumescent Paint

Division 10 - Specialties
10 28 00 TOILET AND BATH ACCESSORIES

Division 14 – Conveying Equipment
14 42 16 VERTICAL PLATFORM WHEELCHAIR LIFT

APPENDIX A
Hazardous Building Materials Assessment, County of Frontenac Administrative Building, 2069 Battersea Rd, Kingston, ON

APPENDIX B
Geotechnical Investigation Proposed Addition to Fairmount Home South Wing, 2069 Battersea Road, Glenburnie ON, March 15, 2022, File: 1583.00-101

END OF SECTION

General

1.1 CONTRACT FORM

.1 The form of contract between the Owner and the Contractor will be CCDC2-2020, as amended by the Supplementary Conditions described in Section 00 30 00.

1.2 IMPORTANT DATES

.1

Mandatory Site Visit:	**Wednesday, April 27, 2022, 2:00:00 PM**
Final Date for Questions:	Wednesday, May 4, 2022
Final date for Addenda:	Monday, May 9, 2022
Closing Date:	Wednesday, May 11, 2:00:00 PM local time

1.3 DEFINITIONS

.1 “Closing Time”, means the Tender submission date and time as herein.

.2 “Days”, means calendar days.

.3 “Bidder”, means an entity that submits a tender in response to this RFT and, in respect of the period prior to the RFT closing time, as the context may suggest, refers to a potential Bidder.

.4 “Contractor”, means any person, firm or organization, as the case may be, that has been awarded the contact to perform the work as outlined within this RFT.

1.4 BID FORM

.1 The form of bid between the Owner and the Contractor will be as follows in Section 00 20 00.

.2 Submit Stipulated Price Bid, as requested in Section 00 20 00 and project schedule, consent of surety, bid bond and insurance undertaking as per Section 00 10 00. Bids shall be submitted One digital copy (PDF format) of the submission, emailed to ap@frontenaccounty.ca. The timestamp on the email as received by the County of Frontenac will determine time received.

Subject line: **RFT 2022-010 - Joint Admin Facility**

Bids will be received up to:

2:00:00 p.m., local time, Wednesday, May 11, 2022

Bids must be submitted on or before the Submission Deadline. Bids submitted after the Submission Deadline will not be accepted. Bidders are cautioned to allow sufficient time to upload their submissions and to resolve any issues that may arise well before the deadline. Bidders making submissions near the deadline do so at their own risk.

Bids of Contractors shall be valid for 30 days.

Bids received by any other form, including but not necessarily limited to hard copy, facsimile transmission, or telephone will not be accepted or considered.

1.5 LATE SUBMISSIONS

.1 Any tender received after the closing time specified in this RFT, shall not be accepted for consideration and will be sent back to the Bidder unopened.

1.6 ACCEPTANCE OF TERMS

.1 Each Bidder, by submitting a tender, represents that the Bidder has read and completely understands, and accepts all provisions contained in this RFT.

1.7 DRAWINGS AND SPECIFICATIONS

.1 Request for Tender will be posted at:
RFPs and RFQs - County of Frontenac (frontenaccounty.ca)
To request a copy of the tender documents, email Justin Chapman. Email address provided in .2 below.

.2 The Consultant is the sole contact for bidding on this Project and all enquiries shall be directed to their attention. A Bid may be disqualified where contact is made with any person other than the Consultant.

Written enquiries only will be accepted and shall be directed to:
Colbourne & Kembel, Architects Inc.
Justin Chapman
justin@ckai.ca
cc: info@ckai.ca

Final Timeline to submit enquiries:
4:00:00 PM, on the final date for questions noted in 1.2.1. Enquiries received after this time period will not be responded to.

Final addendum, if necessary, will be emailed to eligible bidders by 2:00 PM, on the final addendum date noted in 1.2.1.

.3 Bidders shall be responsible for the distribution of all contract Documents and Addenda to all Subcontractors and suppliers. Neither the Owner, nor its employees nor its agents shall be responsible for any information or instructions given to the Bidder, with the exception of information or instructions provided in writing through the issuance of an addendum.

.4 All bidders shall make themselves familiar and be responsible for the requirements set out in Division 00, Project Bidding and Contract Information; and Division 01, General Requirements.

.5 The Bidder is to review the Bid Set upon receipt and verify that all drawings, specifications, and schedules are included. Inform Tender Coordinator immediately of any missing information.

.6 The Bid Documents are made available only for the purpose of submitting Bids for the Project. Availability and/or use of the Bid Documents does not confer a licence or grant for any other purpose.

1.8 COPYRIGHT

.1 Not withstanding GC 1.1.11 of the contract, for the purposes of the bidding stage only, the related sections of the specifications and drawings may be copied for issue to sub-trades for this project. Each such subdivision shall be accompanied by Divisions 00 and 01 in their entirety.

1.9 ADDENDA

.1 Prior to the closing date, Addenda or clarifications may be emailed to eligible bidders. These may include required additions to, deletions from, or alterations to requirements of the RFT documents. Please note that bidders will not receive notification of addenda, and it is their sole responsibility to retrieve any addenda from the website.

.2 All addenda shall become part of the RFT documents and shall be allowed for in arriving at a contract award.

.3 Each Bidder shall be responsible for verifying before depositing its bid that it has retrieved all addenda that may have been issued and acknowledge such addenda as required on the bid form.

1.10 MULTIPLE TENDERS

.1 A contractor may amend their submitted bid at any time up to closing time by submitting a further bid form, subject to the same requirements for submission as the original bid. The last bid received shall govern. Amendments by facsimile transmission, hard copy, or telephone will not be accepted.

1.11 BIDDER EXPENSES

.1 Bidders are solely responsible for their own expenses in preparing a response to this RFT and for subsequent meetings with the Owner. If the Owner elects to reject all tenders, the Owner will not be liable to any Bidder for any claims, whether for costs or damages incurred by the Bidder in preparing the tender, loss of anticipated profit, or any other matter.

1.12 PROJECT SCHEDULE

.1 The Bid is to be accompanied by a Project Schedule submitted by the Contractor. The Project Schedule must clearly identify key milestones dates: construction start date, Substantial Performance of Phase 1, overall Substantial Performance and Total Completion. The anticipated construction period is from June 1, 2022, with Phase 1 (Level 0 & Lobby) Substantial Performance for October 30, 2022, overall Substantial Performance by March 31, 2023 and Total Completion by June 1, 2023.

1.13 TENDER REJECTION

.1 The lowest cost or any tender may not necessarily be accepted. The Owner, its sole discretion, reserves the right to accept any or all tenders or to cancel the RFT in whole or in part at any time without award.

.2 Where the Owner receives only one compliant tender, the Owner reserves the right to either cancel the RFT, award to the Bidder or enter into negotiations with the Bidder.

.3 Where the Owner exercises its right to cancel the RFT, the Owner may issue a new request for tender, sole source, or do nothing.

.4 Bids may be declared informal and rejected if:
- .1 The bid is qualified in any way.
- .2 The bid deposit or consent to surety are not provided.
- .3 The bid form is not completed properly or entirely.
- .4 An improper bid form is used.
- .5 Late receipt.
- .6 The bid has been withdrawn prior to closing.
- .7 Other factors that would cause the bid to be rejected as noted herein, or as are considered reasonable.

1.14 RIGHT TO WAIVE MINOR NON-COMPLIANCE

.1 The Owner reserves the right, in its sole and unfettered discretion, to reject or waive minor errors and non-compliance contained in a tender without having to disqualify the Bidder. The Owner defines minor errors and matters of non-compliance as those which do not have the effect of creating an advantage of one submission over another but may be merely a matter of form.

1.15 ADDITIONAL RIGHTS OF THE OWNER

.1 In addition to any other express rights or any other rights which may be implied in the circumstances, the Owner reserves the right to:
- a) Make public the names of any or all Bidders and the total cost submitted by any Bidder;
- b) Request written clarification or the submission of supplementary written information from any Bidder and incorporate such clarification or supplementary written information into the Bidder's tender, at the Owner's discretion, provided that any clarification or submission of supplementary written information shall not be an opportunity for the Bidder to correct errors in its tender or to change or enhance the tender in any material manner;
- c) Disqualify any Bidder whose tender contains misrepresentations or any other inaccurate or misleading information, or any Bidder whose reasonable failure to cooperate with the Owner impedes the evaluation process, or whose tender is determined to be non-compliant with the requirement of the RFT;
- d) Disqualify a tender where the Bidder reveals a conflict of interest or any unfair advantage is brought to the attention of the Owner;
- e) Disqualify any tender of any Bidder who has breached any applicable laws or who has engaged in conduct prohibited by this RFT, including where there is any evidence that the Bidder or any of its employees or agents colluded with any other Bidder, its employees or agents in the preparation of the tender; and
- f) Make changes, including substantial changes, to this RFT provided that those changes are issued by way of addenda in the manner set out in this RFT.

1.16 MUNICIPAL FREEDOM OF INFORMATION AND PROTECTION OF PRIVACY ACT

.1 The tender and any accompanying documentation submitted by the Bidder prior to the closing date specified in this document shall become the property of the Owner and shall not be returned. The tender shall be subject to the Municipal Freedom of Information and Protection of Privacy Act, R.S.O. 1990, M-56. The Bidder must identify any information contained in the tender that is submitted in confidence.

1.17 CONFLICT OF INTEREST

.1 Each Bidder shall declare to the Owner as part of their tender any situation that may be either a conflict of interest or a potential or perceived conflict of interest with the contractual obligations of their tender.

.2 No officer or staff member of the Owner are, will be, or shall become interested, directly or indirectly, as a contracting party, partner, stockholder, surely or otherwise in the performance of any contract resulting from this solicitation or in the supplies, work or business in connection with any such contract resulting from this solicitation or in the supplies, work or business in connection with any such contract or in any portion thereof, or in any monies to be derived there from.

1.18 PROPRIETARY CONTENT

.1 Information which the Bidder considers to be of a propriety or confidential nature must be clearly marked “proprietary”.

1.19 BRIBERY COLLUSION

.1 Should a Bidder or any of their agents offer any gratuity to or attempt to bribe any agent of the Owner, or attempt to commit fraud, the Owner shall be at liberty to reject the Bidder’s submission or cancel the contract.

.2 The Bidder further acknowledges that its tender is made without any connection, knowledge, comparison of figures or arrangements with any other company, firm or person making a tender for the same work and is in all respects fair and without collusion or fraud.

1.20 NO LIABILITY

.1 The Bidder agrees that:

a) Any action of proceeding relating to this RFT process shall be brought in any court of competent jurisdiction in the Province of Ontario and for that purpose the Bidder irrevocably and unconditionally attorns and submits to the jurisdiction of that Ontario court;

b) It irrevocably waives any right to and shall not oppose any Ontario action or proceeding relating to this RFT process on any jurisdictional basis; and

c) It shall not oppose the enforcement against it, in any other jurisdiction, of any judgement or order duly obtained from an Ontario court as contemplated by this RFT.

.2 The Bidder further agrees that if the Owner commits a material breach of the RFT (that is a material breach of Contract A), the Owner’s liability to the Bidder, and the aggregate amount of damages recoverable against the Owner for any matter relating to or arising from that material breach, whether based upon an action or claim in contract, warranty,

equity, negligence, intended conduct or otherwise, including any action or claim arising from the acts or omissions, negligent or otherwise, of the Owner, shall be no greater than the tender preparation costs that the Bidder seeking damages from the Owner can demonstrate.

1.21 IDENTICAL BIDS

.1 Where more than one compliant tender offering the lowest total cost is received for the same quality of items or services, the contract will be awarded to the bidder as determined by a coin toss.

1.22 ADDITIONAL INFORMATION FOR BID ANALYSIS

.1 Within 3 working days of notification by the Consultant, and prior to award of contract, the low bidder or bidders shall submit a trade by trade breakdown of the bid price for analysis by Consultant.

.2 Submit additional information promptly if requested by Consultant.

.3 Requests for information shall not be construed as acceptance of a bid.

.4 The Owner reserves the right to seek clarification from any Bidder without being obligated to all Bidders if it finds certain aspects of a tender unclear.

1.23 GOVERNING LAW

.1 The RFT, the Bidder's tender, and any resulting agreement will be governed by the laws of Ontario and the federal laws of Canada applicable therein.

1.24 SUBSTITUTIONS

.1 Bidders shall note that this is a base bid Specification. Products specified or shown on Drawings by Brand name or catalogue number and/or by name of the manufacturer or supplier shall form the basis of the bid.

1.25 COMMUNICATION DURING THE REQUEST FOR TENDER PROCESS

.1 Communication to Bidders for significant inquiries will be in the way of an electronic amendment. An amendment will take one of two forms:

- Questions and Clarifications; or
- Addenda

.2 Clarifications will be responses to Bidder questions that do not change the RFT documents.

.3 Addenda are changes to the RFT documents that may impact a Bidder's submission. All addenda must be acknowledged on the Agreement to Contract as indicated.

.4 To ensure consistency and quality of information provided to Bidders, any information with respect to significant inquires received and the replies to such inquiries or changes to RFT documents will be provided simultaneously to all Bidders electronically by way of amendment to which this RFT has been sent without revealing the sources of the inquiries.

.5 Where the RFT Coordinator deems a question to be either insignificant to others or the answer is readily apparent to all Bidders within the document, the RFT Coordinator may choose to respond only to that Bidder.

.6 Under no circumstances will meetings related to this RFT be held with individual Bidders prior to the closing date and time of this RFT. Non-compliance with this condition will (for that reason alone) result in disqualification of the Bidder's submission.

1.26 BIDDER REQUEST FOR CLARIFICATION

.1 It is the responsibility of the Bidder to seek clarification on any matter that they consider unclear before submitting a tender. The Owner is not responsible for any misunderstanding of the RFT on the part of a Bidder.

.2 Bidders must obtain their own information on all matters that may in any way influence them in developing their tender. Bidders must satisfy themselves in all respects as to the risks and obligations to be undertaken by them.

.3 Written queries only should be directed to the RFTCoordinator.

.4 The RFTCoordinator is the only person responsible for any and all information, instructions and interpretations of all information pertaining to this RFT.

.5 The RFTCoordinator will acknowledge receipt of the request for clarification by reply. It will be the responsibility of the Bidder to ensure that it has received a response to the request for clarification before submitting a tender.

.6 The following apply regarding any request for clarification of any aspect of the RFT
a) Questions, inquiries and requests for clarification should be made by the date and time as stated herein;
b) Bidders must submit requests for clarifications by email to the RFTCoordinator;
c) In submitting a request for clarification, a Bidder should include its address, telephone number, email address and fax number; and
d) Where a question relates to a specific section of this RFT, reference should be made to the specific paragraph number.

Inquiries not meeting these conditions may not be responded to.

.7 In answering a Bidder's questions, the RFTCoordinator will set out the question(s), but without identifying the Bidder that submitted the question(s) the RFTCoordinator may, in its sole discretion,
a) Edit the question(s) for clarity;
b) Exclude questions that are either unclear or inappropriate; and
c) Answer similar questions from various Bidders only once.

1.27 TAXES

.1 Refer to the General Conditions of the Contract.

1.28 BONDING AND CONSENT OF SURETY

.1 The successful General Contractor shall be required to furnish a Surety Bond as approved by the C.C.A. from a licensed Canadian Surety Company as follows:
- Performance Bond - 50% of the Contract Sum

- Material and Labour Bond – 50% of the Contract Sum

Each Contractor shall include the cost of such Bond in their Bid.

.2 Bids from General Contractors must be accompanied by a Consent of Surety from an approved Surety Company stating that they will bond the Contractor should they be the successful Bidder. Failure to include such consent form will cause the bid to be declared informal.

1.29 BID BOND

.1 The Bid shall be accompanied by a Bid Bond, as approved by the C.C.A. from a licensed Canadian Surety Company or a certified cheque made out in favour of the Owner in the amount of 10% of the bid price. The Bid Bond shall be valid for a period of thirty (30) days from the date of receipt of Bids.

1.30 INSURANCE

.1 Provide a signed "Undertaking of Insurance": including "Builder's Risk" on a standard form provided by the insurance company stating their intention to provide insurance to the bidder in accordance with the insurance requirements of the Contract Documents.

.2 Refer to Supplementary General conditions 00 30 00 for Insurance requirements.

1.31 MANDATORY SITE VISIT

.1 A pre-bid mandatory site walkthrough for contractors will be held on the date and time indicated in Section 1.2 important dates.

.2 Site address:

2069 Battersea Rd, Glenburnie ON K0H 1S0

.3 Due to current COVID restrictions for the facility, a limit of one (1) individual per company is permitted to attend the site visit. Said individual is also required to provide proof of full vaccination.

1.32 TENDER OPENING

.1 Only Bids received from Bidders who attended the pre-bid site visit and signed the "Contractor Sign in Sheet" and time stamped prior to the time stipulated in this document will be considered for evaluation.

.2 Bids will be opened in private. Only the names and total bid amount will be released to bidders. Tender submissions will be reviewed after the tender opening meeting by the Consultant, who may obtain the assistance of sub-consultants and advisors as they may deem appropriate. Bidders should not conclude any particular results from the release of preliminary information released to bidders.

1.33 CONSTRUCTION HEALTH & SAFETY

.1 The Contractor is to provide and allocate in the schedule for Construction Health and Safety COVID-19 provisions as per the current Government of Ontario Guidelines for construction sites for the duration of the project. The Contractor is to screen, log and

track all construction personnel accessing the site and provide a copy each day of log sheet to Owner representative.

END OF SECTION

BID FORM

Submitted to: Nancy Elliott, Finance Clerk
Accounts Payable
County of Frontenac
ap@frontenaccounty.ca

PROJECT: **Joint Admin Facility, Addition & Renovations**
2069 Battersea Road, Glenburnie

PROJ. NO.: 20027

DATE: _____

1. Bidder

Name: _____

Address: _____

_____

Email: _____

Fax: _____

2. Bid Price

Having examined the Place of Work and bid documents for the County of Frontenac Administrative Offices, to perform the Work required by the documents as prepared by Colbourne & Kembel, Architects Inc.

including addenda listed herein, inclusive, we hereby offer to enter into a Contract to perform the Work required by the documents for the Stipulated price of:

_____ dollars. ($ _____)

in Canadian Funds, which price excludes HST. Included in the total stipulated price above is the cost of Builder's Risk insurance valued at ($_____).

Prices are free of escalation clauses.

This offer is valid for a period of thirty (30) days from close of bidding.

Should either party fail to make payments as they become due under the terms of the Contract, interest on such unpaid amounts shall also become due and payable until payment as outlined in the CCDC2 2020 Stipulated Price Contract. Such interest shall be compounded on a monthly basis. The Bank Rate means the bank rate established by the Bank of Canada as the minimum rate at which the Bank of Canada makes short term advances to the Chartered Banks.

3. Addenda

The following Addenda have been received. The modifications to the Contract Documents noted therein have been considered and all costs thereto are included in the Bid Price.

Addendum # ..... Dated .....

Addendum # ..... Dated .....

Addendum # ..... Dated .....

Addendum # ..... Dated .....

Addendum # ..... Dated .....

4. Schedule:

The Contractor hereby declares that they will commence work immediately upon award of Contract

and attain Phase 1 Substantial Performance by October 30, 2022 and overall Substantial Performance of the Work by March 31, 2023, and Total Completion by June 1, 2023.

5. Cash Allowances:

The following Cash Allowances as outlined in Section 01 21 00 are included as part of the Base Bid Price:

.1	Inspection & Testing Allowance:	$5,000.00
.2	Signage	$10,000.00
.3	Door Hardware	$25,000.00

6. List of Sub-Contractors:

I/We, the undersigned propose that the following Subcontractors and/or suppliers will be used to perform work of this Contract, and I/we confirm that all have been investigated to confirm their reliability and competence to carry out the Work in accordance with the Contract Documents; and I/we agree that no changes from this list may be made without the express written approval of the Owner.

Extra costs to the Contract will not be considered for a Subcontractor/supplier substitution, regardless of the reason, except where a substitution is requested by the Owner.

Item of Work	Subcontractor
Carpentry	
Hollow Metal	
Flooring	
Gypsum Board	
Acoustic Ceilings	

Painting _____

Mechanical _____

Electrical _____

7. Declarations:

We hereby declare that no person, firm, or corporation other than the undersigned has any interest in this Bid or in the proposed Contract for which this Bid is made.

8. Signatures:

Signed and Submitted for and on behalf of:

_____
name of bidder

Seal:

_____
signature

_____
print name and title of person signing

Witness:

_____
signature

_____
signature

_____
print name and title of person signing

_____
print name and title of person signing

Date: _____

Note: this Bid form must be signed in one of the following ways:
For a corporation: minimum of one signing officer.
For a Partnership: two Partners must sign.
For a Sole Proprietorship: The Owner plus one witness must sign.

END

1.0 CONTRACT FORM

The Standard Construction Document for Stipulated Price Contract, 2020 English version, consisting of the Agreement Between *Owner* and *Contractor*, Definitions, and General Conditions of the Stipulated Price Contract, Parts 1 to 13 inclusive, governing same is hereby made part of these *Contract Documents*, with the following amendments, additions and modifications. Where these amendments, additions, and modifications specifically reference a change to the Agreement, Definitions, or General Conditions, these amendments, additions and modifications shall govern.

2.0 ARTICLE A-5

PAYMENT

.1 In paragraph 5.1.1 of Article A-5 add the following words to the end:
"or, where there is no Payment Certifier, jointly by the Owner and Contractor"

3.0 ARTICLE A-6

RECEIPT AND ADDRESSES FOR NOTICES IN WRITING

Delete Article A-6.1 and substitute new article 6.1:

6.1 Notices in Writing between the parties or between them and the Consultant shall be considered to have been received by the addressee on the date of receipt if delivered by hand or by commercial courier or if sent during normal business hours by fax and addressed as set out below. Such Notices in Writing will be deemed to be received by the addressee on the next business day if sent by fax after normal business hours or if sent by overnight commercial courier. Such Notices in Writing will be deemed to be received by the addressee on the fifth Working Day following the date of mailing, if sent by pre-paid registered post, when addressed as set out below. An address for a party may be changed by Notice in Writing to the other party setting out the new address in accordance with this Article.

6.5 Contact information for a party may be changed by Notice in Writing to the other party setting out the new contact information in accordance with this Article.

4.0 DEFINITIONS

.1 Definition, Consultant:

Delete in its entirety and replace with the following:
"The Consultant: is the person or entity identified as such in the Agreement. The Consultant is the duly authorized representative, designated from time to time by the Owner, to exercise such power, authority or discretion as is required under the Contract."

.2 Definition, Provide:

Add the words "or supply, install and connect as applicable, complete and in place including accessories, finishes, tests, and services required to render item so specified complete and ready for use." to the end of the first line.

.3 Add the following new definition:

Submittals
Submittals are documents or items required by the *Contract Documents* to be provided by the *Contractor*, such as:
- *Shop Drawings*, samples, models, mock-ups to indicate details or characteristics, before the portion of the *Work* that they represent can be incorporated into the *Work*; and
- As built drawings and manuals to provide instructions to the operation and maintenance of the *Work*.

.4 Add the following new definition:

"Definition, Contract Completion:
Shall mean when the entire Work, except those items arising from the provisions of GC 12.3 Warranty has been performed to the requirements of the Contract Documents and is so certified by the Consultant."

.5 Add the following new definition:

"Definition, Authorities Having Jurisdiction:
The phrase "authorities having jurisdiction" or the term "authorities" shall

mean those having jurisdiction under law over the Work or parts thereof."

.6 Add the following new definition:

"Definition, Supply or Furnish:
Shall mean fabrication or procurement of materials, equipment, or components, or performance of services to the extent specified and shown. Where used with respect to materials, equipment, or components, the term includes crating and delivery to the Place of Work but is not intended to include installation of item, either temporary or final."

.7 Add the following new definition:

"Definition, Install: Shall mean placement of materials, equipment, or components, including receiving, unloading, transporting, storage, uncrating and installing, and performance of such testing and finish work as is compatible with degree of installation specified."

.8 Add the following new definition:

"Definition, Commission:
Shall mean the procedure which includes checking, testing, adjusting and measuring performed by the Contractor to demonstrate and verify the installation, operation and performance of all components and the entire system"

.9 Add the following new definition:

"Definition, Other Contractor:
Shall mean the individual, firm, partnership or corporation having a separate contract with the Owner for work other than that required by the Contract Documents."

.10 Add the following new definition:

"Definition, Proper Invoice:
Proper Invoice means a "proper invoice" as defined in the Payment Legislation, if any, and as may be modified by written agreement between the parties to the extent permitted by such Payment Legislation.

5.0 GENERAL

Where a General Condition or paragraph of the General Conditions of the Stipulated Price Contract is deleted by these Supplementary Conditions, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, and the numbering of the deleted item will be retained, unused.

6.0 GC 1.1 CONTRACT DOCUMENTS

.1 Delete paragraph 1.1.3 in its entirety and replace with the following:

1.1.3 The *Contractor* shall review the *Contract Documents* for the purpose of facilitating and co-ordination and execution of the Work by the *Contractor*. The *Contractor* shall report promptly to the *Consultant* any ambiguities, design issues or other matters requiring clarification made known to the *Contractor* or that the *Contractor* may discover from such a review. Such review by the *Contractor* shall comply with the standard of care described in paragraph 3.9.1 of the *Contract*.

.2 Delete paragraph 1.1.4 in its entirety and replace with the following:

1.1.4 Except for its obligation to review the *Contract Documents* and report the result pursuant to paragraph 1.1.3, the *Contractor* is not responsible for ambiguities, design issues or other matters requiring clarification in the *Contract Documents* and does not assume any responsibility to the *Owner* or to the *Consultant* for the accuracy of the *Contract Documents*. Without limiting the foregoing, the *Contractor* shall not be liable for any damages or costs resulting from any ambiguities, design issues or other matters requiring clarification in the *Contract Documents* which the *Contractor* could not reasonably have discovered from such a review in accordance with the standard of care. If the *Contractor* does discover any ambiguities, design issues or other matters requiring clarification in the *Contract Documents,* the *Contractor* shall not proceed with the work affected until the

Contractor has received modified or additional information from the *Consultant*. The impacts of any ambiguities, design issues or other matters requiring clarification in the *Contract Documents*, including to the *Contract Price* and *Contract Time*, shall be addressed by the parties in accordance with Part 6 – CHANGES."

.3 Add the following to the end of subparagraph 1.1.6.2

Except where the *Consultant* is indemnified as a third party beneficiary as provided in subparagraphs 9.2.7.4, 9.5.3.4 and in 13.1.3.

.4 Add new paragraph 1.1.12:

1.1.12 The Owner shall provide the Contractor, without charge, 1 pdf copy of the *Contract Documents* to perform the *Work*.

7.0 GC 1.4 ASSIGNMENT

.1 Clause 1.4. 1: Delete in its entirety and replace with the following "The Contractor shall not assign or transfer their interest in the Contract or any portion thereof directly or indirectly, without the prior written consent of the Owner".

8.0 GC 2.2 ROLE OF THE CONSULTANT

.1 Add at the end of paragraph 2.2.3. "Without limiting the foregoing, the *Consultant* may appoint one or more authorized representatives in writing who may fulfill the obligations of the *Consultant* under this *Contract*."

.2 In paragraph 2.2.8 add the words ", written statements" after the word "interpretations" in both the first and second sentences; and

.1 Add the following to the end of paragraph 2.2.8:
The *Owner* and the *Contractor* shall waive any claims against the *Consultant* arising out of its making of any interpretations, written statements or findings in accordance with paragraphs 2.2.6, 2.2.7, 2.2.8, and 7.1.2, but only to the extent that any such

interpretations, written statements, and findings are made by the *Consultant* in an unbiased manner, and in accordance with the *Consultant*'s professional standard of care at law.

.3 In paragraph 2.2.13 add the words "which are provided" before the words "by the *Contractor*".

9.0 GC 2.4 DEFECTIVE WORK

.1 Clause 2.4.1: Add the words "at his own expense," after "The Contractor Shall" in the first line.

.2 In paragraph 2.4.1:

.1 Add after the words "shall promptly correct" the phrase "in a manner acceptable to the *Owner* and the *Consultant*"; and

.1 Add after the words "*Contract Documents*" the phrase "or work that the *Contractor* discovers to be defective, whether or not the defective work had been identified by the *Consultant*, and".

.3 Add new paragraph 2.4.4 as follows:

2.4.4 The *Contractor* shall prioritize the correction of any defective work which, in the sole discretion of the *Owner*, adversely affects the day-to-day operation of the *Owner*.

10.0 GC 3.1 CONTROL OF THE WORK

.1 Add new paragraph 3.1.3:

3.1.3 Prior to commencing individual procurement, fabrication and construction activities, the *Contractor* shall verify, at the *Place of the Work*, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the *Work* and shall further carefully compare such field measurements and conditions with the requirements of the *Contract Documents*. Where dimensions are not included, or contradictions exist, or exact

locations are not apparent, the *Contractor* shall immediately notify the *Consultant* in writing and obtain written instructions from the *Consultant* before proceeding with any part of the affected work.

11.0 GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS:

.1 Clause 3.2:2:

.1 Paragraph 3.2.2.2: Delete in its entirety.

.2 Add new paragraph 3.2.7 as follows:

3.2.7 At the commencement of the *Work*, the *Contractor* shall prepare for the review and acceptance of the *Owner* and the *Consultant,* a schedule indicating the times, within the construction schedule referred to in GC 3.4, that items that are specified to be *Owner* purchased and *Contractor* installed or hooked up are required at the site to avoid delaying the progress of the *Work*.

12.0 GC 3.4 CONSTRUCTION SCHEDULE

.1 Revise 3.4.1.1: to read as follows:

3.4.1.1 prepare and submit to the *Owner* and the *Consultant* within ten (10) calendar days of award of Contract and prior to the first application for payment, a construction schedule that indicates the timing of the major activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed in conformity with the *Contract Time*; Such schedule is subject to approval by the Owner.

13.0 GC 3.7 LABOUR AND PRODUCTS

.1 Add the following to the end of paragraph 3.7.1:

The *Contractor* represents that it has sufficient skilled employees to replace, subject to the *Owner*'s approval, acting reasonably, its designated supervisor and project manager in the event of death, incapacity, removal or resignation.

.2 Add new paragraph 3.7.4:

3.7.4 The *Owner* shall provide the *Contractor* in a timely manner with all relevant information (including storage, protection, and installation requirements) regarding *Products* to be supplied by the *Owner* or other contractors and, prior to delivery of any such *Products* to the *Place of the Work*, the *Owner* shall obtain the *Contractor*'s written approval of the delivery date and proposed storage, protection and installation requirements.

.3 Add new paragraph 3.7.5:

3.7.5 Once the *Contractor* has accepted delivery of *Products*, the *Contractor* shall be responsible for the safe storage and protection of *Products* as required to avoid dangerous conditions or contamination to the *Products* or other persons or property. *Products* shall be stored in locations and at the *Place of the Work* to the satisfaction of the *Owner* and the *Consultant* as agreed and approved by the *Contractor* pursuant to paragraph 3.7.4. Notwithstanding the foregoing, the *Contractor* shall not be responsible for any *Products* supplied by the *Owner* or other contractors unless:
(i) the *Contract Documents* expressly stipulate that such *Product* is to be the *Contractor*'s responsibility and to be installed by the *Contractor* as part of the *Work*;
(ii) the *Contractor* has or has received from the *Owner* proof of insurance coverage sufficient, at a minimum, to cover the replacement cost of such *Product*; and
(iii) the *Owner* obtained the *Contractor*'s approval as required by paragraph 3.7.4.

.2 Add the following new clause 3.7.6:

"All products and materials brought onto the place of Work by the Contractor shall be deemed to be the property of the Owner, but the Owner shall be under no liability for loss thereof or damage thereto arising from any cause whatsoever. The said Products and materials shall be at the sole risk of the Contractor."

.3 Add new paragraph 3.7.7:

3.8.6 All materials, work services and equipment used and delivered to the Place of Work and intended to be used in the carrying out of this Contract shall be free and clear and kept free and clear of all items, charges and encumbrances. In the event of there being a lien, charge or encumbrance or a claim for an item, charge or encumbrance the Owner may retain from the amount otherwise payable to the Contractor, an amount sufficient to satisfy and discharge the same. If the Owner gives to the Contractor written notice of their intention to satisfy and discharge any such lien, charge or encumbrance or a claim for an item, charge or encumbrance and, within three days of receipt of such notice, the Contractor does not show cause, satisfactory to the Consultant, why such item, charge or encumbrance should not be satisfied and discharged, the Owner shall be at liberty and authorized to satisfy and discharge the same and charge the costs thereof to the Contractor. The Contractor agrees to indemnify and keep indemnified and save harmless, the Owner from any and all claims, charges and encumbrances.

14.0 GC 3.8 SHOP DRAWINGS

.1 Add the words “AND OTHER SUBMITTALS” to the Title of GC 3.8 after the words “SHOP DRAWINGS”.

.2 Add the words “and *Submittals*” after the words *“Shop Drawings”* in paragraphs 3.8.1, 3.8.2, 3.8.3, 3.8.3.2, 3.8.5, 3.8.6, 3.8.7.

.3 Delete paragraph 3.8.2 in its entirety and Replace it with new paragraph 3.8.2 as follows:

3.8.2 Prior to the first application for payment, the *Contractor* shall prepare a schedule of the dates for submission and return of *Shop Drawings* and *Submittals* in an orderly sequence.

.4 Delete the words *“with reasonable promptness so as to cause no delay in the performance of the Work” and replace them with the words “within 10 Working Days or such longer period*

as may be reasonably required" in paragraph 3.8.7.

15.0 GC 3.9 PERFORMANCE BY CONTRACTOR

.1 Add new General Condition GC 3.9 as follows:

GC 3.9 PERFORMANCE BY CONTRACTOR

3.9.1 In performing its services and obligations under the *Contract*, the *Contractor* shall exercise a standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The *Contractor* acknowledges and agrees that throughout the *Contract,* the *Contractor's* obligations, duties and responsibilities shall be interpreted in accordance with this standard. The *Contractor* shall exercise the same standard of due care and diligence in respect of any *Products*, personnel, or procedures which it may recommend to the *Owner*.

16.0 GC 3.10 CLEAN UP

.1 Add new General Condition GC 3.10 as follows:

GC 3.10 CLEAN UP

3.10.1 In the event of any dispute regarding the removal of waste products and debris the Owner may remove the rubbish and debris and charge the cost to the Contractor to the extent that the Consultant shall determine to be just.

17.0 GC 4.1 CASH ALLOWANCES

.1 Delete paragraph 4.1.4 in its entirety and substitute new paragraph 4.1.4:

4.1.4 Where costs under a cash allowance exceed the amount of the allowance, unexpended amounts from other cash allowances shall be reallocated at the *Consultant's* direction to cover the shortfall, and, in that case, there shall be no additional amount added to the Contract Price for overhead and profit. Only where the actual cost of the Work under all cash allowances exceeds the total amount of all cash allowances shall the Contractor be compensated for the excess incurred and substantiated, plus an amount for overhead and profit on the excess only, as set out in the

Contract Documents.

.2 Delete paragraph 4.1.5 in its entirety and substitute new paragraph 4.1.5:

4.1.5. The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the Contract Price by Change Order without any adjustment for the Contractor's overhead and profit on such amount.
.

.3 Delete paragraph 4.1.7 in its entirety and Replace it with the following:

4.1.7 At the commencement of the work, the *Contractor* shall prepare for the review and acceptance of the *Owner* and the *Consultant*, a schedule indicating the times, within the construction schedule referred to in GC 3.4, that items called for under cash allowances are required to be delivered to the Place of the Work to avoid delaying the progress of the *Work*.

.4 Add new paragraph 4.1.8:

4.1.8 The *Owner* reserves the right to call, or to have the *Contractor* call, for competitive bids for portions of the *Work*, to be paid for from cash allowances.

.5 Add the following new clause 4.1.9:

"Purchases from cash allowances must be authorized by written instructions issued by the Consultant and the form and methods of accounting for costs shall be agreed to by the Consultant and Contractor before proceeding with the purchase."

18.0 GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

.l Clause 5.1.1: Delete in its entirety

.2 Clause 5.1.2: Delete in its entirety.

19.0 GC 5.2 APPLICATION FOR PAYMENT

.1 Delete paragraph 5.2.2 in its entirety and substitute the following"

5.2.2 Applications for payment shall be dated the last day of each payment period, which is the last day of the month or an alternative day of the month agreed in writing by the parties. The amount claimed shall be for the value, proportionate to the amount of the *Contract*, or work performed and *Products* delivered and incorporated into the *Work* at that date. No amount claimed shall include products delivered and incorporated into the work, unless the products are free and clear of all security interests, liens and other claims of third parties.

Each application for payment, except the first, shall include a statutory declaration, in the CCDC 9A – 2001 form, up to the date of the application for payment, in a form approved by the Consultant. Each application for payment (including the first), shall also include:

.1 A certificate, issued by an agency or firm providing workers' compensation insurance to the *Contractor*, verifying that coverage is in force at the time of making the application for payment, and that coverage will remain in force for at least sixty (60) days thereafter.
.2 A declaration by the Contractor, in a form approved by the *Consultant*, verifying that the performance of the *Work* is in compliance with all applicable regulatory requirements respecting environmental protection, first safety, public safety and occupational health and safety.
.3 A pre-approved schedule of values, supplied by the *Contractor*, for Divisions 1 through 14 of the Work, aggregating the total amount of the *Contract Price*.
.4 A separate pre-approved schedule of values, supplied by each *Subcontractor*, for Mechanical and Electrical Divisions of the Work, aggregating the total amount of the *Contract Price.*
.5 Invoices to support all claims against the cash allowance.
.6 An acceptable construction schedule pursuant to GC 3.5.

20.0 GC 5.4 PAYMENT OF .1 <u>Delete</u> all paragraphs of GC 5.4 in their

HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

entirety and Replace them with the following paragraphs:

5.4.1 When the *Contractor* considers that the *Work* is substantially performed, or if permitted by the lien legislation applicable to the *Place of the Work* a designated portion thereof which the *Owner* agrees to accept separately is substantially performed, the *Contractor* shall, within five (5) *Working Days*, deliver to the *Consultant* and to the *Owner* a comprehensive list of items to be completed or corrected, together with a written application for a review by the *Consultant* to establish *Substantial Performance of the Work* or substantial performance of the designated portion of the *Work*. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*.

5.4.2 The *Consultant* will review the *Work* to certify or verify the validity of the application and shall promptly, and in any event, no later than 10 calendar days after receipt of the *Contractor*'s application:

.1 advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or

.2 state the date of *Substantial Performance of the Work* or a designated portion of the *Work* in a certificate and issue a copy of that certificate to each of the *Owner* and the *Contractor*.

5.4.3 Where the holdback amount required by the applicable lien legislation has not been placed in a separate lien holdback account, the *Owner* shall, no later than 10 calendar days prior to the expiry of the holdback period stipulated in the lien legislation applicable to the *Place of the Work*, place the holdback amount in a bank account in the joint names of the *Owner* and the *Contractor*.

5.4.4 Subject to the requirements of any *Payment Legislation*, all holdback amounts prescribed by the applicable lien legislation for the *Place of the Work* shall become due and payable to the *Contractor* no later than 10 *Working Days* following the expiration of the

holdback period stipulated in the lien legislation applicable to the *Place of the Work*, as certified or verified by the *Consultant* when permitted by any *Payment Legislation*.

5.4.5 The *Contractor* shall submit an application for release of the lien holdback amount in accordance with the lien legislation applicable to the *Place of the Work*. Except to the extent required by any *Payment Legislation*, such application for release of the holdback shall not constitute an application for payment that is subject to *Proper Invoice* requirements.

5.4.6 Where legislation permits progressive release of the holdback for a portion of the *Work* and the *Consultant* has certified or verified that the part of the *Work* has been performed prior to *Substantial Performance of the Work*, the *Owner* hereby agrees to release, and shall release the holdback for such portion of the *Work* to the *Contractor* in accordance with such legislation.

5.4.7 Notwithstanding any progressive release of the holdback, the *Contractor* shall ensure that such parts of the *Work* are protected pending the issuance of a final certificate for payment or until the *Owner* takes early occupancy in accordance with GC12.2, whichever comes first, and shall be responsible for the correction of defects or work not performed regardless of whether or not such was apparent when the holdback was released.

21.0 GC 5.5 FINAL PAYMENT

.l Add to the end of paragraph 5.5.1 the following sentence:
The application for final payment shall meet the requirements of a *Proper Invoice*.

.2 Add the following to the end of paragraph 5.5.3:
Subject to any *Payment Legislation*, when the *Consultant* finds the *Contractor's* application for final payment to be not valid, the *Contractor* shall revise and resubmit the application when the *Contractor* has addressed the reasons given by the *Consultant*.

22.0 GC 5.8 DEFICIENCY HOLDBACK

.1 Add a new General Condition 5.8 as follows:
5.8.0 Notwithstanding any provisions contained in the Contract Documents concerning certification and release of monies to the Contractor, the Owner reserves the right to establish a deficiency holdback, at the time of the review for Substantial Performance, based on a 200% dollar value of the deficiencies listed by the Consultant. The value of work outstanding for the calculation of Substantial Performance of the Work under the Construction Act (Ontario) shall utilize this 200% dollar value. No individual deficiency will be valued at less than two hundred dollars ($200.00). The Owner shall retain the entire deficiency holdback amount until completion of all of the deficiencies listed by the Consultant to the satisfaction of the Consultant.

23.0 GC 6.2 CHANGE ORDER

.1 Add the following sub-paragraphs .1 to .13 to GC6.2.1:
.1 Where a change in the Work involves additions, deletions, or other revisions to the Work, the Contract Price shall be increased only by the net actual value of the change in the Work, including taxes, but excluding Value Added Taxes, plus allowances for overhead and profit as follows:

.1 Where a change is made in work to be carried out by the *Contractor's* own forces, and for which no Contract Unit Prices are scheduled, the value of the additional work shall be determined by adding to the reasonable cost of materials and labour (as assessed by the Consultant), an allowance for the *Contractor's* overhead of not more than ten percent (10%), plus a further allowance for the *Contractor's* profit of not more than five percent (5%) of the total.

.2 Where a change is made in work to be carried out by a Sub-contractor, the value of the additional work shall be

determined in a similar manner, the allowances for the Sub-contractor's overhead of not more than ten percent (10%), plus a further allowance for the Sub-contractor's profit of not more than five percent (5%) of the total. In such cases, the *Contractor* shall be permitted to add thereto an allowance in respect of combined overhead and profit of not more than ten percent (10%) on the total of the Sub-contractor's quotation.

.3 If a Subcontractor retains another subcontractor (sub-subcontractor), no additional mark-up shall be charged to the Owner for the sub-subcontract work.

.2 The above percentages for overhead and profit shall include all costs for job supervisors, job superintendents, project management, administrative personnel, site overhead, office overhead, site measuring, estimating, bonding, insurance, financing, building permit, as-built drawings, site facilities, safety, clean-up, equipment, tools, travel costs to the *Place of Work*, and other job administration charges related to the change and not directly relating to site labour or materials.

.3 The above percentages for Contractor and sub-contractor overhead and profit shall apply for net changes in the *Work* of $15,000.00 or less. Changes in the *Work* in excess of $15,000.00 shall carry an allowance for overhead and profit, at a percentage rate of one half of those called for above.

.4 If a change in the *Work* results in a net decrease in the *Contract Price*, the amount of the credit shall be the net cost, without deduction for overhead or profit. When both additions and deletions covering related work or substitutions are involved in a change in the *Work*, the allowance of overhead and profit shall be calculated on the basis of the net increase, if any, with respect to that change in the *Work*.

.5 Labour costs shall be the actual rates paid to the workers plus a documented mark-up (not

exceeding 60% of actual wage rates) to cover contributions, assessments, or taxes incurred for such items as unemployment and other insurance, provincial health insurance, Workers' Compensation, Canada or Quebec Pension Plan, Holiday & Vacation Pay, Traveling Time, Travel and Parking, Welfare, Union, Industry Training and Pension Funds, rest periods, down time, personal hygiene, personal protection, small tools and the like. Travel time to and from site shall be at no charge to the Owner.

.6 Quotations for changes in the *Work* shall be accompanied by itemized breakdowns together with detailed, substantiating quotations or cost vouchers from *Subcontractors* and *Suppliers*, submitted in a format acceptable to the *Consultant*.

.7 Breakdown shall show areas and quantities on which costs are based, unit costs for labour and material, wage burdens and other direct costs, and all information necessary for a complete understanding of the costs submitted. In the case of changes involving Subcontractors' quotations shall be provided in support of each claim for extra or credit offered. Subcontractors' quotations shall be broken down as specified above.

.8 The *Contractor* is obliged to review and consider the value and validity of *Subcontractors* and *suppliers* quotations to be used as backup for proposed *Change Order* pricing before submission to the *Consultant*. *The Contractor* shall ensure that only valid, and fair and reasonable costs are submitted to the *Consultant*. The *Consultant* will not directly negotiate with *Subcontractors* and *Suppliers* on behalf of the *Contractor*. The *Contractor* shall maintain financial oversight of the *Subcontractors* and *Suppliers* and filter out unreasonable claims.

.9 Unit and alternative prices included in the *Contract* include supply, installation, *Products, Construction Equipment*, services, materials, labour, overhead and profit, but exclude Value Added Taxes and Provincial Sales Tax.

.10 The *Owner* through the *Consultant*, reserves the right to authorize payment for changes in the *Work* by means of cash allowance disbursement authorizations.

.11 If any change or deviation in, or omission from the *Work* is made by which the amount of *Work* to be performed is decreased, or if the whole or a portion of the *Work* is dispensed with, no compensation is claimable by the *Contractor* for any loss of anticipated profit in respect thereof.

.12 Should the Contractor proceed with any change in the method of construction, volume or location of the Work which has not been both ordered and valued as set out above, or as a Change Directive, it shall be conclusively presumed that the parties were in agreement that such change should be made at no additional cost to the Owner.

.13 A change order signed by the Contractor indicates his complete agreement therewith, including the adjustment if any, in the Contract Price and the Contract Time. Contractor agrees that in no event shall he make any subsequent claim relating to the items covered by such change order, either regarding the Contract Price, or the Contract Time. Except as permitted in GC 6.3.5, the Contractor shall not bill for changes in the Work until after a Change Order has been executed by the Contractor, Consultant, and Owner.

24.0 GC 6.3 CHANGE DIRECTIVE

.1 Delete Paragraph 6.3.6 and replace with the following:

6.3.6 The adjustment in the *Contract Price* for a change carried out by way of a *Change Directive* shall be determined in one of the following methods.
.1 Estimate and acceptance in a lump sum;
.2 Unit prices set out in the Contract or subsequently agreed upon;
.3 Actual cost of expenditures and credits to perform the work attributable to the change

valued in accordance with GC 6.2 CHANGE ORDER.

.2 Delete Paragraph 6.3.7 and replace with the following.

6.3.7 The Contractor shall present in a form acceptable to the *Consultant* an amount of adjustment for the *Contract Price*, if any, and an adjustment in the *Contract Time*, if any, for the changes covered by a *Change Directive*. The Procedures of evaluation including applicable overhead and profit mark-up provisions shall be as described under GC 6.2 CHANGE ORDER.

.1 In the case of a change in the *Work* to be valued in accordance with paragraph 6.3.6.1, the *Contractor* shall present to the *Consultant* for approval a detailed estimate of the costs of the *Contractor* and the involved *Subcontractors* including products, labour itemized by man hours, labour burden and the overhead and profit of each of the involved *Subcontractors* shown separately.

.2 In the case of a change to be valued under methods prescribed in Paragraph 6.3.6.2, the form of the presentation of costs and methods of measurement shall be agreed to by the *Owner*, through the *Consultant*, and the *Contractor* before proceeding with the change.

.3 When method prescribed in Paragraph 6.3.6.3 is used to determine the value of a change in the *Work*, the *Contractor* shall keep and present, in such form as the *Consultant* may require, an itemized accounting of the actual cost of expenditures and savings together with supporting data.

25.0 GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

.l Clause 6.4.1:

.1 Paragraph 6.4.1.1: Replace "materially" with "substantially" in the second line.

.2 Paragraph 6.4.1.2: Replace "materially" with: "substantially" in the first line.

.2 Clause 6.4.2: Replace "materially" with

"substantially" in the second line.

.3 Clause 6.4.3: Replace "materially" with "substantially" in the first line.

.4 Add new subparagraph 6.4.5:

6.4.5 The *Contractor* confirms that, prior to bidding the *Project*, it carefully reviewed the *Place of the Work* and applied to that review the degree of care and skill described in paragraph 3.9.1, given the amount of time provided between the issue of the bid documents and the actual closing of bids, the degree of access provided to the *Contractor* prior to submission of bid, and the sufficiency and completeness of the information provided by the *Owner*. The *Contractor* is not entitled to compensation or to an extension of the *Contract Time* for conditions which could reasonably have been ascertained by the *Contractor* by such review undertaken in accordance with this paragraph 6.4.5.

26.0 GC 6.5 DELAYS

.1 Delete the period at the end of paragraph 6.5.1, and substitute the following words:

“, but excluding any consequential, indirect or special damages.”

.2 Delete the period at the end of paragraph 6.5.2, and substitute the following words:

“, but excluding any consequential, indirect or special damages.”

.3 Clause 6.5.3: Add the following sentence to the end of the clause: "If such delays, in the Owner's opinion, may materially affect the Contract Price or the Contract Time the Owner may terminate the Contract by giving written notice to the Contractor."

.4 Add new subparagraph 6.5.6.

6.5.6 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone employed or

engaged by the *Contractor* directly or indirectly, or by any cause within the *Contractor's* control, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may decide in consultation with the *Contractor*. The *Owner* shall be reimbursed by the *Contractor* for all reasonable costs incurred by the *Owner* as the result of such delay, including all services required by the *Owner* from the *Consultant* as a result of such delay by the *Contractor* and, in particular, the cost of the *Consultant's* services during the period between the date of *Substantial Performance of the Work* stated in Article A-1 herein as the same may be extended through the provisions of these General Conditions and any later, actual date of *Substantial Performance of the Work* achieved by the *Contractor*.

.5 Add new subparagraph 6.5.7.

6.5.7 In addition to the amount set out in paragraph 6.5.6, the Contractor recognizes and agrees that the Owner will suffer a financial loss if the Work is not completed within the time prescribed by the Contract. The Contractor also recognizes the delays, expenses and difficulties involved in proving the actual loss suffered by the Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, the Contractor agrees that as liquidated damages for delay (but not as penalty) the Contractor shall pay the Owner, as liquidated damages, an amount per day, as designated in the Specific Provisions of Contract for each and every day's delay from the specified time for completion of the Work until actual completion of the Work, and it is further expressly acknowledged and agreed by the Contractor that:

(a) this amount is a reasonable estimate of the actual damages that will be incurred by the Owner due to any failure to complete the Work within the time required by this Contract;

(b) the Owner may deduct the amount due under this section from any monies that may be due or payable to the Contractor, whether under the Contract or any other agreement;

and,

(c) the liquidated damages provided for in this section shall be without prejudice to any other remedy to which the Owner is entitled at law or in equity.

27.0 GC 6.6 CLAIMS FOR A CHANGE IN CONTRACT PRICE

.1 Delete paragraph 6.6.5. in its entirety and substitute new paragraph 6.6.5.

6.6.5. The *Consultant's* findings, with respect to a claim made by either party, will be given by *Notice in Writing* to both parties within 30 *Working Days* after receipt of the claim as noted in Paragraph 6.6.3 by the *Consultant*, or within such other time period as may be agreed by the parties and the *Consultant*.

.2 Add new paragraph 6.6.7

6.6.7 The Owner shall be reimbursed for all costs incurred for additional services provided by the *Consultant* resulting from the *Contractor's* failure to reasonably perform the Work in accordance with the terms and conditions of the Contract, including the *Contractor's* issuance of unnecessary Requests for Information. The *Consultant* will notify the *Owner* and *Contractor* where it has been determined by the Consultant that additional services will be required or have been provided in order not to cause a delay. The *Owner* shall make claims based on the *Consultant's* invoices.

28.0 GC 7.1 OWNER'S RIGHT TO PERFORM THE WORK, STOP THE WORK, OR TERMINATE THE CONTRACT

.1 Clause 7.1.1: Add the words "or if they should fail to comply substantially with the construction schedule" after the second "insolvency" at the end of the second line.

.2 Clause 7.1.2: Add the words "but without affecting in any respect the liability of the Contractor in respect of earlier defaults." at the end of the clause.

.3 Clause 7.1.3:

Paragraph 7.1.3.1: Add the words "and is diligently proceeding with" after the "commences" in the first line.

29.0 GC 7.2 CONTRACT-OR'S RIGHT TO STOP THE WORK, OR TERMINATE THE CONTRACT

.1 Clause 7.2.4: Add the sentence "The foregoing defaults in contractual obligations shall not apply to the withholding of certificates of payments, or both, in accordance with the General Conditions, because of the registration of liens against the Owner's Property, unfit such claims and liens are discharged as a result of payment by the Contractor." to the end of the clause

30.0 GC 8.2 AJUDICATION

.1 Delete the word "prescribed" from paragraph 8.2.1 and substitute the words "provided for".

31.0 GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

.1 Add the following new paragraphs 8.3.9, to 8.2.13:

8.3.9 Within five days of receipt of the notice of arbitration by the responding party under paragraph 8.3.6, the *Owner* and the *Contractor* shall give the *Consultant* a written notice containing:

1) a copy of the notice of arbitration;
2) a copy of supplementary conditions 8.3.9 to 8.3.14 of this *Contract*, and;
3) any claims or issues which the *Contractor* or the *Owner*, as the case may be, wishes to raise in relation to the *Consultant* arising out of the issues in dispute in the arbitration

8.3.10 The *Owner* and the *Contractor* agree that the *Consultant* may elect, within ten days of receipt of the notice under paragraph 8.3.9, to become a full party to the arbitration under paragraph 8.3.6 if the *Consultant*:

1) has a vested or contingent financial interest in the outcome of the arbitration;
2) gives the notice of election to the *Owner*

and the *Contractor* before the arbitrator is appointed;
3) agrees to be a party to the arbitration within the meaning of the rules referred to in paragraph 8.3.6, and,
d) agrees to be bound by the arbitral award made in the arbitration.

8.3.11 Without limiting and subject to the *Owner* and *Contractor*'s rights under paragraph 8.3.12 to challenge whether the *Consultant* has satisfied the requirements of paragraph 8.3.10, if an election is made under paragraph 8.3.10:
1) the *Owner* or *Contractor* may request particulars and evidence of the *Consultant*'s vested or contingent financial interest in the outcome of the arbitration;
2) the *Consultant* shall participate in the appointment of the arbitrator; and,
3) notwithstanding the rules referred to in paragraph 8.3.6, the time period for reaching agreement on the appointment of the arbitrator shall begin to run from the date the respondent receives a copy of the notice of arbitration.

8.3.12 The arbitrator in the arbitration in which the *Consultant* has elected under paragraph 8.3.10 to become a full party may:
1) on application of the *Owner* or the *Contractor*, determine whether the *Consultant* has satisfied the requirements of paragraph 8.3.10, and;
2) make any procedural order considered necessary to facilitate the addition of the *Consultant* as a party to the arbitration.

8.3.13 The provisions of paragraph 8.3.9 shall apply (with all appropriate changes being made) to written notice to be given by the *Consultant* to any sub-consultant;

32.0 GC 9.1 PROTECTION OF WORK AND PROPERTY

.1 Delete subparagraph 9.1.1.1 in its entirety and substitute new subparagraph 9.1.1.1:

9.1.1.1 errors in the *Contract Documents* which the *Contractor* could not have discovered applying the standard of care described in

paragraph 3.9.1;

.2 Delete paragraph 9.1.2 in its entirety and Replace it with the following new paragraph 9.1.2:

9.1.2 Before commencing any *Work*, the *Contractor* shall determine the locations of all underground utilities and structures indicated in the *Contract Documents*, or that are discoverable by applying to an Inspection of the *Place of the Work* exercising the degree of care and skill described in paragraph 3.9.1.

33.0 GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

.1 Add to paragraph 9.2.6 after the word "responsible", the following new words:

or whether any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the *Owner* or others,

.2 Add "and the *Consultant*" after the word "*Contractor*" in subparagraph 9.2.7.4.

.3 Add to paragraph 9.2.8 after the word "responsible", the following new words:

or that any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damage to the property of the *Owner* or others,

34.0 GC 9.5 MOULD

.1 Add “and the *Consultant*” after “*Contractor*” in subparagraph 9.5.3.4.

35.0 GC 10.1 TAXES AND DUTIES

.1 Clause 10.1.1: Replace "Value Added Taxes" with "Harmonized Sales Tax (HST)" in the line.

.2 Clause 10.1.1: Add these sentences The Contractor shall bill the Owner upon each payment certificate, to the appropriate amount of HST the Owner is legally obliged to pay. This amount for HST will be paid in addition to the amount certified for payment under the Contract and will therefore not affect the Contract Price." at the end of the clause.

.3 Clause 10.1.2: Delete in its entirety and replace with the following clauses:

"10.1.2 When an exception or recovery of government sales taxes, customs duties or excise taxes is applicable to the contract, the Contractor shall at the request of the Owner (or his agent) assist, join in, or make application for an exemption, recovery or refund of all such taxes and duties and all amounts recovered or exemptions obtained shall be for the sole benefit of the Owner. The Contractor agrees to endorse over to the Owner any cheques received from the Federal or Provincial Governments as may be required to implement the foregoing.

10.1.3 Where the Owner is entitled to any available exemptions for rebates of sales tax or customs duty or both or them, the Contractor shall supply to the Owner full particulars of all sales tax or customs duty paid, in order to facilitate the application by the Owner for such refund. The Owner will retain such funds for its own use.

10.1.4 The Contractor is not entitled to any mark-up on account of profit, overhead, or otherwise due to any increase in taxes or duties. Should the cost be retroactively reduced by a change in taxes and/or duties, the Owner will be entitled to withhold payment to the Contractor of a sum equal to the amount of the tax and/or duty reduction. Should the cost of Work be increased by a change of the work, the Subcontractor shall be entitled to claim for the increase in cost equal to the amount of the tax and/or duty increase. No mark-up shall be permitted on the increase.

10.1.5 The Contractor shall maintain accurate records tabulating equipment and component costs showing respective taxes and customs duties or excise taxes."

36.0 GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

.1 Delete from the first line of paragraph 10.2.5 the word, “The” and substitute the words:

“Subject to paragraph 3.9.1, the”.

.2 Clause 10.2.5: Add the words "and no further work on such phase of the Contract shall be proceeded with until instructions rectifying such discrepancy have been obtained by the Contractor from the Consultant."

37.0 GC 11.1 INSURANCE

.l Clause 11.1.l:

.1 Paragraph 11.1.1.1: Delete the last sentence in its entirety and replace it with the following:

"Such insurance shall be issued by companies approved in writing by the Owner and shall be primary and noncontributing with, and not in excess

of, any other insurance available to the Owner and other covered parties, and endorsed to provide the Owner and other covered parties with not less than fifteen (15) days written notice in advance of any cancellation, change or amendment restricting coverage."

.2 Add the following new Paragraph 11.1.1.9:

"Other Insurance: Subject to the provisions above, each Contractor and Subcontractor shall provide, at its own cost, any additional insurance which it is required by law to provide or which it considers necessary for the performance and protection of the Work."

.2 Clause 11.1.5: Add the sentences "The Contractor shall provide the Owner with proof of insurance prior to commencement of Work and shall promptly provide the Owner with a certified true copy of each insurance policy exclusive of information pertaining to premium or premium bases used by the insurer to determine the cost of Insurance."

.3 Add the following new Clause 11.1.9:

"Unless specified otherwise the duration of each insurance policy shall be from the date of commencement of the Work until the date of the final certificate of payment. The Contractor shall be responsible for deductible amounts under all policies. It shall be the responsibility of the Contractor not to violate, nor knowingly permit to violated, any conditions of the policies maintained according to the provisions of the conditions of the Contract and shall be the Contractor's duty and responsibility to impose upon each Subcontractor the same responsibilities and obligations imposed upon the Contractor under such provisions."

38.0 GC 12.1 READY-FOR-TAKEOVER

.1 After the second occurrence of the term "*Ready-for-Takeover*" insert before the term "*Ready-for-Takeover*" in paragraph 12.1.3 the words "determination of".

39.0 GC 12.2 EARLY OCCUPANCY BY THE OWNER

.1 Delete the word "achieve" in paragraph 12.2.4 and replace it with the words "have achieved".

40.0 GC 12.3 WARRANTY

.1 Delete from the first line of paragraph 12.3.2 the word, "The" and substitute the words:

"Subject to paragraph 3.9.1, the…".

41.0 GC 13.1 INDEMNIFICATION

.1 Add new paragraph 13.1.0:

13.1.0 The *Contractor* shall indemnify and hold harmless the *Consultant*, its agents and employees from and against all claims, demands, losses, costs, damages, actions, suits, or proceedings by third parties that arise out of, or are attributable to the *Contractor's* performance of the *Contract*, provided such claims are:
.1 attributable to bodily injury, sickness, disease, or death, or to injury to or destruction of tangible property, and
.2 caused by negligent acts or omissions of the *Contractor* or anyone for whose negligent acts or omissions the *Contractor* is liable, and
.3 made by *Notice in Writing* within a period of 6 years from the *Ready-for-Takeover* date or within such shorter such period as may be prescribed by any limitation statute or the Province or Territory of the *Place of Work.*

.2 Add the words "13.1.0," after the word "paragraphs" in paragraph 13.1.3.

42.0 GC 14.1 CONFIDENTIALITY

.1 Add the following new General Condition GC 14.0 CONFIDENTIALITY as follows:

GC 14.1 CONFIDENTIALITY

14.1.1 Contractor shall treat as

confidential all data, drawings, specifications, and documents related to the Project and shall not lend out to others such information or documents.

14.1.2 Data or design provided by or developed under this Contract shall be for the strict use and benefit of the Owner and not to be used for any other purpose.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Title and description of Work.

.2 Alterations to existing.

.3 Existing services.

.4 Contract method.

.5 Work by others.

.6 Work sequence.

.7 Contractor use of premises.

.8 Partial Owner occupancy.

1.2 WORK COVERED BY CONTRACT DOCUMENTS

.1 Work under this Contract covers the furnishing of all labour, materials, and equipment required for the Work described in the drawings and specifications prepared by Colbourne & Kembel, Architects Inc.

1.3 CODES

.1 Perform Work in accordance with the latest editions of the Ontario Building Code (OBC) and any other code of provincial or local application provided that in any case of conflict or discrepancy, the more stringent requirements shall apply.

.2 Meet or exceed requirements of:
.1 Contract documents,
.2 Specified standards, codes and referenced documents.

1.4 SPECIFICATION GRAMMAR

.1 Specifications are written in the imperative mood, in an abbreviated form.

.2 The imperative language of all technical sections is directed to the Contractor:

1.4 SPECIFICATION GRAMMAR (Cont'd)

.2 (Cont'd)
.1 This form of statement requires the Contractor or one of their engaged Subcontractors to perform such action or work.
.2 Perform all requirements whether stated imperatively or otherwise.

1.5 ALTERATIONS, ADDITIONS OR REPAIRS TO EXISTING BUILDING

.1 Execute work with least possible interference or disturbance to building operations occupants, and normal use of premises. Arrange with Owner to facilitate execution of work.

.2 Use only entrances existing in building for moving workers and material.
.1 Protect walls and floors to approval of owner prior to use.
.2 Accept liability for damage, safety of equipment and overloading of existing equipment.

1.6 EXISTING SERVICES

.1 Notify, Consultant, Owner, and utility companies of intended interruption of services and obtain required permission.

.2 Where Work involves breaking into or connecting to existing services, carry out work at times as directed by governing authorities with minimum disturbance to tenant operations.

.3 Establish location and extent of service lines in area of work before starting Work. Notify Consultant of findings.

.4 Provide temporary services when directed by Consultant to maintain critical building and tenant systems.

.5 Provide adequate bridging over trenches which cross sidewalks or roads to permit normal traffic.

.6 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.

1.6 EXISTING SERVICES (Cont'd)

.7 Protect, relocate or maintain existing active services. When inactive services are encountered, cap off in manner approved by authorities having jurisdiction.

.8 Record locations of maintained, re-routed and abandoned service lines.

.9 Construct barriers in accordance with Section 01 56 00 - Temporary Barriers and Enclosures

1.7 CONTRACT METHOD

.1 Construct Work under single, stipulated price contract. The Canadian Standard Construction Document CCDC 2, 2020, and the supplementary conditions are part of the Contract Documents.

.2 The specification of all trades shall be carefully read by the Contractor so that he may make himself acquainted with the extent and nature of the work of other trades.

1.8 WORK SEQUENCE

.1 Construct Work in stages to accommodate Owner's continued use of premises during construction.

.2 Coordinate Progress Schedule and coordinate with Owner Occupancy during construction.

.3 Maintain fire access/control.

1.9 CONTRACTOR USE OF PREMISES

.1 For the construction period, the Contractor will have exclusive use of the areas to be renovated.

.2 The Contractor will be provided with a key and alarm code to the building so that they may have access at any time.

.3 Co-ordinate use of premises under direction of Owner.

.4 Obtain and pay for use of additional storage or work areas needed for operations under this Contract.

1.10 OWNER OCCUPANCY

.1 Co-operate with Owner in scheduling operations to minimize conflict and to facilitate Owner usage throughout the contruction period.

1.11 DOCUMENTS REQUIRED

.1 Maintain at job site, one copy each document as follows:
.1 Contract Drawings.
.2 Specifications.
.3 Addenda.
.4 Reviewed Shop Drawings.
.5 List of Outstanding Shop Drawings.
.6 Change Orders.
.7 Other Modifications to Contract.
.8 Field Test Reports.
.9 Copy of Approved Work Schedule.
.10 Health and Safety Plan and Other Safety Related Documents.
.11 Other documents as specified.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Cash allowances.

1.2 Cash Allowances

.1 Include in Contract Price, cash allowances stated herein.

.2 Cash allowances, unless otherwise specified, cover net cost to Contractor/ Subcontractor of services, products, construction machinery and equipment, freight, handling, unloading, storage, coordination and supervision and other authorized expenses incurred in performing Work.

.3 The Contract Price, and not cash allowance, includes Contractor's overhead and profit in connection with such cash allowance.

.4 The Contract Price will be adjusted by written order to provide for an excess or deficit to each cash allowance.

.5 Where costs under a cash allowance exceed amount of allowance, Contractor will be compensated for any excess incurred and substantiated plus an allowance for overhead and profit as set out in Contract Documents.

.6 Progress payments on accounts of work authorized under cash allowances shall be included in Consultant's monthly certificate for payment.

.7 The amount of each allowance is as follows:
- .1 Inspection and testing: $5,000
- .2 Signage allowance: $10,000
- .3 Door Hardware: $25,000

END OF SECTION

PART 1 - GENERAL

1.1 Related Requirements Specified Elsewhere

.1 Particular requirements for inspection and testing to be carried out by testing laboratory designated by Consultant are specified under various sections.

1.2 Appointment and Payment

.1 Receive competitive bids for services of testing laboratory to be paid by allowance, except for the following items that are part of the contractor's work:
.1 Inspection and testing required by laws, ordinances, rules, regulations or orders of public authorities.
.2 Inspection and testing performed exclusively for Contractor's convenience.
.3 Testing, adjustment and balancing of mechanical and electrical equipment and systems.
.4 Mill tests and certificates of compliance.
.5 Tests specified to be carried out by Contractor under the supervision of Engineer.
.6 Additional tests specified in the following paragraph 1.2.2.

.2 Where tests or inspections by designated testing laboratory reveal Work not in accordance with contract requirements, pay costs for additional tests or inspections as required by Consultant to verify acceptability of corrected work.

1.3 Contractor's Responsibilities

.1 Provide labour, equipment and facilities to:
.1 Provide access to Work to be inspected and tested.
.2 Facilitate inspections and tests.
.3 Make good Work disturbed by inspection and test.
.4 Provide storage on site for laboratory's exclusive use to store equipment and cure test samples.

1.3 Contractor's Responsibilities (Cont'd)

.2 Notify Consultant sufficiently in advance of operations to allow for assignment of laboratory personnel and scheduling of test.

.3 Where materials are specified to be tested, deliver representative samples in required quantity to testing laboratory.

.4 Pay costs for uncovering and making good Work that is covered before required inspection or testing is completed and approved by Consultant.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 ADMINISTRATIVE

.1 Schedule and administer project meetings throughout the progress of the work at the call of Consultant.

.2 Prepare agenda for meetings.

.3 Distribute written notice of each meeting 5 days in advance of meeting date to Consultant.

.4 Provide physical space and make arrangements for meetings.

.5 Preside at meetings.

.6 Record the meeting minutes. Include significant proceedings and decisions. Identify actions by parties.

.7 Reproduce and distribute copies of minutes within 5 days after meetings and transmit to meeting participants and, affected parties not in attendance.

.8 Representative of Contractor, Subcontractor and suppliers attending meetings will be qualified and authorized to act on behalf of party each represents.

1.2 PRECONSTRUCTION MEETING

.1 Within 15 days after award of Contract, request a meeting of parties in contract to discuss and resolve administrative procedures and responsibilities.

.2 Establish time and location of meeting and notify parties concerned minimum 5 days before meeting.

.3 Incorporate mutually agreed variations to Contract Documents into Agreement, prior to signing.

.4 Agenda to include:
.1 Appointment of official representative of participants in the Work.
.2 Schedule of Work:

1.2 PRECONSTRUCTION MEETING (Cont'd)

.4 (Cont'd)
.3 Schedule of submission of shop drawings, samples, colour chips.
.4 Requirements for temporary facilities, site sign, offices, storage sheds, utilities.
.5 Delivery schedule of specified equipment.
.6 Site security.
.7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, administrative requirements.
.8 Owner provided products.
.9 Record drawings.
.10 Maintenance manuals.
.11 Take-over procedures, acceptance, warranties.
.12 Monthly progress claims, administrative procedures, hold backs.
.13 Insurances, transcript of policies.

1.3 PROGRESS MEETINGS

.1 During course of Work, schedule progress meetings bi-weekly.

.2 Contractor and major Subcontractors involved in Work are to be in attendance.

.3 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within 5 days after meeting.

.4 Agenda to include 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 Revision to construction schedule.
.6 Other business.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Schedule, form, content.

.2 Critical path scheduling.

1.2 Schedules Required

.1 Contractor shall submit their Construction Schedule for review within fifteen days after award of contract utilizing the critical path method. This schedule shall be updated monthly with both hard copy and electronic copy forwarded to the Consultant. Monthly updates must include actual percentages complete. The Construction Schedule will be shown as a line item on the Contractor's Cost Breakdown. Failure to provide monthly updates may result in the contractor's request for payment being returned.

.2 The CPM Schedule shall include complete sequence of construction activities.

.3 Include dates for commencement and completion of each major element of construction as follows, and broken down by Phase of Work (Phase 1, overall Contract).
- .1 Site work.
- .2 Foundation work.
- .3 Framing
- .4 Exterior Finishes
- .5 Interior Finishes
- .6 Mechanical Work.
- .7 Electrical Work.
- .8 Interior Finishes.

.4 Show projected percentage of completion of each item as of first day of month.

.5 Indicate progress of each activity to date of submission schedule.

.6 Show changes occurring since previous submission of schedule:
- .1 Major changes in scope.
- .2 Activities modified since previous submission.

1.2 Schedules Required (Cont'd)

.6 (Cont'd)
.3 Revised project icons of progress and completion.
.4 Other identifiable changes.

.7 Provide a narrative report to define:
.1 Problem areas, anticipated delays, and impact on schedule.
.2 Corrective action recommended and its effect.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Shop drawings and product data.

.2 Samples.

.3 Certificates and transcripts.

1.2 Administrative

.1 Submit to Consultant within 14 days from award submittals listed for review. Failure to submit in ample time is not considered sufficient reason for an extension of Contract Time and no claim for extension by reason of such default will be allowed.

.2 Work affected by submittal shall not proceed until review is complete.

.3 Present shop drawings, product data, samples and mock-ups in SI Metric units.

.4 Where items or information is not produced in SI Metric units converted values are acceptable.

.5 Review submittals prior to submission to Consultant. This review represents that necessary requirements have been determined and verified, or will be, and that each submittal has been checked and co-ordinated with requirements of Work and Contract Documents. Submittals not stamped, signed, dated and identified as to specific project will be returned without being examined and shall be considered rejected.

.6 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

.7 Verify field measurements and affected adjacent Work are coordinated.

.8 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.

1.2 Administrative (Cont'd)

.9 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant.

.10 Keep one reviewed copy of each submission on site.

1.3 Shop Drawings and Product Data

.1 The term "shop drawings" means drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are to be provided by Contractor to illustrate details of a portion of Work.

.2 Indicate materials, methods of construction and attachment or anchorage, erection diagrams, connections, explanatory notes and other information necessary for completion of Work. Where articles or equipment attach or connect to other articles or equipment, indicate that such items have been coordinated, regardless of Section under which adjacent items will be supplied and installed. Indicate cross references to design drawings and specifications.

.3 Allow 10 days for Consultant's review of each submission.

.4 Adjustments made on shop drawings by Consultant are not intended to change Contract Price. If adjustments affect value of Work, state such in writing to Consultant prior to proceeding with Work, and do not proceed without written authority.

.5 Make changes in shop drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Engineer in writing of any revisions other than those requested.

.6 Accompany submissions with transmittal letter, in duplicate, containing:
.1 Date.
.2 Project title and number.
.3 Contractor's name and address.
.4 Identification and quantity of each shop drawing, product data and sample.
.5 Other pertinent data.

1.3 Shop Drawings and Product Data (Cont'd)

.7 Submissions shall include:
.1 Date and revision dates.
.2 Project title and number.
.3 Name and address of:
.1 Subcontractor.
.2 Supplier.
.3 Manufacturer.
.4 Contractor's stamp, signed by Contractor's authorized representative certifying approval of submissions, verification of field measurements and compliance with Contract Documents.
.5 Details of appropriate portions of Work as applicable:
.1 Fabrication.
.2 Layout, showing dimensions, including identified field dimensions, and clearances.
.3 Setting or erection details.
.4 Capacities.
.5 Performance characteristics.
.6 Standards.
.7 Operating weight.
.8 Wiring diagrams.
.9 Single line and schematic diagrams.
.10 Relationship to adjacent work.

.8 After Consultant's review, distribute copies.

.9 Submit all shop drawings electronically in pdf format, without security protection.

.10 Maximum sheet size: 610 x 915 mm.

.11 Delete information not applicable to project.

.12 Supplement standard information to provide details applicable to project.

.13 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, copies will be returned and fabrication and installation of Work may proceed. If shop drawings are rejected, noted copy will be returned and resubmission of corrected shop drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.

PART 2 - PRODUCTS

2.1 Not Used .1 Not Used.

PART 3 - EXECUTION

3.1 Not Used .1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Inspection and testing, administrative and enforcement requirements.

.2 Tests and mix designs.

.3 Mill tests.

.4 Equipment and system adjust and balance.

1.2 Inspection

.1 Allow Consultant access to Work. If part of Work is in preparation at locations other than Place of Work, allow access to such Work whenever it is in progress.

.2 Give timely notice requesting inspection if Work is designated for special tests, inspections or approvals by Consultant instructions, or law of Place of Work.

.3 If Contractor covers or permits to be covered Work that has been designated for special tests, inspections or approvals before such is made, uncover such Work, have inspections or tests satisfactorily completed and make good such Work.

.4 Consultant may order any part of Work to be examined if Work is suspected to be not in accordance with Contract Documents. If, upon examination such work is found not in accordance with Contract Documents, correct such Work and pay cost of examination and correction. If such Work is found in accordance with Contract Documents, Owner shall pay cost of examination and replacement.

1.3 Independent Inspection Agencies

.1 Independent Inspection/Testing Agencies will be selected by Consultant and engaged by the contractor for the purpose of inspecting and/or testing portions of Work. Cost of such services will be paid through the inspection & testing allowance.

1.3 Independent Inspection Agencies (Cont'd)

.2 Provide equipment required for executing inspection and testing by appointed agencies.

.3 Employment of inspection/testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.

.4 If defects are revealed during inspection and/or testing, the appointed agency will request additional inspection and/or testing to ascertain the full degree of defect. The contractor shall correct defects and irregularities as advised by Consultant and complete re testing and re inspection. The contractor shall bear all cost for correction, retesting and re inspection.

1.4 Access to Work

.1 Allow inspection/testing agencies access to Work, off site manufacturing and fabrication plants.

.2 Co-operate to provide reasonable facilities for such access.

1.5 Procedures

.1 Notify appropriate agency and Consultant in advance of requirement for tests, in order that attendance arrangements can be made.

.2 Submit samples and/or materials required for testing, as specifically requested in specifications. Submit with reasonable promptness and in an orderly sequence so as not to cause delay in Work.

.3 Provide labour and facilities to obtain and handle samples and materials on site. Provide sufficient space to store and cure test samples.

1.6 Rejected Work

.1 Remove defective Work, whether result of poor workmanship, use of defective products or damage and whether incorporated in Work or not, which has been rejected by Consultant as failing to conform to Contract Documents. Replace or re-execute in accordance with Contract Documents.

.2 Make good other Contractor's work damaged by such removals or replacements promptly.

.3 If in opinion of Consultant it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, Owner may deduct from Contract Price difference in value between Work performed and that called for by Contract Documents, amount of which shall be determined by Consultant.

1.7 Reports

.1 Submit electronic copies of inspection and test reports.

.2 Provide copies to Subcontractor of work being inspected or tested or manufacturer or fabricator of material being inspected or tested.

1.8 Tests and Mix Designs

.1 Furnish test results and mix designs as may be requested.

.2 The cost of tests and mix designs beyond those called for in Contract Documents or beyond those required by law of Place of Work shall be appraised by Consultant and may be authorized as recoverable.

1.9 Mill Tests

.1 Submit mill test certificates as requested or required of Specification Sections.

1.10 Equipment and Systems

.1 Submit adjustment and balancing reports for mechanical, electrical and building equipment systems.

1.10 Equipment and Systems (Cont'd)

.2 Refer to Section 01 78 00 for definitive requirements.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Temporary utilities.

1.2 Installation and Removal

.1 Provide temporary utilities controls in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.3 Dewatering

.1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water.

1.4 Water Supply

.1 Provide continuous supply of potable water for construction use.

.2 Arrange for connection with appropriate authority and pay all costs for installation, maintenance and removal.

1.5 Temporary Heating and Ventilation

.1 Provide temporary heating required during construction period, including attendance, maintenance and fuel.

.2 Construction heaters used inside building must be vented to outside or be flameless type. Solid fuel salamanders are not permitted.

.3 Provide temporary heat and ventilation in enclosed areas as required to:
.1 Facilitate progress of Work.
.2 Protect Work and products against dampness and cold.
.3 Prevent moisture condensation on surfaces.
.4 Provide ambient temperatures and humidity levels for storage, installation and curing of materials.

1.5 Temporary Heating and Ventilation (Cont'd)

.3 (Cont'd)
.5 Provide adequate ventilation to meet health regulations for safe working environment.

.4 Maintain temperatures of minimum 10 degrees C in areas where construction is in progress.

.5 Ventilating:
.1 Prevent accumulations of dust, fumes, mists, vapours or gases in areas occupied during construction.
.2 Provide local exhaust ventilation to prevent harmful accumulation of hazardous substances into atmosphere of occupied areas.
.3 Dispose of exhaust materials in manner that will not result in harmful exposure to persons.
.4 Ventilate storage spaces containing hazardous or volatile materials.
.5 Ventilate temporary sanitary facilities.
.6 Continue operation of ventilation and exhaust system for time after cessation of work process to assure removal of harmful contaminants.

.6 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.6 Temporary Power and Light

.1 Contractor is to pay for temporary power during construction for temporary lighting and operating of power tools.

.2 Arrange for connection and pay all costs for installation, maintenance and removal of temporary power on site.

.3 Provide and maintain temporary lighting throughout project. Ensure level of illumination on all floors and stairs is not less than 162 lx.

1.7 Temporary Communication Facilities

.1 Provide and pay for temporary telephone, fax and data lines necessary for own use.

1.8 Fire Protection

.1 Provide and maintain temporary fire protection equipment during performance of Work required by insurance companies having jurisdiction and governing codes, regulations and bylaws.

.2 Burning rubbish and construction waste materials is not permitted on site.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Construction aids.

.2 Office and sheds.

.3 Parking.

.4 Project identification.

1.2 Installation and Removal

.1 Provide construction facilities in order to execute work expeditiously.

.2 Remove from site all such work after use.

1.3 Scaffolding

.1 Provide and maintain scaffolding, ramps and ladders.

1.4 Hoisting

.1 Provide, operate and maintain hoists and cranes required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.

.2 Hoists and cranes shall be operated by qualified operator.

1.5 Site Storage/Loading

.1 Confine work and operations of employees by Contract Documents. Do not unreasonably encumber premises with products.

.2 Do not load or permit to load any part of Work with a weight or force that will endanger the Work.

1.6 Construction Parking

.1 Parking will be permitted on site in designated location only.

1.6 Construction Parking (Cont'd)

.2 Provide and maintain adequate access to project site via designated entrance only.

.3 Use existing streets for access to project site. Make good damage resulting from Contractors' use of roads and site.

1.7 Construction Site Office

.1 Provide office heated to 22 ° C, lighted 750 lx and ventilated, of sufficient size to accommodate site meetings and furnished with drawing laydown table. Site office can be in the existing house, but not in Phase 1 area.

.2 Provide a clearly marked and fully stocked first-aid case in a readily available location.

1.8 Temporary Owner Offices

.1 Provide a 3.5 m x 18.3 m insulated site office trailer for use as Owner's temporary offices from start of construction until Substantial Completion of Phase 1. Heated to 22 degrees C, lighted 750 lx, mechanical ventilation, operable windows, temporary power and electrical outlets, and data cabling connection to Owner's site server system.

1.8 Equipment, Tool and Materials Storage

.1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds for storage of tools, equipment and materials.

.2 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.

.3 Storage areas and sheds to be at designated area only.

1.9 Sanitary Facilities

.1 Provide sanitary facilities for work force in accordance with governing regulations and ordinances.

1.9 Sanitary Facilities (Cont'd)

.2 Post notices and take such precautions as required by local health authorities. Keep area and premises in sanitary condition.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Barriers.

.2 Environmental Controls.

.3 Fire Routes.

1.2 Installation and Removal

.1 Provide temporary controls in order to execute Work expeditiously.

.2 Remove from site all such work after use.

1.3 HOARDING

.1 Erect temporary site enclosures using new 1.8m high temporary portable fencing. Panels to have 42mm welded galvanized frames with non-climbable mesh.

1.4 Guard Rails and Barricades

.1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors.

.2 Provide as required by governing authorities.

1.5 Weather Enclosures

.1 Provide weather tight closures to unfinished door and window openings, tops of shafts and other openings in floors and roofs.

.2 Close off floor areas where walls are not finished; seal off other openings; enclose building interior work for temporary heat.

.3 Design enclosures to withstand wind pressure and snow loading.

1.6 Dust Tight Screens

.1 Provide dust tight screens or insulated partitions to localize dust generating activities, and for protection of workers, finished areas of Work and public.

.2 Maintain and relocate protection until such work is complete.

1.7 Fire Routes

.1 Maintain access to property including overhead clearances for use by emergency response vehicles.

1.8 Protection for Off-Site and Public Property

.1 Protect surrounding private and public property from damage during performance of Work.

.2 Be responsible for damage incurred.

1.9 Protection of Building Finishes

.1 Provide necessary screens, covers, and hoardings.

.2 Be responsible for damage incurred due to lack of or improper protection.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Product quality, availability, storage, handling, protection, and transportation.

.2 Manufacturer's instructions.

.3 Quality of Work, coordination and fastenings.

.4 Existing facilities.

1.2 Quality

.1 Products, materials, equipment and articles (referred to as products throughout specifications) incorporated in Work shall be new, not damaged or defective, and of best quality (compatible with specifications) for purpose intended. If requested, furnish evidence as to type, source and quality of products provided.

.2 Defective products, whenever identified prior to completion of Work, will be rejected, regardless of previous inspections. Inspection does not relieve responsibility, but is precaution against oversight or error. Remove and replace defective products at own expense and be responsible for delays and expenses caused by rejection.

.3 Should any dispute arise as to quality or fitness of products, decision rests strictly with Consultant based upon requirements of Contract Documents.

.4 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

.5 Permanent labels, trademarks and nameplates on products are not acceptable in prominent locations, except where required for operating instructions, or when located in mechanical or electrical rooms.

1.2 Quality (Cont'd)

.6 In specification sections where a specific manufacturer and/or product is specified as "an acceptable product is:" other manufacturers products meeting this standard,as determined by the Consultant, will be accepted as an alternative unless specified otherwise.

1.3 Availability

.1 Immediately upon signing Contract, review product delivery requirements and anticipate foreseeable supply delays for any items. If delays in supply of products are foreseeable, notify Consultant of such, in order that substitutions or other remedial action may be authorized in ample time to prevent delay in performance of Work.

.2 In event of failure to notify Consultant at commencement of Work and should it subsequently appear that Work may be delayed for such reason, Consultant reserves right to substitute more readily available products of similar character, at no increase in Contract Price or Contract Time.

1.4 Storage, Handling and Protection

.1 Handle and store products in manner to prevent damage, adulteration, deterioration and soiling and in accordance with manufacturer's instructions when applicable.

.2 Store packaged or bundled products in original and undamaged condition with manufacturer's seal and labels intact. Do not remove from packaging or bundling until required in Work.

.3 Store products subject to damage from weather in weatherproof enclosures.

.4 Store cementitious products clear of earth or concrete floors, and away from walls.

.5 Keep sand, when used for grout or mortar materials, clean and dry. Store sand on wooden platforms and cover with waterproof tarpaulins during inclement weather.

1.4 Storage, Handling and Protection (Cont'd)

.6 Store sheet materials, lumber on flat, solid supports and keep clear of ground. Slope to shed moisture.

.7 Store and mix paints in heated and ventilated room. Remove oily rags and other combustible debris from site daily. Take every precaution necessary to prevent spontaneous combustion.

.8 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.5 Transportation

.1 Pay costs of transportation of products required in performance of Work.

1.6 Manufacturer's Instructions

.1 Unless otherwise indicated in specifications, install or erect products in accordance with manufacturer's instructions. Do not rely on labels or enclosures provided with products. Obtain written instructions directly from manufacturers.

.2 Notify Consultant in writing, of conflicts between specifications and manufacturer's instructions, so that Consultant may establish course of action.

.3 Improper installation or erection of products, due to failure in complying with these requirements, authorizes Consultant to require removal and re-installation at no increase in Contract Price or Contract Time.

1.7 Quality of Work

.1 Ensure Quality of Work is of highest standard, executed by workers experienced and skilled in respective duties for which they are employed. Immediately notify Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ anyone unskilled in their required duties. Consultant reserves right to require dismissal from site, workers deemed incompetent or careless.

1.7 Quality of Work (Cont'd)

.3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

1.8 Co-Ordination

.1 Ensure cooperation of workers in laying out Work. Maintain efficient and continuous supervision.

.2 Be responsible for coordination and placement of openings, sleeves and accessories.

1.9 Concealment

.1 In finished areas, conceal pipes, ducts and wiring in floors, walls and ceilings, except where indicated otherwise.

.2 Before installation, inform Consultant if there is interference. Install as directed by Consultant.

1.10 Remedial Work

.1 Perform remedial work required to repair or replace parts or portions of Work identified as defective or unacceptable. Coordinate adjacent affected Work as required.

.2 Perform remedial work by specialists familiar with materials affected. Perform in a manner to neither damage nor put at risk any portion of Work.

1.11 Location of Fixtures

.1 Consider location of fixtures, outlets, and mechanical and electrical items indicated as approximate.

.2 Inform Consultant of conflicting installation. Install as directed.

1.12 Fastenings

.1 Provide metal fastenings and accessories in same texture, colour and finish as adjacent materials, unless indicated otherwise.

1.12 Fastenings (Cont'd)

.2 Prevent electrolytic action between dissimilar metals and materials.

.3 Use non-corrosive hot dip galvanized steel fasteners and anchors for securing exterior work, unless stainless steel or other material is specifically requested in affected specification Section.

.4 Space anchors within individual load limit or shear capacity and ensure they provide positive permanent anchorage. Wood, or any other organic material plugs are not acceptable.

.5 Keep exposed fastenings to a minimum, space evenly and install neatly.

.6 Fastenings which cause spalling or cracking of material to which anchorage is made are not acceptable.

1.13 Fastenings - Equipment

.1 Use fastenings of standard commercial sizes and patterns with material and finish suitable for service.

.2 Use heavy hexagon heads, semi-finished unless otherwise specified. Use No. 304 stainless steel for exterior areas.

.3 Bolts may not project more than one diameter beyond nuts.

.4 Use plain type washers on equipment, sheet metal and soft gasket lock type washers where vibrations occur. Use resilient washers with stainless steel.

1.14 Protection of Work in Progress

.1 Prevent overloading of any part of building. Do not cut, drill or sleeve any load bearing structural member, unless specifically indicated, without written approval of. Consultant.

1.15 Existing Utilities

.1 When breaking into or connecting to existing services or utilities, execute Work at times directed by local governing authorities, with minimum of disturbance to Work, and pedestrian and vehicular traffic.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in manner approved by authority having jurisdiction. Stake and record location of capped service.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Submit to Consultant copies of the following documents, including updates issued:
.1 Health and Safety Program as indicated in paragraph 1.9, prior to commencement of work on the work site.
.2 Reports or directions issued by authorities having jurisdiction, immediately upon issuance from that authority.
.3 Accident or Incident Reports, within 24 hrs of occurrence.

.2 Submit other data, information and documentation upon request by the Consultant as stipulated elsewhere in this section.

1.2 COMPLIANCE REQUIREMENTS

.1 Comply with the latest edition of the Ontario Occupational Health and Safety Act, and the Regulations made pursuant to the Act.

.2 Observe and enforce construction safety measures required by:
.1 National Building Code of Canada (latest edition).
.2 Provincial Worker's Compensation Board.
.3 Municipal statutes and ordinances.

.3 In event of conflict between any provisions of above authorities the most stringent provision shall apply.

.4 Provide and maintain Worker's Compensation Board coverage for all employees for the duration of the contract. Prior to commencement of the work, at the time of Interim Completion and prior to final payment, provide to the Consultant a letter of Clearance from the Workers' Compensation Board indicating that the Contractor's account is in good standing.

1.2 COMPLIANCE REQUIREMENTS (Cont'd)

.4 (Cont'd)

.1 Should the Contractor be a sole proprietor, provide documented proof in a form acceptable to the Consultant, of an alternative means of personal coverage that meets or exceeds the requirements set out above for Worker's Compensation Board coverage.

1.3 RESPONSIBILITY

.1 The Contractor is responsible for safety of persons and property on the work site and the general public circulating adjacent to work site operations to extent that they may be affected by conduct of work.

.2 The Contractor is to enforce compliance by workers and other persons granted access to work site with safety requirements of Contract Documents, applicable federal, provincial, and local statues, regulations, and ordinances, and with the Contractor's Health and Safety Program.

.3 Should an unforeseen or peculiar safety related hazard or condition become evident during performance of work, immediately take measures to rectify the situation and prevent damage or harm. Advise the Consultant verbally and in writing of the hazard or condition.

1.4 SITE CONTROL AND ACCESS

.1 Control all work site access points and work site activities. Delineate and isolate the work site from adjacent and surrounding areas by use of appropriate means to maintain control of all work site access points.

.2 Make provisions for granting permission to access onto work site to all persons who require access. Procedures for granting permission to access are to be in accordance with the Ontario Occupational Health and Safety Act, and the Regulations made pursuant to the Act and the Contractor's Health and Safety Program.

1.4 SITE CONTROL AND ACCESS (Cont'd)

.3 Ensure persons granted access to the work site are in possession of and wear the minimum personal protective equipment (PPE) designated by the Contractor's Health and Safety Program. Ensure persons granted access to the work site are provided with, trained in the use of, and wear, appropriate PPE that are required above and beyond the designated minimums previously noted and as specifically related to the work site activity that they are involved in. Be responsible for the efficacy of the PPE that is provided above and beyond the designated minimums.

.4 Erect signage at access points and at other strategic locations around the work site clearly identifying the work site area(s) as being "off-limits" to non-authorized persons. Signage must be professionally made with well understood graphic symbols and is not to be used as advertising but for the specific use as related to site safety and key contact information.
.1 Information to be provided on the signage is as follows: Project Name/Description: Contractor Company Name: Project Superintendent's Name/Phone No.:

.5 Secure the work site at all times to protect against un-authorized access.

1.5 FILING OF NOTICE

.1 File Notice of Project and any other required Notices with the Provincial/Territorial Authorities prior to commencement of the work. Provide the Consultant with a copy of the filed Notice(s) prior to commencement of the work.

1.6 PERMITS

.1 Obtain permits, licenses and compliance certificates at appropriate times and frequencies as required by the authorities having jurisdiction.

.2 Post all permits, licenses and compliance certificates on work site.

.3 Owner to provide building permit.

1.7 MEETINGS

.1 Conduct site specific occupational health and safety meetings as required by the Ontario Occupational Health and Safety Act, and the Regulations made pursuant to the Act.

.2 Record and post minutes of all meetings in plain view on the work site. Make copies available to Consultant upon request.

1.8 HEALTH AND SAFETY PROGRAM

.1 Contractors are required under Ontario Occupational Health and Safety Act, and the Regulations made pursuant to the Act to have in place a Health and Safety Program. Compliance requirements for the content, detail and implementation of the program resides with the provincial/territorial authority. For the purpose of this contract the Health and Safety Program shall include a site-specific Health and Safety Plan that acknowledges, assesses and addresses the hazardous substances and/or hazardous conditions known and identified in paragraph 1.7 above, and on-going hazard assessments performed during the progress of work identifying and documenting new or potential health risks and safety hazards not previously known and identified.

.2 Provide one copy of the Health and Safety Program to the Consultant prior to commencement of work on the work site. The copy provided to the Consultant is for the purpose of review against the contract requirements related to the known hazardous substances and/or hazardous conditions. The review is not to be construed to imply approval by the Consultant that the program is complete, accurate and legislatively compliant with the Ontario Occupational Health and Safety Act, and the Regulations made pursuant to the Act, and shall not relieve the Contractor of their legal obligations under such legislation.

1.9 ACCIDENT REPORTING

.1 Investigate and report incidents and accidents as required Ontario Occupational Safety and Health Act, and the Regulations made pursuant to the Act.

.2 For the purpose of this contract immediately investigate and provide a report on incidents and accidents that involve:
.1 A resulting injury that may or may not require medical aid but involves lost time at work by the injured person(s).
.2 Exposure to toxic chemicals or substances.
.3 Property damage.
.4 Interruption to adjacent and/or integral infrastructure operations with potential loss implications.

.3 In the investigation and reporting of incidents and accidents, the Contractor is required to respond in a timely fashion to correct the action that was deemed to have caused the incident and/or accident and advise in writing on the action taken to prevent a re-occurrence of the incident and/or accident.

1.10 RECORDS ON SITE

.1 Maintain on site a copy of the safety documentation as specified in this section and any other safety related reports and documents issued to or received from the authorities having jurisdiction.

1.11 HAZARDOUS MATERIALS

.1 A copy of hazardous building materials assessment report has been provided with the tender documents.

END OF SECTION

PART 1 - GENERAL

1.1 SECTION INCLUDES

.1 Requirements and limitations for cutting and patching the Work.

1.2 RELATED SECTIONS

.1 Individual product Sections: cutting and patching incidental to work of section. Advance notification to other sections required.

1.3 SUBMITTALS

.1 Submit written request in advance of cutting or alteration which affects:
- .1 Structural integrity of any element of Project.
- .2 Integrity of weather-exposed or moisture-resistant elements.
- .3 Efficiency, maintenance, or safety of any operational element.
- .4 Visual qualities of sight-exposed elements.
- .5 Work of Owner or separate contractor.

.2 Include in request:
- .1 Identification of Project.
- .2 Location and description of affected Work.
- .3 Statement on necessity for cutting or alteration.
- .4 Description of proposed Work, and products to be used.
- .5 Alternatives to cutting and patching.
- .6 Effect on Work of Owner or separate contractor.
- .7 Written permission of affected separate contractor.
- .8 Date and time work will be executed.

1.4 MATERIALS

.1 Required for original installation.

.2 Change in Materials: Submit request for substitution in accordance with Section 01 33 00.

1.5 CO-ORDINATION AND CO-OPERATION

.1 The General Contractor shall provide full time supervision and direct the work of all sub-trades and be solely responsible for all construction means, methods, techniques, sequences and procedures.

.2 The reponsibility as to which trade provides or builds in the required materials or article rests with the General Contractor.

.3 Each trade shall carry out his work with care and co-operation with all concerned so that their work will marry with works of other trades to provide a clean finished product.

.4 Each trade shall report to the Contractor any defects in surfaces or work prepared by other trades, which affects his own. Commencement of work shall deem acceptance of condition of other trade's work.

1.6 PREPARATION

.1 Inspect existing conditions, including elements subject to damage or movement during cutting and patching.

.2 After uncovering, inspect conditions affecting performance of Work.

.3 Beginning of cutting or patching means acceptance of existing conditions.

.4 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.

.5 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

1.7 EXECUTION

.1 All necessary cutting and patching of work for the Mechanical and Electrical or associated trades shall be done by the General Contractor. General Contractor is to coordinate and schedule related subtrades prior to pouring concrete, installing finishes to ensure that sub-trades routing, installation of services, finishes, etc. are in place prior to installing.

.2 Execute cutting, fitting, and patching. required to make work fit properly together and as necessary for the installation of new materials.

.3 Make good any damage resulting from work of this contract.

.4 Tradesmen qualified in the work being cut and patched shall be employed to ensure that works are correctly done.

.5 Core drill holes in areas after being located by the Trade concerned.

.6 Whenever it becomes necessary to cut or interfere in any manner with existing services or apparatus, do so at such times as approved by the Consultant.

.7 Coordinate work of all sections, taking into account existing installations to ensure best arrangement of components in available space. For critical locations, consult with Consultant prior to commencing work.

.8 Core drill holes in concrete floors for piping where not previously sleeved, Do not use mechanical hammers or drills without prior approval in writing.

.9 Any cutting/patching required after completion of new works shall be done by the General Contractor at the Sub-Trade concerned's expense.

.10 Maintain all fire separations. Provide fire stopping at all penetrations in accordance with CAN4-5115.

.11 Uncover Work to install ill-timed Work.

1.7 EXECUTION (Cont'd)

.12 Remove and replace defective and non-conforming Work.

.13 Provide openings in non-structural elements of Work for penetrations of mechanical and electrical Work.

.14 Execute Work by methods to avoid damage to other Work, and which will provide proper surfaces to receive patching and finishing.

.15 Cut rigid materials using masonry saw or core drill. Pneumatic or impact tools not allowed on masonry work without prior approval.

.16 Restore work with new products in accordance with requirements of Contract Documents.

.17 Fit Work to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.

.18 At penetration of fire rated wall, ceiling, or floor construction, completely seal voids with firestopping material, full thickness of the construction element.

.19 Refinish surfaces to match adjacent finishes: For continuous surfaces refinish to nearest intersection; for an assembly, refinish entire unit.

.20 Conceal pipes, ducts and wiring in floor, wall and ceiling construction of finished areas except where indicated otherwise.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Progressive cleaning.

.2 Final cleaning.

1.2 Project Cleanliness

.1 Maintain Work in tidy condition, free from accumulation of waste products and debris, including other than that caused by Owner or other Contractors.

.2 Remove waste materials from site at regularly scheduled times or dispose of as directed by Section 01 74 21. Do not burn waste materials on site.

.3 Clear snow and ice from access to building, bank/pile snow in designated areas only remove from site.

.4 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.5 Provide on-site containers for collection of waste materials and debris.

.6 Provide and use clearly marked separate bins for recycling. Refer to Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.7 Remove waste material and debris from site and deposit in waste container at end of each working day.

.8 Dispose of waste materials and debris at designated dumping areas on Crown property off site.

.9 Clean interior areas prior to start of finish work, and maintain areas free of dust and other contaminants during finishing operations.

1.2 Project Cleanliness (Cont'd)

.10 Store volatile waste in covered metal containers, and remove from premises at end of each working day.

.11 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

.12 Use only cleaning materials recommended by manufacturer of surface to be cleaned, and as recommended by cleaning material manufacturer.

.13 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

1.3 Final Cleaning

.1 When Work is Substantially Performed, remove surplus products, tools, construction machinery and equipment not required for performance of remaining Work.

.2 Remove waste products and debris and leave Work clean and suitable for occupancy.

.3 Prior to final review, remove surplus products, tools, construction machinery and equipment.

.4 Remove waste materials from site at regularly scheduled times. Do not burn waste materials on site.

.5 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.

.6 Clean and polish glass, mirrors, hardware, wall tile, stainless steel, chrome, porcelain enamel, baked enamel, plastic laminate, and mechanical and electrical fixtures. Replace broken, scratched or disfigured glass.

.7 Remove stains, spots, marks and dirt from decorative work, electrical and mechanical fixtures, furniture fitments, walls, floors and ceilings.

1.3 Final Cleaning (Cont'd)

.8 Clean lighting reflectors, lenses, and other lighting surfaces.

.9 Vacuum clean and dust building interiors, behind grilles, louvres and screens.

.10 Inspect finishes, fitments and equipment and ensure specified workmanship and operation.

.11 Broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds.

.12 Clean roofs, and drainage systems.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 REGULATORY AGENCIES

.1 The Ontario Ministry of Environment (OME) in accordance with Section 7 of Ontario Regulation 103/94 requires a source separation program for the waste that will be generated in the construction or demolition of a structure.

.2 The source separation program required shall:
.1 Deal separately with each of the categories of waste set out in Part III of the Schedule that have been source separated from other kinds of waste and also from each other category of waste in Part III; or
.2 Provide for removal from the building site of any commingled categories of waste set out in Part III of the Schedule and for the immediate separation of such waste from all other kinds of waste and also from each category of waste in Part III, at
.1 permanent premises of the person undertaking the construction project
.2 permanent premises of the person on whose behalf the construction project is undertaken or
.3 a waste disposal site operating under the authority of a certificate of approval

.3 The source separation program shall be implemented before construction work begins on site.

1.2 SUBMITTAL

.1 Prepare and submit a waste reduction work plan. Describe management of construction wastes. Identify materials which can be recycled, reused and indicate methods proposed for reducing, reusing and recycling wastes.

1.3 WASTE COLLECTION AND DISPOSAL

.1 Separate and salvage materials suitable for reuse and/or recycling from general waste stream.

1.3 WASTE COLLECTION AND DISPOSAL (Cont'd)

.2 Provide on site facilities for collection, handling and storage of anticipated quantities of reusable and/or recyclable materials.

.3 Locate containers in locations, to facilitate deposit of materials without hindering daily operations.

.4 Collect, handle, store on site and transport off site, salvaged materials, salvaged for reuse and/or recycling in separate condition. Transport to authorized reuse/recycling location.

.5 Separate non salvageable materials from salvaged items. Transport and deliver non salvageable items to licensed disposal facility.

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

.7 Disposals of liquid wastes into waterways, sewers is prohibited.

.8 Unless specified otherwise, materials for removal become Contractor's property.

.9 Clean up work, storage and waste collection areas as work progresses.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Administrative procedures preceding preliminary and final inspections of Work.

1.2 Inspection and Declaration

.1 Contractor's Inspection: Contractor and all Subcontractors shall conduct an inspection of Work, identify deficiencies and defects, and repair as required to conform to Contract Documents.
.1 Notify Consultant in writing of satisfactory completion of Contractor's Inspection and that corrections have been made.
.2 Request Consultant's Inspection.

.2 Consultant's Inspection: Consultant and Contractor will perform inspection of Work to identify obvious defects or deficiencies. Contractor shall correct Work accordingly.

.3 Completion: submit written certificate that following have been performed:
.1 Work has been completed and inspected for compliance with Contract Documents.
.2 Defects have been corrected and deficiencies have been completed.
.3 Work is complete and ready for Final Inspection.

.4 Final Inspection: when items noted above are completed, request final inspection of Work by Consultant. If Work is deemed incomplete by Consultant, complete outstanding items and request reinspection.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used .1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 As-built, samples, and specifications.

.2 Equipment and systems.

.3 Product data, materials and finishes, and related information.

.4 Operation and maintenance data.

.5 Spare parts, special tools and maintenance materials.

.6 Warranties

1.2 Submission

.1 Prepare instructions and data using personnel experienced in maintenance and operation of described products.

.2 Copy will be returned after final inspection, with Consultant's comments.

.3 Revise content of documents as required prior to final submittal.

.4 Submit to the Consultant two (2) hard copies and one (1) USB thumb drive, PDF format of operating and maintenance manuals in English within 14 days of Substantial Completion.

1.3 Format

.1 Organize data in the form of an instructional manual.

.2 Binders: vinyl, hard covered, 3 'D' ring, loose leaf 219 x 279 mm with spine and face pockets.

.3 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder on spine.

1.3 Format (Cont'd)

.4 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.

.5 Arrange content by systems, process flow, 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 Text: Manufacturer's printed data, or typewritten data.

.8 Drawings: provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

1.4 Contents - Each Volume

.1 Table of Contents: provide title of project;
.1 date of submission; names,
.2 addresses, and telephone numbers of Contractor with name of responsible parties;
.3 schedule of products and systems, indexed to content of volume.

.2 For each product or system:
.1 list names, addresses and telephone numbers of subcontractors and suppliers, including local source of supplies and replacement parts.

.3 Product Data: mark each 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 Typewritten Text: as required to supplement product data. Provide logical sequence of instructions for each procedure, incorporating manufacturer's instructions specified in Section 01 45 00 - Quality Control.

1.5 As-builts and Samples

.1 In addition to requirements in General Conditions, maintain at the site 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 record documents 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 clean, dry and legible condition. Do not use record documents for construction purposes.

.5 Keep record documents and samples available for inspection by Consultant.

1.6 Recording Actual Site Conditions

.1 Contractor shall maintain two sets of drawings & specifications, for record drawing purposes. Record changes and at completion of project submit one marked, per house, to the Consultant.

.2 Provide felt tip marking pens, maintaining separate colours for each major system, for recording information.

.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:

1.6 Recording Actual Site Conditions (Cont'd)

.4 (Cont'd)
.1 Measured 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 catalogue number of each product 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.

1.7 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 Panel board circuit directories: provide electrical service characteristics, controls, and communications.

.3 Include installed colour coded wiring diagrams.

1.7 Equipment and Systems (Cont'd)

.4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and any special operating instructions.

.5 Maintenance Requirements: include routine procedures and guide for trouble-shooting; disassembly, repair, and reassembly 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 list, illustrations, assembly drawings, and diagrams required for maintenance.

.10 Provide installed control diagrams by controls manufacturer.

.11 Provide Contractor's coordination 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 list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.

.14 Include test and balancing reports as specified.

.15 Additional requirements: As specified in individual specification sections.

1.8 Materials and Finishes

.1 Building Products, Applied Materials, and Finishes: include product data, with catalogue number, size, composition, and colour and texture designations.

.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 recommended schedule for cleaning and maintenance.

.4 Additional Requirements: as specified in individual specifications sections.

1.9 Storage, Handling and Protection

.1 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.

.2 Store in original and undamaged condition with manufacturer's seal and labels intact.

.3 Store components subject to damage from weather in weatherproof enclosures.

.4 Store paints and freezable materials in a heated and ventilated room.

.5 Remove and replace damaged products at own expense and to satisfaction of Consultant.

1.10 Warranties

.1 Separate each warranty or bond with index tab sheets keyed to Table of Contents listing.

.2 List subcontractor, supplier, and manufacturer, with name, address, and telephone number of responsible principal.

.3 Obtain warranties, executed in duplicate by subcontractors, suppliers, and manufacturers, within ten days after completion of the applicable item of work.

1.10 Warranties (Cont'd)

.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 until time specified for submittal.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 Section Includes

.1 Includes general requirements for commissioning facilities and facility systems.

1.2 Quality Assurance

.1 Co-operate with testing organization services under provisions specified in Section 01 45 00 - Quality Control.

.2 Testing organization: certified to perform specified services.

.3 Comply with applicable procedures and standards of the certification sponsoring association.

.4 Perform services under direction of supervisor qualified under certification requirements of sponsoring association.

1.3 Submittals

.1 Prior to start of Work, submit name of organization proposed to perform services. Designate who has managerial responsibilities for coordination of entire testing, adjusting and balancing.

.2 Submit documentation to confirm organization compliance with quality assurance provision.

.3 Submit preliminary specimen copies of each of report forms proposed for use.

.4 Fifteen days prior to Substantial Performance, submit 3 copies of final reports on applicable forms.

.5 Submit reports of testing, adjusting, and balancing postponed due to seasonal, climatic, occupancy, or other reasons beyond Contractor's control, promptly after execution of those services.

1.4 Procedures - General

.1 Comply with procedural standards of certifying association under whose standard services will be performed.

.2 Notify Consultant 3 days prior to beginning of operations.

.3 Accurately record data for each step.

.4 Report any deficiencies or defects noted during performance of services.

1.5 Final Reports

.1 Organization having managerial responsibility shall make reports.

.2 Ensure each form bears signature of recorder, and that of supervisor of reporting organization.

.3 Identify each instrument used, and latest date of calibration of each.

1.6 Contractor Responsibilities

.1 Prepare each system for testing and balancing.

.2 Cooperate with testing organization and provide access to equipment and systems.

.3 Provide personnel and operate systems at designated times, and under conditions required for proper testing, adjusting, and balancing.

.4 Notify testing organization 7 days prior to time project will be ready for testing, adjusting, and balancing.

1.7 Preparation

.1 Provide instruments required for testing, adjusting, and balancing operations.

.2 Make instruments available to Engineer to facilitate spot checks during testing.

.3 Retain possession of instruments and remove at completion of services.

1.7 Preparation (Cont'd)

.4 Verify systems installation is complete and in continuous operation.

.5 Verify lighting is turned on when lighting is included in cooling load.

.6 Verify equipment such as computers, laboratory and electronic equipment are in full operation.

1.8 Execution

.1 Test equipment, balance distribution systems, and adjust devices for HVAC systems.

PART 2 - PRODUCTS

2.1 Not Used

.1 Not Used.

PART 3 - EXECUTION

3.1 Not Used

.1 Not Used.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Canadian Standards Association (CSA International)
.1 CSA S350-M1980(R1998), Code of Practice for Safety in Demolition of Structures.

1.2 SUBMITTALS

.1 Submit shop drawings in accordance with Sections 01 33 00 - Submittal Procedures.

.2 Before proceeding with demolition of load bearing walls and where required by authority having jurisdiction submit for review by Consultant shoring drawings prepared by qualified professional engineer registered or licensed in the Province of Ontario, showing proposed method.

.3 Prior to beginning of Work on site submit detailed Waste Reduction Workplan in accordance with Sections 01 74 21 - Construction/Demolition Waste Management and Disposal and indicate:
.1 Descriptions of and anticipated quantities in percentages of materials to be salvaged reused, recycled and landfilled.
.2 Schedule of selective demolition.
.3 Number and location of dumpsters.
.4 Anticipated frequency of tippage.
.5 Name and address of haulers waste facilities waste receiving organizations.

1.3 WASTE MANAGEMENT AND DISPOSAL

.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 Construction/Demolition Waste Management and Disposal.

1.4 SITE CONDITIONS

.1 Review "Designated Substance Report" and take precautions to protect environment.

1.4 SITE CONDITIONS (Cont'd)

.2 There are known designated substances in this building. Please refer to appendices in specifications for DSS report, lead guidelines and asbestos abatement procedures and comply to all requirements for working in the presence of, disturbing, handling, removal, and disposal of designated substances.

.3 Should material resembling spray or trowel-applied asbestos or other designated substance listed as hazardous be encountered, stop work, take preventative measures, and notify Consultant immediately.
.1 Do not proceed until written instructions have been received from Consultant.

.4 Notify Consultant before disrupting building access or services.

PART 2 - PRODUCTS

2.1 NOT USED

.1 Not used.

PART 3 - EXECUTION

3.1 PROTECTION

.1 Prevent movement, settlement, or damage to parts of building to remain in place. Provide bracing and shoring required.

.2 Keep noise, dust, and inconvenience to occupants to minimum.

.3 Protect building systems, services and equipment.

.4 Provide temporary dust screens, covers, railings, supports and other protection as required.

.5 Do Work in accordance with Section 01 70 12 - Safety Requirements.

3.2 SALVAGE

.1 Refer to demolition drawings and specifications for items to be salvaged for reuse.

.2 Remove items to be reused, store as directed by owner, and re-install.

3.3 DEMOLITION

.1 Remove parts of existing building to permit new construction. Sort materials into appropriate piles for reuse and recycling

3.4 DISPOSAL

.1 Dispose of removed materials, to appropriate recycling facilities except where specified otherwise, in accordance with authority having jurisdiction.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 04 05 13 - Masonry Mortar and Grout.

.2 Section 04 05 19 - Masonry Anchorage and Reinforcing.

.3 Section 04 05 23 - Masonry Accessories.

.4 Section 04 22 00 - Concrete Unit Masonry.

.5 Section 07 92 10 - Joint Sealing.

1.2 REFERENCE STANDARDS

.1 CSA Group (CSA)
.1 CAN/CSA-A165 Series-14, CSA Standards on Concrete Masonry Units (Consists of A165.1, A165.2 and A165.3).
.2 CAN/CSA-A179-14, Mortar and Grout for Unit Masonry.
.3 CAN/CSA-A371-14, Masonry Construction for Buildings.

.2 International Masonry Industry All-Weather Council (IMIAC)
.1 Recommended Practices and Guide Specification for Cold Weather Masonry Construction.

1.3 ADMINISTRATIVE REQUIREMENTS

.1 Pre-installation meetings: comply with Section 01 31 19 - Project Meetings. Conduct pre-installation meeting one week prior to commencing work of this Sectionandon-site installations to:
.1 Verify project requirements, including mock-up requirements.
.2 Verify substrate conditions.
.3 Co-ordinate products, installation methods and techniques.
.4 Sequence work of related sections.
.5 Co-ordinate with other building subtrades.
.6 Review manufacturer's installation instructions.

1.3 ADMINISTRATIVE REQUIREMENTS (Cont'd)

.1 (Cont'd)
.7 Review masonry cutting operations, methods and tools and determine worker safety and protection from dust during cutting operations.
.8 Review warranty requirements.

.2 Sequencing: sequence with other work in accordance with Section 01 32 00 - Construction Progress Documentation. Comply with manufacturer's written recommendations for sequencing construction operations.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for masonry and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Test and Evaluation Reports:
.1 Submit certified test reports in accordance with Section 01 29 83 - Payment Procedures for Testing Laboratory Services.
.2 Test reports to certify compliance of masonry units and mortar ingredients with specified performance characteristics and physical properties.
.3 Submit data for masonry units, in addition to requirements set out in referenced CSA and ASTM Standards, indicating initial rates of absorption.

1.5 CLOSEOUT SUBMITTALS

.1 Submit manufacturer's instructions for care, cleaning and maintenance of prefaced masonry units for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.6 EXTRA MATERIALS

.1 Submit manufacturer's instructions in accordance with Section 01 78 00 - Closeout Submittals covering maintenance requirements and parts catalogue, with cuts and identifying numbers.

1.7 QUALITY ASSURANCE

.1 Mock-ups:
.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control.
.2 Construct mock-up panel of exterior and interior masonry wall construction 1200 x 1800 mm showing masonry colours and textures, use of reinforcement, ties, through-wall flashing, weep holes, jointing, pointing, coursing, mortar and quality of work.
.3 Mock-up used:
.1 To judge quality of work, substrate preparation, operation of equipment and material application.
.4 Construct mock-up where directed by Consultant.
.5 Allow 24 hours for inspection of mock-up by Consultant before proceeding with work.
.6 When accepted by Consultant, mock-up to demonstrate minimum standard for this work. Mock-up may remain as part of finished work.
.7 Start work only upon receipt of written acceptance of mock-up by Consultant.

1.8 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect material packages from nicks, scratches, and blemishes.

1.8 DELIVERY, STORAGE AND HANDLING (Cont'd)

.3 (Cont'd)
.3 Keep materials dry until use except where wetting of bricks is specified.
.4 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.
.5 Replace defective or damaged materials with new.

.4 Packaging Waste Management: in accordance with Section 01 74 21 - Waste Management and Disposal.

1.9 SITE CONDITIONS

.1 Ambient Conditions: assemble and erect components when temperatures are above 5 degrees C.

.2 Cold Weather requirements:
.1 Supplement CAN3-A371 with following requirements: when air temperature is below 5ºC take the following precautions in preparing and using mortar:
.1 Dry materials to be maintained in sealed mortar silo prior to mixing.
.2 Heat water to 70ºC maximum prior to mixing.
.3 After combining heated ingredients maintain temperature of mortar between 5 and 50ºC until used.
.4 Protect mortar from rain and snow.
.5 Mortar must be used and placed in its final position within 2 hours of mixing.
.6 Provide heated enclosure to maintain temperature of 5ºC or higher on all sides of the wall during layout period and for 72 hours after installation.
.7 Keep all units completely free from ice and frost. Do not use admixtures or antifreezes in mortar.
.8 When work is not in progress, tops of all masonry to be covered with non-staining weatherproof covers. Covers to be at least 600 mm wider than masonry elements and shall be well secured against displacement.
.2 Maintain dry beds for masonry and use dry masonry units only. Do not wet masonry units.

1.9 SITE CONDITIONS (Cont'd)

.3 Hot weather requirements:
.1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.
.2 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until masonry work is completed and protected by flashings or other permanent construction.
.3 Spray mortar surface at intervals and keep moist for maximum of 3 days after installation.

1.10 WARRANTY

.1 For Work in this Section 04 05 00 - Common Work Results for Masonry, 12 months warranty period is extended to 60 months.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Masonry materials are specified elsewhere in related Sections indicated in 1.1.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Examine conditions, substrates and work to receive work of this Section.

.2 Examine openings to receive masonry units. Verify opening size, location, and that opening is square and plumb, and ready to receive work of this Section.
.1 Inform Consultant of unacceptable conditions immediately upon discovery.
.2 Proceed with installation after unacceptable conditions have been remedied.

.3 Verification of Conditions:
.1 Verify that:

3.1 EXAMINATION (Cont'd)

.3 (Cont'd)

.1 (Cont'd)

.1 Substrate conditions which have been previously installed under other sections or contracts, are acceptable for product installation in accordance with manufacturer's instructions prior to installation of concrete block.

.2 Site conditions are acceptable and are ready to receive work.

.3 Built-in items are in proper location, and ready for roughing into masonry work.

.2 Commencing installation means acceptance of existing substrates.

3.2 PREPARATION

.1 Surface Preparation: prepare surface in accordance with manufacturer's written recommendations.

.2 Establish and protect lines, levels, and coursing.

.3 Protect adjacent materials from damage and disfiguration.

3.3 INSTALLATION

.1 Do masonry work in accordance with CAN/CSA-A371 except where specified otherwise.

.2 Build masonry plumb, level, and true to line, with vertical joints in alignment, respecting construction tolerances permitted by CAN/CSA-A371.

.3 Layout coursing and bond to achieve correct coursing heights, and continuity of bond above and below openings, with minimum of cutting.

3.4 CONSTRUCTION

.1 Exposed masonry:

.1 Remove chipped, cracked, and otherwise damaged units, in accordance with CAN/CSA-A165, in exposed masonry and replace with undamaged units.

.2 Jointing:

3.4 CONSTRUCTION (Cont'd)

.2 (Cont'd)

.1 Allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, joints true to line, compressed, uniformly concave joints where concave joints are indicated.

.2 Allow joints to set just enough to remove excess water, then rake joints uniformly to 6 mm depth and compress with square tool to provide smooth, compressed, raked joints of uniform depth where raked joints are indicated.

.3 Strike flush joints concealed in walls and joints in walls to receive plaster, tile, insulation, or other applied material except paint or similar thin finish coating.

.3 Cutting:

.1 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects.

.2 Make cuts straight, clean, and free from uneven edges.

.4 Building-In:

.1 Build in items required built into masonry.

.2 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.

.3 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.

.5 Support of loads:

.1 Use concrete to Section 03 30 00 - Cast-in-Place Concrete, where concrete fill is used instead of solid units.

.2 Use grout to CAN/CSA-A179 where grout is used instead of solid units.

.3 Install building paper below voids to be filled with concrete or grout; keep paper 25 mm back from faces of units.

.6 Provision for movement:

.1 Leave 3 mm space below shelf angles.

.7 Loose steel lintels:

.1 Install loose steel lintels. Center over opening width.

.8 Control joints:

3.4 CONSTRUCTION (Cont'd)

.8 (Cont'd)
.1 Construct continuous control joints as indicated.

.9 Movement joints:
.1 Build-in continuous movement joints as indicated.

3.5 SITE TOLERANCES

.1 Tolerances in notes to CAN/CSA-A371 apply.

3.6 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.7 PROTECTION

.1 Temporary Bracing:
.1 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.
.2 Bracing approved by Consultant.
.3 Brace masonry walls as necessary to resist wind pressure and lateral forces during construction.

.2 Moisture Protection:
.1 Keep masonry dry using waterproof, non staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until completed and protected by flashing or other permanent construction.
.2 Cover completed and partially completed work not enclosed or sheltered with waterproof covering at end of each work day. Anchor securely in position.
.3 Air Temperature Protection: protect completed masonry as recommended in 1.9, SITE CONDITIONS.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 04 05 00 - Common Work Results for Masonry.

.2 Section 04 05 19 - Masonry Anchorage and Reinforcing.

.3 Section 04 05 23 - Masonry Accessories.

.4 Section 04 22 00 - Concrete Unit Masonry.

1.2 REFERENCE STANDARDS

.1 CSA Group (CSA)
.1 CSA A23.1/A23.2-14, Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.
.2 CAN/CSA-A179-14, Mortar and Grout for Unit Masonry.
.3 CAN/CSA-A371-14, Masonry Construction for Buildings.
.4 CAN/CSA-A3000-13, Cementitious Materials Compendium (Consists of A3001, A3002, A3003, A3004 and A3005).

.2 International Masonry Industry All-Weather Council (IMIAC)
.1 Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

.3 South Coast Air Quality Management District (SCAQMD)
.1 SCAQMD Rule 1168-05, Adhesive and Sealant Applications.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for masonry mortar and grout and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.3 Samples:
.1 Samples: submit unit samples in accordance with Section 04 05 00 - Common Work Results for Masonry, supplemented as follows:
.1 Submit colour sheets/samples of all standard options from manufacturer. Consultant will select one colour for each masonry type.

.4 Manufacturers' Instructions: submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports including sand gradation tests in accordance with CAN/CSA-A179 showing compliance with specified performance characteristics and physical properties, and in accordance with Section 04 05 00 - Common Work Results for Masonry.

.2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Mock-ups:
.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control and requirements of Section 04 05 00 - Common Work Results for Masonry.

.4 For mortar to remain exposed in finished project, brands of cementitious materials and source of supply of sand shall remain the same for the entire project.

.5 Refer to section 04 05 19 for requirements of grout used in reinforced masonry.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirementsandwith manufacturer's written instructions.

1.5 DELIVERY, STORAGE AND HANDLING (Cont'd)

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect masonry mortar and grout packages from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: in accordance with Section 01 74 21 - Waste Management and Disposal.

1.6 SITE CONDITIONS

.1 Ambient Conditions: maintain materials and surrounding air temperature to:
.1 Minimum 10 degrees C prior to, during, and 48 hours after completion of masonry work.
.2 Maximum 32 degrees C prior to, during, and 48 hours after completion of masonry work.

.2 Weather Requirements: CAN/CSA-A371, International Masonry Industry All-Weather Council (IMIAC) - Recommended Practices and Guide Specifications for Cold Weather Masonry Construction.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Use same brands of materials and source of aggregate for entire project.

.2 Mortar and grout: CSA A179.

.3 Aggregate: supplied by one supplier.
.1 Use aggregate passing 1.18mm sieve where 6mm thick joints or less are indicated.

.4 Water: clean and potable.

2.2 COLOUR ADDITIVES

.1 Use colouring admixture not exceeding 10% of cement content by mass, or integrally coloured masonry cement, to produce coloured mortar to match approved sample. Admixtures approved prior to use. Use in accordance with specific manufacturer's recommendations.

2.3 MORTAR MIXES

.1 Mortar for exterior masonry above grade:
.1 Load Bearing: type S based on property specifications.
.2 Non-Load Bearing: S based on property specifications.

.2 Mortar for interior masonry:
.1 Load Bearing: type S based on property specifications.
.2 Non-Load Bearing: N based on property specifications.

.3 Parging Mortar: type N to CAN/CSA-A179.

.4 Mortar for foundation walls, manholes, sewers, pavements, walks, patios and other exterior masonry at or below grade: type M based on property specifications.

.5 Following applies regardless of mortar types and uses specified above:
.1 Mortar for calcium silicate brick and concrete brick: type O based on proportion specifications.
.2 Mortar for stonework: type N based on property specifications.
.3 Mortar for grouted reinforced masonry: type S based on property specifications.

2.4 MORTAR MIXING

.1 Mix mortar ingredients in accordance with CAN/CSA-A179 in quantities needed for immediate use.

.2 Maintain sand uniformly damp immediately before mixing process.

.3 Add mortar colour and admixtures in accordance with manufacturer's instructions. Provide uniformity of mix and colouration.

2.4 MORTAR MIXING (Cont'd)

.4 Using anti-freeze compounds including calcium chloride or chloride based compounds is prohibited.

.5 Adding air entraining admixture to mortar mix is prohibited.

.6 Use a batch type mixer in accordance with CAN/CSA-A179.

.7 Re-temper mortar only within two hours of mixing, when water is lost by evaporation.

.8 Use mortar within 2 hours after mixing at temperatures of 32 degrees C, or 2-1/2 hours at temperatures under 10 degrees C.

2.5 MIX TESTS

.1 Testing Mortar Mix:
.1 Test mortar to requirements of Section 01 45 00 - Quality Control, and in accordance with CAN/CSA-A179, for mortar based on property specificationproportion specification. Test prior to constructionandduring construction for:
.1 Compressive strength.
.2 Consistency.
.3 Mortar aggregate ratio.
.4 Sand/cement ratio.
.5 Water content and water/cement ratio.
.6 Air content.
.7 Splitting tensile strength.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for masonry installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate.
.2 Inform Consultant of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 PREPARATION

.1 Apply bonding agent to existing concrete surfaces.

.2 Plug clean-out holes with masonry units. Brace masonry for wet grout pressure.

3.3 CONSTRUCTION

.1 Do masonry mortar and grout work in accordance with CAN/CSA-A179 except where specified otherwise.

.2 Apply parging in uniform coating not less than total 10 mm thick at all exposed foundation wall locations.

3.4 MIXING

.1 Clean mixing boards and mechanical mixing machine between batches.

.2 Mortar: weaker than units it is binding.

.3 Contractor to appoint one individual to mix mortar, for duration of project. In event that this individual is changed, mortar mixing must cease until new individual is trained, and mortar mix is tested.

3.5 MORTAR PLACEMENT

.1 Install mortar to manufacturer's instructions.

.2 Install mortar to requirements of CAN/CSA-A179.

.3 Remove excess mortar from grout spaces.

3.6 GROUT PLACEMENT

.1 Install grout in accordance with manufacturer's instructions.

.2 Install grout in accordance with CAN/CSA-A179.

.3 Work grout into masonry cores and cavities to eliminate voids.

.4 Installing grout in lifts greater than 400 mm, without consolidating grout by rodding is prohibited.

3.6 GROUT PLACEMENT (Cont'd)

.5 Displacing reinforcement while placing grout is prohibited.

3.7 FIELD QUALITY CONTROL

.1 Site Tests, Inspection: in accordance with Section 04 05 00 - Common Work Results for Masonry supplemented as follows:
.1 Test and evaluate mortar prior to construction and during construction in accordance with CAN/CSA-A179.
.2 Test and evaluate grout prior to constructionandduring construction to CAN/CSA-A179; test in conjunction with masonry unit sections specified.

.2 Manufacturer's Field Services: in accordance with Section 04 05 00 - Common Work Results for Masonry.

3.8 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Remove droppings and splashings using clean sponge and water.

.3 Clean masonry with low pressure clean water and soft natural bristle brush.

.4 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal..1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.9 PROTECTION

.1 Cover completed and partially completed work not enclosed or sheltered with waterproof covering at end of each work day. Anchor securely in position.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 04 05 00 - Common Work Results for Masonry.

.2 Section 04 05 13 - Masonry Mortar and Grout.

.3 Section 04 22 00 - Concrete Unit Masonry.

1.2 REFERENCE STANDARDS

.1 American Society for Testing and Materials (ASTM)

.1 ASTM A 36/A 36M-14, Standard Specification for Carbon Structural Steel.

.2 ASTM A 167-15, Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.

.3 ASTM A 307-14, Standard Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength.

.4 ASTM A 580/A 580M-16, Standard Specification for Stainless Steel Wire.

.5 ASTM A 641/A 641M-(R2014), Standard Specification for Zinc-Coated (Galvanized) Carbon Steel Wire.

.6 ASTM A 666-15, Standard Specification for Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.

.7 ASTM A 1022 16B, Standard Specification for Deformed and Plain Stainless Steel Wire and Welded Wire for Concrete Reinforcement.

.2 CSA Group (CSA)

.1 CSA A23.1/A23.2-14 (R2015), Concrete Materials and Methods of Concrete Construction/Test Methods and Standard Practices for Concrete.

.2 CAN/CSA-A179-14, Mortar and Grout for Unit Masonry.

.3 CAN/CSA-A370-14, Connectors for Masonry.

.4 CAN/CSA-A371-14, Masonry Construction for Buildings.

.5 CSA G30.18-09 (R2014), Carbon Steel Bars for Concrete Reinforcement.

.6 CSA S304-14(R2015), Design of Masonry Structures.

1.2 REFERENCE STANDARDS (Cont'd)

.2 (Cont'd)
.7 CSA W186-M1990(R2012), Welding of Reinforcing Bars in Reinforced Concrete Construction.

.3 Reinforcing Steel Institute of Canada (RSIC)
.1 Reinforcing Steel Manual of Standard Practice, 2004.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for anchorage and reinforcing materials and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Manufacturers' Instructions: submit manufacturer's installation instructions.

1.4 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports including sand gradation tests in accordance with CAN/CSA-A179 showing compliance with specified performance characteristics and physical properties, and in accordance with Section 04 05 00 - Common Work Results for Masonry.

.2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Mock-ups:
.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control and requirements of Section 04 05 00 - Common Work Results for Masonry.

1.5 SITE MEASUREMENTS

.1 Make site measurements necessary for proper fit of members.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect anchorage and reinforcing materials from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Bar reinforcement: Steel to CAN/CSA-A371 and CSA G30.18, Grade 400.

.2 Connectors: to CAN/CSA-A370 and CSA S304.1.

.3 Corrosion protection: to CSA S304.1, galvanized to CSA S304.1 and CAN/CSA-A370.

.4 Fasteners: Expansion and epoxy anchors - Refer to Structural drawings.
.1 Bolts and Screws: size and type to suit application, locate where indicated.
.2 Nails: case-hardened cut or spiral nails, size and type to suit fastening application.
.3 Powder-Driven Fasteners: pin styles and lengths to suit fastening application in accordance with manufacturers use, load and hold recommendations.
.4 Adhesives: epoxies, mastics and contact cements for fastening applications, use in accordance with manufacturers' recommendations.

.5 Ties: hot dip galvanized to CAN/CSA-A370 Table 5.2 steel finish.

2.1 MATERIALS (Cont'd)

.5 (Cont'd)
.1 Adjustable Unit Ties: to CAN/CSA-A370: proprietary type ties, type, style and size to suit application in accordance with manufacturer's recommendations.
.2 Joint Reinforcement Ties: CSA A371 with corrosion protection to CSA S304 and CSA A370:
.1 Single Wythe Joint Reinforcement: ladder type:
.1 Steel wire, hot dip galvanized: to ASTM A 641.
.2 Cold drawn steel wire.

.6 Anchors: to CAN/CSA-A370:
.1 Conventional Anchors: Refer to Structural drawings.
.2 Wedge Anchors: Refer to Structural drawings.
.3 Sleeve Anchors: Refer to Structural drawings.
.4 Anchor Bolts: Refer to Structural drawings.

.7 Conventional Bolts, Refer to Structural drawings for additional requirements:
.1 Bolts: to ASTM A 36, straight bolts with square or hex-headed nuts.
.2 Plate anchors: steel to ASTM A 36, weld square of circular steel plate perpendicular to axis of steel bar threaded on opposite end.
.3 Through bolt rods: to ASTM A 307 threaded rod or threaded ASTM A 36 bar stock.

.8 Adhesive Anchors: Refer to Structural drawings.

2.2 FABRICATION

.1 Fabricate reinforcing in accordance with CSA A23.1/A23.2 and Reinforcing Steel Manual of Standard Practice by Reinforcing Steel Institute of Canada.

.2 Fabricate connectors in accordance with CAN/CSA-A370.

.3 Obtain Consultant's approval for locations of reinforcement splices other than shown on placing drawings.

2.2 FABRICATION (Cont'd)

.4 Upon approval of Consultant, weld reinforcement in accordance with CSA W186.

.5 Ship reinforcement and connectors, clearly identified in accordance with drawings.

2.3 SOURCE QUALITY CONTROL

.1 Upon request, provide Consultant with certified copy of mill test report of reinforcement steel and connectors, showing physical and chemical analysis, minimum 5 weeks prior to commencing reinforcement work.

.2 Upon request inform Consultant of proposed source of supplied material.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for anchorage and reinforcing materials installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate.
.2 Inform Consultant of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions remedied.

3.2 PREPARATION

.1 Direct and coordinate placement of metal anchors for masonry supplied to other Sections.

3.3 INSTALLATION

.1 Supply and install masonry connectors and reinforcement in accordance with CAN/CSA-A370, CAN/CSA-A371, CSA A23.1/A23.2 and CSA S304.1 unless indicated otherwise.

.2 Prior to placing concrete mortar grout, obtain Consultant's approval of placement of reinforcement and connectors.

3.3 INSTALLATION (Cont'd)

.3 Supply and install additional reinforcement to masonry as indicated.

3.4 BONDING AND TYING

.1 Bond walls of two or more wythes using metal connectors in accordance with CSA S304.1, CAN/CSA-A371 and as indicated.

.2 Tie masonry veneer to backing in accordance with National Building Code of Canada (NBC), CSA S304.1, CAN/CSA-A371 and as indicated.

.3 Install unit, adjustable, single wythe and multiple wythe joint reinforcement where indicated and in accordance with CAN/CSA-A370 and CAN/CSA-A371 and manufacturer's instructions.
.1 Bond walls of two or more wythes using metal connectors in accordance with CAN/CSA-A371 and as indicated.
.2 Install horizontal joint reinforcement 400 mm on centre.
.3 Place masonry joint reinforcement in first and second horizontal joints above and below openings. Extend minimum 400 mm each side of opening.
.4 Place joint reinforcement continuous in first and second joint below top of walls.
.5 Lap joint reinforcement ends minimum 150 mm.
.6 Connect stack bonded unit joint corners and intersections with strap anchors 400 mm on centre.
.7 Refer to Structural drawings for additional horizontal reinforcement requirements.

3.5 REINFORCED LINTELS AND BOND BEAMS

.1 Reinforce masonry beams, masonry lintels and bond beams as indicated.

.2 Place and grout reinforcement in accordance with CSA S304.1, CAN/CSA-A371, and CAN/CSA-A179.

.3 Support and position reinforcing bars in accordance with CAN/CSA-A371.

3.6 GROUTING

.1 Grout masonry in accordance with CSA S304.1, CAN/CSA-A371 and CAN/CSA-A179 and as indicated.

3.7 ANCHORS

.1 Supply and install metal anchors in accordance with CAN/CSA-A370 and CAN/CSA-A371 as indicated.

3.8 LATERAL SUPPORT AND ANCHORAGE

.1 Supply and install lateral support and anchorage in accordance with CSA S304.1 and as indicated.

3.9 MOVEMENT JOINTS

.1 Reinforcement not continuous across movement joints unless otherwise indicated.

3.10 FIELD BENDING

.1 Do not field bend reinforcement and connectors except where indicated or authorized by Consultant.

.2 When field bending authorized, bend without heat, applying slow and steady pressure.

.3 Replace bars and connectors with cracks or splits.

3.11 FIELD QUALITY CONTROL

.1 Site inspections in accordance with Section 04 05 00 - Common Work Results for Masonry.

.2 Obtain Consultant approval of placement of reinforcement and connectors, prior to placing mortar or grout.

3.12 FIELD TOUCH-UP

.1 Touch up damaged and cut ends of epoxy coated or galvanized reinforcement steel and connectors with compatible finish to provide continuous coating.

3.13 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21- Waste Management and Disposal..1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 04 05 10 - Common Work Results for Masonry.

.2 Section 04 05 13 - Masonry Mortar and Grout.

.3 Section 04 05 19 - Masonry Anchorage and Reinforcing.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
.1 ASTM D 2240-02b, Standard Test Method for Rubber Property - Durometer Hardness.

.2 Canadian Standards Association (CSA International).
.1 CSA-A371-94(R1999), Masonry Construction for Buildings.

1.3 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Manufacturer's Instructions:
.1 Submit manufacturer's installation instructions.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Control joint filler: purpose-made elastomer durometer hardness to ASTM D 2240 of size and shape indicated.

.2 Weep hole vents: purpose-made PVC, colour to match mortar.

.3 Cavity Wall Flashing, through wall flashing: self adhered membrane consisting of a 40mLs thick SBS rubberized asphalt compound, integrally laminated to a cross-laminated polyethylene film. Acceptable Material: Bakor TWF.

.4 Primer: as recommended by manufacturer.

.5 Metal Flashing: Zinc coated steel, 0.61 thickness, commercial quality to ASTM A 653/A653M-99 with Z275 designated Zinc coating.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

.1 Install continuous control joint fillers in control joints at locations indicated on drawings.

.2 Install weep hole vents in vertical joints immediately over flashings, in exterior wythes of cavity wall and masonry veneer wall construction, at maximum horizontal spacing of 800 mm on centre.

3.3 CONSTRUCTION

.1 Build in flashings in masonry in accordance with CSA-A371.

.1 Install flashings under exterior masonry bearing on foundation walls, slabs, shelf angles, and steel angles over openings. Install flashings under weep hole courses and as indicated.

.2 In cavity walls and veneered walls, carry flashings from front edge of masonry, under outer wythe, then up backing not less than 150 mm, and as follows:

.1 For masonry backing, fully adhere flashing.

.2 For concrete backing, fully adhere flashing.

.3 Lap joints 150 mm and seal with adhesive.

.4 Masonry shall not be installed above any flashing until each instance is approved by Consultant.

.5 Overhang flashing 25 mm and cut off with a razor knife after approval by Consultant.

3.4 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 04 05 00 - Common Work Results for Masonry.

.2 Section 04 05 13 - Masonry Mortar and Grout.

.3 Section 04 05 19 - Masonry Anchorage and Reinforcing.

.4 Section 04 05 23 - Masonry Accessories.

1.2 REFERENCE STANDARDS

.1 ASTM International
.1 ASTM E 336-11, Standard Test Method for Measurement of Airborne Sound Attenuation Between Rooms in Buildings.

.2 CSA Group (CSA)
.1 CAN/CSA-A165 Series-04(R2009), CSA Standards on Concrete Masonry Units consists: A165.1, A165.2, A165.3.
.2 CAN/CSA-A371-04(R2009), Masonry Construction for Buildings.
.3 CSA S304.1-04(R2010), Design of Masonry Structures.

.3 National Research Council Canada (NRC)
.1 National Building Code of Canada 2015 (NBC).

.4 South Coast Air Quality Management District (SCAQMD)
.1 SCAQMD Rule 1168-05, Adhesive and Sealant Applications.

.5 Underwriters Laboratories of Canada (ULC)
.1 CAN/ULC-S101-07(R2010), Standard Methods of Fire Endurance Tests of Building Construction and Materials.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

1.3 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.2 (Cont'd)
.1 Submit manufacturer's instructions, printed product literature and data sheets for concrete masonry units and include product characteristics, performance criteria, physical size, finish and limitations.

1.4 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports including sand gradation tests in accordance with CAN/CSA-A179 showing compliance with specified performance characteristics and physical properties, and in accordance with Section 04 05 00 - Common Work Results for Masonry.

.2 Certificates: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

.3 Mock-ups:
.1 Construct mock-ups in accordance with Section 01 45 00 - Quality Control and requirements of Section 04 05 00 - Common Work Results for Masonry supplemented as follows:
.1 Construct mock-up panel of exterior concrete unit masonry construction 1200 x 1800 mm.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
.1 Offload concrete unit masonry packages using equipment that will not damage the surfaces.
.2 Do not use brick tongs to move or handle masonry.

.3 Storage and Handling Requirements:

1.5 DELIVERY, STORAGE AND HANDLING (Cont'd)

.3 (Cont'd)
.1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Do not double stack cubes of concrete unit masonry.
.3 Cover masonry units with non-staining waterproof membrane covering.
.4 Allow air circulation around units.
.5 Installation of wet or stained masonry units is prohibited.
.6 Keep concrete unit masonry in individual cardboard packaging provided by manufacturer until units are ready to be installed.
.7 Store and protect concrete unit masonry from nicks, scratches, and blemishes.
.8 Replace defective or damaged materials with new.

.4 Packaging Waste Management: in accordance with Section 01 74 21- Waste Management andDisposal.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Standard concrete block units: to CAN/CSA-A165 Series (CAN/CSA-A165.1).
.1 Classification: H /15 /A /M.
.2 Dimensions Nominal: 200 mm high x 400 mm long x thickness indicated.
.3 Special shapes: provide bull-nosed units for exposed corners and exposed edges of window and door openings. Provide purpose-made shapes for lintels, beams and bond beams. Provide additional special shapes as indicated.

.2 Architectural Concrete Unit Masonry Veneer to CAN/CSA-A165.2 & ASTM C-55-11:
.1 Acceptable Product: Shouldice, Architectural Tex-stone.
.1 Size: 390 mm L x 190 mm W x 90 mm D.
.2 Bond: Running Bond.
.3 Coursing pattern: Running.
.4 Colour: Desert Buff.
.2 Acceptable Product: Richvale York Block Inc., stippled.

2.1 MATERIALS (Cont'd)

.2 (Cont'd)

.2 (Cont'd)

.1 Size: 10 cm D x 20 cm W x 40 cm L.

.2 Bond: Running Bond.

.3 Coursing pattern: Running.

.4 Colour: Simcoe.

2.2 REINFORCEMENT

.1 Reinforcement in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing and structural drawings.

2.3 CONNECTORS

.1 Connectors in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing and structural drawings.

2.4 MORTAR MIXES

.1 Mortar and mortar mixes in accordance with Section 04 05 13 - Masonry Mortar and Grout and structural drawings.

2.5 GROUT MIXES

.1 Grout and grout mixes in accordance with Section 04 05 13 - Masonry Mortar and Grout and structural drawings.

2.6 CLEANING COMPOUNDS

.1 Use low VOC products in compliance with SCAQMD Rule 1168.

.2 Compatible with substrate and acceptable to masonry manufacturer for use on products.

.3 Cleaning compounds compatible with concrete unit masonry and in accordance with manufacturer's written recommendations and instructions.

2.7 TOLERANCES

.1 Tolerances for standard concrete unit masonry tolerances in accordance with CAN/CSA-A165.1, supplemented as follows:

.1 Maximum variation between units within specific job lot not to exceed 2 mm.

2.7 TOLERANCES (Cont'd)

.1 (Cont'd)
.2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.
.3 Out of square tolerance not to exceed 2 mm.

.2 Tolerances for architectural concrete masonry units in accordance with CAN/CSA-A165.1, supplemented as follows:
.1 Maximum variation in length or height between units within specific job lot for specified dimension not to exceed 2 mm.
.2 No parallel edge length, width or height dimension for individual unit to differ by more than 2 mm.
.3 Out of square tolerance not to exceed 2 mm.
.4 Maximum variation in width between units within specific job lot for specified dimension not to exceed 2 mm.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for concrete unit masonry installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate.
.2 Inform Consultant of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 PREPARATION

.1 Protect adjacent finished materials from damage due to masonry work.

3.3 INSTALLATION

.1 Concrete block units:
.1 Bond: running.
.2 Coursing height: 200 mm for one block and one joint.

3.3 INSTALLATION (Cont'd)

.1 (Cont'd)
.3 Jointing: concave where exposed or where paint or other finish coating is specified.

.2 Architectural concrete unit masonry:
.1 Bond: running.
.2 Coursing height: 100 mm for one block and one joint.
.3 Jointing: concave where exposed or where paint or finish coating is specified.

.3 Special Shapes:
.1 Install special units to form corners, returns, offsets, reveals and indents without cut ends being exposed and without losing bond or module.
.2 Install reinforced concrete block lintels over openings in masonry where steel or reinforced concrete lintels are not indicated.
.3 End bearing: not less than 200 mm as indicated on drawings.
.4 Install special site cut shaped units.

3.4 REINFORCEMENT

.1 Install reinforcing in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

3.5 CONNECTORS

.1 Install connectors in accordance with Section 04 05 19 - Masonry Anchorage and Reinforcing.

3.6 FLASHING

.1 Install flashings: in accordance with Section 04 05 23 - Masonry Accessories.

3.7 MORTAR PLACEMENT

.1 Place mortar in accordance with Section 04 05 13 - Masonry Mortar and Grout.

3.8 GROUT PLACEMENT

.1 Place grout in accordance with Section 04 05 13 - Masonry Mortar and Grout.

3.9 CONSTRUCTION

.1 Cull out masonry units, in accordance with CAN/CSA-A165 and reviewed range of colour samples, with chips, cracks, broken corners, excessive colour and texture variation.

.2 Build in miscellaneous items such as bearing plates, steel angles, bolts, anchors, inserts, sleeves and conduits.

.3 Construct masonry walls using running bond unless otherwise noted.

.4 Build around frames previously set and braced. Fill behind hollow frames within masonry walls with mortar or grout and embed anchors.

.5 Fit masonry closely against electrical and plumbing outlets so collars, plates and covers overlap and conceal cuts.

.6 Install movement joints and keep free of mortar where indicated.

.7 Hollow Units: spread mortar setting bed from outside edge of face shells. Gauge amount of mortar on top and end of unit to create full joints, equivalent to shell thickness. Avoid excess mortar.

.8 Solid Units: apply mortar over entire vertical and horizontal surfaces. Avoid bridging of airspace between brick veneer and backup wall with mortar.

.9 Ensure compacted head joints. Use full or face-shell joint as indicated.

.10 Tamp units firmly into place.

.11 Do not adjust masonry units after mortar has set. Where resetting of masonry is required, remove, clean and reset units in new mortar.

.12 Tool exposed joints concave weathered/raked for interior work; strike concealed joints flush.

.13 After mortar has achieved initial set up, tool joints.

.14 Do not interrupt bond below or above openings.

3.10 REPAIR/RESTORATION

.1 Upon completion of masonry, fill holes and cracks, remove loose mortar and repair defective work.

3.11 FIELD QUALITY CONTROL

.1 Site Tests, Inspection: in accordance with Section 04 05 00 - Common Work Results for Masonry supplemented as follows:
.1 Concrete masonry units will be sampled and tested by independent testing agency appointed and paid by Owner in accordance with CSA S304.1.

.2 Manufacturer's Field Services: in accordance with Section 04 05 00 - Common Work Results for Masonry.

3.12 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Standard Concrete Unit Masonry:
.1 Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of block. Clean wall surface with suitable brush or burlap.
.3 Architectural Concrete Unit Masonry:
.1 Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of block. Clean wall surface with suitable brush or burlap.
.4 Prefaced Concrete Unit Masonry:
.1 Clean masonry as work progresses using soft, clean cloths, within few minutes after laying. Upon completion, when mortar has set so that it will not be damaged by cleaning, clean with soft sponge or clean cloths, brush, and clean water. Polish with soft, clean cloths.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.

3.12 CLEANING (Cont'd)

.3 (Cont'd)

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.13 PROTECTION

.1 Brace and protect concrete unit masonry in accordance with Section 04 05 00 - Common Work Results for Masonry.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 09 91 23 - Painting.

1.2 REFERENCE STANDARDS

.1 American National Standards Institute/National Association of Architectural Metal Manufacturers (ANSI/NAAMM)
.1 ANSI/NAAMM MBG 531-15, Metal Bar Grating Manual.

.2 ASTM International (ASTM)
.1 ASTM A 53/A 5 3M-12, Standard Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
.2 ASTM A 307-14, Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
.3 ASTM F 3125/F 3125M-15A, Standard Specification for High Strength Structural Bolts, Steel and Alloy Steel, Heat Treated, 120 ksi (830 MPa) and 150 ksi (1040 MPa) Minimum Tensile Strength, Inch and Metric Dimensions.

.3 CSA Group (CSA)
.1 CSA G40.20-13/G40.21-13, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
.2 CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
.3 CSA W59-13, Welded Steel Construction (Metal Arc Welding).

.4 National Association of Architectural Metal Manufactures (NAAMM)
.1 AMP 510-92, Metal Stair Manual.

.5 The Master Painters Institute (MPI)
.1 Architectural Painting Specification Manual - current edition.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

1.3 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for stairs and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Submit drawings stamped and signed by professional engineer registered or licensed in the Province of Ontario, Canada.
.2 Indicate construction details, sizes of steel sections and thickness of steel sheet.

1.4 QUALITY ASSURANCE

.1 Test Reports: submit certified test reports showing compliance with specified performance characteristics and physical properties.

.2 Certifications: submit product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect stairs from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: in accordance with Section 01 74 21 - Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 SYSTEM DESCRIPTION

.1 Design Requirements:

.2 Design metal stair, balustrade and landing construction and connections to National Building Code of Canada (NBC) vertical and horizontal live load requirements.

.3 Detail and fabricate stairs to NAAMM Metal Stairs Manual.

2.2 MATERIALS

.1 Steel sections: to CSA G40.20/G40.21 Grade 300 W.

.2 Steel plate: to CSA G40.20/G40.21, Grade 260 W.

.3 Floor plate: to CSA G40.20/G40.21, Grade 260 W.

.4 Steel pipe: to ASTM A 53/A 53M, standard weight, schedule 40 seamless black.

.5 Steel tubing: to CSA G40.20/G40.21, , square, sizes and dimensions as indicated.

.6 Metal bar grating: to ASTM/NAAM MBG 531, steel,Type W-19-4, with checkered plate nosings.

.7 Welding materials: to CSA W59.

.8 Bolts: to ASTM A 307.

.9 High strength bolts: to ASTM A F3125/F3125M.

2.3 FABRICATION

.1 Fabricate in accordance with NAAMM, Metal Stair Manual.

2.3 FABRICATION (Cont'd)

.2 Weld connections where possible, otherwise bolt connections. Countersink exposed fastenings, cut off bolts flush with nuts. Make exposed connections of same material, colour and finish as base material on which they occur.

.3 Accurately form connections with exposed faces flush:
.1 Make mitres and joints tight.
.2 Make risers of equal height.

.4 Grind or file exposed welds and steel sections smooth.

.5 Shop fabricate stairs in sections as large and complete as practicable.

2.4 STEEL PAN STAIRS

.1 Fabricate stairs with closed riser steel pan construction.

.2 Form treads and risers from 3 mm thick steel plate. Secure treads and risers to L 25 x 25 x 5 horizontal and vertical welded to stringers.

.3 Form wall stringers from C 250 x 23.

.4 Form outer stringers from C 250 x 23 with 5 mm thick plate fascia welded on.

.5 Form landings from 3 mm thick steel plate, reinforced by L 50 x 50 x 6 mm spaced at 600 mm on centre.

.6 Provide clip angles for fastening of furring channels, where applied finish indicated for underside of stairs and landings.

.7 Extend stringers around mid landings to form steel base.

.8 Close ends of stringers where exposed.

2.5 PLATE/GRATING STAIRS

.1 Form steel grating treads and landings from metal bar grating to profile indicated and secure to stringers and supports as indicated.

2.5 PLATE/GRATING STAIRS (Cont'd)

.2 Form stringers from 50 x 75 x 6.35 steel angles.

2.6 PIPE/TUBING BALUSTRADES

.1 Construct balusters, guards and handrails from steel pipe.

.2 Cap and weld exposed ends of balusters and handrails.

.3 Terminate at abutting wall with end flange.

2.7 FINISHES

.1 Galvanizing: hot dipped galvanizing with zinc coating 600 g/m^2 to CAN/CSA-G164.

.2 Shop coat primer: to CAN/CGSB-1.40.

.3 Zinc primer: zinc rich, ready mix.

2.8 SHOP PAINTING

.1 Clean surfaces in accordance with Steel Structures Painting Council Manual Volume 2.

.2 Apply one coat of shop primer except interior surfaces of pans.

.3 Apply two coats of primer to parts inaccessible after final assembly.

.4 Use primer as prepared by manufacturer without thinning or adding admixtures. Paint on dry surfaces, free from rust, scale, grease. Minimum temperature for painting 7 degrees C.

.5 Do not paint surfaces to be field welded.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for metal stairs and ladders installation in accordance with manufacturer's written instructions.

3.1 EXAMINATION (Cont'd)

.1 (Cont'd)
.1 Visually inspect substrate.
.2 Inform Consultant of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION OF STAIRS

.1 Install in accordance with NAAMM, Metal Stair Manual.

.2 Install plumb and true in exact locations, using welded connections wherever possible to provide rigid structure. Provide anchor bolts, bolts and plates for connecting stairs to structure.

.3 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

.4 Do welding work in accordance with CSA W59 unless specified otherwise.

.5 Touch up shop primer to bolts, welds, and burned or scratched surfaces at completion of erection.

3.3 CLEANING

.1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.

.2 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.3 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.4 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.3 CLEANING (Cont'd)

.5 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.4 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by metal stairs and ladders installation.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

.1 CSA Group (CSA)
.1 CSA B111-1974(R2003), Wire Nails, Spikes and Staples.
.2 CSA O121-08, Douglas Fir Plywood.
.3 CSA O141-05(R2009), Softwood Lumber.
.4 CSA O151-09, Canadian Softwood Plywood.
.5 CAN/CSA-O325.0-07, Construction Sheathing.
.6 CAN/CSA-Z809-08, Sustainable Forest Management.

.2 National Research Council Canada (NRC)
.1 National Building Code of Canada 2015 (NBC).

.3 National Lumber Grades Authority (NLGA)
.1 Standard Grading Rules for Canadian Lumber 2010.

1.2 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra Stock Materials:
.1 Provide electrical equipment backboards for mounting electrical equipment as indicated. Use 19 mm thick plywood on 19 x 38 mm furring around perimeter and at maximum 305 mm intermediate

1.3 QUALITY ASSURANCE

.1 Lumber identification: by grade stamp of an agency certified by Canadian Lumber Standards Accreditation Board.

.2 Plywood identification: by grade mark in accordance with applicable CSA standards.

.3 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect wood from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: in accordance with Section 01 74 21 - Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Lumber: unless specified otherwise, softwood, S4S, moisture content 19% or less in accordance with following standards:
.1 CAN/CSA-O141.
.2 NLGA Standard Grading Rules for Canadian Lumber.
.3 CAN/CSA-Z809 or FSC or SFI certified.

.2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
.1 Board sizes: "Standard" or better grade.
.2 Dimension sizes: "Standard" light framing or better grade.
.3 Post and timbers sizes: "Standard" or better grade.

.3 Panel Materials:
.1 Douglas fir plywood (DFP): to CSA O121, standard construction.
.2 Canadian softwood plywood (CSP): to CSA O151, standard construction.

2.1 MATERIALS (Cont'd)

.3 (Cont'd)
.3 Plywood, OSB and wood based composite panels: to CAN/CSA-O325.

.4 Pressure Treated Lumber: Garbage enclosure panels, all curbs, parapets and blocking around windows shall be S-P-F- No. 2 Factory Treated with preservative to CSA 080. All pressure treated wood on Garbage enclosure to be brown in colour instead of green.

2.2 ACCESSORIES

.1 Fasteners: to CAN/CSA-G164, for exterior work and interior highly humid areas. Fasteners to be compatible with pressure- treated wood.

.2 Nails, spikes and staples: to CSA B111.

.3 Bolts: 12.5 mm diameter unless indicated otherwise, complete with nuts and washers.

.4 Proprietary fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, recommended for purpose by manufacturer.

.5 Transition membrane: self adhering membrane compatible with system products on project.
.1 Acceptable product: Henry Blueskin Butyl Flash or Soprema Sopraseal Stick 1100 TC.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for rough carpentry installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate.
.2 Inform Consultant of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

.1 Comply with requirements of National Building Code of Canada (NBC), supplemented by the following paragraphs.

.2 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding and other work as required.

.3 Align and plumb faces of furring and blocking to tolerance of 1:600.

.4 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.

.5 Install wood cants, fascia backing, nailers, curbs and other wood supports as required and secure using galvanized steel fasteners.

.6 Install wood backing, dressed, tapered and recessed slightly below top surface of roof insulation for roof hopper.

.7 Install sleepers as indicated.

.8 Use caution when working with particle board. Use dust collectors and high quality respirator masks.

.9 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.

.10 Countersink bolts where necessary to provide clearance for other work.

.11 Install transition membrane to areas indicated on drawings.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.3 CLEANING (Cont'd)

.3 Waste Management: separate waste materials in accordance with Section 01 74 21 - Waste Management and Disposal.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

PART 1 - GENERAL

1.1 Related Sections

.1 Section 06 47 00 - Plastic Laminates.

.2 Section 07 92 10 - Joint Sealers.

.3 Section 06 61 16 - Solid Surfacing Fabrications.

1.2 References

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC)
.1 AWMAC Quality Standards for Architectural Woodwork 1998.

.2 Canadian General Standards Board (CGSB).
.1 CAN/CG SB-17.20-M88, Adhesive, Contact, Brushable.

.3 Canadian Standards Association (CSA)
.1 CSA B111-1974 (R1998) 1974, Wire Nails, Spikes and Staples.
.2 CSA O115-M1982 M1982, Hardwood and Decorative Plywood.
.3 CSA O121-M1978 (R1998) M1978, Douglas Fir Plywood.
.4 CAN/CSA-O141-91 (R1999) 91, Softwood Lumber.
.5 CSA O151-M1978 (R1998) M1978, Canadian Softwood Plywood.
.6 CAN3-O188.1-M78 M78, Interior Mat-Formed Wood Particleboard.
.7 CSA Z760-94, life cycle assessment.

.4 National Lumber Grades Authority (NLGA)
.1 Standard Grading Rules for Canadian Lumber 2000.

1.3 Shop Drawings

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate details of construction, profiles, jointing, fastening and other related details.
.1 Scale: profiles full size, details 1/2 full size.

1.3 Shop Drawings (Cont'd)

.3 Indicate all materials, thicknesses, finishes and hardware.

.4 Indicate locations of all service outlets in casework, typical and special installation conditions, and all connections, attachments, anchorage and location of exposed fastenings.

1.4 Delivery, Storage, and Handling

.1 Protect millwork against dampness and damage during and after delivery.

.2 Store millwork in ventilated areas, protected from extreme changes of temperature or humidity.

PART 2 - PRODUCTS

2.1 Materials

.1 Softwood lumber: unless specified otherwise, S4S, moisture content 8 % or less in accordance with following standards:
.1 CAN/CSA-O141.
.2 NLGA Standard Grading Rules for Canadian Lumber.
.3 AWMAC custom premium grade, moisture content as specified.

.2 Machine stress-rated lumber is acceptable for all purposes.

.3 Hardwood lumber: moisture content 6% or less in accordance with following standards:
.1 National Hardwood Lumber Association (NHLA).
.2 AWMAC custom premium grade maple.

.4 Douglas fir plywood (DFP): to CSA O121, standard construction.

.5 Canadian softwood plywood (CSP): to CSA O151-M1978 (R1998), standard construction.

.6 Hardwood veneer plywood: to CSA O115, AWMAC, clear maple.

.7 Nails and staples: to CSA B111.

2.1 Materials (Cont'd)

.8 Wood screws: type and size to suit application.

.9 Splines: wood.

.10 Sealant: 07 92 10 - Joint Sealing, clear silicone.

.11 Hardware:
.1 Plastic grommets: 75 mm diameter plastic grommets to allow passage of electrical plugs.

2.2 Manufactured

.1 Casework.
.1 Fabricate caseworks to AWMAC premium quality grade.
.2 Particle core plywood not acceptable for use in this section.

.2 Cabinets.
.1 Doors: to be 19mm thick hardwood plywood stain grade clear maple veneer with 6 x 19 mm solid clear maple edging, mitred at corners, glued and nailed.
.2 Gables and shelves: to be 19mm plywood core, stain grade clear maple veneer with 6 x 19 mm solid clear maple edging on all exposed edges, glued and nailed.
.3 Concealed backs: to be 6 mm plywood core, stain grade clear maple veneer.

.3 Drawers
.1 Fabricate drawers to AWMAC premium grade supplemented as follows:
.1 Sides and Backs.
.1 Clear Maple veneer plywood, 13mm thick.
.2 Bottoms.
.1 Clear Maple veneer plywood, 13 mm thick.
.3 Fronts.
.1 19 mm plywood core stain grade clear maple veneer with mitered 6 x 19 solid clear maple edging, glued and nailed.

.4 Desks

2.2 Manufactured (Cont'd)

.4 (Cont'd)
.1 Panels & Gables: to be 19mm thick hardwood plywood stain grade clear maple veneer with 6 x 19 mm solid clear maple edging, mitred at corners, glued and nailed.

2.3 Fabrication

.1 Set nails and countersink screws, apply wood filler (colour to match) to indentations, sand smooth and leave ready to receive finish.

.2 Shop install cabinet hardware for doors, shelves and drawers. Recess shelf standards unless noted otherwise.

.3 Shelving to cabinetwork to be adjustable unless otherwise noted.

.4 Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes and other fixtures.

.5 Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings.

.6 Provide removable back panels as noted and required for access to pipe chases.

2.4 Finishing

.1 Fitments and cabinet work of wood construction shall be prefinished by woodwork supplier before delivery to site.

.2 Surface to be finished shall be dry and thoroughly cleaned, free of all machine, tool and sandpaper marks, dust, grease, or any material liable to impair the finish work.

.3 Finished work shall be uniform as to sheen, colour, and texture.

.4 Materials:
.1 2 coats of water-clear gloss polyurethane.
.2 One top coat of water-clear satin polyurethane finish, prepared and installed in accordance with MPIs printed best practices.

PART 3 - EXECUTION

3.1 Installation

.1 Do architectural woodwork to Quality Standards of the Architectural Woodwork Manufacturers Association of Canada (AWMAC), except where specified otherwise.

.2 Install prefinished millwork at locations shown on drawings. Position accurately, level, plumb straight.

.3 Fasten and anchor millwork securely. Provide solid blocking in walls as required for installation of millwork. Provide heavy duty fixture attachments for wall mounted cabinets.

.4 Use draw bolts in countertop joints.

.5 Scribe and cut as required to fit abutting walls and to fit properly into recesses and to accommodate piping, columns, fixtures, outlets or other projecting, intersecting or penetrating objects.

.6 At junction of plastic laminate counter back splash and adjacent wall finish, apply small bead of sealant.

.7 Adjust hardware accurately and securely in accordance with manufacturer's directions.

3.2 Cleaning

.1 Clean millwork and cabinet work inside cupboards and drawers and outside surfaces.

3.3 Protection

.1 Protect millwork and cabinet work from damage until final inspection.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.

.2 Canadian Standards Association (CSA International)
.1 CSA O112-M1977(R2001, Standards for Wood Adhesives.
.2 CAN/CSA O141-91(R1999), Softwood Lumber.
.3 CSA O151-M1978(R1998), Canadian Softwood Plywood.

.3 Environmental Choice Program (EPC)
.1 CCD-044-95, Adhesives.
.2 CCD-045-95, Sealants and Caulking Compounds.

.4 National Electrical Manufacturers Association (NEMA)
.1 NEMA LD-3-95

1.2 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Samples:
.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit duplicate samples of joints, edging, cutouts and postformed profiles.

.3 Manufacturer's Instructions:
.1 Submit manufacturer's installation instructions.

.4 Closeout Submittals:
.1 Provide maintenance data for laminate work for incorporation into manual specified in Section 01 78 00 - Closeout Procedures/ Submittals.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:
.1 Deliver, handle, store and protect materials of this section in accordance with Section 01 61 00 - Common Product Requirements.
.2 Maintain relative humidity between 25 and 60% at 22 degrees C during storage and installation.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Laminated plastic for postforming work: to NEMA LD 3.
.1 Type: Postforming.
.2 Grade: HGP.
.3 Size: 1.016 mm thick.
.4 Colour: selected from Manufacturers range for colour, pattern and finish.
.5 Acceptable manufacturers: Formica, Arborite, Wilsonart.

.2 Plywood core: to CSA O151 solid two sides, 19 mm thick.

.3 Laminated plastic adhesive: contact adhesive to CAN/CGSB-71.20.
.1 Test for acceptable VOC emissions in accordance with ASTM D 2369 and ASTM D 2832.

.4 Sealer: water resistant sealer or glue acceptable to laminate manufacturer.
.1 Test for acceptable VOC emissions in accordance with ASTM D 2369 and ASTM D 2832.

.5 Sealants:07 92 10.

.6 Draw bolts and splines: as recommended by fabricator.

2.2 FABRICATION

.1 Comply with NEMA LD 3, Annex A.

.2 Obtain governing dimensions before fabricating items which are to accommodate or abut appliances, equipment and other materials.

2.2 FABRICATION (Cont'd)

.3 Ensure adjacent parts of continuous laminate work match in colour and pattern.

.4 Veneer laminated plastic to core material in accordance with adhesive manufacturer's instructions. Ensure core and laminate profiles coincide to provide continuous support and bond over entire surface. Use continuous lengths up to 3000 mm. Keep joints 600 mm from sink cutouts.

.5 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.

.6 Use straight self-edging laminate strip for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 degrees. Do not mitre laminate edges.

.7 Apply laminate backing sheet to reverse side of core of plastic laminate work.

.8 Apply laminated plastic liner sheet to interior of cabinetry where indicated.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

.1 Install work plumb, true and square, neatly scribed to adjoining surfaces.

.2 Make allowances around perimeter where fixed objects pass through or project into laminated plastic work to permit normal movement without restriction.

.3 Use draw bolts and splines in countertop joints. Maximum spacing 450 mm on centre, 75 mm from edge. Make flush hairline joints.

3.2 INSTALLATION (Cont'd)

.4 Provide cutouts for inserts, grilles, appliances, outlet boxes and other penetrations. Round internal corners, chamfer edges and seal exposed core.

.5 At junction of laminated plastic counter back splash and adjacent wall finish, apply small bead of sealant.

.6 Site apply laminated plastic to units as indicated. Adhere laminated plastic over entire surface. Make corners with hairline joints. Use full sized laminate sheets. Make joints only where indicated approved. Slightly bevel arrises.

.7 For site application, offset joints in plastic laminate facing from joints in core.

3.3 PROTECTION

.1 Cover finished laminated plastic veneered surfaces with heavy kraft paper or put in cartons during shipment. Protect installed laminated surfaces by approved means. Do not remove until immediately before final inspection.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Perform care and cleaning with NEMA LD 3, Annex B.

.3 Remove traces of primer, caulking, epoxy and filler materials; clean doors and frames .

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Environmental Choice Program (EPC)
- .1 CCD-044-95, Adhesives.
- .2 CCD-045-95, Sealants and Caulking Compounds.

.2 Related Sections
- .1 Joint Sealing 07 92 10.
- .2 Architetcural Woodwork 06 40 00.

1.2 SUBMITTALS

.1 Product Data:
- .1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Samples:
- .1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
- .2 Submit duplicate samples of joints, edging and cutouts.

.3 Manufacturer's Instructions:
- .1 Submit manufacturer's installation instructions.

.4 Closeout Submittals:
- .1 Provide manufacturer's care and maintenance data, including repair and cleaning for Corian work for incorporation into manual specified in Section 01 78 00 - Closeout Procedures/ Submittals.
  - .1 A maintence kit shall be submitted.

1.3 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:
- .1 Deliver, handle, store and protect materials of this section in accordance with Section 01 61 00 - Common Product Requirements.
- .2 Maintain relative humidity between 25 and 60% at 22 degrees C during storage and installation.

1.3 DELIVERY, STORAGE, AND HANDLING (Cont'd)

.1 (Cont'd)
.3 Handle materials to prevent damage to finished surfaces. Provide protective covering to prevent physical damage or staining following installation for duration of project.

1.4 WARRANTY

.1 Provide manufacturer's warranty against defects in materials. Warranty shall provide material and labour to repair or replace defective materials.

.2 Warranty period: Ten years from date of substantial completion.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Cast, non-porous, filled polymer.
.1 Corian solid surface by Dupont.

.2 Solid Surface Material:
.1 Non-porous, homogeneous material maintaining the same composition throughout the part with a composition of acryclic polymer, aluminum trihydrate filler and pigment; not coated, laminated or of composite construction; meeting following criteria:
.1 Flammability: Flame Spread Index: 0 and smoke Development Index: 5 when tested to CAN/ULC-S102.

.3 Thickness: 25 mm for counters.

.4 Size: as indicated on drawings. All counters and sills to be one continuous piece.

.5 Colour: arrowroot.

.6 Edge treatment: bullnose radius top and bottom of edge.

.7 Sealant: section 07 92 10 Joint Sealing.

.8 Adhesive for bonding to other products: One component silicone to ASTM C920.

2.1 MATERIALS (Cont'd)

.9 Sealant: A standard mildew-resistant, FDA/UL recognixed silicone colour coordinated sealant or clear silicone sealants.

2.2 FABRICATION

.1 Fabricate components in shop for continuous one piece application, to sizes and shapes indicate, in accordance with approved shop drawings and solid surface manufacturer requirements. Provide factory cutouts for plumbing fittings and bath accessories as indicated on drawings.

.2 Where indicated, thermoform corners and edges or other objects to shapes and sizes indicated on Drawings, prior to seaming and joining. Cut components larger than finished dimensionsand sand edges to remove nicks and scratches. Heat entire component uniformly prior to forming.

.3 Ensure no blistering, whitening and cracking of components during forming.

.4 Provide holes and cutouts for plumbing accessories as indicated on Drawings.

.5 Rout finish component edges to a smooth, uniform finish. Rout cutouts, then sand edges smooth. Repair or reject defective or inaccurate work.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions:
.1 Examine substrates and conditions, with fabricator present for complaince with requirements for installation tolerances and other conditions affecting performance of work. Proceed with installation only after unsatisfactory conditions have been corrected.
.2 Verify actual site dimensions and location of adjacent materials prior to commencing work.
.3 Examine cabinets upon which counter tops are to be installed. Verify cabinets are levelto within 3 mm in 3m (18" in 10'0").

3.1 EXAMINATION (Cont'd)

.1 (Cont'd)

.4 Notify Consultant in writing of any conditions which would be detrimental to installation.

.2 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 INSTALLATION

.1 Install components plumb, level, rigid, scribed to adjacent finishes in accordance with reviewed Shop Drawings and Product installation details.

.2 Route radii and contours to template. Anchor securely to base component or other supports. Align adjacent components and form seams to comply with manufacturer's written recommendations using adhesive in colour to match work. Carefully dress joints smooth, remove surface scratches and clean entire surface.

.3 Install countertops with no more than 3 mm (1/8") sag, bow or other variation from a straight line.

.4 Adhere topmount sinks/bowls to countertops using manufacturer recommended adhesives and colour-coordinated silicone sealant.

.5 Seal between wall and cmponents with joint sealant as specified herein and in Section 07 92 10, as applicable.

.6 Keep components and hands clean during installation. Remove adhesives, sealants and other stains. Ensure components are clean on date of Substantial Performance of the Work.

3.3 REPAIR

.1 Repair minor imperfections and cracked seams and replace areas of severly damaged surfaces in accordance with manufacturer's "Technical Bulletins".

3.4 SITE QUALITY CONTROL

.1 Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.5 CLEANING

.1 Remove excess adhesive and sealant from visible surfaces.

.2 Clean surfaces in accordance with manufacturer's " Care and Maintenance Instructions".

3.6 PROTECTION

.1 Provide protective coverings to prevent physical damage or staining following installation for duration of Project.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 07 26 00 - Air and Vapour Barriers.

.2 Section 07 46 15 - Aluminum Siding and Soffits.

1.2 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
.1 ASTM D1621, Standard Test Method for Compressive Properties of Rigid Cellular Plastics.

.2 Underwriters Laboratories of Canada (ULC).
.1 CAN/ULC-S701-2001, Thermal Insulation, Polystyrene, Boards and Pipe Coverings.

1.3 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

PART 2 - PRODUCTS

2.1 INSULATION

.1 Foundation Insulation and under slab insulation: Extruded polystyrene (XPS): to CAN/ULC-S701-2001.
.1 Type: 4.
.2 Thickness: As indicated.
.3 Size: 610 x 2440 mm.
.4 Edges: ship lapped.

2.1 INSULATION (Cont'd)

.1 (Cont'd)
.5 Compressive strength: ASTM D 1621-00 min. 210 kPa.

.2 Wall Rigid Insulation: breathable rigid polyisocyanurate foam insulation to CAN/ULC-S704-03 with coated glass fiber facer laminated to both sides.
.1 Type: 1, Class 3.
.2 Thickness: As indicated.
.3 R value: R 5.6 per inch min.
.4 Edges: square.

.3 Roof insulation: refer to Section 07 51 00.

2.2 ACCESSORIES

.1 Mechanical fasteners for foundation walls: impale type, neoprene serrated 50 mm dia. head, length to suit insulation.

.2 Mechanical fasteners: screw type with plastic washers, length to suit insulation.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Mechanically fastened as per manufacturer recommendations.

3.2 WORKMANSHIP

.1 Install insulation after building substrate materials are dry.

.2 Install insulation to maintain continuity of thermal protection to building elements and spaces.

3.2 WORKMANSHIP (Cont'd)

.3 Cut and trim insulation neatly to fit spaces. Butt joints tightly, offset vertical joints. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.4 Any unauthorized covering will be required to be removed for examination.

3.3 EXAMINATION

.1 Examine substrates and immediately inform Consultant in writing of defects.

.2 Prior to commencement of work ensure:
.1 Substrates are firm, straight, smooth, dry, free of snow, ice or frost, and clean of dust and debris.

3.4 RIGID INSULATION INSTALLATION

.1 Secure insulation boards with clips and disks spacing as recommended by manufacturer.

.2 Ensure that any holes or gaps have been covered and the air/vapour barrier is complete and continuous.

.3 Using a sharp edged knife, trim all pieces of insulation to fit flush with adjacent surfaces. Gaps greater than 1/8" are to be filled with similar insulating material.

3.5 PERIMETER FOUNDATION INSULATION

.1 Interior application: extend boards vertically below slab as indicated.

.2 Under slab application: extend boards as indicated. Lay boards on level compacted fill.

3.6 CLEANING

.1 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

.1 CSA Group (CSA)
.1 CSA B149 PACKAGE-10, Consists of B149.1, Natural Gas and Propane Installation Code and B149.2, Propane Storage and Handling Code.

.2 Underwriters Laboratories of Canada (ULC)
.1 CAN/ULC-S604-2012, Standard for Factory-Built Type A Chimneys.
.2 CAN/ULC-S702-2012, Standard for Mineral Fibre Insulation for Buildings.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for acoustic insulation and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect from damage.
.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: in accordance with Section 01 74 21 - Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 INSULATION

.1 Acoustic Batt for interior partitions and floor/ceiling: to ASTM E492.
.1 Thickness to be full width of stud.
Acoustic batt insulation to be composed of preformed inorganic fibres and bonded with thermosetting resin to controlled density and thickness conforming to CAN/ULC S702-97.

.2 Batt and blanket mineral fibre to ASTM 665.
.1 Type 1.
.2 Roxul Comfort Batt, thickness as indicated.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for blanket insulation application in accordance with manufacturer's written instructions.
.1 Visually inspect substrate.
.2 Inform Consultant of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSULATION INSTALLATION

.1 Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

.2 Do not compress insulation to fit into spaces.

.3 Keep insulation minimum 75 mm from heat emitting devices such as recessed light fixtures, and minimum 50 mm from sidewalls of CAN/ULC-S604 Type A chimneys and CSA B149.1 and CSA B149.2 Type B and L vents.

.4 Do not enclose insulation until it has been inspected and approved by Consultant.

3.3 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
   .1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.
   .1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 07 21 13 - Board Insulation.

1.2 REFERENCES

.1 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.

.2 ASTM
.1 ASTM E 1745 Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under concrete slabs.
.2 ASTM E154, Standard Test Methods for Water Vapor Retarders Used in Contact with Earth Under Concrete Slabs, on Walls or as Ground Cover.
.3 ASTM D 1709, Plastic Film Impact Resistance.

1.3 SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet and include:
.1 Product characteristics.
.2 Performance criteria.
.3 Limitations.
.4 Compatibility of all components.

1.4 QUALITY ASSURANCE

.1 Submit mock-ups in accordance with Section 01 45 00 - Quality Control.

.2 Construct mock-up of air vapour barrier on masonry backwall, transition membrane and thru wall flashing installation including one lap joint, one inside corner and window frame transition membrane. Mock-up may be part of finished work.

1.4 QUALITY ASSURANCE (Cont'd)

.3 Mock-up will be used to judge quality of work, substrate preparation, and material application.

.4 Locate where directed, where indicated.

.5 Allow 48 hours for inspection of mock-up by Consultant before proceeding with vapour barrier work.

.6 When accepted, mock-up will demonstrate minimum standard of quality required for this work. Approved mock-up may remain as part of finished work.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 UNDER SLAB SHEET VAPOUR BARRIER

.1 Plastic Vapour Retarder: Vapour retarder membrane to be manufacturered from polyolefin resins, and be tested in accordance with ASTM E1745 and meet the following minimum requirements:
.1 Maximum Water Vapour Permeance: As received, ASTM E96, 0.0063 Perms.
.2 Maximum Water Vapour Permeance: After Wetting and Drying, 0.0052 Perms.
.3 Resistance to Organisms and Substrates in Contact with Soil: ASTM E 154, Section 13, 0.052 Perms.
.4 Puncture Resistance: ASTM D 1709, Method B, 3,700 Grams.
.5 Tensile Strength: ASTM E 154, Section 9, 72 lbs. Force/Inch.
.6 Thickness of Retarder (plastic): ACI 302.1R, not less than 15 mils.

.2 Acceptable Material: Perminator 15 mil by W.R. Meadows.

2.1 UNDER SLAB SHEET VAPOUR BARRIER (Cont'd)

.3 Seam Tape: High density polyethylene tape with pressure sensitive adhesive. Minimum width 100 mm.

2.2 AIR BARRIER

.1 Self adhering sheet vapour permeable air barrier membrane.
.1 Acceptable Product: IKO Aqua Barrier VB, Henry Blueskin VP160, Soprema Sopraseal Stick VP.

2.3 THRU WALL FLASHING

.1 Thru Wall Flashing: acceptable product, IKO AquaBarrier TWF, Bakor TWF, Sopraseal WFM and self-adhesive thru-wall flashing compatible with system products on project.

2.4 SHEET VAPOUR BARRIER

.1 Polyethylene film: to CAN/CGSB-51.34, 6 mil thick.

2.5 MEMBRANE

.1 Transition Membrane - self adhering membrane compatible with system products on project.
.1 Acceptable Product: Henry Blueskin Butyl Flash, Soprema Sopraseal Stick 1100TC.

2.6 ACCESSORIES

.1 Joint sealing tape: high density polyethylene tape with pressure sensitive adhesive, minimum width 100 mm compatible with system products.

.2 Sealant: compatible with vapour retarder materials, recommended by vapour retarder manufacturer.

.3 Primer, Liquid sealant, sealant and mastic as recommended by manufacturers for installation of air barrier, transition membrane and thru wall flashing.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Ensure services are installed and inspected prior to installation of retarder.

.2 Install sheet vapour retarder on warm side of floor assemblies prior to installation of slab to form continuous retarder.

.3 Use sheets of largest practical size to minimize joints.

.4 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

.5 Flexible membranes to wrap all window and door bucks and tie into adjacent vapour barriers.

3.2 PERIMETER SEALS

.1 Seal perimeter of sheet vapour barrier as follows:
.1 Apply continuous bead of sealant to substrate at perimeter of sheets.
.2 Lap sheet over sealant and press into sealant bead.
.3 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

.2 Air/Vapour Barrier self adhesive flexible membrane:
.1 Tie-in to window frames, door frames, roofing system and at the interface of dissimilar materials with transition membrane as indicated in drawings. Refer to manufacturers standard details.
.2 All interfaces and penetrations of dissimilar materials to be sealed to air vapour barrier.
.3 Ensure no wrinkles or air pockets are present.

3.3 EXTERIOR SURFACE OPENINGS

.1 Cut sheet vapour retarder to form openings and ensure material is lapped and sealed to frame.

3.4 LAP JOINT SEALS

.1 Seal lap joints of sheet vapour barrier as follows:
.1 Attach first sheet to substrate.
.2 Apply continuous bead of sealant over solid backing at joint.
.3 Lap adjoining sheet minimum 150 mm and press into sealant bead.
.4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.5 AIR/VAPOUR BARRIER

.1 Install air/vapour barrier on exterior walls prior to installation of insulation.

.2 Use sheets of largest practical size to minimize joints.

.3 Inspect for continuity, Repair punctures and tears with sealing tape before work is concealed.

.4 Seal all joints with sealing tape.

3.6 VAPOUR RETARDER BELOW SLAB

.1 Install Vapour retarder below floor slab immediately prior to concrete placement and in accordance with ASTM E 1643-98.

.2 Prepare surfaces in accordance with manufacturer's recommendations.

.3 Unroll vapour retarder with the longest dimension parallel with the direction of the pour.

.4 Overlap joints 150 mm and seal with manufacturer's tape.

.5 No penetrations of the vapour retarder is allowed except for reinforcing steel and permanent utilities.

.6 Repair damaged areas by cutting patches of vapour retarder, overlapping damaged areas 150mm and taping all four sides with tape.

.7 Restrict traffic over vapour retarder.

3.6 VAPOUR RETARDER BELOW SLAB (Cont'd)

.8 Prior to placing concrete inspect vapour retarder and repair all tears and punctures.

3.7 TRANSITION MEMBRANE INSTALLATION

.1 Examination: Verify that surfaces and conditions are ready to accept the Work of this section. Notify Consultant in writing of any discrepancies. Commencement of the work or any parts there of shall mean acceptance of the prepared substrate.

.2 Ensure all surfaces are free of oil, dirt & contaminants. Area must be dry & sound.

.3 Primer:
.1 Apply primer for membrane at rate recommended by manufacturer.
.2 Primed surfaces not covered by membrane during the same working day must be re-primed.

.4 Transition membrane:
.1 Tie-in to door frames, windows and openings for services including pipes, vents, ductwork, canopy soffits, at top of foundation wall up min. 300m on exterior wall sheathing, and at the interface of dissimilar materials with transition membrane and as indicated. Refer to manufacturers standard details.
.2 Ensure all projections, including wall ties, are properly sealed with a trowel or caulk application of liquid sealant.
.3 Ensure no wrinkles or air pockets are present.
.4 Ensure product is compatible with foamed-in-place insulation system.

3.8 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

PART 1 GENERAL

1.1 SECTION INCLUDES

.1 Aluminum Siding and Soffit.

.2 Aluminum trim and accessories.

1.2 RELATED SECTIONS

.1 Section 07 62 00 – Sheet Metal Flashing and Trim.

.2 Section 06 10 10 – Rough Carpentry.

1.3 REFERENCES

.1 ASTM D 958 - Practice for Determining Temperatures of Standard ASTM Molds for Test Specimens of Plastics.

.2 AAMA 2605-05 - Voluntary Specification, Performance requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

.3 AAMA 2604 - Voluntary Specification, Performance requirements and Test Procedures for High Performing Organic Coatings on Aluminum Extrusions and Panels.

.4 AAMA 2603 - Voluntary Specification, Performance requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.

.5 ASTM E2768-11 – Standard Test Method for Extended Duration Surface Burning Characteristics for Building Materials (30 min Tunnel Test). Results: Zero Flame Spread, Smoke Developed Index of 5. Meets criteria for Class A fire rating.

.6 ASTM E136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C

.7 CAN/ULC S114 – Standard method of test for determination of non-combustibility in building materials.

1.4 PERFORMANCE REQUIREMENTS

.1 Components: Design and size components to withstand dead and live loads caused by positive and negative wind pressure acting normal to plane of soffit as calculated in accordance with applicable code.

.2 Movement: Accommodate movement within system without damage to components or movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.

1.5 SUBMITTALS

.1 Submit under provisions of Section 01 33 00.

.2 Product Data: Manufacturer's data sheets on each product to be used, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

.3 Shop Drawings: Indicate dimensions, layout, joints, expansion joints, construction details, methods of anchorage, and interface with adjacent materials.

.4 Samples: For each finish product and colour specified, two samples, minimum size 2 inches (51 mm) by 3-1/2 inches (89 mm), representing actual product, color, and gloss.

1.6 DELIVERY, STORAGE, AND HANDLING

.1 Package and store products under cover in manufacturer's unopened packaging until ready for transport and installation.

.2 Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.

.3 Store prefinished material off ground protected from weather, to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.

.4 Prevent contact with materials capable of causing discoloration or staining.

1.7 WARRANTY

.1 Provide a warranty against cracking, peeling and gloss/color retention within the guidelines stated by the American Aluminum Manufactures Association (AAMA).
1. AAMA 2604 15 Year manufacturer's Warranty

PART 2 PRODUCTS

2.1 MATERIAL MANUFACTURERS

.1 ACCEPTABLE MANUFACTURE: Mayne Coatings Corp.: 27575-50th Ave. ; Langley, BC; Canada V4W 0A2; Tel: 604-607-6630; Fax: 604-607-6680; Email: info@longboardproducts.com;
Web: www.longboardproducts.com

2.2 MATERIALS

.1 Aluminum Siding and Soffits: Extruded Aluminum Longboard Aluminum Siding and Soffits with Alluminate bonded film finish and integrated venting system.
1. Size:
102mm (4”) V Groove Siding & Soffit.

.2 Accessories: Provide matching prefinished aluminum perforated vent strip starter strips, J track, inside and outside corners, base, U and flat caps.

.3 Framing system: Provide clips and fasteners per manufacturers recommendation.

2.3 FINISHES:

.1 Finish/Colour:
1. Two colours to be selected by Consultant from manfucaturer’s standard range.

2.4 FABRICATION

.1 Prepare surfaces, pre-treat and coat components in accordance with AAMA 2604 and 2605 Quality Standards and applicable European standards for the coating material specified.

.2 Wrap and package coated components using methods suitable for transit and covered site storage without damage.

PART 3 EXECUTION

3.1 EXAMINATION

.1 Do not begin installation until colors have been verified.

.2 Verify framing members are ready to receive panel system.

.3 Notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

.1 Clean surfaces thoroughly prior to installation.

.2 Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the material under the project conditions.

3.3 INSTALLATION

.1 Install in accordance with manufacturer's installation instructions.

.2 Barrier Protection: Do not install over cementitious materials, dissimilar metals or pressure treated material without adequate barrier protection.

.3 Install aluminum clips to underside canopy structure to form a perfectly plumb and horizontal support.

.4 Fasten siding to supports; aligned, level, and plumb.

.5 Locate joints over supports. Stagger joints to form a random board pattern.

.6 Use concealed fasteners unless otherwise approved by Architect.

.7 Install soffits, and accessories in accordance with best practice, with all joint members plumb and true.

3.4 FIELD QUALITY CONTROL

.1 After installation of soffits, check entire surface for obvious flaws or defects.

.2 Replace and repair any problem areas, paying close attention to the substrate for causes of the problem.

3.5 CLEANING

.1 After application of soffits, clean as necessary to remove all fingerprints and soiled areas.

.2 Upon completion of soffit application, clean entire area, removing all scrap, packaging, and unused materials related to this work.

3.6 PROTECTION

.1 Protect installed products until completion of project.

.2 Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION

1.1 GENERAL

.1 Conform to General Requirements, Division 1.

1.2 RELATED WORK

.1 Section 06 10 10 Rough Carpentry - Wood cant strips, facias, stops, blocking, curbs and nailing strips.

.2 Section 07 62 00 Metal Flashing and Trim - Metal Flashing

1.3 REFERENCE STANDARD

.1 Do roofing work in accordance with applicable, standard in Canadian Roofing contractors Association (CRCA) Roofing Specifications Manual and to FM class 1-60, except where specified otherwise.

.2 Do priming for asphalt roofing in accordance with CGSB 37-GP-15M-76 (R84).

.3 Roofing Membrane System Load-Strain Properties: Provide a roofing membrane identical to component systems that have been successfully tested by a qualified independent testing and inspecting agency to meet the following minimum load-strain properties at membrane failure when tested according to ASTM D 2523:

Tensile strain at failure, at -18 deg C: 82 kN/m machine direction, minimum.

Tensile strain at failure, at -18 deg C: 76 kN/m cross-machine direction, minimum.

.4 CAN/ULC-S704-2001 – Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced

1.4 STORAGE AND HANDLING

.1 Provide and maintain dry, off-ground weatherproof storage.
.2 Store rolls of felt on end.
.3 Remove only in quantities required for same day use.
.4 Place plywood runways over work to enable movement of material and other traffic.
.5 At no time shall the shipping wrap of any of the roofing products be used as the primary weather protection. All products must be protected by tarps.

1.5 IDENTIFICATION AND DELIVERY

.1 Indicate on containers or wrappings of materials:

.1 Manufacturer’s name and brand.
.2 Compliance with applicable standard.

.2 Deliver materials in original containers, sealed, with label intact.

.3 Deliver fasteners in boxes or kegs and keep in protective storage until used. Do not oil or grease fasteners.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Stop work when temperature remains consistently below - 18C, especially when wind chill effect would tend to set bitumen before proper adhesion takes place.

.2 Use only dry materials and apply only during weather that will not introduce moisture into roofing system.

1.7 WARRANTY

.1 Upon project substantial completion, the Roofing Contractor shall deliver a two (2) year material and workmanship warranty.

.2 The primary material manufacturer shall issue to the Owner a complete system guarantee against defective workmanship and materials for a period of fifteen (15) years.

1.8 MAINTENANCE

.1 Arrange for roofing manufacturer to conduct periodic visual inspections of roof surface in year two (2), year five (5) and year ten (10) of this warranty. Roofing manufacturer shall provide rooftop visual inspections, preventative maintenance and limited housekeeping services. Roofing manufacturer to provide roof inspection reports based upon regular inspections to Owner corresponding to Maintenance requirements.

.2 Record noted deficiencies and arrange for their repair under warranty.

1.9 COMPATIBILITY

.1 Compatibility between components of roofing system is essential. Bituminous adhesives, insulation, felts, and surface coatings, which are to be incorporated into system, must be compatible with each other.

.2 Provide written declaration that components of roofing system are compatible.

2. PRODUCTS

2.1 MATERIALS

.1 Roofing felts:

.1 Base Ply: Trilaminate composite felt, nonperforated, asphalt-coated, polyester/fibreglass/polyester reinforced sheet, dusted with fine mineral surfacing on both sides to meet requirements of ASTM D 4601, Type II and following properties: Breaking strength (per ASTM D 146) MD & XMD -35.0 kN/M; Tear Strength (per ASTM D 4073) MD&XD-1400 N

.2 Membrane felts to ASTM D2178-88A, Glass Fiber, Type IV.

.2 Asphalt: Type III Asphalt for Constructing built-up roof coverings to CAN/CSA A124.4-04

.3 Polymer-Modified Asphalt: SEBS-Modified, hot melt, asphalt adhesive, Low Temperature Flex, -25^{0}C, ASTM D3111

.4 Asphalt primer: ASTM D41

.5 Adhesives:
.1 2 ply felt vapour retarder: asphalt
.2 2 ply felt vapour retarder to base layer isocyanurate insulation to top layer isocyanurate insulation: asphalt
.3 Cover Board to Isocyanurate insulation: asphalt
.4 Base ply to Cover Board: asphalt
.5 Membrane felt interply: asphalt
.5 Base felt flashing interply: asphalt
.6 Flexible flashing sheet: polymer-modified asphalt
.7 Floodcoat: polymer-modified asphalt

.6 Asphalt Mastic: Conform to ASTM D4586 (Non-volative content: min. 75%; Resistance to Sag-not to exceed 6mm)

.7 Caulking: 1 part acrylic, high molecular weight polymer, flexible sealant, conform to CAN/CGSB 19.13-M87

.8 Underlay Board: Glass-faced gypsum board, to ASTM C1177M-08. Thickness:13 mm (1/2 inch)

.9 Vapour retarder felt: saturated roofing felts, No. 15 perforated organic felts to CSA-A123.3M

.10 Insulation:
- .1 Base Course and Top Course: ASTM C1013-85, Class 1 Polyisocyanurate with asphalt impregnated felt facer, provide minimum two layers of insulation for a total thickness of 152 mm (6.0 inches), 76 mm (3 inches per layer) and an R value of 17.5 per layer and to applicable energy codes if more stringent.
- .2 Cover Board: ASTM C208-72, Asphalt coated high density fiberboard. Thickness: of 13 mm (.5 inches)
- .3 Pre-engineered Tapered Insulation, Drain Sumps and Crickets: high density fibreboard; Drain sumps: 1220 mm x 1220 mm (48 inches x 48 inches), slope 100 mm to 50 mm (4 inches to 2 inches). Areas of tapered insulation, drain sumps, crickets, equipment crickets: minimum slope 1 ½% as shown on drawings and described on drawing notes; as supplied by Accuplane or Posi-Slope, or approved equal.

.11 Flashing Plies
- .1 Base Felt Flashing Plies: saturated roofing felts, No. 15 perforated organic felts to CSA-A123.3M
- .2 Flexible flashing sheet: Polyester-reinforced EPDM/SBR, polyester-reinforced membrane; Breaking Strength, to CGSB 37-GP-52M, min. 1200 N; Tear Strength, to CGSB 37-GP-52M, min. 300 N; Low Temperature Flex, to CGSB 37-GP-52M, -40^{0}C. with no cracking

.12 Gravel: to ASTM D1863-86. 6 to 12 mm in size well rounded, opaque, non-porous material. Washed and free of fines, moisture and long splinters.

.13 Polymer-Modified Mastic: Asphalt-compatible, Elongation @ 25°C., min. 900%, to ASTM D412; Recovery from 500% Elongation @ 25°C., min. 80%, to ASTM D412; Low Temperature Flexibility @ -35°C., no cracking, to ASTM D3111

.14 Accessories:
- .1 Nails: hot dipped galvanized steel, spiral head, 25 mm nailing disc. Minimum 25 mm. substrate penetration.
- .2 Flat caps or discs: flat metal 32 mm diameter not less than 0.25 mm thick.
- .3 Mechanical fasteners: as approved by Factory Mutual, length to suit application.
- .4 Precast Pavers: 600 mm x 600 mm x 50 mm steel wire reinforced precast concrete pavers meeting applicable CSA Standards. Insulation and pavers are to be placed at all access points on the roof (at access doors, top &

bottom of ladders).

.5 Reinforcing Mesh: woven glass fibres, conform to ASTM D 146 Grab Tensile

.6 Reflective aluminum paint: asphalt-compatible, conform to ASTM D 2824 Metallic Aluminum content % exceed 14.5%; Reflectance – Exceed 40%

.7 Insulated vent pipe sleeve flashing: Spun aluminum base with 75 mm flange. Rubber cap with stepped for various projection sizes and ring clamp.

.8 Extruded polystyrene insulation (pads under pavers), to CAN/CGSB 51.20-M87, type 4. Thickness to be 25 mm.

.9 Roof Tread: heavy asphaltic pad, fibreglass reinforced, surfaced with granule/sand, thickness: min. 9 mm

.10 Roof Drain: Copper body, locking cast bonnet with independent clamping ring, Flash-Tite Super-Drain by Lexcor or approved equal. See Mechanical Drawings for size of drains required.

.11 Miscellaneous Flashing (for protrusions through roof): provide Lexor pre-insulated gooseneck flashings for flexible conduits. Provide specialty sleeves by Lexcor at gas pipes, conduits, guy wires complete with bitumen protection cups.

2.2 PRODUCT QUALIFICATION REQUIREMENTS

.1 The owner reserves the right to make the final determination as to the equality and or superiority of submitted products. Requests for substitution for products specified herein shall be considered in accordance with provision of Section 01 25 00. In addition, substitute manufacturer must provide:

.1 List of five (5) projects where substitutes were used in the same configuration as specified (each project must be at least 500 m2). These projects must be in Ontario and within 200 km. of the Owner’s office and available for inspection by the Owner’s representative

.2 Proof of Manufacturer being registered at the ISO 14001 level

.3 List of locations where manufacturer has provided daily work-in-progress inspections

3. EXECUTION

3.1 PLANT AND EQUIPMENT

.1 Use only kettles equipped with thermometers or gauges in good working order. Use a separate kettle for the polymer-modified asphalt.

.2 Locate kettles in safe place outside of building. When locating kettles, give consideration to direction of

prevailing winds, building fans and air handling units to minimize possibility of smoke and fumes entering surrounding occupied buildings.

.3 Maintain continuous supervision while kettles are in operation and provide metal covers for kettles to smother flames in case of fire. Provide suitable fire extinguishers.

.4 Maintain efficiency of kettles and equipment by frequent cleaning. Remove all carbonized bitumen.

.5 Use only fiberglass roofing mops.

.6 Do not leave used roofing mops unattended on roof; store away from building and combustible materials.

3.2 PROTECTION

.1 Cover walls and adjacent work where materials hoisted or used.

.2 Use warning signs and barriers. Maintain in good order until completion of work.

.3 Clean off drips and smears of bituminous material.

.4 Dispose of rain water off roof and away from face of building until roof drains or hoppers installed and connected.

.5 Prevent traffic over completed roofing except where required by work above roof level. Comply with precautions deemed necessary by Roofing Inspector. Repair damage caused by non-compliance with Roofing Inspector requirements.

.6 At end of each day’s work or when stoppage occurs due to inclement weather provide protection for completed work and materials out of storage.

3.3 EXAMINATION OF ROOF DECKS

.1 Examine roof decks and immediately inform the Architect and General Contractor in writing of defects.

.2 Ensure deck is sloped to drain where indicated on drawings.

.3 Prior to commencement of work ensure:

.1 Decks are firm, straight, smooth, dry, free of snow, ice or frost, and swept clean of dust and debris.

.2 Curbs have been built.

.3 Plywood and lumber nailer plates have been installed to walls and parapets as required.

3.4 ACOUSTIC STEEL DECK

.1 Prior to placing roofing materials over acoustic steel decks, place batt insulation in flutes all in moderate contact. Batt insulation will be provided by this Section 07 51 00 Roofing Contractor.

3.5 ROOFING ASPHALT

.1 Apply asphalt and polymer-modified asphalt at plus or minus 3^0 C of EVT indicated on Bill of Lading.

.2 Maintain asphalt in tanker at or below its FBT indicated.

3.6 UNDERLAY BOARD

.1 Install underlay board mechanically-fastened to conform with FM 1-60 requirements.

3.7 VAPOUR RETARDER

.1 Install two plies #15 felt fully-bonded with asphalt applied at coverage rate of 1.2 kg/m2.

.2 Allow sufficient vapour retarder to end wrap insulation 100 mm.

3.8 INSULATION & COVER BOARD

.1 Install base polyisocyanurate insulation with asphalt applied at coverage rate of 1.2 kg/m2.

.2 Lay in regular pattern to provide uniform insulation value over entire roof.

.3 Install second layer of polyisocyanurate insulation to bottom layer of polyisocyanurate insulation with asphalt applied at coverage rate of 1.2 kg/m2.

.4 Install fibreboard cover board to second layer of polyisocyanurate insulation with asphalt applied at coverage rate of 1.2 kg/m2.

.4 Butt boards together without gaps. Keep joints free of asphalt.

.5 At end of each work period mop felt membrane over exposed surfaces and edges of insulation and onto vapour barrier to render watertight. Remove this seal on resumption of work.

.6 Install pre-engineered tapered fibreboard insulation at drains, roof-top equipment and all locations shown on drawings, with asphalt applied at coverage rate of 1.2 kg/m2.

3.9 FELTS: APPLICATION METHOD

.1 Adhere 1 ply of base ply to cover board with asphalt applied at coverage rate of 1.2 kg/m2 per ply and in accordance with appropriate CRCA Specification.

.2 Adhere 3 plies of fibreglass felts to base ply and to each other with asphalt applied at coverage rate of 1.2 kg/m2 per ply and in accordance with appropriate CRCA Specification.

.3 During cold-weather applications, the top surface of the 4th ply shall receive a glaze coating of asphalt applied at a coverage rate of 1.0 kg/m2.

3.10 FLASHINGS: GENERAL

.1 Install two plies of base felt flashing embedded in asphalt and one ply flexible flashing sheet embedded in polymer-modified asphalt at all flashing details including perimeters, expansion joints, curbs, junctions or horizontal and vertical surfaces, roof drains, vents, and other roof mounted appurtenances.

.2 Ensure surfaces are smooth, clean, and dry. Ensure complete bond and continuity without wrinkles or voids.

.3 Clean with solvent all metal in contact with bitumen such as flashings, caulking retainers and vents. Dry with clean rags, prime with asphalt primer and allow to dry before incorporating into roof system.

.4 Top dress all lap edges of flexible flashing sheet with 150 mm reinforcing mesh and polymer-modified mastic.

.5 Any membrane flashing which is to be left exposed after installation of metal shall be treated with two coats of asphalt-compatible reflective coating applied at a rate of 0.16L/m2.

3.11 FLASHING AT ROOF EDGE

.1 Cut roof membrane flush with top edge of cant strip.

.2 Install two ply felt flashing in asphalt extending 100 mm beyond toe of cant and 200 mm above top of cant.

.3 Install flexible flashing sheet in polymer-modified asphalt. Sheet width: sufficient to extend at least 150 mm (6 inches) beyond toe of cant onto roof surface and 50 mm (2 inches) over outside edge, applied continuously. Nail on outside edge with roofing nails 600 mm o.c.

3.12 FLASHING AT VERTICAL SURFACES

.1 Cut roof membrane flush with top edge of cant strip.

.2 Install two ply felt flashing in asphalt extending 100 mm beyond toe of cant and 200 mm above top of cant. .

.3 Install flexible flashing sheet in polymer-modified asphalt. Adhere flashing sheet completely to flashing surface, cant and roofing with flashing adhesive.

.4 Flashing Sheet width: sufficient to extend at least 150 mm (6 inches) beyond toe of cant onto roof surface and 300 mm (13 inches) above top of cant.

.5 Prior to installation of flashing, install sealing tape to align with top 25 mm (1 inch) of flashing sheet.

.6 Secure the top of the Flashing Sheet to the vertical plane with a Flashing Termination Bar. Mechanically fasten 300 mm o.c. (12 inches).

3.13 FLASHING VENT STACKS, GAS LINE SUPPORTS AND MISCELLANEOUS FLASHINGS

.1 Install polyethylene back-up rope between roof deck and vent stack, gas line supports and miscellaneous flashing flanges and caulk joint.

.2 Embed vent flashing flange in 3 mm thickness of polymer-modified mastic on top of roofing felts.

.3 Embed 2 plies of organic felt and one ply flashing sheet in heavy coatings of polymer-modified asphalt. Extend plies 100 mm and 200 mm beyond outer edge of flange.

.4 Insulate voids with loose-fill insulation. Fit rubber caps and secure with ring clamps.

3.14 FLASHING ROOF DRAINS

.1 Cut 225 mm (9 inches) diameter opening through new membrane and insulation coinciding with the drain opening.

.2 Embed drain flange in 3 mm thickness of polymer-modified mastic on top of roofing felts and mechanically fasten to deck, minimum of four fasteners per drain.

.3 Flashing sheet:

.1 Provide 900 mm x 900 mm (36 inches x 36 inches) flashing sheet reinforcement to drain flange.

.1 Centre sheeting over drain.

.2 Adhere sheeting with continuous application of flashing adhesive.

.3 Remove wrinkles/entrapped air.

.2 Cut/remove excess sheeting within drain.

.3 Seal leading edge of sheet with reinforcing membrane embedded between alternate continuous courses of polymer-modified mastic.

.4 Flashing adhesive application rate:

.1 1.2 kg per sq. metre

.5 Stripping ply adhesive application rate:

.1 1 - 1.2 kg per sq. Metre

.6 Install clamping ring.

.7 Install flow control insert (where required) and drain screen.

3.15 FLASHING ROOF AREA DIVIDER

.1 Install flashing sheet centred over area divider.

.2 Install two ply felt flashing in asphalt extending 100 mm beyond toe of cant and 200 mm above top of cant.

.3 Adhere flashing sheet completely to horizontal and vertical

blocking surfaces with polymer-modified asphalt. Press sheeting into adhesive.

.4 Flashing membrane is to be of sufficient width to extend onto the adjacent roofing a min. 150 mm continuously on both sides of the joint.

3.16 EXPANSION JOINTS

.1 Install 13 mm plywood to the top of the blocking, securing on one side only.

.2 Apply foam rubber or 25 mm minimum thickness fibreglass insulation to the top of the plywood.

.3 Install flashing sheet centred over expansion joint.

.4 Sheeting width: sufficient to extend onto adjacent roofing 150 mm minimum applied continuously over the entire joint.

3.17 EXPANSION JOINT AT WALL-ROOF JUNCTION

.1 Fill any open joint with loose insulation.

.2 Adhere elastomeric sheeting completely to flashing surface, cant and roofing with flashing adhesive. Ensure that the leading edge of the sheeting extends onto the roof surface a distance of 150 mm.

.3 Membrane is not to be stretched tight and is to be formed with “V” loop at expansion joint.

.4 Flashing height shall be not less than 200 mm above the finished roof surface.

.5 Prior to installation of flashing, install sealing tape to align with top 25 mm (1 inch) of flashing sheet.

.6 Secure the top of the Flashing Sheet to the vertical plane with a Flashing Termination Bar. Mechanically fasten 300 mm o.c. (12 inches).

3.18 GRAVEL SURFACING

.1 Inspect entire roof area to ensure no wrinkles, buckles, fishmouths or unadhered membrane exist.

.2 Apply flood of polymer-modified asphalt and gravel surfacing only after placement of roofing felts and membrane flashings.

.3 Apply flood coat of polymer-modified asphalt at 3.6 kg/m2 into which, while hot, embed aggregate at minimum rate of 30 kg/m^2. Ensure aggregate is dry and temperature of aggregate at time of application is minimum 5°C.

.4 Apply double pour around all perimeters if roof slopes are less than 1:25.
   .1 In valleys when control flow drains are used.
   .2 At roof corners exposed to wind.
   .3 At corners of penthouses where wind eddies occur.

.5 Where double pour is required:
   .1 Remove loose aggregate and

   .2 Repeat application of bitumen and gravel at same rate and quantity as first application for total aggregate mass of 40 kg/m^2.

3.19 PIPE SUPPORTS

.1 Provide 152 mm X 152 mm X 600 mm long pressure treated wood block on concrete pavers on top of extruded polystyrene, on top of roof tread, for gas pipe supports (the same as for walkway planks) for gas lines150 mm (6 inch) dia. or less. Install roof tread into full mopping of polymer-modified asphalt over top ply of glass felt, prior to application of gravel. Install 25 mm (1 inch) thick extruded polystyrene insulation 600 mm (24 inches) square over roof tread, below paver.

.2 Install specified support for all gas lines larger than 150 mm (6 inch) diameter.

3.20 CLEANING

.1 Clean drains, gutters and downspouts of debris, ensuring free drainage.

.2 Clean adjacent roof surfaces, levels and ground level areas of debris and excess products.

.3 Rake out gravel to provide neat, even appearance.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 07 46 15 - Aluminum Siding and soffits.

.2 Section 06 10 10 - Rough Carpentry.

.3 Section 07 51 00 - Built Up Bituminous Roofing.

1.2 REFERENCE STANDARDS

.1 ASTM International (ASTM)
.1 ASTM A 606/A 606M-15, Standard Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance.
.2 ASTM A 653/A 653M-15e1, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
.3 ASTM A 755/A 755M-16e1 Standard Specification for Steel Sheet, Metallic coated by the Hot-Dip Process and Prepainted by the Coil-Coating Process for Exterior Exposed Building Products.

.2 Canadian Roofing Contractors Association (CRCA)
.1 Roofing Specifications Manual 2012.

.3 Canadian Sheet Steel Building Institute (CSSBI)
.1 CSSBI S8-2008 Quality and Performance Specification for Prefinished Sheet Steel Used for Building Products.
.2 CSSBI B17-2002 Barrier Series Prefinished Steel Sheet: Product Performance & Applications.
.3 CSSBI Sheet Steel Facts #12 2003 Fastener Guide for Sheet Steel Building Products.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

1.3 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.2 (Cont'd)
.1 Submit manufacturer's printed product literature including product specifications and technical data sheets for sheet metal flashing fasteners and accessory materials. Include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Submit shop drawings only for sheet metal flashing and trim items that differ from those indicated in Contract Documents.
.2 Indicate sheet thickness, flashing dimensions and fastenings. Include anchorage, expansion joints and other provisions for thermal movement.
.3 Submit manufacturer's catalogue cut sheets for manufactured items.

.4 Samples:
.1 Submit duplicate 50 x 50 mm samples of each type of sheet metal material, finishes and colour.

1.4 MOCK-UPS

.1 Include flashings in mock-ups as specified for work of other affected sections.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.

.2 Handle and store flashing materials to prevent creasing, buckling, scratching, or other damage.

.3 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 BASE SHEET METAL MATERIALS

.1 Zinc coated steel sheet: 0.61 mm (26 gauge) thickness, commercial quality to ASTM A 653/A 653M, with Z275 designation zinc coating.

2.2 PREFINISHED STEEL SHEET

.1 Prefinished steel with factory applied two-coat polyvinylidene fluoride resin on specified steel sheet substrate conforming to ASTM A 755:
.1 Finished one side with wash coat on back.
.2 Colours: as selected by Consultant from manufacturers standard range.
.3 Specular gloss: 25 units +/- in accordance with ASTM D 523.
.4 Exposed coating thickness: dry film coating system thickness not less than 22 micrometres.

2.3 ACCESSORIES

.1 Isolation coating: alkali resistant bituminous paint.

.2 Sealants: in accordance with Section 07 92 10 - Joint Sealants, in colour to match flashing finish colour.

.3 Cleats and hook strips: of same material, and temper as sheet metal, minimum 50 mm wide. Thickness same as sheet metal being secured.
.1 Provide continuous hook strip at outside of parapets.

.4 Touch-up paint: as recommended by prefinished material manufacturer.

2.4 FABRICATION

.1 Fabricate sheet steel flashings and other sheet steel work in accordance with applicable CRCA 'FL' series detailsand as indicated.

.2 Form pieces in 2400 mm maximum lengths.
.1 Make allowance for expansion at joints.

2.4 FABRICATION (Cont'd)

.3 Hem exposed edges on underside 12 mm.
.1 Mitre and seal corners with sealant.

.4 Form sections square, true and accurate to size, free from distortion and other defects detrimental to appearance or performance.

.5 Apply isolation coating to metal surfaces to be embedded in concrete or mortar.

2.5 METAL FLASHINGS

.1 Form flashings, copings and fascias to profiles indicated of 0.61 mm thick prefinished steel.

2.6 CAP FLASHINGS

.1 Form recessed and metal cap flashing of 0.61 mm thicksheet metal to be built-in masonry work for base flashings as detailed.
.1 Provide slotted fixing holes and steel/plastic washer fasteners.

2.7 SCUPPERS

.1 Form scuppers from 0.61 mm thick prefinished steel.

.2 Sizes and profiles as indicated.

.3 Provide necessary fastenings.

.4 Form 610 x 610 mm splash pans from 0.61 mm thick prefinished steel.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION

.1 Install sheet metal work in accordance with CRCA FL series details.

3.2 INSTALLATION (Cont'd)

.2 Use concealed fastenings except where approved before installation.

.3 Provide underlay under sheet metal.
.1 Secure in place and lap joints 100 mm.
.2 Provide self-adhesive membrane to tie into adjacent assemblies.

.4 Counterflash bituminous flashings at intersections of roof with vertical surfaces and curbs.
.1 Flash joints using S-lock forming tight fit over hook strips, as detailed.

.5 Lock end joints and caulk with sealant.

.6 Insert metal flashing under cap flashing to form weather tight junction.

.7 Caulk flashing at cap flashing with sealant.

.8 Install pans, where shown around items projecting through roof membrane.

.9 Where flashing installed with mechanical fasteners, install fasteners in slots or oversize holes to allow expansion and contraction of flashings.

3.3 SCUPPERS

.1 Install scuppers as indicated.

3.4 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.3 Leave work areas clean, free from grease, finger marks and stains.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

.1 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Safety Data Sheets (SDS).

.2 National Research Council Canada (NRC)
.1 National Building Code of Canada 2015 (NBC).

.3 Underwriter's Laboratories of Canada (ULC)
.1 ULC-S115-11, Fire Tests of Fire stop Systems.

1.2 DEFINITIONS

.1 Fire Stop Material: device intended to close off opening or penetration during fire or materials that fill openings in wall or floor assembly where penetration is by cables, cable trays, conduits, ducts and pipes and poke-through termination devices, including electrical outlet boxes along with their means of support through wall or floor openings.

.2 Single Component Fire Stop System: fire stop material that has Listed Systems Design and is used individually without use of high temperature insulation or other materials to create fire stop system.

.3 Multiple Component Fire Stop System: exact group of fire stop materials that are identified within Listed Systems Design to create on site fire stop system.

.4 Tightly Fitted; (ref: NBC Part 3.1.9.1(1) and 9.10.9.6(1)): penetrating items that are cast in place in buildings of noncombustible construction or have "0" annular space in buildings of combustible construction.
.1 Words "tightly fitted" should ensure that integrity of fire separation is such that it prevents passage of smoke and hot gases to unexposed side of fire separation.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's printed product literature, specifications and datasheet and include product characteristics, performance criteria, physical size, finish and limitations.
.2 Submit electronic copy of WHMIS SDS - Safety Data Sheets.

.3 Shop Drawings:
.1 Submit shop drawings to show location, proposed material, reinforcement, anchorage, fastenings and method of installation.
.2 Construction details should accurately reflect actual job conditions.

.4 Quality assurance submittals: submit following in accordance with Section 01 45 00 - Quality Control.
.1 Test reports: in accordance with CAN-ULC-S115.
.2 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.
.3 Manufacturer's Instructions: submit manufacturer's installation instructions and special handling criteria, installation sequence and cleaning procedures.

1.4 QUALITY ASSURANCE

.1 Qualifications:
.1 Installer: company person specializing in fire stopping installations with 5 years documented experience approved by manufacturer. Specialty fire stop installer toperfomr all work of this section.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Packing, shipping, handling and unloading:
.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements.
.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.

1.5 DELIVERY, STORAGE AND HANDLING (Cont'd)

.1 (Cont'd)
.3 Deliver materials to the site in undamaged condition and in original unopened containers, marked to indicate brand name, manufacturer, ULC markings.

.2 Storage and Protection:
.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Replace defective or damaged materials with new.

.3 Waste Management and Disposal:
.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21-Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Fire stopping and smoke seal systems: in accordance with CAN-ULC-S115.
.1 Asbestos-free materials and systems capable of maintaining effective barrier against flame, smoke and gases in compliance with requirements of CAN-ULC-S115 and not to exceed opening sizes for which they are intended and conforming to specified special requirements described in PART 3.

.2 Use Fire Stop materials from a single manufacturer only for this project. Acceptable Manufacturers:
.1 STI Firestop (Specified Technologies Inc.)
.2 Hilti Canada Corporation.
.3 3M Canada Inc.
.4 Tremco Ltd.

.3 Service penetration assemblies: systems tested to CAN-ULC-S115.

.4 Service penetration fire stop components: certified by test laboratory to CAN-ULC-S115.

.5 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.

2.1 MATERIALS (Cont'd)

.6 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.

.7 Pillow type fire stopping and smoke seals at openings intended for ease of re-entry such as cables and cable traps.

.8 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: firestop sealant.

.9 Primers: to manufacturer's recommendation for specific material, substrate, and end use.

.10 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.

.11 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.

.12 Sealants for vertical joints: non-sagging.

.13 Fire caulking installed in areas with exposed or painted structure to be white paintable type.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 PREPARATION

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials.
.1 Ensure that substrates and surfaces are clean, dry and frost free.

3.2 PREPARATION (Cont'd)

.2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.

.3 Maintain insulation around pipes and ducts penetrating fire separation without interruption to vapour barrier.

.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.3 INSTALLATION

.1 Install fire stopping and smoke seal material and components in accordance with manufacturer's certified tested system listing and ULC certification.

.2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.

.3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.

.4 Tool or trowel exposed surfaces to neat finish.

.5 Remove excess compound promptly as work progresses and upon completion.

3.4 SEQUENCES OF OPERATION

.1 Proceed with installation only when submittals have been reviewed by Consultant.

.2 Install floor fire stopping before interior partition erections.

.3 Mechanical pipe insulation: certified fire stop system component.
.1 Ensure pipe insulation installation precedes fire stopping.

3.5 FIELD QUALITY CONTROL

.1 Inspections: notify Consultant when ready for inspection and prior to concealing or enclosing fire stopping materials and service penetration assemblies.

3.6 CLEANING

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

.3 Remove temporary dams after initial set of fire stopping and smoke seal materials.

3.7 SCHEDULE

.1 Fire stop and smoke seal at:
.1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
.2 Edge of floor slabs at curtain wall and precast concrete panels.
.3 Top of fire-resistance rated masonry and gypsum board partitions.
.4 Intersection of fire-resistance rated masonry and gypsum board partitions.
.5 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
.6 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
.7 Openings and sleeves installed for future use through fire separations.
.8 Around mechanical and electrical assemblies penetrating fire separations.
.9 Rigid ducts: greater than 129 cm^2 : fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

.1 ASTM International
.1 ASTM C 919-19, Standard Practice for Use of Sealants in Acoustical Applications.
.2 ASTM C 834-17 Standard & Specification for latex sealants.
.3 ASTM 920-18 Standard Specification for Elastomeric joint Sealants ULC/CAN 4 S115.
.4 ASTM E90 Acoustical Testing.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Safety Data Sheets (SDS).

.3 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
.1 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for joint sealants and include product characteristics, performance criteria, physical size, finish and limitations.
.2 Manufacturer's product to describe:
.1 Caulking compound.
.2 Primers.
.3 Sealing compound, each type, including compatibility when different sealants are in contact with each other.
.3 Submit electronic copies of WHMIS SDS.

.3 Samples:
.1 Submit 1 sample of Cured samples of exposed sealants for each colour where required to match adjacent material. each type of material and colour.

.4 Manufacturer's Instructions:

1.2 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.4 (Cont'd)
.1 Submit instructions to include installation instructions for each product used.

1.3 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Replace defective or damaged materials with new.

.4 Packaging Waste Management: in accordance with Section 01 74 21 - Waste Management and Disposal.

1.5 SITE CONDITIONS

.1 Ambient Conditions:
.1 Proceed with installation of joint sealants only when:
.1 Ambient and substrate temperature conditions are within limits permitted by joint sealant manufacturer or are above 4.4 degrees C.
.2 Joint substrates are dry.

1.5 SITE CONDITIONS (Cont'd)

.1 (Cont'd)

.1 (Cont'd)

.3 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

.2 Joint-Width Conditions:

.1 Proceed with installation of joint sealants only where joint widths are more than those allowed by joint sealant manufacturer for applications indicated.

.3 Joint-Substrate Conditions:

.1 Proceed with installation of joint sealants only after contaminants capable of interfering with adhesion are removed from joint substrates.

1.6 ENVIRONMENTAL REQUIREMENTS

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of Safety Data Sheets (SDS) acceptable to Health Canada.

PART 2 - PRODUCTS

2.1 SEALANT MATERIALS

.1 Do not use caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant in air handling units.

.2 When low toxicity caulks are not possible, confine usage to areas which off gas to exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off gas time.

.3 Where sealants are qualified with primers use only these primers.

2.2 SEALANT MATERIAL DESIGNATIONS

.1 Type 1; low modulus, one component, moisture curing, modified polyurethane joint sealer to: ULC CAN4 S115, ASTM C 920-18, Type S, Grade NS, Class 35, use NT, colour to be selected from full colour range.

.2 Type 2: One part, high performance neutral cure, medium modulus, non-sag, non-staining, silicone sealant to: ASTM C 920-18, Type S grade NS, colour to be selected from full colour range.

.3 Type 3: One part, moisture cure, general purpose construction grade acetoxy silicone sealant to ASTM C 920-18, type s, grade NS, colour to be selected from full colour range.

.4 Type 4: One part, siliconized acrylic latex, fast setting, pliable seal with minimum shrinkage sealant to ASTM C 834-17, Type OP, grade NF, colour to be selected from full colour range.

.5 Type 5: Single component, non-skinning, non-sag, paintable, nonhardening synthetic rubber acoustical sealant to ASTM E90, ASTM C919.

.6 Preformed compressible and non-compressible back-up materials:

.1 Polyethylene, urethane, neoprene or vinyl foam:

.1 Extruded closed cell foam backer rod.

.2 Size: oversize 30 to 50 %.

.2 Neoprene or butyl rubber:

.1 Round solid rod, Shore A hardness 70.

.3 High density foam:

.1 Extruded closed cell polyvinyl chloride (PVC), extruded polyethylene, closed cell, Shore A hardness 20, tensile strength 140 to 200 kPa, extruded polyolefin foam, 32 kg/m^3 density, or neoprene foam backer, size as recommended by manufacturer.

.4 Bond breaker tape:

.1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 SEALANT SELECTION

.1 Perimeters of exterior openings where frames meet exterior facade of building (i.e. brick, block, precast masonry): sealant type: Type 1.

.2 Control and expansion joints in exterior surfaces of unit masonry walls: sealant type: Type 1.

.3 Perimeter of exterior side of windows and doors where frames meet exterior masonry or metal siding: Type 1.

.4 Seal interior perimeters of exterior openings as detailed on drawings: sealant type: Type 2.

.5 Interior control and expansion joints in floor surfaces: sealant type: Type 4.

.6 Perimeters of interior frames, as detailed and itemized: sealant type: Type 4.

.7 Interior masonry vertical control joints (block-to-block, block-to-concrete, and intersecting masonry walls): sealant type: Type 4.

.8 Joints at tops of masonry walls and roof deck: sealant type: Type 5.

.9 Perimeter of bath fixtures (e.g. sinks, tubs, urinals, stools, water closets, basins, vanities): sealant type: Type 3.

.10 Exposed interior control joints in drywall: sealant type: Type 4.

2.4 JOINT CLEANER

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant in accordance with sealant manufacturer's written recommendations.

.2 Primer: in accordance with sealant manufacturer's written recommendations.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for joint sealants installation in accordance with manufacturer's written instructions.

3.2 SURFACE PREPARATION

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants.

.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair Work.

.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.

.4 Ensure joint surfaces are dry and frost free.

.5 Prepare surfaces in accordance with manufacturer's directions.

.6 Protect installed work of other trades from staining or contamination.

3.3 PRIMING

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.

.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 BACKUP MATERIAL

.1 Apply bond breaker tape where required to manufacturer's instructions.

3.4 BACKUP MATERIAL (Cont'd)

.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 MIXING

.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 APPLICATION

.1 Sealant:
.1 Apply sealant in accordance with manufacturer's written instructions.
.2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.
.3 Apply sealant in continuous beads.
.4 Apply sealant using gun with proper size nozzle.
.5 Use sufficient pressure to fill voids and joints solid.
.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
.7 Tool exposed surfaces before skinning begins to give slightly concave shape.
.8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing:
.1 Cure sealants in accordance with sealant manufacturer's instructions.
.2 Do not cover up sealants until proper curing has taken place.

3.7 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Clean adjacent surfaces immediately.
.3 Remove excess and droppings, using recommended cleaners as work progresses.
.4 Remove masking tape after initial set of sealant.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.7 CLEANING (Cont'd)

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by joint sealants installation.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 07 92 10 - Joints Sealants.

.2 Section 08 14 16 - Flush Wood Doors.

.3 Section 08 71 00 - Door Hardware.

.4 Section 08 80 50 - Glazing.

.5 Section 09 91 23 - Painting.

1.2 REFERENCE STANDARDS

.1 ASTM International (ASTM)
.1 ASTM A 653/A 653M-06a, Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-1.181-99, Ready-Mixed Organic Zinc-Rich Coating.
.2 CGSB 41-GP-19Ma-84, Rigid Vinyl Extrusions for Windows and Doors.

.3 CSA Group (CSA)
.1 CSA-G40.20-04/G40.21-04, General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
.2 CSA W59-03, Welded Steel Construction (Metal Arc Welding).

.4 Canadian Steel Door Manufacturers' Association (CSDMA)
.1 CSDMA, Recommended Specifications for Commercial Steel Doors and Frames, 2000.
.2 CSDMA, Selection and Usage Guide for Commercial Steel Doors, 1990.

.5 National Fire Protection Association (NFPA)
.1 NFPA 80-99, Standard for Fire Doors and Fire Windows.
.2 NFPA 252-03, Standard Methods of Fire Tests of Door Assemblies.

.6 South Coast Air Quality Management District (SCAQMD), California State

1.2 REFERENCE STANDARDS (Cont'd)

.6 (Cont'd)
.1 SCAQMD Rule 1113-04, Architectural Coatings.
.2 SCAQMD Rule 1168-05, Adhesives and Sealants Applications.

.7 Underwriters' Laboratories of Canada (ULC)
.1 CAN/ULC-S701-01, Standard for Thermal Insulation, Polystyrene, Boards and Pipe Covering.
.2 CAN/ULC-S702-97, Standard for Thermal Insulation, Mineral Fibre, for Buildings.
.3 CAN/ULC-S704-03, Standard for Thermal Insulation, Polyurethane and Polyisocyanurate Boards, Faced.
.4 CAN4-S104-M80, Standard Method for Fire Tests of Door Assemblies.
.5 CAN4-S105-M85, Standard Specification for Fire Door Frames Meeting the Performance Required by CAN4-S104.

1.3 SYSTEM DESCRIPTION

.1 Design Requirements:
.1 Design exterior frame assembly to accommodate to expansion and contraction when subjected to minimum and maximum surface temperature of -35 degrees C to 35 degrees C.
.2 Maximum deflection for exterior steel entrance screens under wind load of 1.2 kPa not to exceed 1/175th of span.
.3 Steel fire rated doors and frames: labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 NFPA 252 and NFPA 80 for ratings specified or indicated.
.4 Provide fire labelled frames for openings requiring fire protection ratings. Test products in conformance with CAN4-S104, NFPA 252 and listed by nationally recognized agency having factory inspection services.

1.4 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Provide product data: in accordance with Section 01 33 00 - Submittal Procedures.

1.4 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.3 Provide shop drawings: in accordance with Section 01 33 00 - Submittal Procedures.
.1 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, openings, arrangement of hardware, fire rating and finishes.
.2 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings, reinforcing, fire rating and finishes.
.3 Include schedule identifying each unit, with door marks and numbers relating to numbering on drawings and door schedule.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements:
.1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Hot dipped galvanized steel sheet: to ASTM A 653M, ZF75, minimum base steel thickness in accordance with CSDMA Table 1 - Thickness for Component Parts.

.2 Reinforcement channel: to CSA G40.20/G40.21, Type 44W, coating designation to ASTM A 653M, ZF75.

2.2 DOOR CORE MATERIALS

.1 Stiffened: face sheets, insulated core.

2.3 ADHESIVES

.1 Polystyrene and polyurethane cores: heat resistant, epoxy resin based, low viscosity, contact cement.

2.4 PRIMER

.1 Touch-up prime CAN/CGSB-1.181.
.1 Maximum VOC limit 50 g/L to GC-03.

2.5 PAINT

.1 Field paint steel doors and frames in accordance with Section 09 91 23 - Painting. Protect weatherstrips from paint. Provide final finish free of scratches or other blemishes.

2.6 ACCESSORIES

.1 Door silencers: single stud rubber/neoprene type.

.2 Fabricate glazing stops as formed channel, minimum 16 mm height, accurately fitted, butted at corners and fastened to frame sections with counter-sunk oval head sheet metal screws.

.3 Metallic paste filler: to manufacturer's standard.

.4 Fire labels: metal rivited.

.5 Sealant: 07 92 10.

.6 Glazing: 08 80 50.

.7 Make provisions for glazing as indicated and provide necessary glazing stops.
.1 Design exterior glazing stops to be tamperproof.

2.7 FRAMES FABRICATION GENERAL

.1 Fabricate frames in accordance with CSDMA specifications.

.2 Fabricate frames to profiles and maximum face sizes as indicated.

.3 Exterior frames: 1.6 mm thermally broken type construction.

.4 Interior frames: 1.6mm welded type construction.

2.7 FRAMES FABRICATION GENERAL (Cont'd)

.5 Blank, reinforce, drill and tap frames for mortised, templated hardware, and electronic hardware using templates provided by finish hardware supplier. Reinforce frames for surface mounted hardware.

.6 Protect mortised cutouts with steel guard boxes.

.7 Prepare frame for door silencers, 3 for single door, 2 at head for double door.

.8 Manufacturer's nameplates on frames and screens are not permitted.

.9 Conceal fastenings except where exposed fastenings are indicated.

.10 Provide factory-applied touch up primer at areas where zinc coating has been removed during fabrication.

.11 Insulate exterior frame components with polyurethane insulation.

2.8 FRAME ANCHORAGE

.1 Provide appropriate anchorage to floor and wall construction.

.2 Locate each wall anchor immediately above or below each hinge reinforcement on hinge jamb and directly opposite on strike jamb.

.3 Provide 2 anchors for rebate opening heights up to 1520 mm and 1 additional anchor for each additional 760 mm of height or fraction thereof.

2.9 FRAMES: WELDED TYPE

.1 Welding in accordance with CSA W59.

.2 Accurately mitre or mechanically joint frame product and securely weld on inside of profile.

.3 Cope accurately and securely weld butt joints of mullions, transom bars, centre rails and sills.

2.9 FRAMES: WELDED TYPE (Cont'd)

.4 Grind welded joints and corners to a flat plane, fill with metallic paste and sand to uniform smooth finish.

.5 Securely attach floor anchors to inside of each jamb profile.

.6 Weld in 2 temporary jamb spreaders per frame to maintain proper alignment during shipment.

2.10 DOOR FABRICATION GENERAL

.1 Doors: swing type, flush, with provision for glass and/or louvre openings as indicated.

.2 Exterior doors: insulated hollow steel construction.

.3 Fabricate doors with longitudinal edges locked seamed, adhesive assisted. Seams: visible.

.4 Blank, reinforce, drill doors and tap for mortised, templated hardware andelectronic hardware.

.5 Factory prepare holes 12.7 mm diameter and larger except mounting and through-bolt holes, on site, at time of hardware installation.

.6 Reinforce doors where required, for surface mounted hardware. Provide flush steel top caps to exterior doors. Provide inverted, recessed, spot welded channels to top and bottom of interior doors.

.7 Provide factory-applied touch-up primer at areas where zinc coating has been removed during fabrication.

.8 Provide fire labelled doors for those openings requiring fire protection ratings, as scheduled. Test such products in conformance with CAN4-S104 NFPA 252 and list by nationally recognized agency having factory inspection service and construct as detailed in Follow-Up Service Procedures/Factory Inspection Manuals issued by listing agency to individual manufacturers.

.9 Manufacturer's nameplates on doors are not permitted.

2.11 HOLLOW STEEL CONSTRUCTION

.1 Form face sheets for exterior doors from 1.6 mm sheet steel.

.2 Form face sheets for interior doors from 1.6 sheet steel.

.3 Reinforce doors with vertical stiffeners, securely welded to face sheets at 150 mm on centre maximum.

.4 Fill voids between stiffeners of exterior doors with fibreglass core.

.5 Fill voids between stiffeners of interior doors with fibreglass core.

2.12 THERMALLY BROKEN DOORS AND FRAMES

.1 Fabricate thermally broken doors by using insulated core and separating exterior parts from interior parts with continuous interlocking thermal break.

.2 Thermal break: rigid polyvinylchloride extrusion conforming to CGSB 41-GP-19Ma.

.3 Fabricate thermally broken frames separating exterior parts form interior parts with continuous interlocking thermal break.

.4 Apply insulation.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheets.

3.2 INSTALLATION GENERAL

.1 Install labelled steel fire rated doors and frames to NFPA 80 except where specified otherwise.

.2 Install doors and frames to CSDMA Installation Guide.

3.3 FRAME INSTALLATION

.1 Set frames plumb, square, level and at correct elevation.

.2 Secure anchorages and connections to adjacent construction.

.3 Brace frames rigidly in position while building-in. Install temporary horizontal wood spreader at third points of door opening to maintain frame width. Provide vertical support at centre of head for openings over 1200 mm wide. Remove temporary spreaders after frames are built-in.

.4 Make allowances for deflection of structure to ensure structural loads are not transmitted to frames.

.5 Caulk perimeter of frames between frame and adjacent material.

.6 Maintain continuity of air barrierandvapour retarder.

3.4 DOOR INSTALLATION

.1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 10 - Door Hardware.

.2 Provide even margins between doors and jambs and doors and finished floor and thresholds as follows.
.1 Hinge side: 1.0 mm.
.2 Latchside and head: 1.5 mm.
.3 Finished floor, top of carpet, and thresholds: 13 mm.

.3 Adjust operable parts for correct function.

.4 Install louvres.

3.5 FINISH REPAIRS

.1 Touch up with primer finishes damaged during installation.

.2 Fill exposed frame anchors andsurfaces with imperfections with metallic paste filler and sand to a uniform smooth finish.

3.6 GLAZING

.1 Install glazing for doors andframes in accordance with Section 08 80 50 - Glazing.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 07 92 10 - Joint Sealants.

.2 Section 08 71 10 - Door Hardware.

.3 Section 08 80 50 - Glazing.

1.2 REFERENCE STANDARDS

.1 American Architectural Manufacturers Association (AAMA)
.1 AAMA 609/610-15, Cleaning and Maintenance Guide for Architecturally Finished Aluminum.

.2 ASTM International (ASTM)
.1 ASTM E 330-E330M-14, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.3 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
.2 CAN/CGSB-12.20-M89, Structural Design of Glass for Buildings.

.4 CSA Group (CSA)
.1 CSA G40.20/G40.21-04(R2009), General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
.2 CAN/CSA G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

.5 Underwriters Laboratories (UL)
.1 UL 2761-2011Sealants and Caulking Compounds.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:

1.3 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.2 (Cont'd)

.1 Submit manufacturer's instructions, printed product literature and data sheets for doors, frames, and demountable systems and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Indicate materials and profiles and provide full-size, scaled details of components for each type of door and frame. Indicate:

.1 Interior trim and exterior junctions with adjacent construction.

.2 Junctions between combination units.

.3 Elevations of units.

.4 Core thicknesses of components.

.5 Type and location of exposed finishes, method of anchorage, number of anchors, supports, reinforcement, and accessories.

.6 Location of caulking.

.7 Each type of door system including location.

.8 Arrangement of reinforcing for hardware and joints.

.9 Arrangement of hardware and required clearances.

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for cleaning and maintenance of aluminum finishes for incorporation into manual.

.3 Warranty Documentation: submit warranty documents specified.

1.5 QUALITY ASSURANCE

.1 Manufacturers Reports:

.1 Manufacturer's Field Reports: submit manufacturer's written reports within 3 days of review, verifying compliance of Work, as described in Part 3 - FIELD QUALITY CONTROL.

1.5 QUALITY ASSURANCE (Cont'd)

.2 Certifications: product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria and physical requirements.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.
.1 Apply temporary protective coating to finished surfaces. Remove coating after erection. Use easy to remove, residue free coatings.
.2 Leave protective covering in place until final cleaning of building.

.3 Storage and Handling Requirements:
.1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect aluminum doors and frames from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse and return by manufacturer of pallets, crates, padding, and packaging materials in accordance with Section 01 74 21 - Waste Management and Disposal.

1.7 WARRANTY

.1 Manufacturer's warranty: Submit, for Consultant acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty in addition to and not limit other rights Owner may have under Contract Documents.

PART 2 - PRODUCTS

2.1 DESIGN CRITERIA

.1 Design frames and doors in exterior walls to:
.1 Accommodate expansion and contraction within service temperature range of -35 to 35 degrees C.
.2 Limit deflection of mullions to maximum 1/175th of clear span when tested to ASTM E 330 under wind load of 1.2 kPa submit certificate of tests performed.
.3 Movement within system.
.4 Movement between system and perimeter framing components or substrate.

.2 Size glass thickness and glass unit dimensions to limits in accordance with CAN/CGSB-12.20.

.3 Include continuous air barrier and vapour retarder through door system. Primarily in line with inside pane of glass and heel bead of glazing compound.

2.2 MATERIALS

.1 Aluminum extrusions: to Aluminum Association alloy AA 6063-T5 anodizing quality.

.2 Sheet aluminum: to Aluminum Association alloy AA 1100 - H14 anodizing quality.

.3 Steel reinforcement: to CSA G40.20/G40.21, grade 300 W.

.4 Fasteners: finished to match adjacent material.

.5 Door bumpers: black neoprene.

.6 Isolation coating: bituminous paint.

.7 Glazing materials: 08 80 50 - Glazing.

.8 Sealants: colour selected by Consultant in accordance with Section 07 92 10 - Joint Sealants.
.1 Maximum VOC limit: 250 g/L 5% by weight to SCAQMD Rule 1168 UL 2761.

2.3 ALUMINUM DOORS

.1 Acceptable Products:
.1 Exterior Doors thermally broken & insulated:
.1 Alumicor Thermaporte 7700, T600A.
.2 Kawneer AA425 thermal entrance.
.3 Windspec 500 HTP wide stile.
.2 Interior Doors:
.1 Alumicor Series Canadiana 600A
.2 Kawneer Standard entrance 500
.3 Windspec Standard commercial 500 widestile

.2 Reinforce mechanically-joined corners of doors to produce sturdy door unit.

.3 Glazing stops: interlocking snap-in type for dry glazing. Exterior stops: tamperproof type.

.4 Supply thermally broken doors for exterior.

.5 Hardware: 08 71 10 - Door Hardware.

2.4 ALUMINUM FRAMES

.1 Aluminum Frames Exterior Frames - thermally broken and insulated.
.1 Acceptable products:
.1 Alumicor Flushglaze BF 3400.
.2 Kawneer Tri fab 451 UT
.3 Windspec 655 series thermally broken.
.2 Aluminum Frames Interior Frames - non-thermally broken.
.1 Alumicor Flushglaze TL 1800.
.2 Kawneer Trifab 400.
.3 Windspec 630 Series non-thermally broken.

2.5 DEMOUNTABLE ALUMINUM PARTITION & ALUMINUM SWING DOORS

.1 Interior demountable acceptable products.
.1 PC 350 Elite system or equal by CR Laurence.
.1 45mm face profile.
.2 45 mm snap on aluminum trim.
.3 throat sizes 124 mm.
.4 Clear anodized coating.

2.6 ALUMINUM FINISHES

.1 Clear anodic finish: to designation AA-A41, Architectural Class 1.

.2 Appearance and properties of anodized finishes designated by Aluminum Association as Architectural Class 1.

2.7 STEEL FINISHES

.1 Finish steel clips and reinforcing steel with zinc coating to CAN/CSA-G164.

2.8 FABRICATION

.1 Doors and framing by same manufacturer.

.2 Fabricate doors and frames to profiles and maximum face sizes as indicated. Provide minimum 22 mm bite for insulating glazed units.

.3 Provide structural steel reinforcement as required.

.4 Fit joints tightly and secure mechanically.

.5 Conceal fastenings.

.6 Mortise, reinforce, drill and tap doors, frames and reinforcements to receive hardware using templates provided under Section 08 71 10 - Doors Hardware.

.7 Isolate aluminum from direct contact with dissimilar metals, concrete and masonry.

PART 3 - EXECUTION

3.1 INSTALLATION

.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Set frames plumb, square, level at correct elevation in alignment with adjacent work.

3.1 INSTALLATION (Cont'd)

.3 Anchor securely.

.4 Install doors and hardware in accordance with hardware templates and manufacturer's instructions.

.5 Adjust door components to ensure smooth operation.

.6 Make allowances for deflection of structure to ensure structural loads not transmitted to frames.

.7 Glaze aluminum doors and frames in accordance with Section 08 80 50 - Glazing.

.8 Seal joints to provide weathertight seal at outside and air, vapour seal at inside.

.9 Apply sealant in accordance with Section 07 92 10 - Joint Sealants.

3.2 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Perform cleaning of aluminum components in accordance with AAMA 609.1 - Voluntary Guide Specification for Cleaning and Maintenance of Architectural Anodized Aluminum.
.3 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.
.4 Clean aluminum with damp rag and approved non-abrasive cleaner.
.5 Remove traces of primer, caulking, epoxy and filler materials; clean doors and frames.
.6 Clean glass and glazing materials with approved non-abrasive cleaner.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.

3.2 CLEANING (Cont'd)

.3 (Cont'd)

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.3 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by aluminum door and frame installation.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 08 11 00 - Metal Doors and Frames.

.2 Section 08 71 10 - Door Hardware.

.3 Section 08 80 50 - Glazing.

.4 Section 09 91 23 - Painting.

1.2 REFERENCE STANDARDS

.1 Architectural Woodwork Manufacturers Association of Canada (AWMAC).
.1 Quality Standards for Architectural Woodwork 1998.

.2 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-71.19-M88, Adhesive, Contact, Sprayable.
.2 CAN/CGSB-71.20-M88, Adhesive, Contact, Brushable.

.3 CSA Group (CSA)
.1 CSA A440.2-98, Energy Performance of Windows and Other Fenestration Systems.
.2 CSA O115-M1982(R2001), Hardwood and Decorative Plywood.
.3 CAN/CSA O132.2 Series-90(R1998), Wood Flush Doors.
.4 CAN/CSA-O132.5-M1992(R1998), Stile and Rail Wood Doors.
.5 CAN/CSA-Z808-96, A Sustainable Forest Management System: Guidance Document.
.6 CSA Certification Program for Windows and Doors 00.

.4 Environmental Choice Program (ECP).
.1 CCD-045-92, Sealants and Caulking Compounds.
.2 CCD-046-92, Adhesives.

.5 National Fire Protection Association (NFPA).
.1 NFPA 80-1999, Standard for Fire Doors and Fire Windows.
.2 NFPA 252-1999, Standard Method of Fire Tests of Door Assemblies.

.6 Underwriters' Laboratories of Canada (ULC).

1.2 REFERENCE STANDARDS (Cont'd)

.6 (Cont'd)
.1 CAN-4S104M-80(R1985), Fire Tests of Door Assemblies.
.2 CAN4-S105M-85 (R1992), Fire Door Frames Meeting the Performance Required by CAN4-S104.

.7 Forest Stewardship Council (FSC)
.1 FSC-STD-01-001-2004, FSC Principle and Criteria for Forest Stewardship.

.8 Sustainable Forestry Initiative (SFI)
.1 SFI-2010-2014 Standard.

.9 South Coast Air Quality Management District (SCAQMD), California State, Regulation XI. Source Specific Standards
.1 SCAQMD Rule 1113-A2011, Architectural Coatings.
.2 SCAQMD Rule 1168-A2005, Adhesives and Sealants Applications.

.10 California Air Resources Board (CARB) 93120 Airborne Toxic Control Measure

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Shop Drawings:
.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Indicate door types and cutouts for lights and louvres, sizes, core construction, transom panel construction and cutouts.

1.4 DELIVERY, STORAGE, AND HANDLING

.1 Storage and Protection:
.1 Protect doors from dampness. Arrange for delivery after work causing abnormal humidity has been completed.
.2 Store doors in well ventilated room, off floor, in accordance with manufacturer's recommendations.
.3 Protect doors from scratches, handling marks and other damage. Wrap doors.
.4 Store doors away from direct sunlight.

1.5 WASTE MANAGEMENT AND DISPOSAL

.1 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.2 Dispose of corrugated cardboard, polystyrene and plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

.3 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.4 Divert unused adhesive material from landfill to official hazardous material collections site.

.5 Do not dispose of unused paint materials into sewer systems, into lakes, streams, onto ground or in locations where it will pose health or environmental hazard.

PART 2 - PRODUCTS

2.1 WOOD FLUSH DOORS

.1 Solid core: to CAN/CSA-O132.2.1.
.1 Construction:
.1 Solid particleboard core: stile and rail frame bonded to particleboard core with wood lock blocks, 5-ply construction.
.2 Face Panels:
.1 Hardwood; stain grade veneer: Grade I (Premium), maple species.
.3 Adhesive: Type I (waterproof) for interior doors.
.4 Finish: Polyurethane varnish (Section 09 91 23).

2.2 GLAZING

.1 Glass: 08 80 50.

2.3 FABRICATION

.1 Vertical edge strips to match face veneer.

.2 Prepare doors for louvres and glazing. Provide maple glazing stops with mitred corners.

2.3 FABRICATION (Cont'd)

.3 Bevel vertical edges of single acting doors 3 mm in 50 mm on lock side and 1.5 mm in 50 mm on hinge side.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 INSTALLATION

.1 Unwrap and protect doors in accordance with CAN/CSA-O132.2 Series, Appendix A.

.2 Install doors and hardware in accordance with manufacturer's printed instructions and CAN/CSA-O132.2 Series, Appendix A.

.3 Adjust hardware for correct function.

.4 Install glazing in accordance with Section 08 80 50 - Glazing.

.5 Install stops.

3.3 ADJUSTMENT

.1 Re-adjust doors and hardware just prior to completion of building to function freely and properly.

3.4 CLEANING

.1 Perform cleaning as soon as possible after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking; clean doors and frames.

.3 Clean glass and glazing materials with approved non-abrasive cleaner.

3.4 CLEANING (Cont'd)

.4 On completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY OF WORK

.1 This Section specififes glazed, thermally broken aluminum-framed storefronts and accessories.

1.2 RELATED REQUIREMENTS

.1 Section 07 92 10 Joint Sealants.

.2 Section 08 11 16 - Aluminum Doors: Aluminum-framed glazed swing doors.

.3 Section 08 80 50 - Glazing: Insulating glass units.

1.3 REFERENCE STANDARDS

.1 ASTM International
.1 ASTM B 209-2010, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
.2 ASTM B 221-2013, Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
.3 ASTM E 283-2012, Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
.4 ASTM E330/E330M-14(2021), Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtainwalls.
.5 ASTM E 331-(2009), Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-19.13-M87, Sealing Compound, One-Component, Elastomeric, Chemical Curing.

.3 CSA International(CSA)
.1 CAN/CSA-S157-2005, Strength Design in Aluminum.
.2 CSA W59.2-M1991(R2008), Welded Aluminum Construction.

.4 Environmental Choice Program (ECP)

1.3 REFERENCE STANDARDS (Cont'd)

.4 (Cont'd)
.1 CCD-045-95(R2005), Sealants and Caulking Compounds.

.5 Underwriter's Laboratories of Canada (ULC)
.1 CAN/ULC-S710.1 2005, Standard for Thermal Insulation - Bead-Applied One Component Polyurethane Air Sealant Foam, Part 1: Materials Standard for Thermal Insulation - Bead - Applied One Component Polyurethane Air Sealant Foam, Part 1: Materials.

1.4 ADMINISTRATIVE REQUIREMENTS

.1 Co-ordination: co-ordinate work of this Section with work of other trades for proper time and sequence to avoid construction delays.

.2 Pre-Installation Meetings: Convene pre-installation meeting after Award of Contract and one week prior to commencing work of this Section to verify project requirements, substrate conditions and coordination with other building sub-trades, and to review manufacturers written installation instructions.

1.5 ACTION AND INFORMATIONAL SUBMITTALS

.1 Make submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data: Submit product data including manufacturer's literature for glazed aluminum aluminum-framed storefront extruded members, panels, components and accessories, indicating compliance with specified requirements and material characteristics.

.3 Shop Drawings: Submit drawings stamped and signed by Professional Engineer registered or licensed in Province of Ontario, Canada. Include on shop drawings:

1.5 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.3 (Cont'd)
.1 Aluminum-framed storefront panel and component dimensions, framed opening requirements and tolerances, adjacent construction, anchor details anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.
.2 Include details of fasteners between interior and exterior extrusions ensuring no penetration of thermal break or thermal bridging.

1.6 CLOSEOUT SUBMITTALS

.1 Operation and Maintenance Data: Supply maintenance data for aluminum-framed storefront for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

.2 Record Documentation: In accordance with Section 01 78 00 - Closeout Submittals.
.1 List materials used in aluminum-framed storefront work.
.2 Warranty: Submit warranty documents specified.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements:
.1 Deliver material in accordance with Section 01 61 00 - Common Product Requirements.
.2 Deliver glazed aluminum-framed storefront materials and components in manufacturers original packaging with identification labels intact and in sizes to suit project.

.2 Storage and Handling Requirements: Store materials off ground and protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.

.3 Packaging Waste Management:
.1 Separate and recycle waste packaging materials in accordance with Section 01 74 21 - Construction Waste Management and Disposal.

1.7 DELIVERY, STORAGE AND HANDLING (Cont'd)

.3 (Cont'd)
.2 Remove waste packaging materials from site and dispose of packaging materials at appropriate recycling facilities.

1.8 WARRANTY

.1 Manufacturer's warranty: Submit manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to and not intended to limit other rights Owner may have under Contract Conditions.

PART 2 - PRODUCTS

2.1 MANUFACTURER

.1 Manufacturer: Alumicor Limited, 290 Humberline Drive, Toronto, ON, Canada M9W 5S2, Phone: (416) 745-4222 or (877) ALUMICOR, email: info@alumicor.com, URL: www.Alumicor.com.

2.2 DECSRIPTION

.1 Thermally broken, aluminum-framed glazed storefront constructed from prefinished aluminum extrusions and including swing type doors.

.2 Framing: Flush glazed framing 114.3 mm deep x 50.8 mm wide profile.

2.3 DESIGN CRITERIA

.1 Design aluminum components to CAN/CSA S157.

.2 Design and size aluminum-framed storefront to withstand dead and live loads caused by pressure and suction of wind, acting normal to plane of wall using design pressure of 0.95 kPa (20 psf) to ASTM E330.
.1 Design aluminum-framed storefront system for expansion and contraction caused by cycling temperature range of 95 degrees C over 12 hour period without causing detrimental effect to system components.

2.3 DESIGN CRITERIA (Cont'd)

.2 (Cont'd)

.2 Thermal expansion: Ensure aluminum-framed storefront system can withstand temperature differential of 85 degrees C and is able to accommodate interior and exterior system expansion and contraction without damage to components or deterioration of seals.

.3 Design vertical expansion joints with baffled overlaps and compressed resilient air seal laid between mullion ends.

.4 Ensure system is designed to accommodate:

.1 Movement within aluminum-framed storefront assembly.

.2 Movement between system and perimeter framing components.

.3 Dynamic loading and release of loads.

.4 Deflection of structural support framing.

.5 Shortening of building concrete structural columns.

.6 Creep of concrete structural members.

.5 Air infiltration: 0.3 L/s/m2 maximum of wall area to ASTM E283 at differential pressure across assembly of 300 Pa.

.6 Water infiltration: None to ASTM E331 at differential pressure across assembly of 720 Pa.

.7 Ensure interior surfaces have no condensation before exposed edges of sealed units reach dew point temperatures during testing.

.8 Maintain continuous air barrier and vapour retarder throughout building envelope and aluminum-framed storefront assembly.

.9 Ensure no vibration harmonics, wind whistles, noises caused by thermal movement, thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

.10 Reinforce aluminum-framed storefront system where necessary.

2.4 MATERIALS

.1 Aluminum-Framed Storefront System and Components:

.1 Extruded aluminum: To ASTM B221.

.2 Sheet aluminum: to ASTM B209, utility grade for unexposed surfaces.

2.4 MATERIALS (Cont'd)

.1 (Cont'd)
.3 Fasteners, screws and bolts: Cadmium plated stainless steel to meet aluminum-framed storefront requirements and as recommended by manufacturer.
.4 Thermal Break: Glass fibre reinforced polyamide porthole extrusion.
.5 Insulating glass units: In accordance with Section 08 80 50 - Glazing.
.6 Doors: In accordance with Section 08 11 16 - Aluminum Doors.

.2 Acceptable Material: Alumicor Ltd., FlushGlaze BF 3400 Series Storefront.

2.5 ALUMINUM-FRAMED STOREFRONT SYSTEM FABRICATION

.1 Do aluminum welding to CAN/CSA W59.2.

.2 Fabricate aluminum assemblies of extruded sections to sizes and profiles indicated.
.1 Ensure verticals and horizontals are extrusions designed for shear block or screw spline corner construction.

.3 Construct units square, plumb and free from distortion, waves, twists, buckles or other defects detrimental to performance or appearance.

.4 Fabricate aluminum-framed storefront with minimum clearances and shim spacing around panel perimeter and ensure installation and dynamic movement of perimeter seal is enabled.

.5 Fabricate aluminum framed doors in accordance with Section 08 11 16 - Aluminum Doors.

.6 Accurately fit and secure joints and corners.
.1 Ensure joints are flush, hairline, and weatherproof.

.7 Prepare aluminum-framed storefront to receive anchor devices.

.8 Use only stainless steel or zinc plated concealed fasteners.
.1 Ensure fasteners do not penetrate thermal break.

2.5 ALUMINUM-FRAMED STOREFRONT SYSTEM FABRICATION (Cont'd)

.8 (Cont'd)
.2 Where fasteners cannot be concealed, countersunk screws finished to match adjacent material may be used upon receipt of written approval from Consultant.

.9 Prepare components to receive doors and openings as indicated.

.10 Visible manufacturer's labels are not permitted.

2.6 FINISHES

.1 Exterior exposed aluminum surfaces: To AA DAF-45-M10C21A41, Architectural Class I, clear anodized.
.1 Acceptable material: Alumicor Ltd., Class I Anodic Finish.

.2 Interior exposed aluminum surfaces: To AA DAF-45-M10C21A41, Architectural Class I, clear anodized.
.1 Acceptable material: Alumicor Ltd., Class I Anodic Finish.

2.7 ACCESSORIES

.1 Sealant: To CAN/CGSB-19.13, Class 40, one-component, cold-applied, non-sagging silicone.
.1 Acceptable material: Dow Corning 795.

.2 Sealant Bond Breaker: Open cell foam backer rod sized to suit project requirements.

.3 Flashings: 3 mm thick aluminum flashing to profiles indicated.

.4 Liquid Foam Insulation: Single component, moisture cure, low expansion rate spray-in-place polyurethane liquid foam insulation to ULC-S710.1 and in accordance with manufacturer's written recommendations.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for aluminum-framed storefront installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate.
.2 Inform Consultant of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

.1 Install thermally broken aluminum framed storefront in accordance with manufacturer's written recommendations.

.2 Do aluminum welding to CAN/CSA W59.2.

.3 Attach thermally broken aluminum-framed storefront assemblies to structure plumb and level, free from warp, and allow for sufficient adjustment to accommodate construction tolerances and other irregularities.
.1 Maintain dimensional tolerances and align with adjacent work.
.2 Use alignment attachments and shims to permanently fasten elements to building structure.
.3 Clean welded surfaces and apply protective primer to field welds and adjacent surfaces.

.4 Install thermal isolation where components penetrate or disrupt building insulation.

.5 Install sill flashings.

.6 Co-ordinate attachment and seal of perimeter air and vapour retarder.

.7 Install liquid foam insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.

3.2 INSTALLATION (Cont'd)

.8 Install insulating glass units in accordance with Section 08 80 50 - Glazing and to manufacturer's written instructions.

.9 Install perimeter sealant to method required to achieve performance criteria, backing materials, and installation criteria in accordance with Section 07 92 10 - Joint Sealants.

3.3 FIELD QUALITY CONTROL

.1 Field Inspection: Coordinate field inspection in accordance with Section 01 45 00 - Quality Control.

.2 Site installation tolerances:
.1 Variation from plumb: 12 mm per 30 m maximum.
.2 Misalignment of two adjacent panels or members: 0.8mm maximum.
.3 Sealant space between aluminum-framed storefront and adjacent construction: 13 mm maximum.

3.4 CLEANING

.1 Progress Cleaning: Perform cleanup as work progresses in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.2 Waste Management:
.1 Co-ordinate recycling of waste materials with 01 74 21 - Construction Waste Management and Disposal.
.2 Collect recyclable waste and dispose of or recycle field generated construction waste created during construction or final cleaning related to work of this Section.
.3 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by aluminum-framed storefront installation.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED REQUIREMENTS

.1 Section 07 92 10 - Joint Sealants.

.2 Section 08 80 50 - Glazing.

.3 Section 08 11 16 - Aluminum Doors and Frames.

1.2 REFERENCE STANDARDS

.1 Aluminum Association (AA)
.1 AA DAF 45-03(R2009), Designation System for Aluminum Finishes.

.2 American Architectural Manufacturers Association (AAMA)
.1 AAMA CW-10-04, Care and Handling of Architectural Aluminum From Shop to Site.
.2 AAMA CW-11-85, Design Wind Loads and Boundary Layer Wind Tunnel Testing.
.3 AAMA 501-05, Methods of Test for Exterior Walls.

.3 ASTM International
.1 ASTM A 123/A 123M-09, Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
.2 ASTM B 209-07, Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
.3 ASTM B 221-08, Specification for Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
.4 ASTM E 283-04, Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
.5 ASTM E 330-02, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls, by Uniform Static Air Pressure Difference.
.6 ASTM E 331-00(2009), Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform Static Air Pressure Difference.

1.2 REFERENCE STANDARDS (Cont'd)

.3 (Cont'd)
.7 ASTM E 1105-00(2008), Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference.

.4 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-12.20-M89, Structural Design of Glass for Buildings.

.5 Society for Protective Coatings (SSPC)
.1 SSPC - Paint 20-02(R2004), Zinc Rich Coating, Type I - Inorganic and Type II - Organic.
.2 SSPC - Paint 25 - 97(R2004) BCS, Zinc Oxide, Alkyd, Linseed Oil and Primer for Use Over Hand Cleaned Steel Type 1 and Type 2.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for curtain wall components, anchorage and fasteners, glass and infill, and internal drainage details and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:
.1 Submit drawings stamped and signed by professional Engineer registered or licensed in Ontario, Canada.
.2 Indicate system dimensions, framed opening requirements and tolerances, adjacent construction, anchor details anticipated deflection under load, affected related Work, weep drainage network, expansion and contraction joint location and details, and field welding required.

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

1.4 CLOSEOUT SUBMITTALS (Cont'd)

.2 Operation and Maintenance Data: submit operation and maintenance data for glazed aluminum curtain wall for incorporation into manual.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Handle work of this Section in accordance with AAMA CW-10.
.2 Store materials in accordance with manufacturer's recommendations.
.3 Store and protect aluminum glazed curtain wall components from nicks, scratches, and blemishes.
.4 Protect prefinished aluminum surfaces. Do not use adhesive papers or sprayed coatings which bond when exposed to sunlight or weather.
.5 Replace defective or damaged materials with new.

.4 Packaging Waste Management: in accordance with Section 01 74 21 - Waste Management and Disposal.

1.6 AMBIENT CONDITIONS

.1 Install sealants when ambient and surface temperature is above 5 degrees C minimum.

.2 Maintain this minimum temperature during and for 48 hours minimum after installation of sealants.

1.7 WARRANTY

.1 Contractor hereby warrants that glazed aluminum curtain wall will function as specified or 60 months.

PART 2 - PRODUCTS

2.1 SYSTEMS

.1 Description:

.1 Vertical glazed aluminum curtain wall system includes thermally broken tubular aluminum sections, shop fabricated, factory prefinished, vision glass; related flashings, anchorage and attachment devices.

.2 Assembled system to permit re-glazing of individual glass units from exterior without requiring removal of structural mullion sections.

.2 Performance Requirements:

.1 Design and size components to withstand dead and live loads caused by pressure and suction of wind, acting normal to plane of system as calculated in accordance with National Building Code of Canada (NBC)and as measured to AAMA CW 11, ASTM E 330.

.2 Design and size components to withstand seismic loads and sway displacement as calculated in accordance with applicable codes.

.3 Limit mullion deflection to flexure limit of glass with full recovery of glazing materials.

.4 Size glass units and glass dimensions to limits established in CAN/CGSB-12.20.

.5 Ensure system is designed to accommodate the following without damage to components or deterioration of seals:

.1 Movement within system.

.2 Movement between system and perimeter framing components.

.3 Dynamic loading and release of loads.

.4 Deflection of structural support framing.

.5 Shortening of building concrete structural columns.

.6 Creep of concrete structural members.

.6 Limit air infiltration through assembly to 0.0003 L/s/m^2 of wall area, measured at a reference differential pressure across assembly of 75 Pa as measured in accordance with AAMA 501, ASTM E 283.

2.1 SYSTEMS (Cont'd)

.2 (Cont'd)

.7 Vapour seal with interior atmospheric pressure of 25 mm sp, 22 degrees C, 40% RH: no failure.

.8 Water leakage: none, when measured to AAMA 501, ASTM E 331, ASTM E 1105.

.9 Ensure system allows for expansion and contraction within system components when temperature range is 95 degrees C over 12 hour period without causing detrimental affect to system components.

.10 Drain water entering joints, condensation occurring in glazing channels, or migrating moisture occurring within system, to exterior by weep drainage network.

.11 Maintain continuous air barrier and vapour retarder throughout assembly, primarily in line with inside pane of glass and heel bead of glazing compound.

.1 Position thermal insulation on exterior surface of air barrier and vapour retarder.

.12 Ensure no vibration harmonics, wind whistles, noises caused by thermal movement transmitted to other building elements, loosening, weakening, or fracturing of attachments or components of system occur.

2.2 MATERIALS

.1 Extruded aluminum: to ASTM B 221.

.2 Sheet aluminum: to ASTM B 209.

.3 Anchors: 3-way adjustable hot-dip galvanized cast iron.

.4 Fasteners: stainless steel, finish to match curtain wall.

.5 Glazing: Section 08 80 50.

.6 Sealant: section 07 92 10 and as recommended by manufacturer.

.7 Insulating foam air barrier: one component low expansion polyurethane foam.

2.3 COMPONENTS

.1 Acceptable products: Alumicor 2600 ThermaWall.

2.3 COMPONENTS (Cont'd)

.2 Mullion profile:
.1 Vertical members: 133.4 x 63.5 mm nominal dimension.
.2 Horizontal members: 133.4 x 63.5 mm nominal dimension.
.3 Thermally broken with interior tubular section insulated from exterior pressure plate.
.4 Matching stops and pressure plate of sufficient size and strength to ensure adequate bite on glass and infill panels.
.5 Drainage holes, deflector plates and internal flashings to accommodate internal weep drainage system.
.6 Internal mullion baffles to eliminate "stack effect" air movement within internal spaces.

.3 Flashings: 0.8 mm thick aluminum, finish to match curtain wall mullion sections where exposed, secured with concealed fastening method.

2.4 FABRICATION

.1 Fabricate system components with minimum clearances and shim spacing around perimeter of assembly, yet enabling installation and dynamic movement of perimeter seal.

.2 Accurately fit and secure joints and corners. Make joints flush, hairline, and weatherproof

.3 Prepare components to receive anchor devices. Install anchors.

.4 Arrange fasteners and attachments to ensure concealment from view.

.5 Reinforce framing members for external imposed loads.

.6 Visible manufacturer's identification labels not permitted.

.7 Finishes:
.1 Finish coatings: Architectural Class 1, Clear Anodized finish to designation AA-41.
.2 Shop and touch-up primer for steel components: SSPC 25 Paint red oxide.

2.4 FABRICATION (Cont'd)

.7 (Cont'd)

.3 Touch-up primer for galvanized steel surfaces: SSPC 20 Paint zinc rich.

.4 Concealed steel items: galvanized in accordance with ASTM A 123 to 600 gm/m^2 primed with iron oxide paint.

.5 Apply 1 coat of bituminous paint to concealed aluminum and steel surfaces in contact with cementitious or dissimilar materials.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for aluminum curtain wall installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate.

.2 Verify dimensions, tolerances, and method of attachment with other work.

.3 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this Section.

.4 Inform Consultant of unacceptable conditions immediately upon discovery.

.5 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSTALLATION

.1 Install curtain wall system in accordance with manufacturer's instructions.

.2 Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.

.3 Use alignment attachments and shims to permanently fasten system to building structure. Clean weld surfaces; apply protective primer to field welds and adjacent surfaces.

.4 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.

3.2 INSTALLATION (Cont'd)

.5 Use thermal isolation where components penetrate or disrupt building insulation.

.6 Install sill flashings.

.7 Co-ordinate attachment and seal of perimeter air barrier and vapour retarder materials.

.8 Apply foam insulation in shim spaces to fill all gaps at perimeter of framing using manufacturers approved applicator and in accordance with manufacturers instructions to maintain continuity of thermal barrier. Cut back or tool foam to allow for finish caulking.

.9 Install glass in accordance with Section 08 80 50 - Glazing.

.10 Install perimeter sealant to method required to achieve performance criteria.

3.3 SITE TOLERANCES

.1 Maximum variation from plumb: 1.5 mm/m non-cumulative or 12 mm/30 m, whichever is less.

.2 Maximum misalignment of two adjoining members abutting in plane: 0.8 mm.

.3 Maximum sealant space between curtain wall and adjacent construction: 13 mm.

3.4 FIELD QUALITY CONTROL

.1 Manufacturer's Field Services:

.1 Obtain written report from manufacturer of curtain wall verifying compliance of Work, in handling, installing, applying, protecting and cleaning of products, and submit written reports in acceptable format to verify compliance of Work with Contract within 3 days of review.

.2 Submit manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Remove protective material from prefinished aluminum surfaces.
.3 Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths. Take care to remove dirt from corners. Wipe surfaces clean.
.4 Remove excess sealant by moderate use of mineral spirits or other solvent acceptable to sealant manufacturer.
.5 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by glazed aluminum curtain wall installation.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Aluminum Association (AA), Designation System for Aluminum Finishes (2000)

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-1.40-97, Anticorrosive Structural Steel Alkyd Primer.
.2 CAN/CGSB-79.1-M91, Insect Screens.

.3 Canadian Standards Association (CSA) International
.1 CSA-A440-00/A440.1-00, A440-00, Windows / Special Publication A440.1-00, User Selection Guide to CSA Standard A440-00, Windows.
.2 CAN/CSA-Z91-M90(R2000), Safety Code for Window Cleaning Operations.

1.2 SHOP DRAWINGS

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.

.2 Indicate materials and details in full size scale for head, jamb and sill, profiles of components, interior and exterior trim junction between combination units elevations of unit, anchorage details, location of isolation coating, description of related components and exposed finishes fasteners, and caulking. Indicate location of manufacturer's nameplates.

1.3 TEST REPORTS

.1 Submit test reports from approved independent testing laboratories, certifying compliance with specifications, for:
.1 Windows classifications.
.2 anodized finish, weathering characteristics.
.3 Insect screens.
.4 Air tightness.
.5 Water tightness.
.6 Wind load resistance.
.7 Condensation resistance.
.8 Safety drop - vertical sliding windows only.
.9 Block operation - sliding windows only.

1.3 TEST REPORTS (Cont'd)

.1 (Cont'd)
.10 Sash strength and stiffness - Operable Casement Projecting.
.11 Ease of operation - windows with operable lights.
.12 Forced entry resistance.
.13 Mullian deflection - combination and composite windows.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper plastic polystyrene corrugated cardboard packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.

.4 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.5 Divert unused metal materials from landfill to metal recycling facility.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Acceptable product:
.1 Alumicor 970 series with a 178mm frame with 1350 series operators or approved equal.

.2 Materials: to CSA-A440/A440.1 supplemented as follows:

.3 All windows by same manufacturer.

.4 Insect Screen: aluminum mesh.

.5 Main frame: aluminum thermally broken.

.6 Glass: Section 08 80 50.

2.1 MATERIALS (Cont'd)

.7 Exterior sill closure: 3 mm extruded aluminum to suit slope of existing sills complete with chairs and anchoring devices.

.8 Sealants: Section 07 92 10.

.9 Isolation coating: alkali resistant bituminous paint.

.10 Foamed in place insulation: Spray applied low expansion rigid medium density polyurethane foam insulation to comply with CAN/ULC-S705.1 and CMHCs technical guide for sprayed in place insulation.

2.2 WINDOW TYPE AND CLASSIFICATION

.1 Types:
.1 Fixed and Casement: with double insulating glass.

.2 Classification rating: to CSA-A440/A440.1.
.1 Air tightness: A3.
.2 Water tightness: B7.
.3 Wind load resistance: C5.
.4 Condensation resistance: Temperature Index, I 58.
.5 Forced Entry: F2.
.6 Insect Screens: S2.
.7 Glazing: G2.

.3 Maximum U-value 0.40.

.4 Windows shall conform to the requirements in,
.1 AAMA/WDMA/CSA 101/I.S.2/A440, "NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights", and
.2 CSA A440S1, "Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights".

2.2 WINDOW TYPE AND CLASSIFICATION (Cont'd)

.5 Performance grades for windows shall be selected according to the CSA A440S1, "Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440, NAFS - North American Fenestration Standard/Specification for Windows, Doors, and Skylights" so as to be appropriate for the conditions and geographic location in which the windows will be installed.
.1 Windows shall conform to the performance grades selected under 2.2.5 when tested in accordance withthe AAMA/WDMA/CSA 101/I.S.2/A440, " NAFS - North American Fenestration Standard Specification for Windows, Doors, and Skylights".

2.3 FABRICATION

.1 Fabricate in accordance with CSA-A440/A440.1 supplemented as follows:

.2 Fabricate units square and true with maximum tolerance of plus or minus 1.5 mm for units with a diagonal measurement of 1800 mm or less and plus or minus 3 mm for units with a diagonal measurement over 1800 mm.

.3 Face dimensions detailed are maximum permissible sizes.

.4 Brace frames to maintain squareness and rigidity during shipment and installation.

.5 Finish steel clips and reinforcement with shop coat primer to CAN/CGSB-1.40 380 g/m^2 zinc coating to CAN/CSA-G164.

2.4 ALUMINUM FINISHES

.1 Finish exposed surfaces of aluminum components in accordance with Aluminum Association Designation System for Aluminum Finishes.
.1 Clear anodic finish: designation AA-A41 Architectural Class 1.

2.5 ISOLATION COATING

.1 Isolate aluminum from following components, by means of isolation coating:
.1 Dissimilar metals except stainless steel, zinc, or white bronze of small area.

2.5 ISOLATION COATING (Cont'd)

.1 (Cont'd)
.2 Concrete, mortar and masonry.
.3 Wood.

2.6 GLAZING

.1 Glaze windows in accordance with CSA-A440/A440.1.

2.7 HARDWARE

.1 Multipoint locking handle.

.2 Stainless steel friction arms.

.3 Sash limiter.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verify dimensions, tolerences, and method of attachment with other work.

.2 Verify wall openings and adjoining air barrier and vapour retarder materials are ready to receive work of this section.

3.2 INSTALLATION

.1 Install windows in accordance with manufacturer's instructions and CSA-CAN-A440/A440.1

.2 Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances and align with adjacent work.

.3 Apply foam insulation in shim spaces at perimeter of framing using manufacturer's approved applicator gun in accordance with manufacturer's instructions to maintain continuity of thermal barrier. Fill gaps, cracks and holes with sealant, making allowance for post-expansion of foam. Apply successive layers as required, allowing previous layer to cure prior to applying successive layers. Cut back or tool foam to allow for finish caulking.

3.2 INSTALLATION (Cont'd)

.4 Install edge flashings at perimeter.

3.3 SILL CLOSURE

.1 Install sill closures, level in length, straight in alignment with plumb upstands and faces. Use one piece at each location.

.2 Cut sills closures to fit exact length of window opening.

END OF SECTION

PART 1 - GENERAL

1.1 RELATED SECTIONS

.1 Section 08 11 00 - Metal Doors and Frames.

.2 Section 08 14 16 - Flush Wood Doors.

1.2 REFERENCES

.1 Canadian Steel Door and Frame Manufacturers' Association (CSDFMA).
.1 CSDFMA Canadian Metric Guide for Steel Doors and Frames (Modular Construction): standard hardware location dimensions.

.2 Standards.
.1 ANSI/BHMA A156.1-1981, Butts and Hinges.
.2 ANSI/BHMA A156.3-1984, Exit Devices.
.3 ANSI/BHMA A156.4-1986, Door Controls (Closers).
.4 ANSI/BHMA A156.6-1986, Architectural Door Trim.
.5 ANSI/BHMA A156.8-1982, Door Controls - Overhead Holders.
.6 ANSI/BHMA A156.10-1991, Power-operated Pedestrian Doors.
.7 ANSI/BHMA A156.15-1981, Closer/Holder Release Device.
.8 ANSI/BHMA A156.16-1981, Auxiliary Hardware.
.9 ANSI/BHMA A156.18-1987, Materials and Finishes.

.3 ULC-S132-93 (R2001) Emergency exit and emergency fire exit hardware.

1.3 SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures.

.2 Hardware List:
.1 Submit contract hardware list in accordance with Section 01 33 00 - Submittal Procedures.

1.3 SUBMITTALS (Cont'd)

.2 (Cont'd)
.2 Indicate specified hardware, including make, model, material, function, size, finish and other pertinent information.

.3 Manufacturer's Instructions:
.1 Submit manufacturer's installation instructions.

.4 Furnish other sections with two (2) complete sets of hardware templates for related fabricating and installation.

.5 Submit for owner review and comments key schedules listing the door number, hardware heading or item, lock function and the key group.

.6 Closeout Submittals
.1 Provide operation and maintenance data for door closers, locksets, door holders electrified hardware and fire exit hardware for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 QUALITY ASSURANCE

.1 Regulatory Requirements:
.1 Hardware for doors in fire separations and exit doors certified by a Canadian Certification Organization accredited by Standards Council of Canada.

.2 Test Reports: certified test reports showing compliance with specified performance characteristics and physical properties.

1.5 DELIVERY, STORAGE, AND HANDLING

.1 Packing, Shipping, Handling and Unloading:
.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Common Product Requirements.
.2 Package each item of hardware including fastenings, separately or in like groups of hardware, label each package as to item definition and location.

.2 Storage and Protection:
.1 Store finishing hardware in locked, clean and dry area.

1.5 DELIVERY, STORAGE, AND HANDLING (Cont'd)

.3 Where required, package items of hardware separately for delivery to other fabricators for their installation.

1.6 WASTE DISPOSAL AND MANAGEMENT

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Dispose of corrugated cardboard polystyrene plastic packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

1.7 MAINTENANCE

.1 Extra Materials:
.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.
.2 Supply two sets of wrenches for door closers locksets and fire exit hardware.

PART 2 - PRODUCTS

2.1 HARDWARE ITEMS

.1 Use one manufacturer's products only for similar items.

.2 All hardware items to be commercial grade.

2.2 DOOR HARDWARE

.1 Locks and latches:
.1 Locks and latches: to ANSI/BHMA A156.13, cylindrical lock sets, designed for function as stated in Hardware Schedule.
.2 Latch bolts to be anti friction with separate latch guard.
.3 ULC labels and 19mm throw for all fire rated doors.
.4 Auxiliary dead bolts to have hardened steel pin inserts.

2.2 DOOR HARDWARE (Cont'd)

.1 (Cont'd)

.5 Lever trim is required, trim to have concealed through bolt mounting and the lever is to be solid cast or forged material with a return to the door face.

.6 Finished as stated in Hardware Schedule.

.7 Acceptable Manufacturers:

.1 Schlage locks.

.2 Butt and hinges:

.1 Butts and hinges: to ANSI/BHMA A156.1, three knuckle concealed bearing. Exterior out swing doors must be non-ferrous and have non-removable pins (NRP).

.2 Acceptable Manufacturers:

.1 Hager

.2 Ives

.3 Door Closers and Accessories:

.1 Door controls (closers): to ANSI/BHMA A156.4.

.2 To have full adjustment features including back check, general speed, and latch speed control.

.3 All interior door closers to have reduced opening force spring power of 22N as required by the barrier free codes.

.4 Surface mounted door closers are to be located on the room side of the door whenever possible.

.5 Provide all mounting plates for door closers required to mount on special door and frame conditions. Check all door and frame details from related trades to ensure dimensions have not changed and hardware will not conflict with window lite kits.

.6 Where listed, door closers are to have full body covers to match the project finishes.

.7 Acceptable Manufacturers:

.1 LCN 4041

.4 Architectural door trim: to ANSI/BHMA A156.6, as listed in Hardware Schedule.

2.2 DOOR HARDWARE (Cont'd)

.4 (Cont'd)

.1 All kickplates, push plates, and bumper plates must have all sides bevelled and corners rounded to ensure there are no sharp edges. Supply plates with tape mounting or if screws are listed, with counter sunk screw holes. The plates will be .050 thick unless listed otherwise. Size to suit door width. Kickplate will be door width less 35 mm for single door and less 25 mm for pairs of doors.

.2 When push plates are listed with door pulls, install the push plate to conceal the through bolt.

.3 Pulls to be supplied with back to back (BTB) or through bolt mounting.

.4 All escutcheon plates to have a three digit room number engraved. Numbers to be 19mm high, Helvetica Medium, filled black.

.5 Acceptable Manufacturers:

.1 Hager

.2 Ives

.5 Door stops and holders:

.1 Wall stops are only to be used on proper wall conditions such as block or masonry. Supply floor stops with sufficient height to suite the floor condition or undercut of doors.

.2 Overhead stops and holders to be surface mounted unless there is a conflict with door closers or other hardware. Provide door stays with friction action in locations that do not have door closers. Install overhead stops and holders for 90 DEG stop unless otherwise specified.

.3 Electronic door holder to be supplied to suit the specified voltage and be connected to the fire alarm system to release the door when signalled.

.4 Acceptable Manufacturers:

.1 Sargent

.2 Hager

.3 Glynn Johnson

.6 Door seals:

.1 Perimeter seals to be supplied to fully cover all gaps between the door, frame, and floor condition to seal against weather, sound, or smoke.

2.2 DOOR HARDWARE (Cont'd)

.6 (Cont'd)

.2 Frame gasketing to be closed cell neoprene. The extruded housing to have a rib to prevent distortion during installation. Aluminum frames to be equipped with felt inserts by the frame supplier.

.3 Door bottoms will be heavy duty and have an adjustment screw to ensure proper contact with the floor. Supply the correct drop insert for carpet where required.

.4 Supply thermally broken thresholds for all exterior door openings.

.7 Door Operators:

.1 Power-operated pedestrian doors: to ANSI/BHMA A156.10.

.2 Door operators will be supplied and installed as listed. Electro-mechanical operator, powered by 1/4 hp motor. Power Transmission has only one moving part, ensuring superior reliability and low overall maintenance. Operator is non-handed to insure maximum versatility in adapting to varying field conditions. The operator housing provides a seal against dust, dirt and moisture.

.3 A self-contained, solid state integrated circuit controls the operation and switching of the swing power operator. The electronic control provides low voltage power supply for all means of actuation. No external or auxiliary low voltage power source will be allowed. The controls include time delay (5 to 30 seconds) for normal cycle.

.4 Interfaced with the transmission system is a DC shunt-wound permanent magnet motor with sealed ball bearings. System operates from 120 VAC-60 cycle-1 phase power supply. Operator is mounted in the header case housing using vibration isolators to maintain quiet operation.

.5 Acceptable Manufacturers:

.1 Hunter

.2 LCN

2.3 FASTENINGS

.1 Use only fasteners provided by manufacturer. Failure to comply may void warranties and applicable licensed labels.

2.3 FASTENINGS (Cont'd)

.2 Supply screws, bolts, expansion shields and other fastening devices required for satisfactory installation and operation of hardware.

.3 Exposed fastening devices to match finish of hardware.

.4 Use fasteners compatible with material through which they pass.

2.4 KEYING

.1 All keyed locksets shall be Master keyed to Owner's request.

.2 Provide keys in duplicate for every lock in this Contract.

.3 Provide three master keys for each MK or GMK group.

.4 Stamp keying code numbers on keys and cylinders.

.5 All cored and devices to suit best core system

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

.2 Furnish metal door and frame manufacturers with complete instructions and templates for preparation of their work to receive hardware.

.3 Furnish manufacturers' instructions for proper installation of each hardware component.

3.2 INSTALLATION

.1 Install hardware to standard hardware location dimensions in accordance with Canadian Metric Guide for Steel Doors and Frames (Modular Construction) prepared by Canadian Steel Door and Frame Manufacturers' Association.

.2 Use only manufacturer's supplied fasteners. Failure to comply may void manufacturer's warranties and applicable licensed labels. Use of "quick" type fasteners, unless specifically supplied by manufacturer, is unacceptable.

3.3 ADJUSTING

.1 Adjust door hardware, operators, closures and controls for optimum, smooth operating condition, safety and for weather tight closure.

.2 Lubricate hardware, operating equipment and other moving parts.

.3 Adjust door hardware to provide tight fit at contact points with frames.

3.4 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Clean hardware with damp rag and approved non-abrasive cleaner, and polish hardware in accordance with manufacturer's instructions.

.3 Remove protective material from hardware items where present.

.4 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 American Society for Testing and Materials International, (ASTM).
.1 ASTM C 542-05, Specification for Lock-Strip Gaskets.
.2 ASTM D 2240-05, Standard Test Method for Rubber Property - Durometer Hardness.
.3 ANSI/ASTM E330-02, Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference.

.2 Canadian General Standards Board (CGSB).
.1 CAN/CGSB-12.1-M90, Tempered or Laminated Safety Glass.
.2 CAN/CGSB-12.8-97 (Amendment), Insulating Glass Units.

.3 Flat Glass Manufacturers Association (FGMA).
.1 FGMA Glazing Manual - 1997.

1.2 SUBMITTALS

.1 Product Data: Submit manufacturer's printed product literature, specifications and data sheet in accordance with Section 01 33 00 - Submittal Procedures

1.3 SITE CONDITIONS

.1 Environmental Requirements:
.1 Install glazing when ambient temperature is 10 degrees C minimum. Maintain ventilated environment for 24 hours after application.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Unused or damaged glazing materials are not recyclable and must not be diverted to municipal recycling programs.

.3 Remove form site and dispose of packaging materials at appropriate recycling facilities.

1.4 WASTE MANAGEMENT AND DISPOSAL (Cont'd)

.4 Dispose of packaging material in appropriate on-site bin for recycling in accordance with site waste management program.

PART 2 - PRODUCTS

2.1 MATERIALS: GLASS

.1 GL3 Insulating glass units: to CAN/CGSB-12.8, double, 25 mm overall thickness.
.1 Glass: to CAN/CGSB-12.3 CAN/CGSB-12.1 CAN/CGSB-12.2 CAN/CGSB-12.4 CAN/CGSB-12.10.
.2 Glass thickness: 6 mm (1/4") tempered glass inner and outer lights.
.3 Inter-cavity space thickness: 13 mm (1/2")with low conductivity spacers.
.4 Glass coating: Low E 180, LOF/Pilkington Energy Advantage Low E or Solarban 60. Low E on surface 2.
.5 Inert gas fill: Argon.
.6 max SHGC 0.40.
.7 Min VT/SHGC 1.10.

.2 GL1 Safety Glass: To CAN/CGSB-12.1 Transparent 6 mm thick, tempered Type 2.

.3 GL2 Insulated Fire Rated Glazing (FRG):
.1 Insulating glass unit (IGU) to CAN CGSB 12.1 Safety Glazing.
.2 Outboard lite: 6mm clear tempered, Low E.
.3 Inboard lite: Firelite NT ceramic glass c/w 5mil impact safety film.
.4 Use silicone seals and steel or stainless-steel spacers consistent with the ULC-listing for this glass.
.5 IGU to be fabricated by a ULC-authorized company, approved to build fire-rated insulating glass.
.6 Nominal thickness: 1" (25mm)

.4 GL4 Safety Glass: to CAN/CGSB-12.1 Transparent 19 mm thick, tempered Type 2.

.5 Insulated Spandrel Glass: GANA 89 - 1-6, 6 mm, tempered spandrel glass with a water-based silicine elastomeric opacifying coating of 0.17 mm on #2 surface.
.1 Colour: clear glazing with coating colour as indicated on drawing.

2.1 MATERIALS: GLASS (Cont'd)

.6 GL6 Safety Glass: to CAN/CGSB-12.1 translucent 6 mm thick, tempered Type 2.

2.2 MATERIALS

.1 Sealant: Section 07 92 10.

2.3 ACCESSORIES

.1 Setting blocks: Neoprene Shore A durometer hardness to ASTM D 2240, to suit glazing method, glass light weight and area.

.2 Spacer shims: Neoprene Shore A durometer hardness to ASTM D 2240, 75 mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.

.3 Glazing tape:
.1 Preformed butyl compound with integral resilient tube spacing device, 10-15 Shore A durometer hardness to ASTM D 2240; coiled on release paper; x mm size; black colour.

.4 Glazing clips: manufacturer's standard type.

.5 Lock-strip gaskets: to ASTM C 542.

.6 ULC Listed accessories for fire rated glazing.

PART 3 - EXECUTION

3.1 MANUFACTURER'S INSTRUCTIONS

.1 Compliance: Comply with manufacturer's written data, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.2 EXAMINATION

.1 Verify that openings for glazing are correctly sized and within tolerance.

.2 Verify that surfaces of glazing channels or recesses are clean, free of obstructions, and ready to receive glazing.

3.3 PREPARATION

.1 Clean contact surfaces with solvent and wipe dry.

.2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.

.3 Prime surfaces scheduled to receive sealant.

3.4 INSTALLATION: INTERIOR - DRY METHOD (TAPE AND TAPE)

.1 Perform work in accordance with FGMA Glazing Manual IGMAC and Laminators Safety Glass Association - Standards Manual for glazing installation methods.

.2 Cut glazing tape to length and set against permanent stops, projecting 1.6 mm above sight line.

.3 Place setting blocks at 1/4 points, with edge block maximum 150 mm from corners.

.4 Rest glazing on setting blocks and push against tape for full contact at perimeter of light or unit.

.5 Place glazing tape on free perimeter of glazing in same manner described.

.6 Install removable stop without displacement of tape. Exert pressure on tape for full continuous contact.

.7 Knife trim protruding tape.

3.5 CLEANING

.1 Perform cleaning after installation to remove construction and accumulated environmental dirt.

.2 Remove traces of primer, caulking.

.3 Remove glazing materials from finish surfaces.

.4 Remove labels after work is complete.

.5 Clean glass using approved non-abrasive cleaner in accordance with manufacture's instructions.

3.5 CLEANING (Cont'd)

.6 Upon completion of installation, remove surplus materials, rubbish, tools and equipment barriers.

3.6 PROTECTION OF FINISHED WORK

.1 After installation, mark light with an "X" by using removable plastic tape or paste.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 American Society for Testing and Materials International, (ASTM)
.1 ASTM C 442/C 442M-01, Specification for Gypsum Backing Board, Gypsum Coreboard, and Gypsum Shaftliner Board.
.2 ASTM C 475/C 475M-02 (2015), Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
.3 ASTM C 630/C 630M-01, Specification for Water-Resistant Gypsum Backing Board.
.4 ASTM C 840-16, Specification for Application and Finishing of Gypsum Board.
.5 ASTM C 1002-14, Specification for Steel Self-Piercing Tapping Screws for the Application of Gypsum Panel Products or Metal Plaster Bases to Wood Studs or Steel Studs.
.6 ASTM C 1047-14a, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.

1.2 DELIVERY, STORAGE AND HANDLING

.1 Deliver materials in original packages, containers or bundles bearing manufacturers brand name and identification.

.2 Store materials inside, level, under cover. Keep dry. Protect from weather, other elements and damage from construction operations and other causes.

.3 Handle gypsum boards to prevent damage to edges, ends or surfaces. Protect metal accessories and trim from being bent or damaged.

1.3 SITE ENVIRONMENTAL REQUIREMENTS

.1 Maintain temperature minimum 10 degrees C, maximum 21 degrees C for 48 hours prior to and during application of gypsum boards and joint treatment, and for at least 48 hours after completion of joint treatment.

.2 Apply board and joint treatment to dry, frost free surfaces.

.3 Ventilation: Ventilate building spaces as required to remove excess moisture that would prevent drying of joint treatment material immediately after its application.

1.4 WASTE MANAGEMENT AND DISPOSAL

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.2 Do not dispose of unused paint and caulking materials into sewer systems, into lakes, streams, onto ground or in other locations where it will pose health or environmental hazard.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Standard board: to ASTM C 36/C 36M-01, 12.7 mm thick, 1200 mm wide x maximum practical length, ends square cut, edges bevelled. Ceiling.

.2 Fire rated gypsum board ceilings: 15.9 mm Type X, 1220 wide x 2440 length, edges bevelled.

.3 Non-structural Metal Framing:
.1 Non-load bearing channel stud framing: to ASTM C 645, 92mm stud size, roll formed from 0.53mm thickness hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460 mm centres.
.2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32 mm flange height.

2.1 MATERIALS (Cont'd)

.4 Metal furring and runner channels, hangers, tie wires, inserts and hangers.

.5 Nails: to ASTM C 514-01.

.6 Steel drill screws: to ASTM C 1002-01.

.7 Moulded metal corner beads, casing beads, control joints and edge trim: to ASTM C 1047-99, metal, 0.5 mm base thickness, perforated flanges, one piece length per location.

.8 Sealants: in accordance with Section 07 92 10 - Joint Sealing.

.9 Joint compound: to ASTM C 475/C 475M-02, asbestos-free.

PART 3 - EXECUTION

3.1 ERECTION

.1 Do application and finishing of gypsum board in accordance with ASTM C 840-02 except where specified otherwise.

.2 Do application of gypsum sheathing in accordance with ASTM C 1280-99.

.3 Install work level to tolerance of 1:1200.

.4 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers and grilles.

.5 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.

.6 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.

.7 Install wall furring for gypsum board wall finishes in accordance with ASTM C 840-02, except where specified otherwise.

.8 Furr duct shafts, beams, columns, pipes and exposed services where indicated.

3.2 APPLICATION

.1 Do not apply gypsum board until bucks, anchors, blocking, sound attenuation, electrical and mechanical work are approved.

.2 Apply single layer gypsum board to wood furring or framing using screw fasteners Maximum spacing of screws 300 mm on centre.

.1 Single-Layer Application:

.1 Apply gypsum board on ceilings prior to application of walls in accordance with ASTM C 840-02.

.2 Apply gypsum board vertically or horizontally, providing sheet lengths that will minimize end joints.

.3 Apply water-resistant gypsum board to bathrooms, washrooms, and laundry rooms. Apply water-resistant sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads. Do not apply joint treatment on areas to receive tile finish.

.4 Install ceiling boards in direction that will minimize number of end-butt joints. Stagger end joints at least 250 mm.

.5 Install gypsum board with face side out.

.6 Do not install damaged or damp boards.

.7 Locate edge or end joints over supports. Stagger vertical joints over different studs on opposite sides of wall.

3.3 INSTALLATION

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150 mm on centre

.2 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.

3.3 INSTALLATION (Cont'd)

.3 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.

.4 Splice corners and intersections together and secure to each member with 3 screws.

.5 Install access doors to electrical and mechanical fixtures specified in respective sections.
.1 Rigidly secure frames to furring or framing systems.

.6 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.

.7 Gypsum Board Finish: finish gypsum board walls and ceilings to following levels in accordance with Association of the Wall and Ceiling Industries (AWCI) International Recommended Specification on Levels of Gypsum Board Finish:
.1 Level 4: Embed tape for joints and interior angles in joint compound and apply three separate coats of joint compound over joints, angles, fastener heads and accessories; surfaces smooth and free of tool marks and ridges.

.8 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.

.9 Fill screw head depressions with joint and taping compounds to bring flush with adjacent surface of gypsum board so as to be invisible after surface finish is completed.

.10 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

.11 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

3.4 ERECTION OF FRAMING

.1 Install steel framing members to receive screw-attached gypsum board in accordance with ASTM C754 except where specified otherwise.

.2 Align partition tracks at floor and ceiling and secure at 610 mm on centre maximum.

.3 Place studs vertically at 400 mm on centre and maximum of 50 mm from abutting walls, and at each side of openings and corners. Position studs in tracks at floor and ceiling. Cross brace steel studs as required to provide rigid installation to manufacturer's instructions.

.4 Erect metal studding to tolerance of 1:1000.

.5 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

.6 Include two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50 mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.

.7 Install heavy gauge single jamb studs at openings.

.8 Erect track at head of door/window openings and sills of sidelight/window openings to accommodate intermediate studs. Secure track to studs at each end, in accordance with manufacturer's instructions. Install intermediate studs above and below openings in same manner and spacing as wall studs.

.9 Include 40 mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.

.10 Install steel studs or furring channel between studs for attaching electrical and other boxes.

3.4 ERECTION OF FRAMING (Cont'd)

.11 Extend partitions to ceiling height except where indicated.

.12 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use double track slip joint.

.13 Install continuous insulating strips to isolate studs from uninsulated surfaces.

END OF SECTION

PART 1 - GENERAL

1.1 Related Sections

.1 Section 07 92 10 - Joint Sealing.

1.2 References

.1 American National Standards Institute (ANSI)/Ceramic Tile Institute (CTI)
.1 ANSI A108.1-99, Specification for the Installation of Ceramic Tile (Includes ANSI A108.1a-1999, 108.4-.13, A118.1-.10, ANSI A136.1-1999).
.2 CTI A118.6-92, Specification for Ceramic Tile Grouts (included in ANSI A108.1-1992).

.2 American Society for Testing and Materials (ASTM International) International
.1 ASTM C 144-02, Specification for Aggregate for Masonry Mortar.

.3 Canadian General Standards Board (CGSB)
.1 CGSB 71-GP-22M, Adhesive, Organic, for Installation of Ceramic Wall Tile.
.2 CAN/CGSB-75.1-M88, Tile, Ceramic.

.4 Terrazzo Tile and Marble Association of Canada (TTMAC)
.1 Tile Specification Guide 09300 2009/2010, Tile Installation Manual.
.2 Tile Maintenance Guide 2000.

1.3 Product Data

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.

1.4 Samples

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.

.2 Submit duplicate full tile samples of each colour, texture, size, and pattern of tile.

1.5 Delivery, Storage and Handling

.1 Deliver materials in containers with labels legible and intact and grade-seals unbroken.

.2 Store material so as to prevent damage or contamination.

.3 Store materials in a dry area, protected from freezing, staining and damage.

.4 Store cementitious materials on a dry surface.

1.6 Waste Management and Disposal

.1 Separate and recycle waste materials in accordance with Section 01 74 21 - Construction/Demolition Waste Management And Disposal.

.2 Remove from site and dispose of all packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal packaging material in appropriate on-site for recycling in accordance with Waste Management Plan.

.4 Unused adhesive, sealant and coating materials must be disposed of at an official hazardous material collections site as approved by the Engineer.

.5 Unused adhesive, sealant and coating materials must not be disposed of into the sewer system, into streams, lakes, onto the ground or in other location where it will pose a health or environmental hazard.

1.7 Environmental Conditions

.1 Maintain air temperature and structural base temperature at ceramic tile installation area above 12 ° C for 48 h before, during, and 48 h after, installation.

.2 Do not install tiles at temperatures less than 12 ° C or above 38 ° C.

.3 Do not apply epoxy mortar and grouts at temperatures below 15 ° C or above 25 ° C.

1.8 Extra Material

.1 Provide maintenance materials in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide minimum 2% of each type and colour of tile required for project for maintenance use. Store where directed.

.3 Maintenance material to be of same production run as installed material.

PART 2 - PRODUCTS

2.1 Product Description

.1 Ceramic porcelain tile to CAN/CGSB-75.1-M88
- .1 Floor Tile and tile base (100 mm):
  - .1 Acceptable Product: Matte glazed Ceramic Tile: Olympia Uptown Series.
    - .1 Size 300 x 600.
    - .2 Colour: Hamilton (Medium Grey) matte.
  - .2 Acceptable Product: Porcelain Tile, Stone Tile, Otto Series.
    - .1 Size 300 x 600.
    - .2 Finish: Natural.
    - .3 Colour: Grigio.

2.2 Mortar and Adhesive Materials

.1 Portland modified thinset one step mortar to: ANSI A118.4 suited to application.

.2 Water: potable and free of minerals and chemicals which are detrimental to mortar and grout mixes.

2.3 Grout

.1 Latex-Portland Cement Grout: to ANSI A108.1-1992, fast curing, high early strength, polymer-modified, stain resistant, sanded mix for floors, unsanded mix for walls and floors with polished tiles commercial tile grout.

.2 Grout colour to be selected by Consultant from manufacturer's standard colour range.

2.4 Accessories

.1 Sealant: in accordance with Section 07 92 10 - Joint Sealing.

.2 Metal Edging: Provide metal edging along top and side edge exposed tile edges. 'Jolly' profile by Schluter or approved equivalent.

2.5 Mixes

.1 Mortar and Adhesive: mix to manufacturer's instructions.

.2 Mix bond and levelling coats, and grout to manufacturer's instructions.

.3 Adjust water volumes to suit water content of sand.

PART 3 - EXECUTION

3.1 Workmanship

.1 Do tile work in accordance with TTMAC Tile Installation Manual 2010 , "Ceramic Tile", except where specified otherwise.

.2 Apply tile or backing coats to clean and sound surfaces.

.3 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even. Do not split tiles.

.4 Maximum surface tolerance 1:800.

.5 Make joints between tile uniform and approximately 1.5 mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.

.6 Lay out tiles so perimeter tiles are minimum 1/2 size.

.7 Sound tiles after setting and replace hollow-sounding units to obtain full bond.

.8 Make internal angles square, external angles rounded bullnosed.

3.1 Workmanship (Cont'd)

.9 Install edge trim pieces at termination of wall tile panels and top of the tile base, except where panel abuts projecting surface or intersecting plane.

.10 Allow minimum 24 h after installation of tiles, before grouting.

.11 Clean installed tile surfaces after installation and grouting cured.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

.1 ASTM International (ASTM)
.1 ASTM C 423-09, Standard Test Method for Sound Absorption and Sound Absorption Coefficients by the Reverberation Room Method
.2 ASTM E 580/E 580M-14 Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions.
.3 ASTM C 635/C 635M-13a, Standard Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
.4 ASTM C 636/C 636M-08, Standard Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.
.5 ASTM E 1264-14, Standard Classification for Acoustical Ceiling Products.
.6 ASTM F 1667-15Standard Specification for Driven Fasteners: Nails, Spikes and Staples.

.2 Health Canada/Workplace Hazardous Materials Information System (WHMIS)
.1 Safety Data Sheets (SDS).

.3 Underwriter's Laboratories of Canada (ULC)
.1 CAN/ULC-S102-2003, Surface Burning Characteristics of Building Materials and Assemblies.

1.2 COORDINATION

.1 Do not begin erection of ceiling suspension system until work above ceiling has been inspected by Consultant.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for acoustical suspension, acoustic panels, acoustic tiles, and system accessories. Include product characteristics, performance criteria, physical size, finish and limitations.

1.3 ACTION AND INFORMATIONAL SUBMITTALS (Cont'd)

.2 Delegated Design Submittals:
.1 Submit delegated design shop drawings stamped and signed by professional engineer registered or licensed in Province of Ontario, Canada.
.2 Indicate components and installation methods to conform to specified seismic design and construction requirements of Contract Documents and in general accordance with ASTM E 580/E 580M.
.3 Include supporting details, treatment of cross runners, main runners, and wall closures at terminal ends, suspension wire, lateral force bracing, light fixtures and services within the ceiling, seismic isolation joints and partition bracing.

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Submit operation and maintenance data for acoustical suspension for incorporation into manual.

.3 Submit final certificate from design professional responsible for delegated detail design of ceiling indicating conformity with accepted shop drawings.

1.5 MAINTENANCE MATERIALS

.1 Provide extra acoustical units in accordance with Section 01 78 00 - Closeout Submittals.

.2 Provide acoustical units amounting to 2% of gross ceiling area for each pattern and type of acoustical tile, required for project, minimum 1 complete factory-sealed package of each.

.3 Ensure extra materials are from same production run as installed materials.

.4 Deliver extra materials for each type of acoustical unit in original unopened packages clearly identified, including colour and texture.

1.5 MAINTENANCE MATERIALS (Cont'd)

.5 Deliver to Owner, upon completion of the work of this section.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirementsandwith manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials flat, indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect acoustical ceiling tiles suspension grid components from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.
.4 Store extra materials required for maintenance, where directed by Owner.

.4 Waste Management and Disposal:
.1 Separate waste materials for recycling or disposal in accordance with Section 01 74 21 - Waste Management and Disposal.

1.7 ENVIRONMENTAL REQUIREMENTS

.1 Permit wet work to dry before beginning to install.

.2 Maintain uniform minimum temperature of 15 degrees C and humidity of 20-40% before and during installation.

.3 Store materials in work area 48 hours prior to installation.

PART 2 - PRODUCTS

2.1 DESIGN CRITERIA

.1 Design Requirements:
.1 Intermediate duty system to ASTM C 635/ASTM C635M.
.2 Maximum deflection: 1/360th of span to ASTM C 635/ASTM C635M deflection test.

.2 Seismic design requirements:
.1 Design acoustical ceiling installation to resist effects of earthquake motions under seismic design conditions specified in Contract Documents. Provide components as necessary to implement design.

2.2 ACOUSTICAL CEILING SUSPENSION

.1 Acoustical Ceiling Suspension system: non fire rated, made up as follows:
.1 2 directional exposed tee bar grid.
.2 Acceptable Product: Prelude ML exposed Tee as manufactured by Armstrong WorldIndustries or equal by Certainteed or CGC.
.3 Colour: White.

.2 Basic materials for suspension system: commercial quality cold rolled steel.

.3 Exposed tee bar grid components: shop painted satin sheenwhite. Components die cut. Main tee with double web, rectangular bulb and 25 mm rolled cap on exposed face. Cross tee with rectangular bulb; web extended to form positive interlock with main tee webs; lower flange extended and offset to provide flush intersection.

.4 Hanger wire: galvanized soft annealed steel wire.

.5 Hanger inserts: purpose made.

.6 Accessories: splices, clips, wire ties, retainers and wall moulding, to complement suspension system components, as recommended by system manufacturer.

2.3 ACOUSTICAL CEILING PANELS

.1 Acoustical Panel: to ASTM E 1264 and as follows.

.1 ACT 1: Armstrong Fissured or equal by CGC or Certainteed.

.1 Size: 610 x 1220 tiles.

.2 Colour: White.

.3 Edge Profile: square.

.2 ACT 2: Armstrong Optima or equal by CGC or Certainteed.

.1 Size: 610 x 610 tiles.

.2 Colour: White.

.3 Edge Profile: square.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verify conditions of substrates previously installed under other Sections or Contracts are acceptable for acoustical ceiling tile and track installation in accordance with manufacturer's written instructions.

3.2 INTERFACE WITH OTHER WORK

.1 Coordinate ceiling work to accommodate components of other sections, such as light fixtures, diffusers, speakers, sprinkler heads, to be built into acoustical ceiling components.

3.3 SUSPENSION SYSTEM INSTALLATION

.1 Comply with manufacturer's written installation instructions and recommendations, including product technical bulletins, product carton installation instructions, and data sheets.

.2 Install suspension system in accordance with accepted shop drawings, Certification Organizations tested design requirements and ASTM C 636/C 636M except where specified otherwise.

.3 Lay out centre line of ceiling both ways, to provide balanced borders at room perimeterwith border units not less than 50% of standard unit widthaccording to reflected ceiling plan.

3.3 SUSPENSION SYSTEM INSTALLATION (Cont'd)

.4 Finished ceiling system to be square with adjoining walls and level within 1:1000.

.5 Secure hangers to overhead structure using attachment methods as recommended by Manufacturer.

.6 Install hangers spaced at maximum 1200 mm centres and within 150 mm from ends of main tees.

.7 Ensure suspension system is coordinated with location of related components. Provide carrying channels as necessary to bridge at unavoidable interference between suspension system and other work above ceiling.

.8 Install wall moulding to provide correct ceiling height.

.9 Completed suspension system to support super-imposed loads, such as lighting fixturesdiffusersgrilles and speakers.

.10 Support at light fixturesdiffusers with additional ceiling suspension hangers within 150 mm of each corner and at maximum 610 mm around perimeter of fixture.

.11 Interlock cross member to main runner to provide rigid assembly.

.12 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.

3.4 ACOUSTICAL CEILING PANEL INSTALLATION

.1 Install lay-in acoustical panels in ceiling suspension system in accordance with manufacturer's instructions and as indicated.

3.5 SITE QUALITY CONTROL

.1 Arrange for periodic site visits by design professional responsible for delegated ceiling design work to review installed work for conformity to design.

3.6 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.
.1 Touch up scratches, abrasions, voids and other defects in painted surfaces.

.3 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.

3.7 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by acoustical suspension installation.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

.1 ASTM International
.1 ASTM F 1066-04(2010)e1, Standard Specification for Vinyl Composition Floor Tile.
.2 ASTM F 1344-12e1, Standard Specification for Rubber Floor Tile.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for resilient tile flooring and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:
.1 Submit duplicate tile in size specified.

1.3 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra Materials:
.1 Provide maintenance materials of resilient tile flooring, base and adhesive in accordance with Section 01 78 00 - Closeout Submittals.
.2 Provide 10% of each colour, pattern and type flooring material required for this project for maintenance use.
.3 Extra materials from same production run as installed materials.
.4 Identify each container of floor tile and each container of adhesive.
.5 Deliver to Consultant, upon completion of the work of this section.
.6 Store where directed by Consultant.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirementsandwith manufacturer's written instructions.

1.4 DELIVERY, STORAGE AND HANDLING (Cont'd)

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect resilient tile flooring from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: in accordance with Section 01 74 21 - Waste Management and Disposal.

1.5 SITE CONDITIONS

.1 Ambient Conditions:
.1 Maintain air temperature and structural base temperature at flooring installation area above 20 degrees C for 48 hours before, during and for 48 hours after installation.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Luxury Vinyl Tile:
.1 Acceptable product: Mannington Commercial Walkway and Walkway 20 Collection.
.1 Size: 150 mm x 915 mm.
.2 Colour: as selected by Consultant from Manufacturer's standard range.
.3 Installation pattern: Ashlar.
.4 Allow for up to 2 colours.
.2 Acceptable Product: Interface, Studio Set Series.
.1 Size: 25cm x 1m.
.2 Colour: as selected by Consultant from Manufaturer's standard range.
.3 Installation pattern: Ashlar.
.4 Allow for up to 2 colours.

.2 Resilient base: continuous complete with premoulded end stops and external corners.

2.1 MATERIALS (Cont'd)

.2 (Cont'd)
.1 Acceptable product: Johnsonite/Tarkett or equal by Roppe or Armstrong.
.2 Style: cove.
.3 Height 101.6 mm.
.4 Length: cut lengths min 2400 mm.
.5 Colour as selected from manufacturers standard range.

.3 Resilient stair tread with integral riser: rubber, 30 mm vertical face, square nose, full tread deep, 5 mm thick, with solid integrated colour contrasting non-slip nosing strip (surface applied adhesive type not acceptable). Acceptable product: Johnsonite/Tarkett Hammered stair tread or approved equal. Colours as selected from manufacturers standard range.

.4 Tactile Warning indicator surface: rubber tile with truncated domes.
.1 Acceptable Products: Johnsonite/Tarkett or Kinesik.
.2 Refer to drawings for sizes and locations.
.3 Colour as selected by Consultant from manufacturers standard range.

.5 Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.

.6 Sub-floor filler and leveller: as recommended by flooring manufacturer for use with their product.

.7 Metal edge strips: aluminum extruded, smooth, mill finish with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrate previously installed under other Sections or Contracts are acceptable for resilient tile flooring installation in accordance with manufacturer's written instructions.
.1 Visually inspect substrate.
.2 Inform Consultant of unacceptable conditions immediately upon discovery.
.3 Proceed with installation only after unacceptable conditions have been remedied.

3.2 INSPECTION

.1 Ensure concrete floors are dry, by using test methods recommended by tile manufacturer.

3.3 SUB-FLOOR TREATMENT

.1 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

.2 Remove sub-floor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with sub-floor filler.

.3 Prepare concrete to flooring manufacturer's printed instructions.

3.4 TILE APPLICATION

.1 Provide high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to outside.

.2 Apply adhesive uniformly using recommended trowel in accordance with flooring manufacturer's instructions. Do not spread more adhesive than can be covered by flooring before initial set takes place.

.3 Lay flooring with joints parallel to building lines to produce symmetrical tile pattern. Border tiles minimum half tile width.

3.4 TILE APPLICATION (Cont'd)

.4 Install flooring to pattern indicated.

.5 As installation progresses, and after installation, roll flooring in 2 directions with 45 kg minimum roller to ensure full adhesion.

.6 Cut tile and fit neatly around fixed objects.

.7 Install feature strips and floor markings where indicated. Fit joints tightly.

.8 Install flooring in pan type floor access covers. Maintain floor pattern.

.9 Continue flooring through areas to receive movable type partitions without interrupting floor pattern.

.10 Terminate flooring at centerline of door in openings where adjacent floor finish or colour is dissimilar.

.11 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.5 APPLICATION STAIRS

.1 Install stair nosings, treads and risers one piece for full width of stair. Adhere over entire surface and fit accurately.

3.6 APPLICATION BASE

.1 Lay out base to keep number of joints at a minimum.

.2 Clean substrate and prime with one coat of adhesive.

.3 Apply adhesive to back of base.

.4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.

.5 Install straight and level to variation of 1:1000.

.6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

3.6 APPLICATION BASE (Cont'd)

.7 Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles.

.8 Use toeless type base where floor finish will be carpet, coved type elsewhere.

.9 Install toeless type base before installation of carpet on floors.

.10 Heat weld base in accordance with manufacturer's printed instructions.

3.7 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 00 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
.1 Clean flooring and base surfaces to flooring manufacturer's printed instructions.

.3 Remove excess adhesive from floor, base and wall surfaces without damage.

.4 Clean floor and base surface to flooring manufacturer's instructions.

.5 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 PROTECTION

.1 Protect new floors from time of final set of adhesive until final inspection.

.2 Prohibit traffic on floor for 48 hours after installation.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

.1 American Association of Textile Chemists and Colorists (AATCC)
- .1 AATCC Test Method 16.1-2012(R2014), Colorfastness to Light: Outdoor.
- .2 AATCC Test Method 134-2013(2016), Electrostatic Propensity of Carpets.
- .3 AATCC Test Method 171-2014, Carpets: Cleaning of; Hot Water Extraction Method .
- .4 AATCC Test Method 175-2013, Stain Resistance: Pile Floor Coverings.

.2 Canadian General Standards Board (CGSB)
- .1 CAN/CGSB-4.2 No.27.6-M91-(R2013), Textile Test Methods - Flame Resistance - Methemine Tablet Test for Textile Floor Coverings.
- .2 CAN/CGSB-4.2 No.77.1-94/ISO 4919: 1978 (R2012), Textile Test Methods - Carpets - Determination of Tuft Withdrawal Force.

.3 Carpet and Rug Institute (CRI)
- .1 CRI 104 Standard for Installation of Commercial Carpet 2015.
- .2 CRI Green Label Plus Indoor Air Quality Testing Program.

.4 Health Canada
- .1 C.R.C., c.923-10, Hazardous Products Act - Carpet Regulations, Part II of Schedule 1.

.5 ULC Standards(ULC)
- .1 CAN/ULC-S102-11, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .2 CAN/ULC-S102.2-88, Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings and Miscellaneous Materials and Assemblies.

1.2 ADMINISTRATIVE REQUIREMENTS

.1 Pre-Installation Meetings:
- .1 Convene pre-installation meeting 1 week prior to beginning work of this Section, with Contractor's Representative to:
  - .1 Verify project requirements.
  - .2 Review installation and substrate conditions.

1.2 ADMINISTRATIVE REQUIREMENTS (Cont'd)

.1 (Cont'd)
.1 (Cont'd)
.3 Co-ordination with other construction subtrades.
.4 Review manufacturer's written installation instructions and warranty requirements.

.2 Sequencing: sequence with other work. Comply with manufacturer's written recommendations for sequencing construction operations.

1.3 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets for each carpet tile and adhesive and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Samples:
.1 Submit 2 samples of each type of carpet tile specified and for each colour selected.

.4 Manufacturer's Instructions: submit manufacturer's installation andstorage instructions.

.5 Manufacturers Reports:
.1 Manufacturer's Field Reports: submit manufacturer's written reports within 3 days of review, verifying compliance with specifications.

.6 Qualification Statements:
.1 Compliance: to CAN/ULC-S102andCAN/UL C-S102.2.
.2 Testing: passes Green Label Plus Indoor Air Quality Testing Program.
.3 Tuft bind: meets requirements of CAN/CGSB-4.129 when tested to CAN/CGSB-4.2 No.77.1.

1.4 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

1.4 CLOSEOUT SUBMITTALS (Cont'd)

.2 Operation and Maintenance Data: submit operation and maintenance data for installed products for incorporation into manual.

.3 Warranty Documentation: submit warranty documents specified.
.1 Warranty: 15 year standard non-prorated warranty from manufacturer.

1.5 MAINTENANCE MATERIAL SUBMITTALS

.1 Extra stock materials: deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Section 01 78 00 - Closeout Submittals.
.1 Quantity: provide minimum 10% of:
.1 Carpet tile each colour indicated.
.2 Adhesives
.2 Delivery, storage and protection: comply with Owner's requirements for delivery and storage of extra materials.

1.6 QUALITY ASSURANCE

.1 Quality Assurance: in accordance with Section 01 45 00 - Quality Control.

.2 Regulatory Requirements:.
.1 Prequalification: compliance with Health Canada regulations under "Hazardous Products Act", Part II of Schedule 1, to CAN/CGSB-4.2 No. 27.6.

.3 Qualifications:
.1 Manufacturer: capable of providing field service representation during construction and approving application method.
.2 Flooring Installer:
.1 Experienced in performing work of this Section who has specialized in installation of work similar to that required for this project.
.2 No sub-contract labour without written approval of Consultant.
.3 Responsible for proper product installation, including floor testing and preparation as specified and in accordance with carpet manufacturer's written instructions.

1.7 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials off ground indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store materials protected from exposure to harmful weather conditions and at temperature conditions recommended by manufacturer.
.3 Store and protect carpet tile and adhesive in original containers or wrapping with manufacturer's seals and labels intact.
.4 Store carpet and adhesive at minimum temperature of 18 degrees C and relative humidity of maximum 65% for minimum of 48 hours before installation.
.5 Prevent damage to materials during handling and storage. Keep materials under cover and free from dampness.
.6 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials.
.7 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse and returnby manufacturer of pallets, crates, padding, and packaging materials in accordance with Section 01 74 21 - Waste Management and Disposal.

1.8 SITE CONDITIONS

.1 Moisture: substrate within moisture limits and alkalinity limits recommended by manufacturer. Prepare moisture testing and provide report to Consultant.

1.8 SITE CONDITIONS (Cont'd)

.2 Temperature: maintain ambient temperature of minimum 18 degrees C from 48 hours before installation to minimum 48 hours after completion of work.

.3 Relative humidity: maintain between 10% and 65% for 48 hours before, during and 48 hours after installation.

.4 Ventilation:
.1 Ventilate area of work in accordance with manufacturers recomendations.
.2 Ventilate enclosed spaces in accordance with Section 01 51 00 - Temporary Utilities. Provide fans with HEPA filters.
.3 Provide continuous ventilation during and after carpet application. Run ventilation system 24 hours per day during installation; provide continuous ventilation for 7 days after completion of carpet installation.

.5 Install carpet after:
.1 Space enclosed and weatherproof.
.2 Wet-work in space completed and nominally dry.
.3 Work above ceilings complete.

1.9 WARRANTY

.1 Manufacturer's warranty: submit, for Consultant's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty in addition to and not limit other rights Owner may have under Contract Documents.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Manufacturers:
.1 Ensure manufacturer has minimum 5 years experience in manufacturing components similar to or exceeding requirements of project.

.2 Acceptable Product: Interface On Line Series.
.1 Colour: Pewter 103787.
.2 Size 25 cm x 1 m.
.3 Thickness 6.5 mm.

2.1 MATERIALS (Cont'd)

.2 (Cont'd)
.4 Installation pattern: vertical ashlar.

.3 Acceptable Product: Tarkett, Metri II Series.
.1 Colour: as selected by Consultant from manufacturer's standard range.
.2 Size: 24" x 24"
.3 Thickness: 7.1 mm
.4 Installation pattern: vertical ashlar.

2.2 PERFORMANCE

.1 Flammability: certified for flammability to Health Canada regulations under "Hazardous Products - Carpet Regulations", Part II of Schedule 1.

.2 Flame Spread: maximum flame spread rating 300, maximum smoke developed classification 500, when tested to CAN/ULC-S102.2.

.3 Smoke Development: Maximum 450 to ASTM E 662.

.4 Wear: maximum 10% loss of pile face fibre by weight for 10 years.

.5 Edge Ravel: none for 10 years.

.6 Static Resistance: permanent static control to AATCC 134, 3000 V maximum at 20% RH and 22 degrees C.

.7 Static Generation: less than 3.0 kV per AATCC 134 for 10 years.

.8 Stain resistance: to AATCC 175, 8.

.9 Colorfastness, dimensional stability, permanency of finishes, and ease of cleaning: to AATCC 171.

.10 Indoor Air Quality Certification: certified to CRI Green Label Plus IAQ requirements.

2.3 ACCESSORIES

.1 Rubber Base: Section 09 65 19.

.2 Adhesive:

2.3 ACCESSORIES (Cont'd)

.2 (Cont'd)
.1 Multi-purpose Adhesive Type: recommended by carpet tile manufacturer for direct glue down installation.

.3 Metal Edge Strips:
.1 aluminum extruded, smooth, mill finish with lip to extend under floor finish, shoulder flush, with top of adjacent floor finish.

.4 Carpet protection: non-staining heavy duty kraft paper.

.5 Concrete floor sealer:
.1 As recommended by manufacturer.

.6 Subfloor patching compound: Portland cement base filler, mix with latex and water to form cementitious paste.

PART 3 - EXECUTION

3.1 INSTALLERS

.1 Experienced and qualified technicians to carry out assembly and installation of tile carpet.

3.2 EXAMINATION

.1 Examine conditions, substrates and work to receive work of this Section, co-ordinate with Section 01 71 00 - Examination and Preparation.

.2 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts acceptable for carpet tile installation in accordance with manufacturer's written instructions.
.1 Inform Consultant of unacceptable conditions immediately upon discovery.
.2 Proceed with installation only after unacceptable conditions remedied.

3.3 PREPARATION

.1 Subfloor Preparation:

3.3 PREPARATION (Cont'd)

.1 (Cont'd)
.1 Inspect concrete and determine special care required to make it a suitable for carpet installation.
.2 Fill and level cracks 3 mm wide or protrusions over 0.8 mm with appropriate and compatible latex patching compound.
.3 Comply with manufacturer's written recommendations for maximum patch thickness.
.4 Prime large patch areas with compatible primer.
.5 Ensure concrete substrates cured, clean and dry.
.6 Ensure concrete substrates free of paint, dirt, grease, oil, curing or parting agents, and other contaminates, including sealers, that interfere with bonding of adhesive.
.7 Where powdery or porous concrete surface encountered, apply primer compatible with adhesive to provide suitable surface for glue-down installation.

.2 Surface Preparation: prepare surface in accordance with manufacturer's written recommendations.
.1 Prepare floor surfaces in accordance with CRI Carpet Installation Standard.

.3 Tile Carpeting Preparation:
.1 Pre-condition carpeting following manufacturer's written instructions.

3.4 INSTALLATION

.1 Install carpet tiles in accordance with manufacturer's written instructions, and CRI Carpet Installation Standard.

.2 Co-ordinate tile carpeting work with work of other trades, for proper time and sequence to avoid construction delays.

.3 Install carpet tile after finishing work is completed but before demountable office partitions and telephone and electrical pedestal outlets installed.

3.4 INSTALLATION (Cont'd)

.4 Install carpet tile in accordance with manufacturer's recommendation. This can include quarter-turn 90 degree format, monolithic, random, quarter turn ashlar, horizontal, herringbone or vertical ashlar.

.5 Snugly join carpet tiles in completed installation.
.1 Measure distance covered by 11 carpet tiles (10 joints) and ensure distance is compliance with manufacturer specifications.
.2 Trapping yarn between carpet tiles is prohibited.

.6 Apply thin film of pressure-sensitive adhesive according to manufacturer's recommendations.

.7 Finished installation to present smooth wearing surface free from conspicuous seams, burring and other faults.

.8 Use material from same dye lot.
.1 Colour, pattern and texture to match within visual areas.
.2 Maintain constant pile direction.

.9 Fit around architectural, mechanical, electrical and telephone outlets, and furniture fitments, around perimeter of rooms into recesses, and around projections.

.10 Install carpeting in pan type floor access covers.

.11 Extend carpet tiles into toe spaces, door reveals, closets, open-bottomed obstructions, removable flanges, alcoves, and similar openings.

.12 Install carpet tiles smooth and free from bubbles, puckers, and other defects.

.13 Protect exposed carpet tile edges at transition to other flooring materials with suitable transition strips.

3.5 INSTALLATION: BASE

.1 Lay out base to keep number of joints at minimum.

3.5 INSTALLATION: BASE (Cont'd)

.2 Clean substrate and prime with one coat of adhesive.

.3 Apply adhesive to back of base.

.4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.

.5 Install straight and level to variation of 1:1000.

.6 Scribe and fit to door frames and other obstructions. Use premoulded end pieces at flush door frames.

.7 Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles.

.8 Heat weld base in accordance with manufacturer's printed instructions.

3.6 SITE QUALITY CONTROL

.1 Site Tests and Inspections:
.1 Co-ordinate site test with Section 01 45 00 - Quality Control.

3.7 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.
.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 00 - Cleaning.
.1 Vacuum carpets clean immediately after completion of installation.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Waste Management and Disposal.
.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.8 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Prohibit traffic on carpet for minimum period of 24 hours after installation and until adhesive is cured.

.3 Install carpet protection.

.4 Repair damage to adjacent materials caused by tile carpeting installation.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCES

.1 Health Canada / Workplace Hazardous Materials Information System (WHMIS)
.1 Material Safety Data Sheets (MSDS).

.2 Master Painters Institute (MPI)
.1 MPI Architectural Painting Specifications Manual, 2004.

1.2 SUBMITTALS

.1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit product data and instructions for each paint and coating product to be used.

.3 Samples:
.1 Submit full range colour sample chips to indicate where colour availability is restricted.
.2 Submit duplicate 200 x 300 mm sample panels of each paint and stain with specified paint or coating in colours, gloss/sheen and textures required to MPI Architectural Painting Specification Manual standards submitted on following substrate materials:
.3 Retain reviewed samples on-site to demonstrate acceptable standard of quality for appropriate on-site surface.

1.3 DELIVERY, STORAGE AND HANDLING

.1 Packing, Shipping, Handling and Unloading:
.1 Pack, ship, handle and unload materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's written instructions.

.2 Acceptance at Site:
.1 Identify products and materials with labels indicating:
.1 Manufacturer's name and address.
.2 Type of paint or coating.
.3 Compliance with applicable standard.
.4 Colour number in accordance with established colour schedule.

1.3 DELIVERY, STORAGE AND HANDLING (Cont'd)

.2 (Cont'd)
.1 (Cont'd)
.3 Remove damaged, opened and rejected materials from site.

.4 Storage and Protection:
.1 Provide and maintain dry, temperature controlled, secure storage.
.2 Store materials and supplies away from heat generating devices.
.3 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.

.5 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.

.7 Fire Safety Requirements:
.1 Provide one 9 kg Type ABC dry chemical fire extinguisher adjacent to storage area.
.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
.3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

1.4 SITE CONDITIONS

.1 Heating, Ventilation and Lighting:
.1 Ventilate enclosed spaces in accordance with Section.
.2 Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees C for 24 hours before, during and after paint application until paint has cured sufficiently.
.3 Provide continuous ventilation for seven days after completion of application of paint.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Paint materials listed in the MPI Approved Products List (APL) are acceptable for use on this project.

.2 Provide paint materials for paint systems from single manufacturer.

.3 Only qualified products with E2 "Environmentally Friendly" rating are acceptable for use on this project.

.4 Conform to latest MPI requirements for painting work including preparation and priming.

2.2 COLOURS

.1 Colour schedule will be based upon selection of three (3) base colours (+ white) and three (3) accent colours. No more than six (6) colours (+ white) will be selected for entire project and no more than three (3) colours (+ white) will be selected in each area.

.2 Selection of colours from manufacturers full range of colours.

2.3 MIXING AND TINTING

.1 Perform colour tinting operations prior to delivery of paint to site.

.2 Re-mix paint in containers prior to and during application to ensure break-up of lumps, complete dispersion of settled pigment, and colour and gloss uniformity.

2.4 GLOSS/SHEEN RATINGS

.1 Paint gloss is defined as sheen rating of applied paint, in accordance with following values:

	Gloss @ 60 degrees	Sheen @ 85 degrees
Gloss Level 1 - Matte Finish (flat)	Max. 5	Max. 10

Gloss Level 2 - Velvet-Like Finish	Max.10	10 to 35
Gloss Level 3 - Eggshell Finish	10 to 25	10 to 35
Gloss Level 4 - Satin-Like Finish	20 to 35	min. 35
Gloss Level 5 - Traditional Semi-Gloss Finish	35 to 70	
Gloss Level 6 - Traditional Gloss	70 to 85	
Gloss Level 7 - High Gloss Finish	More than 85	

.2 Gloss level ratings of painted surfaces as indicated and as noted on Finish Schedule.

2.5 INTERIOR PAINTING SYSTEMS

.1 Structural steel and metal fabrications:
.1 INT 5.1B - Waterborne light industrial gloss level 5 coating (steel columns, lintels).

.2 Galvanized metal: doors, frames, railings, misc. steel.
.1 INT 5.3C - Alkyd gloss level 4 finish (galvanized metal hollow doors and frames)(over cementitious primer).

.3 Solid Core Wood Door:
.1 INT - 6.1G Semi-Transparent Stain with INT 6.1J Polyurethane varnish.

.4 Gypsum board: gypsum wallboard, drywall:
.1 INT 9.2A - Latex gloss level 4 finish for walls and gloss level 2 finish for ceilings.

.5 All other exposed unfinished surfaces including ones that have been shop primed: paint with type as recommended by supplier.

2.6 EXTERIOR PAINTING SYSTEMS

.1 Exterior steel doors, frames and lintels.
.1 Ext 5.3B Alkyd level 5 semi-gloss.

PART 3 - EXECUTION

3.1 GENERAL

.1 Perform preparation and operations for painting in accordance with MPI Architectural Painting Specifications Manual except where specified otherwise.

.2 Apply paint materials in accordance with paint manufacturer's written application instructions.

.3 All exposed surfaces in this contract shall be painted unless pre-finished with a finish acceptable to Consultant.

3.2 EXAMINATION

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report to Consultant damages, defects, unsatisfactory or unfavourable conditions before proceeding with work.

.2 Conduct moisture testing of surfaces to be painted using properly calibrated electronic moisture meter, except test concrete floors for moisture using simple "cover patch test". Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.

3.3 PREPARATION

.1 Protection:
.1 Protect existing building surfaces and adjacent structures from paint spatters, markings and other damage by suitable non-staining covers or masking.
.2 Protect items that are permanently attached such as Fire Labels on doors and frames.
.3 Protect factory finished products and equipment.

3.3 PREPARATION (Cont'd)

.2 Surface Preparation:
.1 Remove electrical cover plates, light fixtures, surface hardware on doors, bath accessories and other surface mounted equipment, fittings and fastenings prior to undertaking painting operations. Identify and store items in secure location and re-installed after painting is completed.
.2 Place "WET PAINT" signs in occupied areas as painting operations progress.

.3 Clean and prepare surfaces in accordance with MPI Architectural Painting Specification Manual requirements. Refer to MPI Manual in regard to specific requirements and as follows:
.1 Remove dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
.2 Wash surfaces with a biodegradable detergent and bleach where applicable and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
.3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.

.4 Sand and dust between coats as required to provide adequate adhesion for next coat and to remove defects visible from a distance up to 1000 mm.

.5 Clean metal surfaces to be painted by removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with MPI requirements. Remove traces of blast products from surfaces, pockets and corners to be painted by brushing with clean brushes.

.6 Touch up of shop primers with primer as specified.

3.4 APPLICATION

.1 Apply paint by brush and roller. Conform to manufacturer's application instructions unless specified otherwise.

.2 Brush and Roller Application:

3.4 APPLICATION (Cont'd)

.2 (Cont'd)

.1 Apply paint in uniform layer using brush and/or roller type suitable for application.

.2 Work paint into cracks, crevices and corners.

.3 Paint surfaces and corners not accessible to brush using spray, daubers and/or sheepskins. Paint surfaces and corners not accessible to roller using brush, daubers or sheepskins.

.4 Brush and/or roll out runs and sags, and over-lap marks. Rolled surfaces free of roller tracking and heavy stipple.

.5 Remove runs, sags and brush marks from finished work and repaint.

.3 Apply coats of paint continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.

.4 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.

.5 Sand and dust between coats to remove visible defects.

.6 Finish surfaces both above and below sight lines as specified for surrounding surfaces, including such surfaces as tops of interior cupboards and cabinets and projecting ledges.

.7 Finish closets and alcoves as specified for adjoining rooms.

.8 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.

3.5 MECHANICAL/ELECTRICAL EQUIPMENT

.1 Paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment with colour and finish to match adjacent surfaces, except as indicated.

.2 Boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.

3.5 MECHANICAL/ELECTRICAL EQUIPMENT (Cont'd)

.3 Leave unexposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.

.4 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.

.5 Do not paint over nameplates.

.6 Keep sprinkler heads free of paint.

.7 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.

.8 Paint exposed fire protection piping red.

.9 Paint exposed natural gas piping yellow.

.10 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.6 SITE TOLERANCES

.1 Walls: no defects visible from a distance of 1000 mm at 90 degrees to surface.

.2 Ceilings: no defects visible from floor at 45 degrees to surface when viewed using final lighting source.

.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

3.7 FIELD QUALITY CONTROL

.1 Advise Consultant when surfaces and applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.

.2 Cooperate with inspection firm and provide access to areas of work.

3.8 RESTORATION

.1 Clean and re-install hardware items removed before undertaken painting operations.

.2 Remove protective coverings and warning signs as soon as practical after operations cease.

.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.

END OF SECTION

PART 1 - GENERAL

1.1 Related Sections

.1 Section 07 84 00 - Fire Stopping.

.2 Section 09 91 23 - Painting.

1.2 References

.1 Heath Canada/ Workplace Hazardous Materials Information System (WHMIS)

.2 Master Painters Institute (MPI)
.1 MPI Architectural Painting Specification Manual , 2004.

.3 Underwriter's Laboratories of Canada (ULC)
.1 CAN-ULC-S101, Standard Methods of Fire Endurance Tests of Building Construction and Materials
.2 CAN-ULC-S102, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

1.3 Quality Assurance

.1 Qualifications:
.1 Provide list of last three comparable jobs including, job name, and location, specifying authority, and project manager.

.2 Intumescent paint to be applied by applicators approved or licensed by material manufacturer.

1.4 Submittals

.1 Provide submittals in accordance with section 01 33 00 - Submittal Procedures

.2 Prior to ordering materials submit manufacturers printed product literature, specifications and data sheets and include product characteristics, performance, criteria, physical size, finish, limitations and all calculations indicating the thickness of finish require to meeting associated rating.

1.4 Submittals (Cont'd)

.3 Upon completion of work of this section, submit a certificate issued by the manufacturer, verifying that coating system applied to the substrate as constructed on this project meets or exceeds the required fire resistance ratings noted in the specification and on the drawings.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Packing, Shipping, Handling and Unloading:
.1 Pack, ship, handle and unload materials in accordance with Section 01 61 00 - Common Product Requirements and manufacturer's written instructions.

.2 Acceptance at Site:
.1 Identify products and materials with labels indicating:
.1 Manufacturer's name and address.
.2 Type of paint or coating.
.3 Compliance with applicable standard.
.4 Colour number in accordance with established colour schedule.

.3 Remove damaged, opened and rejected materials from site.

.4 Storage and Protection:
.1 Provide and maintain dry, temperature controlled, secure storage.
.2 Store materials and supplies away from heat generating devices.
.3 Store materials and equipment in well ventilated area with temperature range 7 degrees C to 30 degrees C.

.5 Store temperature sensitive products above minimum temperature as recommended by manufacturer.

.6 Keep areas used for storage, cleaning and preparation clean and orderly. After completion of operations, return areas to clean condition.

.7 Remove materials from storage only in quantities required for same day use.

.8 Fire Safety Requirements:

1.5 DELIVERY, STORAGE AND HANDLING (Cont'd)

.8 (Cont'd)

.1 Provide one Type ABC fire extinguisher adjacent to storage area.

.2 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.

.3 Handle, store, use and dispose of flammable and combustible materials in accordance with National Fire Code of Canada requirements.

.9 Waste Management and Disposal:

.1 Separate waste materials for reuse and recycling in accordance with Section01 74 21 - Construction/Demolition Waste Management and Disposal.

.2 Remove from site and dispose of packaging materials at appropriate recycling facilities.

.3 Collect and separate for disposal paper, plastic, polystyrene, and corrugated cardboard packaging material for recycling.

.4 Place materials defined as hazardous or toxic in designated containers.

.5 Handle and dispose of hazardous materials in accordance with Regional and Municipal, regulations.

.6 Ensure emptied containers are sealed and stored safely.

.7 Unused coating materials must be disposed of at official hazardous material collections site.

.8 Material which cannot be reused must be treated as hazardous waste and disposed of in an appropriate manner.

.9 Place materials defined as hazardous or toxic waste, including used sealant and adhesive tubes and containers, in containers or areas designated for hazardous waste.

1.6 Site Conditions

.1 Heating, Ventilation and Lighting:

.1 Ventilate enclosed spaces in accordance with Section 01 70 12 - Safety Requirements.

.2 Provide heating facilities to maintain ambient air and substrate temperatures above 10 degrees Celsius for 24hours before, during and after paint application until paint has cured sufficiently.

1.6 Site Conditions (Cont'd)

.1 (Cont'd)
.3 Provide continuous ventilation for seven days after completion of application of paint.

PART 2 - PRODUCTS

2.1 Materials

.1 Intumescent Paint:
.1 Designs or Assemblies listed in the ULC Guide. Tested in accordance with the Standard Method of Fire Tests of Building Construction and Materials, CAN/ULC-S101 (ANSI/UL 263, ASTM E 119) and CAN4-S102 M - Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.

.2 Acceptable Manufacturers and Products:
.1 Interior Intumescent System. All systems to be confirmed with Manufacturer.
.1 AD FIRE
.1 Primer: Carboguard 893SG primer
.2 Intumescent: ThermoSorb Voc solvent based intumescent to be applied prior to construction of wall.
.3 Carbocrylic 3350 top coat.

.3 Decorative Finish (Top Coat) to be provided by the contractor in all areas where steel to remain exposed. Top coat to be compatible with chosen intumescent paint manufacturer. Colour to be determined by Consultant at time of shop drawing review.

.4 Mix products in accordance with manufacturer's instructions.

PART 3 - EXECUTION

3.1 Manufacturer's Instructions

.1 Compliance: Comply with Manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions and data sheets.

3.2 Preparation

.1 Substrate: to be thoroughly cleaned and be free of oil, grease, dirt, loose paint, loose mill scale, and any other matte that will impair bond.

.2 Verify that painted substrates are compatible and have suitable bonding characteristics to receive intumescent paint coating. NOTE: PRIMERS CONTAINING ZINC METAL ARE NOT TO BE USED ON ANY STEEL MEMBERS SCHEDULED TO RECEIVE INTUMESCENT PAINT COATINGS.

.3 Remove all incompatible materials. Ensure that items required to penetrate other items which would interfere with application of intumescent paint are not positioned until fire proofing work is completed.

.4 Ensure that ducts, piping, equipment, or other items which would interfere with application of intumescent paint are not positioned until all painting work is completed.

.5 Protect all adjacent surfaces from damage or overspray

3.3 Installation

.1 Apply basecoat and topcoat by spray, brush or roller in accordance with manufacturer's printed instructions to all columns indicated on the ground floor fire separation plans as well as all cross bracing on the ground floor.

.2 Apply intumescent coating to correspond with tested assemblies, or acceptable calculation procedures to provide following fire resistance ratings:
.1 For all A/D Products: All columns and cross bracing requiring a 1hr fire rating is to comply with ULC BXUV7.Z608, Z610, Z611, Z612, Z626, Z627, Z628, Z629, Z630, and F906.
.2 All products are to meet or exceed ANSI/UL 263.

.3 Apply intumescent paint over substrate, uniformly in a monolithic manner to ensure consistent thickness of product to achieve required fire resistance rating in all locations.

3.3 Installation (Cont'd)

.4 Minimum film thickness to equal minimum required thickness to acheive the required fire rating +20%.

.5 Completed film thickness to be checked to ensure the required thickness has been applied.

.6 If multiple coats of intumescent paint if required to achieve overall thickness, adequate drying times between coats should be accounted for. Refer to manufacturers written instructions for details. Contractor to assume multiple coats will be required for scheduling purposes.

3.4 Field Quality Control

.1 Manufacturer's Field Services:
.1 Obtain Written report from manufacturer verifying compliance of work, in handling, installing, applying, protecting and cleaning of product and submit manufacturer's Field Reports as described in PART 1 - Submittals.

3.5 Patching

.1 Patch damage to intumescent paint caused by testing or by other trades before paint is concealed, or if exposed, before final inspection.

3.6 Cleaning

.1 Proceed in accordance with Section 01 74 11 - Cleaning.

.2 Clean surfaces not indicated to receive intumescent paint of spray material within 24hours after application is complete.

.3 On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

.1 ASTM International (ASTM)
.1 ASTM A 167-99(2009), Standard Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip.
.2 ASTM A 653/A 653M-09, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
.3 ASTM A 924/A 924M-09, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.

.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-1.81-M90, Air Drying and Baking Alkyd Primer for Vehicles and Equipment.
.2 CAN/CGSB-1.88-92, Gloss Alkyd Enamel, Air Drying and Baking.
.3 CGSB 31-GP-107MA-90, Non-inhibited Phosphoric Acid Base Metal Conditioner and Rust Remover.

.3 CSA Group (CSA)
.1 CAN/CSA-B651-04, Accessible Design for the Built Environment.
.2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Provide submittals in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Provide manufacturer's printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations.

1.3 CLOSEOUT SUBMITTALS

.1 Provide maintenance data for toilet and bath accessories for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.4 MAINTENANCE MATERIAL SUBMITTALS

.1 Tools:
.1 Provide special tools required for assembly, disassembly or removal for toilet and bath accessories in accordance with requirements specified in Section 01 78 00 - Closeout Submittals.
.2 Deliver special tools to Owner.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Common Product Requirements and with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:
.1 Store materials indoors in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.
.2 Store and protect toilet and bathroom accessories from nicks, scratches, and blemishes.
.3 Replace defective or damaged materials with new.

PART 2 - PRODUCTS

2.1 MATERIALS

.1 Sheet steel: to ASTM A 653/A 653M with ZF001 designation zinc coating.

.2 Stainless steel sheet metal: to ASTM A 167, Type 304, with brushed satin finish.

.3 Sustainability Characteristics:
.1 Laminate Adhesives.
.1 Urea Formaldehyde Free.

.4 Stainless steel tubing: Type 304, commercial grade, seamless welded, 1.2 mm wall thickness.

2.1 MATERIALS (Cont'd)

.5 Fasteners: concealed screws and bolts hot dip galvanized, exposed fasteners to match face of unit. Expansion shields fibre, lead or rubber as recommended by accessory manufacturer for component and its intended use.

2.2 COMPONENTS

.1 Toilet tissue dispenser: double roll type, surface mounted, chrome plated steel frame, capacity of 500 double ply roll, roll under spring tension for controlled delivery.

.2 Paper towel dispenser: for folded paper towels, stainless steel cabinet, hinged front panel, surface mounted. Acceptable product: B-262 as manufactured by Bobrick or equal by Bradley or Frost.

.3 Soap dispenser: liquid push-in valve 102 mm spout, self contained 340 mL translucent polyethylene , stainless steel piston and valve assembly, tamper proof filler lock, surface mounted, exposed metal components chrome plated, exposed plastic components white.

.4 Grab bars: 38 mm diameter x 1.6 mm wall tubing of stainless steel, 38 mm diameter wall flanges, concealed screw attachment, flanges welded to tubular bar, provided with steel back plates and all accessories. Knurl bar at area of hand grips. Grab bar material and anchorage to withstand downward pull of 2.2 kN. Clearance to wall to be 30-50 mm.

.5 Mirrors: wall mounted unit, fixed framed mirror 6 mm, stainless steel frame. Sizes as noted on drawings.

2.3 FABRICATION

.1 Weld and grind joints of fabricated components flush and smooth. Use mechanical fasteners only where approved.

.2 Wherever possible form exposed surfaces from one sheet of stock, free of joints.

.3 Brake form sheet metal work with 1.5 mm radius bends.

2.3 FABRICATION (Cont'd)

.4 Form surfaces flat without distortion. Maintain flat surfaces without scratches or dents.

.5 Back paint components where contact is made with building finishes to prevent electrolysis.

.6 Hot dip galvanize concealed ferrous metal anchors and fastening devices to CAN/CSA-G164.

.7 Shop assemble components and package complete with anchors and fittings.

.8 Deliver inserts and rough-in frames to job site at appropriate time for building-in. Provide templates, details and instructions for building in anchors and inserts.

.9 Provide steel anchor plates and components for installation on studding and building framing.

2.4 FINISHES

.1 Chrome and nickel plating: to ASTM B 456, satin finish.

.2 Baked enamel: condition metal by applying one coat of metal conditioner to CGSB 31-GP-107Ma, apply one coat Type 2 primer to CAN/CGSB-1.81 and bake, apply two coats Type 2 enamel to CAN/CGSB-1.88 and bake to hard, durable finish. Sand between final coats. Colour selected from standard range by Consultant.

.3 Manufacturer's or brand names on face of units not acceptable.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verification of Conditions: verify that conditions of substrates and surfaces to receive toilet and bathroom accessories previously installed under other Sections or Contracts are acceptable for product installation in accordance with manufacturer's instructions prior to toilet and bathroom accessories installation.

3.2 INSTALLATION

.1 Install and secure accessories rigidly in place as follows:
.1 Stud walls: install steel back-plate to stud prior to plaster or drywall finish. Provide plate with threaded studs or plugs.
.2 Hollow masonry units, existing plaster or drywall: use toggle bolts drilled into cell or wall cavity.
.3 Solid masonry, marble, stone or concrete: use bolt with lead expansion sleeve set into drilled hole.
.4 Toilet and shower compartments: use male to female through bolts.

.2 Install grab bars on built-in anchors provided by bar manufacturer.

.3 Use concealed tamper proof screws/bolts for fasteners.

.4 Fill units with necessary supplies shortly before final acceptance of building.

.5 Install mirrors in accordance with Section 08 80 50 - Glazing.

3.3 ADJUSTING

.1 Adjust toilet and bathroom accessories components and systems for correct function and operation in accordance with manufacturer's written instructions.

.2 Lubricate moving parts to operate smoothly and fit accurately.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.5 PROTECTION

.1 Protect installed products and components from damage during construction.

3.5 PROTECTION (Cont'd)

.2 Repair damage to adjacent materials caused by toilet and bathroom accessories installation.

3.6 SCHEDULE

.1 Locate accessories where indicated.

END OF SECTION

PART 1 - GENERAL

1.1 REFERENCE STANDARDS

.1 CSA Group
.1 CSA B44 - Safety Code for Elevators and Escalators.
.2 CSA B355-09(R2013), Lifts for Persons with Physical Disabilities.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit in accordance with Section 01 33 00 - Submittal Procedures.

.2 Product Data:
.1 Submit manufacturer's instructions, printed product literature and data sheets and include product characteristics, performance criteria, physical size, finish and limitations. Show maximum and average power demands.

.3 Shop Drawings:
.1 Show typical details of assembly, erection and anchorage.
.2 Include wiring diagrams for power, control and signal systems.
.3 Show complete layout and location of equipment including required clearances and coordination with shaftway.

.4 Manufacturer's Field Reports: submit manufacturer's field reports specified.

1.3 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 78 00 - Closeout Submittals.

.2 Operation and Maintenance Data: submit operation and maintenance data for incorporation into manual.
.1 Record actual locations of equipment, names of equipment manufacturers and suppliers, concealed conduit and boxes, concealed devices, disconnects.
.2 Include description of lift operation and control including motor and pump unit, door operation, signals, and special or non-standard features provided.

1.3 CLOSEOUT SUBMITTALS (Cont'd)

.2 (Cont'd)
.3 Provide parts catalogues with complete list of equipment replacement parts with equipment description and identifying numbers.
.4 Lubrication chart.
.5 Planned maintenance tasks and their frequencies.

1.4 QUALITY ASSURANCE

.1 Sustainable Design Closeout Documentation
.1 Installer Qualifications: Licensed to install equipment of this scope, with evidence of experience with specified equipment. Installer shall maintain an adequate stock of replacement parts, have qualified people available to ensure fulfillment of maintenance and callback service without unreasonable loss of time in reaching project site

1.5 REGULATORY REQUIREMENTS

.1 Provide lifts in compliance with:
.1 CSA B355 - Lifts for Persons with Physical Disabilities.
.2 CSA B44 - Safety Code for Elevators and Escalators.

1.6 DELIVERY, STORAGE AND HANDLING

.1 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.2 Storage and Handling Requirements:
.1 Store materials off ground in dry location and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

PART 2 - PRODUCTS

2.1 LIFT CHARACTERISTICS

.1 Rated Net Capacity: 340 kg (750 lbs).

.2 Acceptable Products: Garaventa Lift, Genesis Shaftway or approved equivalent.

2.1 LIFT CHARACTERISTICS (Cont'd)

.3 Nominal Clear inside Platform Dimensions: Minimum 1125 mm wide by 1519 mm deep.

.4 Platform Configuration: 90 degree Entry/Exit: Front and side openings.

.5 Landing Openings:
.1 Lower Landing: Door.
.2 Upper Landing: Door.

.6 Doors: Doors shall be self-closing type.
.1 Door Height: Flush mount, 2032 mm.
.2 Door Width: 965.
.3 Door Construction: 16 gauge (1.5 mm) painted galvanized steel , with a vision panel, delayed action door closer, 12 inch (305 mm) offset D-Handle pull and integrated interlock. Doors mount flush to the inside wall of the shaftway.

.7 Power door operator: Automatically opens the door when platform arrives at a landing. Will also open at landing by pressing the call button.
.1 Low voltage, 24 VDC with all wiring concealled.
.2 Provide power operators at the lower and upper landing doors.

.8 Lift Components:
.1 Machine Tower: extruded aluminum.
.2 Base Frame: Structural steel.
.3 Platform Side Wall Panels: 16 gauge (1.5 mm) galvanized steel sheet. Aluminum extrusion tube frame.

.9 Base Mounting and Access to Lift at Lower Landing: Lift to be mounted in pit with dimensions to meet manufacturers requirements for the platform size specified. Coordinate requirements with configuration of structural support.

.10 Drive Mast Side Wall Panels: Provide 16 gauge hardware to cover the void between both sides of the mast and the side of the shaftway. Panels to cover the front and top of the void area to the height of the top surface of the drive mast.

.11 Leadscrew Drive:

2.1 LIFT CHARACTERISTICS (Cont'd)

.11 (Cont'd)
.1 Drive Type: Self-lubricating acme screw type.
.2 Emergency Operation: Manual handwheel device to raise or lower platform.
.3 Safety Devices: Integral safety nut assembly with safety switch.
.4 Travel Speed: 10 fpm (3.0 m/minute).
.5 Motor: 2.0 hp (560 W).
.6 Power Supply: 120 VAC single phase, 60 Hz on a dedicated 20 amp circuit.

.12 Platform Controls: 24 VDC control circuit withthe following features.
.1 Direction Control: Constant pressure rocker switch.
.2 Illuminated and audible emergency stop switch shuts off power to lift and activates audio alarm equipped with battery backup.
.3 Keyed operation.
.4 Emergency Telephone: Platform shall be equipped with ADA compliant auto dialer telephone with a stainless steel faceplate. Telephone shall operate in the event of power failure. A telephone line shall be supplied to the lift site as specified under Division 16.
.5 Arrival gong and digital floor display.

.13 Call Station Controls: 24 VDC control circuit with the following features.
.1 Direction Control: Constant pressure rocker switch.
.2 Keyed and swipe card operation.
.3 Call Station Mounting: Wall mounted recessed.

.14 Safety Devices and Features:
.1 Grounded electrical system with upper, lower and final limit switches.
.2 Tamper resistant interlock to electronically monitor that the door is in closed position and teh lock is engaged beforelift can move from landing.

.15 Finishes:
.1 Aluminum Extrusions: Champagne anodized finish.
.2 Ferrous Components: Electrostatically applied baked powder finish, fine textured, colour: Satin Grey, RAL 7030.

PART 3 - EXECUTION

3.1 EXAMINATION

.1 Verify that hoistway, it and machine room are ready for equipment installation.

.2 Verify shaft and openings are of correct size and within tolerances.

.3 Confirm electrical power is available and of correct characteristics.

.4 Report defects in writing to Consultant.

3.2 INSTALLATION

.1 Install lifts in accordance with applicable regulatory requirements including CSA B355, and manufacturer's instructions.

.2 Install system components and connect to building utilities.

.3 Accommodate equipment in space indicated.

.4 Startup equipment in accordance with manufacturer's instructions.

.5 Adjust for smooth operation.

3.3 FIELD QUALITY CONTROL

.1 Site Tests:
.1 Perform and meet inspection tests in accordance with CSA B355 and as required by jurisdictional authorities.
.2 Supply instruments and execute specific tests.
.3 Furnish test and approval certificates issued by jurisdictional authorities.
.4 Provide two weeks written notice to Consultant of date and time of tests.

3.4 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 74 11 - Cleaning.
.1 Leave Work area clean at end of each day.

3.4 CLEANING (Cont'd)

.2 Remove protective coverings from finished surfaces and components.

.3 Clean surfaces and components ready for inspection.

.4 Touch up and restore to new condition, damaged or defaced factory finished surfaces.

.5 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 74 11 - Cleaning.

3.5 ADJUSTING

.1 Adjust floor levelling feature at each floor.

.2 Design and adjust equipment to achieve smooth acceleration and deceleration of lift without perceptible steps so adjusted as not to cause passenger discomfort.

END OF SECTION

Appendix A

The enclosed Hazardous Building Materials Assessment is part of this scope of work, prepared by the Owner's separate consultant.
During construction, notify the Owner's Representative immediately for clarification if the contractor has any questions regarding the presence of hazardous materials.

Hazardous Building Materials Assessment

County of Frontenac
Administration Building
2069 Battersea Road, Kingston, Ontario

Prepared for:

County of Frontenac

2069 Battersea Road
Kingston, Ontario K0H 1S0

April 8, 2020

Pinchin File: 207131

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Issued to:	**County of Frontenac**
Issued on:	**April 8, 2020**
Pinchin File:	**207131**
Issuing Office:	**Kingston, ON**

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EXECUTIVE SUMMARY

County of Frontenac (Client) retained Pinchin Ltd. (Pinchin) to conduct a hazardous building materials assessment at the Administration Building located at 2069 Battersea Road, Kingston, Ontario. Pinchin performed the assessment on March 3, 2020.

The objective of the assessment was to identify specified hazardous building materials in preparation for interior building renovation. The results of this assessment are intended for use with a properly developed scope of work and performance specification.

SUMMARY OF FINDINGS

Asbestos: Asbestos-containing materials (ACM) are present as follows:

- Friable parging cement, containing chrysotile asbestos, is present on various pipe system fittings (tees elbows, valves, etc.) throughout the building, in good condition.
- Non-friable duct paper, containing chrysotile asbestos, is present on ducts concealed within wall cavities in the basement, in good condition.
- Potentially-friable smooth plaster, containing chrysotile asbestos in the base layer, is present on ceiling finishes throughout the building, in good condition with the exception of 5 square feet of debris in basement level of the stairwell, location 19.
- Non-friable 12” off-white vinyl floor tiles, containing chrysotile asbestos, is concealed beneath carpet in the north east office, location 9, in good condition.
- Non-friable 12” grey vinyl floor tiles and mastic, containing chrysotile asbestos, is present in the link, location 29, in good condition.

Lead: Lead is present as follows:

- Orange paint containing elevated lead concentrations is present on concrete stairs and landings in location 19, in good condition.
- Batteries of emergency lights and fire alarm systems.
- Caulking on cast iron pipe joints (bell and spigot).

Silica: Crystalline silica is present in concrete, mortar, masonry, ceramic tiles, grout, plaster, stucco and stone.

Mercury: Mercury vapour is present in light tubes.

Polychlorinated Biphenyls (PCBs): PCBs may be present in light ballasts.

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Mould and Water Damage: Visible mould growth and water damage was not observed.

SUMMARY OF RECOMMENDATIONS

The following is a summary of significant recommendations; refer to the body of the report for detailed recommendations:

1. Regardless of planned construction work due to the condition and location of the material; remediate the following materials:

Material, Quantity & Condition	Location	Recommended Procedure
Smooth ceiling plaster, 5 square feet, debris	Basement level, Stairwell, Location 19	Remove in accordance with Type 2 asbestos abatement procedures

2. Prepare specifications for the hazardous material removal required for the planned work.
3. Conduct further investigation of the following items, which could not be completed during this assessment due to limitations on scope, occupancy, or being in service at the time of the assessment:
    a. Materials concealed or outside the assessed area.
    b. Any materials listed as exclusions in this report, prior to disturbance.
4. Do not disturb suspected hazardous building materials discovered during the planned work, which have not been identified in this report and arrange for further evaluation and testing.
5. Remove and dispose of asbestos-containing materials if disturbed by the planned renovation work.
6. Remove and properly dispose of PCB ballasts when fixtures are decommissioned.
7. Recycle mercury-containing light tubes when removed from service.
8. Follow appropriate safe work procedures when handling or disturbing silica and lead.

This Executive Summary is subject to the same standard limitations as contained in the report and must be read in conjunction with the entire report.

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TABLE OF CONTENTS

1.0 INTRODUCTION AND SCOPE 1
- 1.1 Scope of Assessment 1

2.0 BACKGROUND INFORMATION 2
- 2.1 Building Description 2

3.0 FINDINGS 2
- 3.1 Asbestos 2
- 3.2 Lead 10
- 3.3 Silica 12
- 3.4 Mercury 12
- 3.5 Polychlorinated Biphenyls 12
- 3.6 Mould 12

4.0 RECOMMENDATIONS 13
- 4.1 General 13
- 4.2 Remedial Work 13
- 4.3 Renovation Work 13

5.0 TERMS AND LIMITATIONS 15

6.0 REFERENCES 15

APPENDICES

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 HMIS Data Report

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1.0 INTRODUCTION AND SCOPE

County of Frontenac (Client) retained Pinchin Ltd. (Pinchin) to conduct a hazardous building materials assessment at the Administration Building located at 2069 Battersea Road, Kingston, Ontario.

Pinchin performed the assessment on March 3, 2020. The surveyor was unaccompanied during the assessment. The assessed area was occupied at the time of the assessment.

The objective of the assessment was to identify specified hazardous building materials in preparation for planned interior building renovation. The results of this assessment are intended for use with a properly developed scope of work and performance specification.

The proposed renovations as identified by the Client include extensive interior renovations.

1.1 Scope of Assessment

The assessment was performed to establish the location and type of specified hazardous building materials incorporated in the structure(s) and its finishes. This assessment is intended to be used for renovation purposes only and may not provide sufficient detail for long term management of hazardous materials as required by Health and Safety regulations.

The assessed area was limited to the interior of the building. Exterior finishes and the roof were excluded.

The extent of the assessed area was defined by the Client and is shown on the appended drawings.

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

- Asbestos.
- Lead.
- Silica.
- Mercury.
- Polychlorinated Biphenyls (PCBs).
- Mould.

The following Designated Substances are not typically found in building materials in a composition/state that is hazardous and were not included in this assessment:

- Arsenic.
- Acrylonitrile.
- Benzene.
- Coke oven emissions.

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- Ethylene oxide.
- Isocyanates.
- Vinyl chloride monomer.

2.0 BACKGROUND INFORMATION

2.1 Building Description

Description Item	Details
Use	Offices
Number of Floors	Two stories plus a basement
Total Area	4,500 square feet
Year of Construction	1900
Structure	Wood and concrete
Exterior Cladding	Stucco
HVAC	Boiler with hot water heating to radiators and electric baseboard heating
Roof	Sloped asphalt shingles and flat roofing (not in scope)
Flooring	Concrete, carpet, ceramic tile, laminate flooring, vinyl floor tile and vinyl sheet flooring
Interior Walls	Plaster, drywall, ceramic tile, concrete and stone
Ceilings	Plaster, acoustic ceiling tile and drywall

3.0 FINDINGS

The following section summarizes the findings of the assessment and provides a general description of the hazardous materials identified and their locations. For details on approximate quantities, assessment and locations of hazardous materials; refer to the Hazardous Material Summary Report and All Data Report in Appendix V and VI.

3.1 Asbestos

3.1.1 Texture Finishes (Decorative)

Texture finish present on the plaster ceilings in various locations throughout the ground and second floor does not contain asbestos (samples S0014A-G). The plaster ceilings contain chrysotile asbestos; refer to Section 3.1.7 for further information.

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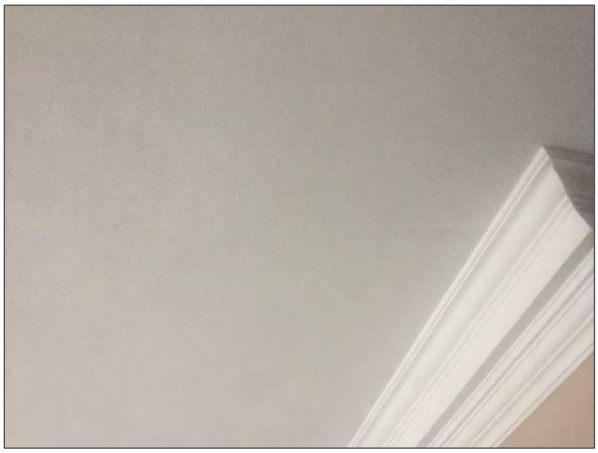

Non-asbestos texture finish applied to asbestos-containing smooth plaster ceiling.

3.1.2 Pipe Insulation

Parging cement, containing chrysotile asbestos, is present on pipe fittings (elbows, valves, tees, etc.) on various systems throughout the building (samples S0001A-C). Parging cement is a friable insulation, jacketed with canvas and is in good condition. Refer to the HMIS data in Appendices V and VI for locations, quantity and condition of asbestos-containing pipe insulation.

Paper concealed beneath canvas pipe jacketing in the basement storage room (Location 1) does not contain asbestos (sample S0016A-C).

Remaining pipes are insulated with fibreglass, or other non-asbestos insulation such as mineral fibre or elastomeric foam insulation.

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.

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Asbestos-containing parging cement insulated pipe fittings.

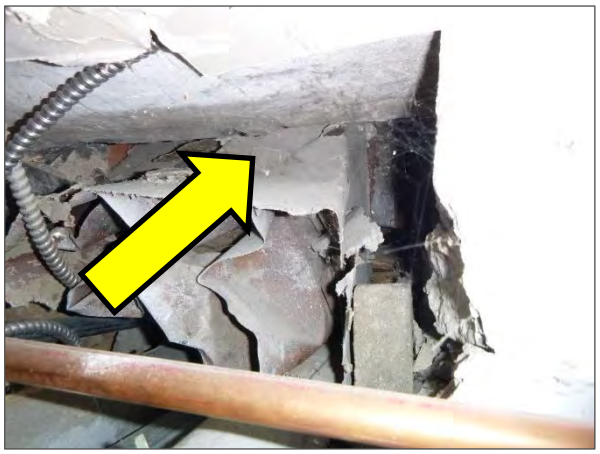
Asbestos-containing parging cement insulated pipe fittings.

3.1.3 Duct Insulation and Mastic

Duct paper, containing chrysotile asbestos, is present over the entire duct concealed within the wall cavity in the basement (samples S0005A-C). There is approximately four linear feet of ducts insulated with asbestos-containing paper, however additional asbestos-containing duct paper may be concealed within other wall cavities in other areas of the building. All paper on ducts is non-friable and is in good condition.

Remaining ducts are either uninsulated or insulated with non-asbestos fibreglass (foil-faced or canvas).

Grey and brown duct mastic present on seams / joints on ducts throughout the assessed area does not contain asbestos (samples S0004A-C and S0006A-C).



Asbestos-containing duct paper present on ducts.

Non-asbestos grey duct mastic concealed beneath non-asbestos fiberglass.

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Non-asbestos brown duct mastic.

3.1.4 Mechanical Equipment Insulation

Mechanical equipment is either uninsulated or insulated with non-asbestos fibreglass.

Non-asbestos fiberglass insulated hot water tank.

3.1.5 Vermiculite

Destructive testing was conducted of masonry block walls. The masonry block walls were penetrated in four locations, loose fill vermiculite was not observed within the cavities. The locations of destructive testing have been indicated on the drawings in Appendix I.

3.1.6 Acoustic Ceiling Tiles

Acoustic ceiling tiles are present in the assessed area, as follows:

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Size, Type, Pattern	Locations (Location #)	Sample Number Date Code or Composition	Asbestos Type
1' glued-on, small and medium pinhole	Link corridor (Location 7) Stairwell (Location 19)	S0007A-C; Layer 1	None detected
2'x4' lay-in, small pinhole and fissure	Link corridor second floor (Location 29)	2007	None
2'x2' lay-in, rough surface	Reception (Location 20)	2010	None
1' mechanically fastened, smooth surface	Offices (Locations 25 and 26)	Visually assessed (non-asbestos wood composition)	None

The adhesive present on the substrate and backside of the 1' glued-on ceiling tiles with small and medium pinholes does not contain asbestos (samples S0007A-C; Layer 2).

Ceiling tiles presumed to be non-asbestos are based on the date of manufacture determined from the date stamp applied to the top of the tiles or based on the non-asbestos composition of tile (i.e. wood). These tiles were manufactured after asbestos was stopped being used in acoustic ceiling tiles.

Non-asbestos 1" glued-on acoustic ceiling tiles with small and medium pinholes.

Non-asbestos 2'x4' acoustic ceiling tile with small pinhole and fissure.

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Non-asbestos 2'x2' acoustic ceiling tiles with rough surface.

Non-asbestos 1'x1' acoustic ceiling tile with smooth surface.

3.1.7 Plaster

Smooth plaster, containing chrysotile asbestos in the grey base coat layer, is present on ceilings throughout the ground and second floors of the assessed area (Samples A0015A-G). The plaster is applied to metal lath. Plaster is a non-friable material which may become friable during removal. There is approximately 9,000 square feet of plaster, is either painted or concealed by non-asbestos texture finish and is in good condition with the exception of 5 square feet of smooth ceiling plaster debris in the basement level of the stairwell, location 19.

Rough plaster present on stone walls throughout the basement does not contain asbestos (samples S0002A-E).

Smooth plaster present on walls throughout the assessed area does not contain asbestos (samples S0008A-G).

Non-asbestos rough plaster on stone walls.

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3.1.8 Drywall Joint Compound

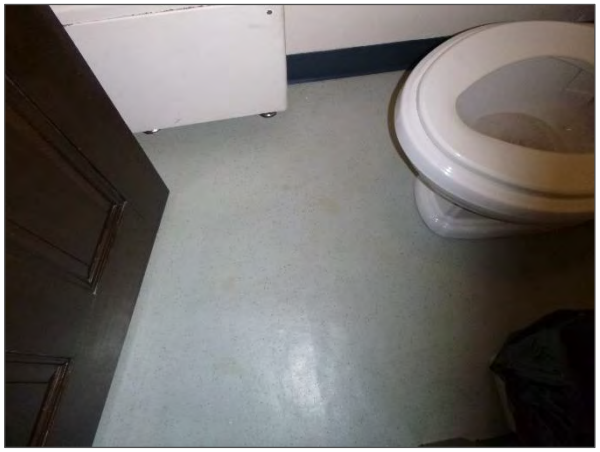
Drywall joint compound present on wall and ceiling finishes throughout the basement does not contain asbestos (samples S0003A-G).

3.1.9 Vinyl Sheet Flooring

Vinyl sheet flooring is present as follows:

Colour, Pattern	Paper Backing (Yes/No)	Locations (Location #)	Sample Number	Asbestos Type
Blue with grey specks	No	First floor washrooms (Locations 10 and 18)	S0012A-C; Layer 1	None detected
Orange with grey specks	No	Second floor washroom (Location 27)	S0013A-C; Layer 1	None detected

The adhesive adhered to the flooring backing does not contain asbestos (samples S00012A-C: Layer 2 and S0013A-C: Layer 2).



Non-asbestos blue vinyl sheet flooring with grey specks.

Non-asbestos orange vinyl sheet flooring with grey specks.

3.1.10 Vinyl Floor Tiles

Vinyl floor tiles are present as follows:

Size, Colour	Locations (Location #) and quantity of ACM in square feet	Sample Number	Asbestos Type (tile)	Asbestos Type (mastic)
12” Off-white (concealed)	**North east office, first floor (Location 9) - 400 SF**	**S0010A-C**	**Chrysotile**	None detected
12” Beige (concealed)	Entrance area, first floor (Location 10)	S0011A-C	None detected	None detected

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Size, Colour	Locations (Location #) and quantity of ACM in square feet	Sample Number	Asbestos Type (tile)	Asbestos Type (mastic)
12” Grey	Link corridor, second floor (Location 29) - 200 SF	S0017 A-C	Chrysotile	Chrysotile

The vinyl floor tiles and mastic are non-friable and are in good condition.

Brown baseboard mastic adhered to rubber baseboards throughout the assessed area does not contain asbestos (sample S0009A-C).

Asbestos-containing 12” off-white vinyl floor tile (concealed).

Non-asbestos 12” beige vinyl floor tile (concealed).

Asbestos-containing 12” grey vinyl floor tile and mastic.

3.1.11 Sealants, Caulking, and Putty

Caulking and sealants were not present in the assessed area.

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3.1.12 Presumed Asbestos Materials

The following is a list of materials which may contain asbestos, which were not observed and/or not sampled during the assessment; these materials are presumed to contain asbestos until otherwise proven by sampling and analysis:

- Roofing felts and tar, mastics.
- Exterior stucco.
- Caulking, sealants and putties.
- Floor levelling compound.
- Ceramic tile setting compound.
- Mechanical packing, ropes and gaskets.
- Materials concealed or outside the assessed area.

3.2 Lead

3.2.1 Paints and Surface Coatings

Refer to the lab report in Appendix II-B and the Hazardous Materials Summary Report in Appendix V for details on paints sampled and their locations.

The following table summarizes the analytical results for paints sampled that are considered elevated, i.e. above 0.1%:

Sample Number	Colour, Substrate Description	Location (Location #)	Lead (%)
L11	**Orange on concrete stairs and landings**	**Stairwell (Location 19)**	**0.162**

Results above 0.1% are considered elevated (i.e., greater than the EACO guideline of 0.1%). Orange paint determined to be elevated was found to be in good condition and not flaking, peeling or delaminating.

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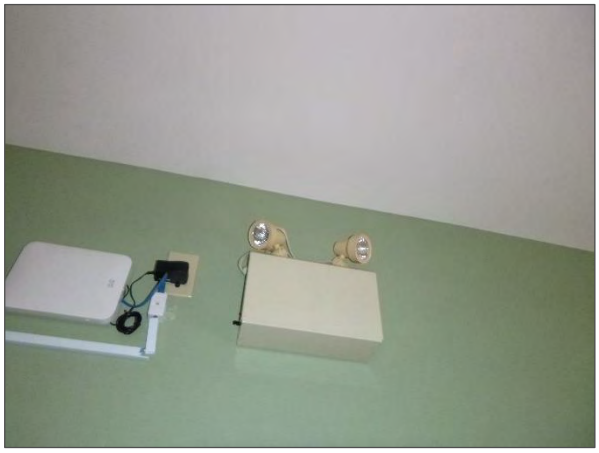
Orange paint containing elevated levels of lead on concrete stairs and landings.

3.2.2 Lead Products and Applications

Lead-containing batteries are present in emergency lighting and fire alarm control panels.

Lead caulking is present in bell and spigot fittings on cast iron pipes.



Emergency lighting containing lead-acid batteries.

Lead caulking present in bell and spigot fittings.

3.2.3 Presumed 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.

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3.3 Silica

Crystalline silica is a presumed component of the following materials:

- Poured or pre-cast concrete.
- Masonry and mortar.
- Ceramic tiles and grout.
- Plaster and stucco.
- Stone.

3.4 Mercury

3.4.1 Lamps

Mercury vapour is present in fluorescent lamps.

3.4.2 Mercury-Containing Devices

Thermostats inspected did not contain liquid mercury ampules.

Mercury-containing devices were not found during the assessment.

3.5 Polychlorinated Biphenyls

3.5.1 Caulking

Caulking was not found in the assessed areas.

3.5.2 Lighting Ballasts

The building has not been comprehensively re-lamped with new energy efficient light ballasts and lamps, and as such, a percentage of light ballasts may be manufactured prior to 1980 and may contain PCBs.

3.5.3 Transformers

All transformers in the building are dry type transformers and do not contain PCB-containing dielectric fluids.

3.6 Mould

Visible mould growth and water damage was not found during the assessment.

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4.0 RECOMMENDATIONS

4.1 General

1. Prepare plans and performance specifications for hazardous material removal required for the planned work. The specifications should include the scope of work, safe work practices, personal protective equipment, respiratory protection, and disposal of waste materials.
2. 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.
3. Conduct further investigation of the following items, which could not be completed during this assessment due to limitations on scope, occupancy, or being in service at the time of the assessment:
    a. Materials concealed or outside the assessed area.
    b. Any materials listed as exclusions in this report, prior to disturbance.
4. Provide this report and the detailed plans and specifications to the contractor prior to bidding or commencing work.
5. Retain a qualified consultant to specify, inspect and verify the successful removal of hazardous materials.
6. Update the asbestos inventory upon completion of the abatement and removal of asbestos-containing materials.

4.2 Remedial Work

The following remedial work is recommended regardless of the planned construction work due to the condition and location of the material.

Material, Quantity & Condition	Location	Recommended Procedure
Smooth ceiling plaster, 5 square feet, debris	Basement level, Stairwell, Location 19	Remove in accordance with Type 2 asbestos abatement procedures

4.3 Renovation Work

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

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4.3.1 Asbestos

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

If the identified ACM will not be removed prior to commencement of the work, any potential disturbance of ACM must follow asbestos precautions appropriate for the type of work being performed.

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

4.3.2 Lead

For paints identified as having elevated levels of lead (i.e., greater than the EACO guideline of 0.1% for lead-containing paints), 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 provincial standards or guidelines.

For paints identified as having low levels of lead (i.e., less than the EACO guideline of 0.1% for lead-containing paints but above 0.009%). Special precautions are not recommended unless aggressive disturbance (grinding, blasting, torching) is planned.

Items painted with paints containing elevated levels of lead may be a hazardous waste. Test lead-painted materials for leachable lead prior to disposal.

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

4.3.3 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 provincial standards or guidelines.

4.3.4 Mercury

Do not break lamps. 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 local regulations.

4.3.5 PCBs

When light fixtures are removed, examine light ballasts for PCB content. If ballasts are not clearly labelled as “non-PCB” or are suspected to contain PCBs; package and ship ballasts for destruction at a federally permitted facility.

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5.0 TERMS AND 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.

6.0 REFERENCES

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

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 Ontario (EACO) Lead Guideline for Construction, Renovation, Maintenance or Repair.
5. Ministry of the Environment Regulation, R.R.O. 1990 Reg. 347 as amended.
6. Silica on Construction Projects, Ministry of Labour Guidance Document.
7. Alert – Mould in Workplace Buildings, Ontario Ministry of Labour.
8. PCB Regulations, SOR/2008-273, Canadian Environmental Protection Act.

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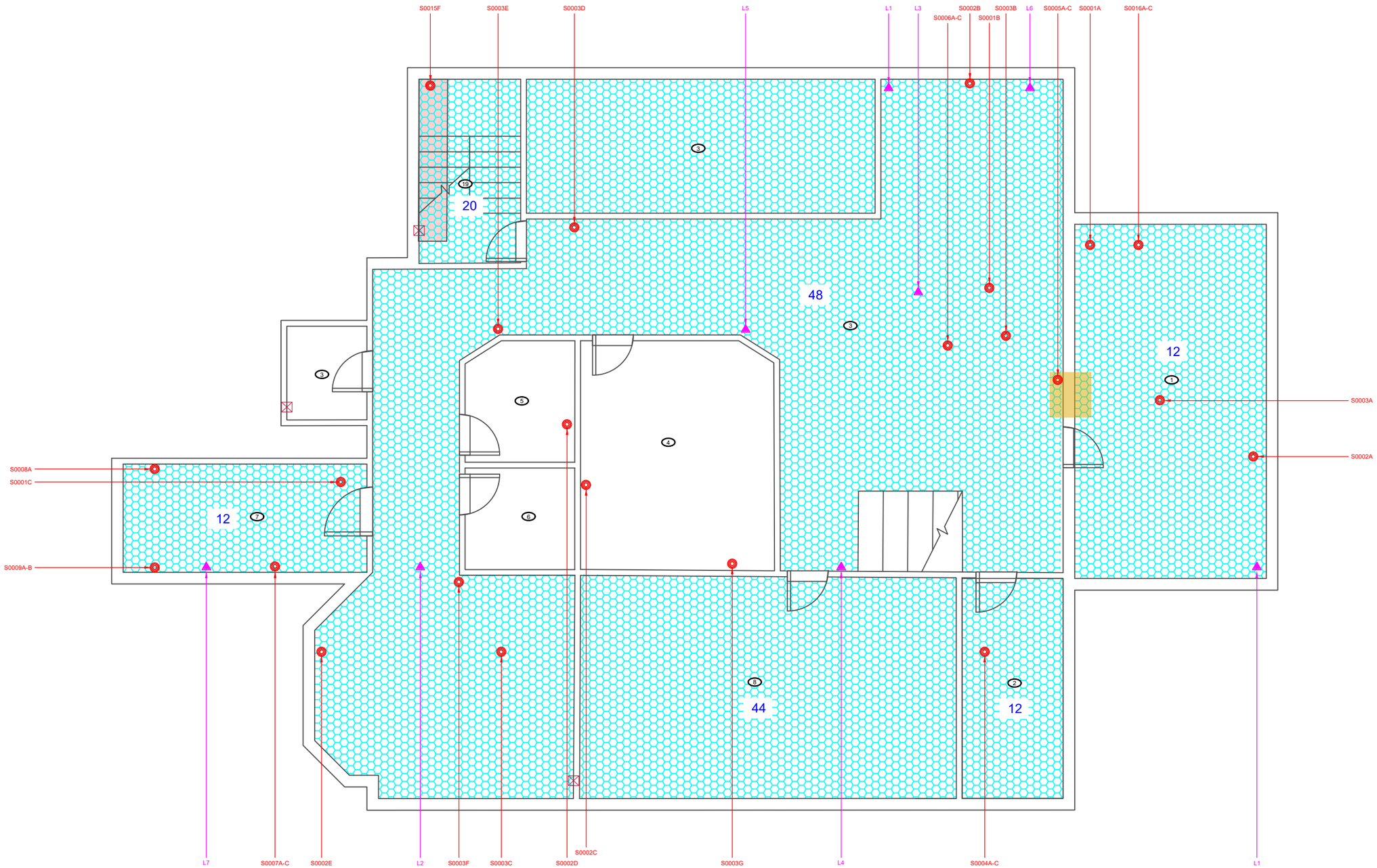
APPENDIX I

Drawings



N

LEGEND

- PINCHIN LOCATION NUMBER
- ASBESTOS BULK SAMPLE
- LEAD BULK SAMPLE
- INTRUSIVE INSPECTION

ASBESTOS-CONTAINING MATERIALS:

- THERMAL SYSTEM INSULATION
- # QUANTITY OF ASBESTOS-CONTAINING FITTINGS
- AREA WITH DUCT PAPER CONCEALED WITHIN WALL CAVITY
- VINYL FLOOR TILES
- VINYL FLOOR TILES & MASTIC
- AREA WITH ASBESTOS-CONTAINING SMOOTH CEILING PLASTER DEBRIS.

NOTE:
SMOOTH PLASTER, CONTAINING CHRYSOTILE ASBESTOS IN THE BASE LAYER, IS PRESENT ON CEILING FINISHES THROUGHOUT THE ASSESSED AREA.

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.

PINCHIN

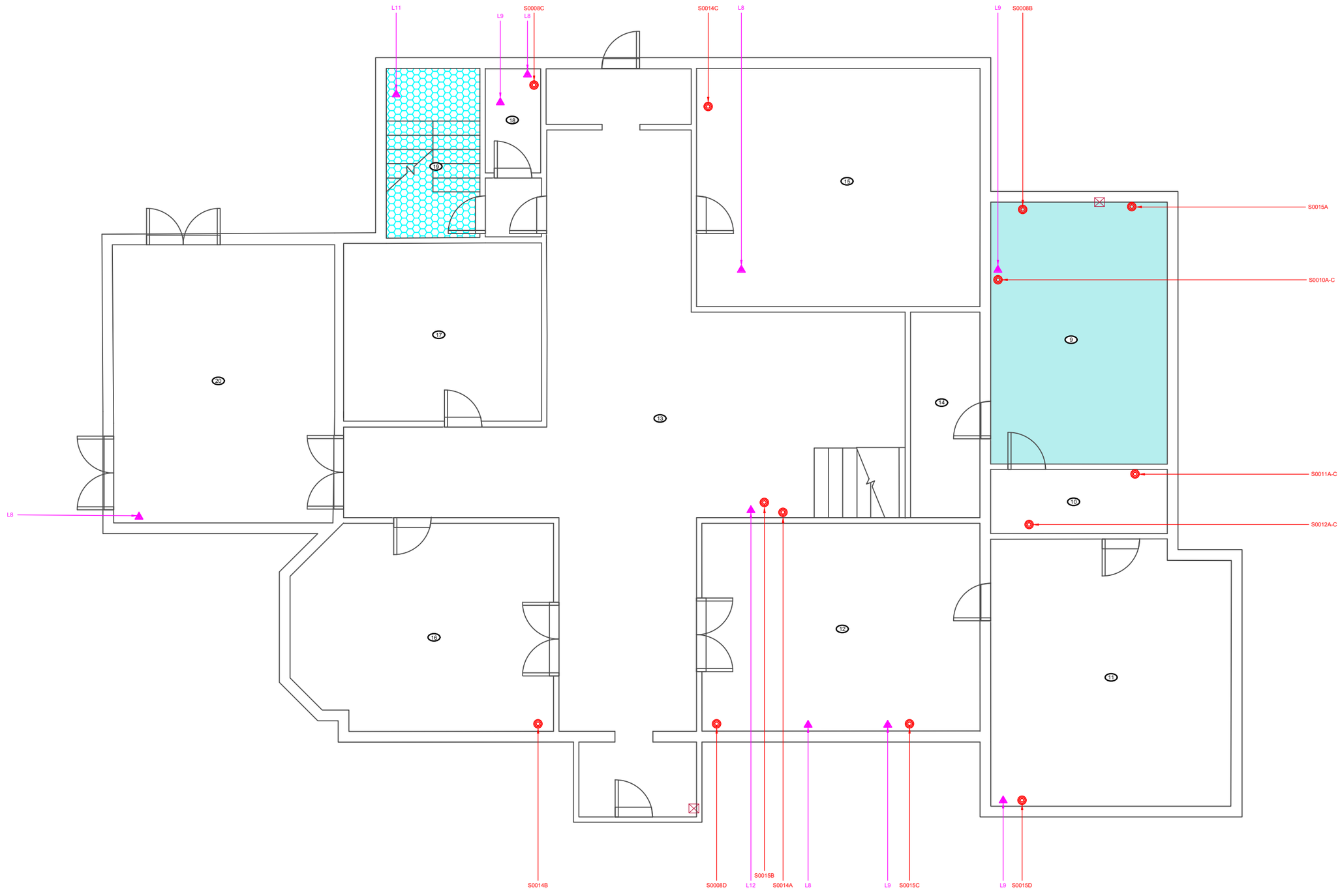
PROJECT NAME:
HAZARDOUS BUILDING MATERIALS ASSESSMENT

CLIENT NAME:
COUNTY OF FRONTENAC

PROJECT LOCATION:
ADMINISTRATION BUILDING
2069 BATTERSEA ROAD
KINGSTON, ONTARIO

FIGURE NAME:
BASEMENT

PROJECT NUMBER:	SCALE:
270131	NOT TO SCALE
DRAWN BY: NC	REVIEWED BY: SY
DATE: MARCH 2020	FIGURE NUMBER: 1 OF 3



N

LEGEND

- PINCHIN LOCATION NUMBER
- ASBESTOS BULK SAMPLE
- LEAD BULK SAMPLE
- INTRUSIVE INSPECTION

ASBESTOS-CONTAINING MATERIALS:

- THERMAL SYSTEM INSULATION
- # QUANTITY OF ASBESTOS-CONTAINING FITTINGS
- AREA WITH DUCT PAPER CONCEALED WITHIN WALL CAVITY
- VINYL FLOOR TILES
- VINYL FLOOR TILES & MASTIC
- AREA WITH ASBESTOS-CONTAINING SMOOTH CEILING PLASTER DEBRIS.

NOTE:
SMOOTH PLASTER, CONTAINING CHRYSOTILE ASBESTOS IN THE BASE LAYER, IS PRESENT ON CEILING FINISHES THROUGHOUT THE ASSESSED AREA.

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.

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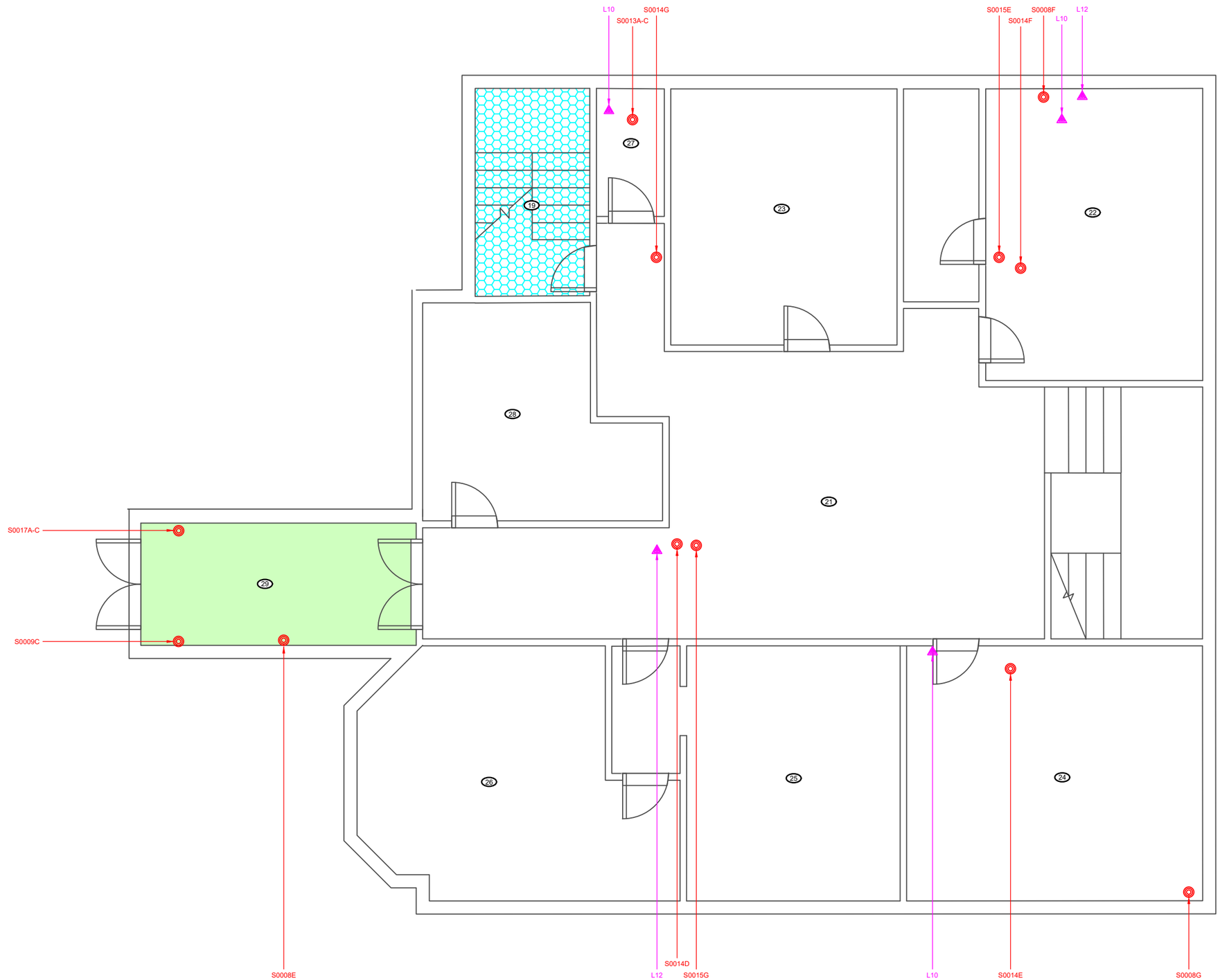
BASE PLAN PROVIDED BY CLIENT.

PINCHIN

PROJECT NAME: HAZARDOUS BUILDING MATERIALS ASSESSMENT	
CLIENT NAME: COUNTY OF FRONTENAC	
PROJECT LOCATION: ADMINISTRATION BUILDING 2069 BATTERSEA ROAD KINGSTON, ONTARIO	
FIGURE NAME: GROUND FLOOR	
PROJECT NUMBER: 270131	SCALE: NOT TO SCALE
DRAWN BY: NC	REVIEWED BY: SY
DATE: MARCH 2020	FIGURE NUMBER: 2 OF 3



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LEGEND

- PINCHIN LOCATION NUMBER
- ASBESTOS BULK SAMPLE
- LEAD BULK SAMPLE
- INTRUSIVE INSPECTION

ASBESTOS-CONTAINING MATERIALS:

- THERMAL SYSTEM INSULATION
- # QUANTITY OF ASBESTOS-CONTAINING FITTINGS
- AREA WITH DUCT PAPER CONCEALED WITHIN WALL CAVITY
- VINYL FLOOR TILES
- VINYL FLOOR TILES & MASTIC
- AREA WITH ASBESTOS-CONTAINING SMOOTH CEILING PLASTER DEBRIS.

NOTE:
SMOOTH PLASTER, CONTAINING CHRYSOTILE ASBESTOS IN THE BASE LAYER, IS PRESENT ON CEILING FINISHES THROUGHOUT THE ASSESSED AREA.

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.

PINCHIN

PROJECT NAME: HAZARDOUS BUILDING MATERIALS ASSESSMENT	
CLIENT NAME: COUNTY OF FRONTENAC	
PROJECT LOCATION: ADMINISTRATION BUILDING 2069 BATTERSEA ROAD KINGSTON, ONTARIO	
FIGURE NAME: SECOND FLOOR	
PROJECT NUMBER: 270131	SCALE: NOT TO SCALE
DRAWN BY: NC	REVIEWED BY: SY
DATE: MARCH 2020	FIGURE NUMBER: 3 OF 3

APPENDIX II-A

Asbestos Analytical Certificates

Your Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Your C.O.C. #: na

Attention: Kristen Vanderburgt

Pinchin Ltd
1456 Centennial Drive
Suite 2
Kingston, ON
CANADA K7P 0K4

Report Date: 2020/03/26
Report #: R6124704
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C061116
Received: 2020/03/06, 08:48

Sample Matrix: Solid
Samples Received: 69

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Asbestos by PLM - 0.5 RDL (1)	69	N/A	2020/03/12	COR3SOP-00002	EPA 600R-93/116

Remarks:

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

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs 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.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs 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 BV Labs, unless otherwise agreed in writing. BV Labs 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 BV Labs, 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 Laboratories' Asbestos Laboratory is accredited by NVLAP for bulk asbestos analysis by polarized light microscopy, NVLAP Code 600136-0.

This report may not be reproduced, except in full, without the written approval of Bureau Veritas Canada. This report may not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any other agency of the U.S. Government.

Bureau Veritas Laboratories' scope of accreditation includes EPA-600/M4-82-020: "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.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

Your Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Your C.O.C. #: na

Attention: Kristen Vanderburgt

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1456 Centennial Drive
Suite 2
Kingston, ON
CANADA K7P 0K4

Report Date: 2020/03/26
Report #: R6124704
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: C061116
Received: 2020/03/06, 08:48

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Antonella Brasil, Senior Project Manager
Email: Antonella.Brasil@bvlabs.com
Phone# (905)817-5817
==========
BV Labs 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 Signature Page.

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0001A PARGING CEMENT, ELBOW, LOC:1, STORAGE ROOM 1, BASEMENT

BV Labs ID: MEJ395 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos		Other Fibres	Particulate
Layer 1	100	Homogeneous grey parging	**Chrysotile**	45%		Non-Fibrous

S0001B PARGING CEMENT, TEE, LOC:3, MAIN BASEMENT AREA

BV Labs ID: MEJ396 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1			N/A		
Layer 1			N/A		

Comment: Not analyzed - positive stop

S0001C PARGING CEMENT, ELBOW, LOC:7, LINK CORRIDOR, BASEMENT

BV Labs ID: MEJ397 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1			N/A		
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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0002A ROUGH PLASTER, ON STONE WALL, LOC:1, STORAGE ROOM 1, BASEMENT

BV Labs ID: MEJ398 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	20	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	80	Homogeneous grey plaster	Not Detected		Non-Fibrous

S0002B ROUGH PLASTER, ON STONE WALL, LOC:3, MAIN BASEMENT AREA

BV Labs ID: MEJ399 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	20	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	80	Homogeneous grey plaster	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0002C ROUGH PLASTER, WALL, LOC:4, FILE ROOM, BASEMENT

BV Labs ID: MEJ400 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	10	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	90	Homogeneous grey plaster	Not Detected		Non-Fibrous

S0002D ROUGH PLASTER, WALL, LOC:5, STORAGE ROOM 3, BASEMENT

BV Labs ID: MEJ401 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	10	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	90	Homogeneous grey plaster	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0002E ROUGH PLASTER, WALL, LOC:3, MAIN BASEMENT AREA, BASEMENT

BV Labs ID: MEJ402 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	5	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	95	Homogeneous grey plaster	Not Detected		Non-Fibrous

S0003A DRYWALL JOINT COMPOUND, CEILING, LOC:1, STORAGE ROOM 1, BASEMENT

BV Labs ID: MEJ403 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white drywall joint compound	Not Detected		Non-Fibrous

S0003B DRYWALL JOINT COMPOUND, CEILING, LOC:3 ,MAIN BASEMENT AREA

BV Labs ID: MEJ404 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0003C DRYWALL JOINT COMPOUND, CEILING, LOC:3 ,MAIN BASEMENT AREA

BV Labs ID: MEJ405 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white drywall joint compound	Not Detected		Non-Fibrous

S0003D DRYWALL JOINT COMPOUND, CEILING, LOC:3,MAIN BASEMENT AREA

BV Labs ID: MEJ406 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white drywall joint compound	Not Detected		Non-Fibrous

S0003E DRYWALL JOINT COMPOUND, WALL, LOC:3,MAIN BASEMENT AREA

BV Labs ID: MEJ407 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white drywall joint compound	Not Detected		Non-Fibrous

S0003F DRYWALL JOINT COMPOUND, WALL, LOC:3,MAIN BASEMENT AREA

BV Labs ID: MEJ408 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0003G DRYWALL JOINT COMPOUND, WALL, LOC:4, FILE ROOM, BASEMENT

BV Labs ID: MEJ409 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white drywall joint compound	Not Detected		Non-Fibrous

S0004A GREY MASTIC ON DUCT JOINTS, LOC:2, STORAGE ROOM 2, BASEMENT

BV Labs ID: MEJ410 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey duct mastic	Not Detected		Non-Fibrous

S0004B GREY MASTIC ON DUCT JOINTS, LOC:2, STORAGE ROOM 2, BASEMENT

BV Labs ID: MEJ411 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey duct mastic	Not Detected		Non-Fibrous

S0004C GREY MASTIC ON DUCT JOINTS, LOC:2, STORAGE ROOM 2, BASEMENT

BV Labs ID: MEJ412 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous grey duct 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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0005A DUCT PAPER, LOC:3, MAIN BASEMENT AREA

BV Labs ID: MEJ413 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos		Other Fibres	Particulate
Layer 1	100	Homogeneous grey paper	**Chrysotile**	55%		Non-Fibrous

S0005B DUCT PAPER, LOC:3, MAIN BASEMENT AREA

BV Labs ID: MEJ414 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1			N/A		
Layer 1			N/A		
	Comment:	Not analyzed - positive stop			

S0005C DUCT PAPER, LOC:3, MAIN BASEMENT AREA

BV Labs ID: MEJ415 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1			N/A		
Layer 1			N/A		
	Comment:	Not analyzed - positive stop			

S0006A BROWN MASTIC ON DUCT JOINTS, LOC:3, MAIN BASEMENT AREA

BV Labs ID: MEJ416 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous brown duct 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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0006B BROWN MASTIC ON DUCT JOINTS, LOC:3, MAIN BASEMENT AREA

BV Labs ID: MEJ417 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous brown duct mastic	Not Detected			Non-Fibrous

S0006C BROWN MASTIC ON DUCT JOINTS, LOC:3, MAIN BASEMENT AREA

BV Labs ID: MEJ418 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	100	Homogeneous brown duct mastic	Not Detected			Non-Fibrous

S0007A CEILING TILES (GLUE-ON),1X1 SMALL AND MEDIUM PINHOLE, LOC:7, LINK CORRIDOR, BASEMENT

BV Labs ID: MEJ419 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	50	Homogeneous grey ceiling tile	Not Detected	Cellulose	40%	Non-Fibrous
				Fibrous Glass	40%	
Layer 2	50	Homogeneous brown 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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0007B CEILING TILES (GLUE-ON),1X1 SMALL AND MEDIUM PINHOLE, LOC:7, LINK CORRIDOR, BASEMENT

BV Labs ID: MEJ420 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	50	Homogeneous grey ceiling tile	Not Detected	Cellulose	40%	Non-Fibrous
				Fibrous Glass	40%	
Layer 2	50	Homogeneous brown mastic	Not Detected			Non-Fibrous

S0007C CEILING TILES (GLUE-ON),1X1 SMALL AND MEDIUM PINHOLE, LOC:7, LINK CORRIDOR, BASEMENT

BV Labs ID: MEJ421 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres		Particulate
Layer 1	50	Homogeneous grey ceiling tile	Not Detected	Cellulose	40%	Non-Fibrous
				Fibrous Glass	40%	
Layer 2	50	Homogeneous brown 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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0008A SMOOTH PLASTER, WALL, LOC:7, LINK CORRIDOR, BASEMENT

BV Labs ID: MEJ422 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	85	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	15	Homogeneous grey plaster	Not Detected		Non-Fibrous

S0008B SMOOTH PLASTER, WALL, LOC:9, NORTH EAST OFFICE, GROUND FLOOR

BV Labs ID: MEJ423 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	85	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	15	Homogeneous grey plaster	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0008C SMOOTH PLASTER, WALL, LOC:18, WASHROOM, GROUND FLOOR

BV Labs ID: MEJ424 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	85	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	15	Homogeneous grey plaster	Not Detected		Non-Fibrous

S0008D SMOOTH PLASTER, WALL, LOC:12, PARLOR, GROUND FLOOR

BV Labs ID: MEJ425 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	50	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	50	Homogeneous grey plaster	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0008E SMOOTH PLASTER, WALL, LOC:29, LINK CORRIDOR, SECOND FLOOR

BV Labs ID: MEJ426 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	50	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	50	Homogeneous grey plaster	Not Detected		Non-Fibrous

S0008F SMOOTH PLASTER, WALL, LOC:22, NORTH EAST OFFICE, SECOND FLOOR

BV Labs ID: MEJ427 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	50	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	50	Homogeneous grey plaster	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0008G SMOOTH PLASTER, WALL, LOC:24, SOUTH EAST OFFICE, SECOND FLOOR

BV Labs ID: MEJ428 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	50	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	50	Homogeneous grey plaster	Not Detected		Non-Fibrous

S0009A BROWN BASEBOARD MASTIC, LOC:7, LINK CORRIDOR, BASEMENT

BV Labs ID: MEJ429 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous brown mastic	Not Detected		Non-Fibrous

S0009B BROWN BASEBOARD MASTIC, LOC:7, LINK CORRIDOR, BASEMENT

BV Labs ID: MEJ430 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous brown 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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0009C BROWN BASEBOARD MASTIC, LOC:29, LINK CORRIDOR, SECOND FLOOR

BV Labs ID: MEJ431 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous brown mastic	Not Detected		Non-Fibrous

S0010A VINYL FLOOR TILE AND MASTIC,12''; OFF-WHITE CONCEALED, LOC:9, NORTH EAST OFFICE, GROUND FLOOR

BV Labs ID: MEJ432 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	96	Homogeneous grey vinyl floor tile	**Chrysotile** 2%		Non-Fibrous
Layer 2	2	Homogeneous black mastic	Not Detected		Non-Fibrous Tar
Layer 3	2	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0010B VINYL FLOOR TILE AND MASTIC,12''; OFF-WHITE CONCEALED, LOC:9, NORTH EAST OFFICE, GROUND FLOOR

BV Labs ID: MEJ433 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	96	Homogeneous grey vinyl floor tile	N/A		
Layer 1	96	Homogeneous grey vinyl floor tile	N/A		
	Comment:	Not analyzed - positive stop			
Layer 2	2	Homogeneous black mastic	Not Detected		Non-Fibrous Tar
Layer 3	2	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0010C VINYL FLOOR TILE AND MASTIC,12''; OFF-WHITE CONCEALED, LOC:9, NORTH EAST OFFICE, GROUND FLOOR

BV Labs ID: MEJ434 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	96	Homogeneous grey vinyl floor tile	N/A		
Layer 1	96	Homogeneous grey vinyl floor tile	N/A		
	Comment:	Not analyzed - positive stop			
Layer 2	2	Homogeneous black mastic	Not Detected		Non-Fibrous Tar
Layer 3	2	Homogeneous yellow mastic	Not Detected		Non-Fibrous

S0011A VINYL FLOOR TILE AND MASTIC,12''; BEIGE CONCEALED, LOC:10, ENTRANCE AREA, GROUND FLOOR

BV Labs ID: MEJ435 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	98	Homogeneous grey vinyl floor tile	Not Detected		Non-Fibrous
Layer 2	2	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0011B VINYL FLOOR TILE AND MASTIC,12''; BEIGE CONCEALED, LOC:10, ENTRANCE AREA, GROUND FLOOR

BV Labs ID: MEJ436 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	98	Homogeneous grey vinyl floor tile	Not Detected		Non-Fibrous
Layer 2	2	Homogeneous yellow mastic	Not Detected		Non-Fibrous

S0011C VINYL FLOOR TILE AND MASTIC,12''; BEIGE CONCEALED, LOC:10, ENTRANCE AREA, GROUND FLOOR

BV Labs ID: MEJ437 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	98	Homogeneous grey vinyl floor tile	Not Detected		Non-Fibrous
Layer 2	2	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0012A VINYL SHEET FLOORING, BLUE WITH GREY SPECKS, LOC:10, WASHROOM, GROUND FLOOR

BV Labs ID: MEJ438 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	98	Homogeneous blue vinyl sheet flooring	Not Detected		Non-Fibrous
Layer 2	2	Homogeneous yellow mastic	Not Detected		Non-Fibrous

S0012B VINYL SHEET FLOORING, BLUE WITH GREY SPECKS, LOC:10, WASHROOM, GROUND FLOOR

BV Labs ID: MEJ439 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	98	Homogeneous blue vinyl sheet flooring	Not Detected		Non-Fibrous
Layer 2	2	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0012C VINYL SHEET FLOORING, BLUE WITH GREY SPECKS, LOC:10, WASHROOM, GROUND FLOOR

BV Labs ID: MEJ440 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	98	Homogeneous blue vinyl sheet flooring	Not Detected		Non-Fibrous
Layer 2	2	Homogeneous yellow mastic	Not Detected		Non-Fibrous

S0013A VINYL SHEET FLOORING, ORANGE WITH GREY SPECKS, LOC:27, WASHROOM, SECOND FLOOR

BV Labs ID: MEJ441 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	98	Homogeneous orange vinyl sheet flooring	Not Detected		Non-Fibrous
Layer 2	2	Homogeneous black mastic	Not Detected		Non-Fibrous Tar

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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0013B VINYL SHEET FLOORING, ORANGE WITH GREY SPECKS, LOC:27, WASHROOM, SECOND FLOOR

BV Labs ID: MEJ442 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	98	Homogeneous orange vinyl sheet flooring	Not Detected		Non-Fibrous
Layer 2	2	Homogeneous black mastic	Not Detected		Non-Fibrous Tar

S0013C VINYL SHEET FLOORING, ORANGE WITH GREY SPECKS, LOC:27, WASHROOM, SECOND FLOOR

BV Labs ID: MEJ443 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	98	Homogeneous orange vinyl sheet flooring	Not Detected		Non-Fibrous
Layer 2	2	Homogeneous black mastic	Not Detected		Non-Fibrous Tar

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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0014A TEXTURE FINISH, CEILING, LOC:13, MAIN AREA, FIRST FLOOR

BV Labs ID: MEJ444 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white textured finish	Not Detected		Non-Fibrous

S0014B TEXTURE FINISH, CEILING, LOC:16, SOUTH WEST OFFICE, FIRST FLOOR

BV Labs ID: MEJ445 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white textured finish	Not Detected		Non-Fibrous

S0014C TEXTURE FINISH, CEILING, LOC:15, NORTH OFFICE , FIRST FLOOR

BV Labs ID: MEJ446 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white textured finish	Not Detected		Non-Fibrous

S0014D TEXTURE FINISH, CEILING, LOC:21, MAIN AREA, SECOND FLOOR

BV Labs ID: MEJ447 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white textured finish	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0014E TEXTURE FINISH, CEILING, LOC:24, MAIN AREA, SECOND FLOOR

BV Labs ID: MEJ448 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white textured finish	Not Detected		Non-Fibrous

S0014F TEXTURE FINISH, CEILING, LOC:22, MAIN AREA, SECOND FLOOR

BV Labs ID: MEJ449 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white textured finish	Not Detected		Non-Fibrous

S0014G TEXTURE FINISH, CEILING, LOC:21, MAIN AREA, SECOND FLOOR

BV Labs ID: MEJ450 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	100	Homogeneous white textured finish	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0015A SMOOTH PLASTER, CEILING, LOC:9, NORTH EAST OFFICE, GROUND FLOOR

BV Labs ID: MEJ451 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	5	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	95	Homogeneous grey plaster	Not Detected		Non-Fibrous

S0015B SMOOTH PLASTER, CEILING, LOC:13, MAIN AREA, GROUND FLOOR

BV Labs ID: MEJ452 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	20	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	80	Homogeneous grey plaster	**Chrysotile** 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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0015C SMOOTH PLASTER, CEILING, LOC:12, PARLOR, GROUND FLOOR

BV Labs ID: MEJ453 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos		Other Fibres	Particulate
Layer 1	20	Homogeneous white plaster	Not Detected			Non-Fibrous
Layer 2	80	Homogeneous grey plaster	**Chrysotile**	1%		Non-Fibrous

S0015D SMOOTH PLASTER, CEILING, LOC:11, BUD CLAYTON ROOM, GROUND FLOOR

BV Labs ID: MEJ454 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	90	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	10	Homogeneous grey plaster	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0015E SMOOTH PLASTER, CEILING, LOC:22, NORTH EAST OFFICE, , SECOND FLOOR

BV Labs ID: MEJ455 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	90	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	10	Homogeneous grey plaster	Not Detected		Non-Fibrous

S0015F SMOOTH PLASTER, CEILING, LOC:19, STAIRWELL

BV Labs ID: MEJ456 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1	80	Homogeneous white plaster	Not Detected		Non-Fibrous
Layer 2	20	Homogeneous grey plaster	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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0015G SMOOTH PLASTER, CEILING, LOC:21, MAIN AREA, SECOND FLOOR

BV Labs ID: MEJ457 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos		Other Fibres		Particulate
Layer 1	20	Homogeneous white plaster	Not Detected				Non-Fibrous
Layer 2	80	Homogeneous grey plaster	**Chrysotile**	1%			Non-Fibrous

S0016A PAPER CONCEALED BENEATH CANVAS PIPE JACKET, STRAIGHT SECTION, LOC:1, STORAGE ROOM 1, BASEMENT

BV Labs ID: MEJ458 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos		Other Fibres		Particulate
Layer 1	100	Homogeneous brown paper	Not Detected		Cellulose	90%	Non-Fibrous

S0016B PAPER CONCEALED BENEATH CANVAS PIPE JACKET, STRAIGHT SECTION, LOC:1, STORAGE ROOM 1, BASEMENT

BV Labs ID: MEJ459 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos		Other Fibres		Particulate
Layer 1	100	Homogeneous brown 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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0016C PAPER CONCEALED BENEATH CANVAS PIPE JACKET, STRAIGHT SECTION, LOC:1, STORAGE ROOM 1, BASEMENT

BV Labs ID: MEJ460 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos		Other Fibres		Particulate
Layer 1	100	Homogeneous brown paper	Not Detected		Cellulose	90%	Non-Fibrous

S0017A 12" GREY VINYL FLOOR TILE, LINK CORRIDOR, LOC29, SECOND FLOOR

BV Labs ID: MEJ461 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos		Other Fibres		Particulate
Layer 1	99	Homogeneous grey vinyl floor tile	**Chrysotile**	2%			Non-Fibrous
Layer 2	1	Homogeneous black mastic	**Chrysotile**	1%			Non-Fibrous Tar

S0017B 12" GREY VINYL FLOOR TILE, LINK CORRIDOR, LOC29, SECOND FLOOR

BV Labs ID: MEJ462 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1			N/A		
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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

Asbestos Analytical Results

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

S0017C 12" GREY VINYL FLOOR TILE, LINK CORRIDOR, LOC29, SECOND FLOOR

BV Labs ID: MEJ463 Date Analyzed: 2020/03/12

	P.O.B	Sample Morphology	Asbestos	Other Fibres	Particulate
Layer 1			N/A		

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

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ395 **Collected:** 2020/03/04
Sample ID: S0001A PARGING CEMENT, ELBOW, LOC:1, STORAGE ROOM 1, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ395 Dup **Collected:** 2020/03/04
Sample ID: S0001A PARGING CEMENT, ELBOW, LOC:1, STORAGE ROOM 1, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ396 **Collected:** 2020/03/04
Sample ID: S0001B PARGING CEMENT, TEE, LOC:3, MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ397 **Collected:** 2020/03/04
Sample ID: S0001C PARGING CEMENT, ELBOW, LOC:7, LINK CORRIDOR, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ398 **Collected:** 2020/03/04
Sample ID: S0002A ROUGH PLASTER, ON STONE WALL, LOC:1, STORAGE ROOM 1, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ399 **Collected:** 2020/03/04
Sample ID: S0002B ROUGH PLASTER, ON STONE WALL, LOC:3, MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ400 **Collected:** 2020/03/04
Sample ID: S0002C ROUGH PLASTER, WALL, LOC:4, FILE ROOM, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ401 **Collected:** 2020/03/04
Sample ID: S0002D ROUGH PLASTER, WALL, LOC:5, STORAGE ROOM 3, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ402 **Collected:** 2020/03/04
Sample ID: S0002E ROUGH PLASTER, WALL, LOC:3, MAIN BASEMENT AREA, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ403 **Collected:** 2020/03/04
Sample ID: S0003A DRYWALL JOINT COMPOUND, CEILING, LOC:1, STORAGE ROOM 1, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ404 **Collected:** 2020/03/04
Sample ID: S0003B DRYWALL JOINT COMPOUND, CEILING, LOC:3 ,MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ405 **Collected:** 2020/03/04
Sample ID: S0003C DRYWALL JOINT COMPOUND, CEILING, LOC:3 ,MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ406 **Collected:** 2020/03/04
Sample ID: S0003D DRYWALL JOINT COMPOUND, CEILING, LOC:3,MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ407 **Collected:** 2020/03/04
Sample ID: S0003E DRYWALL JOINT COMPOUND, WALL, LOC:3,MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ408 **Collected:** 2020/03/04
Sample ID: S0003F DRYWALL JOINT COMPOUND, WALL, LOC:3,MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ409 **Collected:** 2020/03/04
Sample ID: S0003G DRYWALL JOINT COMPOUND, WALL, LOC:4, FILE ROOM, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ410 **Collected:** 2020/03/04
Sample ID: S0004A GREY MASTIC ON DUCT JOINTS, LOC:2, STORAGE ROOM 2, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ411 **Collected:** 2020/03/04
Sample ID: S0004B GREY MASTIC ON DUCT JOINTS, LOC:2, STORAGE ROOM 2, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ412 **Collected:** 2020/03/04
Sample ID: S0004C GREY MASTIC ON DUCT JOINTS, LOC:2, STORAGE ROOM 2, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ412 Dup **Collected:** 2020/03/04
Sample ID: S0004C GREY MASTIC ON DUCT JOINTS, LOC:2, STORAGE ROOM 2, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ413 **Collected:** 2020/03/04
Sample ID: S0005A DUCT PAPER, LOC:3, MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ414 **Collected:** 2020/03/04
Sample ID: S0005B DUCT PAPER, LOC:3, MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ415 **Collected:** 2020/03/04
Sample ID: S0005C DUCT PAPER, LOC:3, MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ416 **Collected:** 2020/03/04
Sample ID: S0006A BROWN MASTIC ON DUCT JOINTS, LOC:3, MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ417 **Collected:** 2020/03/04
Sample ID: S0006B BROWN MASTIC ON DUCT JOINTS, LOC:3, MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ418 **Collected:** 2020/03/04
Sample ID: S0006C BROWN MASTIC ON DUCT JOINTS, LOC:3, MAIN BASEMENT AREA **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ419 **Collected:** 2020/03/04
Sample ID: S0007A CEILING TILES (GLUE-ON),1X1 SMALL AND MEDIUM PINHOLE, LOC:7, LINK CORRIDOR, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ420 **Collected:** 2020/03/04
Sample ID: S0007B CEILING TILES (GLUE-ON),1X1 SMALL AND MEDIUM PINHOLE, LOC:7, LINK CORRIDOR, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

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BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ421 **Collected:** 2020/03/04
Sample ID: S0007C CEILING TILES (GLUE-ON),1X1 SMALL AND MEDIUM PINHOLE, LOC:7, LINK CORRIDOR, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ422 **Collected:** 2020/03/04
Sample ID: S0008A SMOOTH PLASTER, WALL, LOC:7, LINK CORRIDOR, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ422 Dup **Collected:** 2020/03/04
Sample ID: S0008A SMOOTH PLASTER, WALL, LOC:7, LINK CORRIDOR, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ423 **Collected:** 2020/03/04
Sample ID: S0008B SMOOTH PLASTER, WALL, LOC:9, NORTH EAST OFFICE, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ424 **Collected:** 2020/03/04
Sample ID: S0008C SMOOTH PLASTER, WALL, LOC:18, WASHROOM, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ425 **Collected:** 2020/03/04
Sample ID: S0008D SMOOTH PLASTER, WALL, LOC:12, PARLOR, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ426 **Collected:** 2020/03/04
Sample ID: S0008E SMOOTH PLASTER, WALL, LOC:29, LINK CORRIDOR, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

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BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ427 **Collected:** 2020/03/04
Sample ID: S0008F SMOOTH PLASTER, WALL, LOC:22, NORTH EAST OFFICE, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ428 **Collected:** 2020/03/04
Sample ID: S0008G SMOOTH PLASTER, WALL, LOC:24, SOUTH EAST OFFICE, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ429 **Collected:** 2020/03/04
Sample ID: S0009A BROWN BASEBOARD MASTIC, LOC:7, LINK CORRIDOR, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ430 **Collected:** 2020/03/04
Sample ID: S0009B BROWN BASEBOARD MASTIC, LOC:7, LINK CORRIDOR, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ431 **Collected:** 2020/03/04
Sample ID: S0009C BROWN BASEBOARD MASTIC, LOC:29, LINK CORRIDOR, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ432 **Collected:** 2020/03/04
Sample ID: S0010A VINYL FLOOR TILE AND MASTIC,12''; OFF-WHITE CONCEALED, LOC:9, NORTH EAST OFFICE, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ432 Dup **Collected:** 2020/03/04
Sample ID: S0010A VINYL FLOOR TILE AND MASTIC,12''; OFF-WHITE CONCEALED, LOC:9, NORTH EAST OFFICE, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

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BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ433 **Collected:** 2020/03/04
Sample ID: S0010B VINYL FLOOR TILE AND MASTIC,12''; OFF-WHITE CONCEALED, LOC:9, NORTH EAST SIDE, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ434 **Collected:** 2020/03/04
Sample ID: S0010C VINYL FLOOR TILE AND MASTIC,12''; OFF-WHITE CONCEALED, LOC:9, NORTH EAST SIDE, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ435 **Collected:** 2020/03/04
Sample ID: S0011A VINYL FLOOR TILE AND MASTIC,12''; BEIGE CONCEALED, LOC:10, ENTRANCE AREA, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ436 **Collected:** 2020/03/04
Sample ID: S0011B VINYL FLOOR TILE AND MASTIC,12''; BEIGE CONCEALED, LOC:10, ENTRANCE AREA, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ437 **Collected:** 2020/03/04
Sample ID: S0011C VINYL FLOOR TILE AND MASTIC,12''; BEIGE CONCEALED, LOC:10, ENTRANCE AREA, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ438 **Collected:** 2020/03/04
Sample ID: S0012A VINYL SHEET FLOORING, BLUE WITH GREY SPECKS, LOC:10, WASHROOM, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630012	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ439 **Collected:** 2020/03/04
Sample ID: S0012B VINYL SHEET FLOORING, BLUE WITH GREY SPECKS, LOC:10, WASHROOM, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

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BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ440 **Collected:** 2020/03/04
Sample ID: S0012C VINYL SHEET FLOORING, BLUE WITH GREY SPECKS, LOC:10, WASHROOM, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ441 **Collected:** 2020/03/04
Sample ID: S0013A VINYL SHEET FLOORING, ORANGE WITH GREY SPECKS, LOC:27, WASHROOM, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ442 **Collected:** 2020/03/04
Sample ID: S0013B VINYL SHEET FLOORING, ORANGE WITH GREY SPECKS, LOC:27, WASHROOM, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ442 Dup **Collected:** 2020/03/04
Sample ID: S0013B VINYL SHEET FLOORING, ORANGE WITH GREY SPECKS, LOC:27, WASHROOM, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ443 **Collected:** 2020/03/04
Sample ID: S0013C VINYL SHEET FLOORING, ORANGE WITH GREY SPECKS, LOC:27, WASHROOM, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ444 **Collected:** 2020/03/04
Sample ID: S0014A TEXTURE FINISH, CEILING, LOC:13, MAIN AREA, FIRST FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ445 **Collected:** 2020/03/04
Sample ID: S0014B TEXTURE FINISH, CEILING, LOC:16, SOUTH WEST OFFICE, FIRST FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

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BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ446 **Collected:** 2020/03/04
Sample ID: S0014C TEXTURE FINISH, CEILING, LOC:15, NORTH OFFICE , FIRST FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ447 **Collected:** 2020/03/04
Sample ID: S0014D TEXTURE FINISH, CEILING, LOC:21, MAIN AREA, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ448 **Collected:** 2020/03/04
Sample ID: S0014E TEXTURE FINISH, CEILING, LOC:24, MAIN AREA, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ449 **Collected:** 2020/03/04
Sample ID: S0014F TEXTURE FINISH, CEILING, LOC:22, MAIN AREA, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ450 **Collected:** 2020/03/04
Sample ID: S0014G TEXTURE FINISH, CEILING, LOC:21, MAIN AREA, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ451 **Collected:** 2020/03/04
Sample ID: S0015A SMOOTH PLASTER, CEILING, LOC:9, NORTH EAST OFFICE, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ452 **Collected:** 2020/03/04
Sample ID: S0015B SMOOTH PLASTER, CEILING, LOC:13, MAIN AREA, GROUND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

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BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ452 Dup
Sample ID: S0015B SMOOTH PLASTER, CEILING, LOC:13, MAIN AREA, GROUND FLOOR
Matrix: Solid
Collected: 2020/03/04
Shipped:
Received: 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ453
Sample ID: S0015C SMOOTH PLASTER, CEILING, LOC:12, PARLOR, GROUND FLOOR
Matrix: Solid
Collected: 2020/03/04
Shipped:
Received: 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ454
Sample ID: S0015D SMOOTH PLASTER, CEILING, LOC:11, BUD CLAYTON ROOM, GROUND FLOOR
Matrix: Solid
Collected: 2020/03/04
Shipped:
Received: 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ455
Sample ID: S0015E SMOOTH PLASTER, CEILING, LOC:22, NORTH EAST OFFICE, , SECOND FLOOR
Matrix: Solid
Collected: 2020/03/04
Shipped:
Received: 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ456
Sample ID: S0015F SMOOTH PLASTER, CEILING, LOC:19, STAIRWELL
Matrix: Solid
Collected: 2020/03/04
Shipped:
Received: 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ457
Sample ID: S0015G SMOOTH PLASTER, CEILING, LOC:21, MAIN AREA, SECOND FLOOR
Matrix: Solid
Collected: 2020/03/04
Shipped:
Received: 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ458
Sample ID: S0016A PAPER CONCEALED BENEATH CANVAS PIPE JACKET, STRAIGHT SECTION, LOC:1, STORAGE ROOM 1, BASEMENT
Matrix: Solid
Collected: 2020/03/04
Shipped:
Received: 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

TEST SUMMARY

BV Labs ID: MEJ459 **Collected:** 2020/03/04
Sample ID: S0016B PAPER CONCEALED BENEATH CANVAS PIPE JACKET, STRAIGHT SECTION, LOC:1, STORAGE ROOM 1, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ460 **Collected:** 2020/03/04
Sample ID: S0016C PAPER CONCEALED BENEATH CANVAS PIPE JACKET, STRAIGHT SECTION, LOC:1, STORAGE ROOM 1, BASEMENT **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ461 **Collected:** 2020/03/04
Sample ID: S0017A 12” GREY VINYL FLOOR TILE, LINK CORRIDOR, LOC29, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ461 Dup **Collected:** 2020/03/04
Sample ID: S0017A 12” GREY VINYL FLOOR TILE, LINK CORRIDOR, LOC29, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ462 **Collected:** 2020/03/04
Sample ID: S0017B 12” GREY VINYL FLOOR TILE, LINK CORRIDOR, LOC29, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

BV Labs ID: MEJ463 **Collected:** 2020/03/04
Sample ID: S0017C 12” GREY VINYL FLOOR TILE, LINK CORRIDOR, LOC29, SECOND FLOOR **Shipped:**
Matrix: Solid **Received:** 2020/03/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Asbestos by PLM - 0.5 RDL	MIC	6630018	N/A	2020/03/12	Romeo Samson

Bureau Veritas Laboratories 6740 Campobello Road, Mississauga, Ontario, L5N 2L8 Tel: (905) 817-5700 Toll-Free: 800-563-6266 Fax: (905) 817-5777 www.bvlabs.com

Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

GENERAL COMMENTS

Vinyl floor tile can contain very fine asbestos fibres that are below the resolution limits of the PLM. Transmission Electron Microscopy (TEM) is recommended for confirmation of Not Detected results.

Revised Report (2020/03/26): IDs changed as per client request for some samples.

Results relate only to the items tested.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

BV Labs Job #: C061116
Report Date: 2020/03/26

Pinchin Ltd
Client Project #: 270131
Site Location: 2069 BATTERSEA ROAD, KINGSTON, ON
Sampler Initials: NC

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Romeo Samson, Team Lead- Asbestos

BV Labs 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 Signature Page.

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Microbiology testing is conducted at 6660 Campobello Rd. Chemistry testing is conducted at 6740 Campobello Rd.

APPENDIX II-B

Lead Analytical Certificates

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Certificate of Analysis

Pinchin Ltd. (Kingston)

1456 Centennial Drive, Suite 2
Kingston, ON K7P 0K4
Attn: Nathan Cartmell

Client PO: 2069 Battersea Road, Kingston, Ontario
Project: 270131
Custody:

Report Date: 9-Mar-2020
Order Date: 4-Mar-2020

Revised Report **Order #: 2010304**

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

Paracel ID	Client ID
2010304-01	L1, White on stone wall, basement, location 1 and 3
2010304-02	L2, Grey on concrete floor, basement, location 3
2010304-03	L3, White on canvas pipe jacket, basement, location 3
2010304-04	L4, White on drywall, ceiling, basement, location 3
2010304-05	L5, White on drywall, wall, basement, location3
2010304-06	L6, White on concrete, wall, basement, location3
2010304-07	L7, Yellow on smooth plaster, wall, basement, location 7
2010304-08	L8, Beige on smooth plaster, wall, first floor (composite)
2010304-09	L9, White on smooth plaster, ceiling, first floor (composite)
2010304-10	L10, Beige on smooth plaster, wall, second floor (composite)
2010304-11	L11, Orange on concrete floor, stairwell, location 19
2010304-12	L12, White on textured finish, ceiling (composite)

Approved By:

Alex Enfield, MSc
Lab Manager

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Client: Pinchin Ltd. (Kingston)

Client PO: 2069 Battersea Road, Kingston, Ontario

Report Date: 09-Mar-2020

Order Date: 4-Mar-2020

Project Description: 270131

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	6-Mar-20	6-Mar-20

Sample Data Revisions

None

Work Order Revisions/Comments:

Revision 1 - This report includes an updated project number.

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.

Sample Results

Lead

Matrix: Paint
Sample Date: 03-Mar-20

Paracel ID	Client ID	Units	MDL	Result
2010304-01	L1, White on stone wall, basement, location 1 and 3	% by Wt.	0.0005	0.0035
2010304-02	L2, Grey on concrete floor, basement, location 3	% by Wt.	0.0005	0.0014
2010304-03	L3, White on canvas pipe jacket, basement, location 3	% by Wt.	0.0005	0.0008
2010304-04	L4, White on drywall, ceiling, basement, location 3	% by Wt.	0.0005	0.0007
2010304-05	L5, White on drywall, wall, basement, location3	% by Wt.	0.0005	<0.0005
2010304-06	L6, White on concrete, wall, basement, location3	% by Wt.	0.0005	0.0010
2010304-07	L7, Yellow on smooth plaster, wall, basement, location 7	% by Wt.	0.0005	<0.0005
2010304-08	L8, Beige on smooth plaster, wall, first floor (composite)	% by Wt.	0.0005	<0.0005
2010304-09	L9, White on smooth plaster, ceiling, first floor (composite)	% by Wt.	0.0005	<0.0005
2010304-10	L10, Beige on smooth plaster, wall, second floor (composite)	% by Wt.	0.0005	0.0174
2010304-11	L11, Orange on concrete floor, stairwell, location 19	% by Wt.	0.0005	0.162
2010304-12	L12, White on textured finish, ceiling (composite)	% by Wt.	0.0005	<0.0005

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	**ND**	**0.0005**	**% by Wt.**						
Matrix Duplicate									
Lead	**0.0174**	**0.0005**	**% by Wt.**	**0.0174**			**0.27**	**50**	
Matrix Spike									
Lead	0.134	0.0005	% by Wt.	0.0174	92.9	70-130			

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Paracel ID: 2010304

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Chain of Custody
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Page 1 of 2.

Client Name:	Pinchin Ltd.	Project Reference: 269131	TAT: ✔ Regular ☐ 3 Day ☐ 2 Day ☐ 1 Day
Contact Name:	Nathan Cartmell	Quote # 2069 Battersea Road, Kingston, Ontario	
Address:	1456 Centennial Drive, Suite 2, Kingston, ON	PO #	Date Required:
Telephone:	613.541.1013 ext 1614	Email Address: ncartmell@pinchin.com kvanderburgt@pinchin.com	

Criteria: ☐ O. Reg. 153 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality: _____ ☐ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 2010304

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	LEAD										
1	L1, White on stone wall, basement, location 1 and 3	p		1	3/3/2020	am	✔										
2	L2, Grey on concrete floor, basement, location 3	p		1			✔										
3	L3, White on canvas pipe jacket, basement, location3	p		1			✔										
4	L4, White on drywall, ceiling, basement, location3	p		1			✔										
5	L5, White on drywall, wall, basement, location3	p		1			✔										
6	L6, White on concrete, wall, basement, location 3	p		1			✔										
7	L7, Yellow on smooth plaster, wall, basement, location 7	p		1			✔										
8	L8, Beige on smoooth plaster, wall, first floor (composite)	p		1			✔										
9	L9, White on smooth plaster, ceiling, frist floor (composite)	p		1			✔										
10	L10, Beige on smooth plaster, wall, second floor (composite)	p		1			✔										

Comments: Please report in %

Please CC Kristen Vanderburgt on results: kvanderburgt@pinchin.com

Method of Delivery: Pick-up

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Nathan Cartmell	Date/Time: March 1:45	Date/Time: 10:07 Mar 5, 20	Date/Time: March 2 10
Date/Time: 3/3/2020 2:00PM	Temperature: ____ °C	Temperature: ____ °C	pH Verified [ ] By:

Paracel ID: 2010304

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Chain of Custody
(Lab Use Only)

Client Name:	Pinchin Ltd.	Project Reference: 269131	TAT: ✔ Regular ☐ 3 Day ☐ 2 Day ☐ 1 Day
Contact Name:	Nathan Cartmell	Quote # 2069 Battersea Road, Kingston, Ontario	
Address:	1456 Centennial Drive, Suite 2, Kingston, ON	PO #	Date Required:
		Email Address: ncartmell@pinchin.com kvanderburgt@pinchin.com	
Telephone:	613.541.1013 ext 1614		

Criteria: ☐ O. Reg. 153 (As Amended) Table __ ☐ RSC Filing ☐ O. Reg. 558/00 ☐ PWQO ☐ CCME ☐ SUB (Storm) ☐ SUB (Sanitary) Municipality:_____ ☐ Other:_____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number: 2010304

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	LEAD										
1	L11, Orange on concrete floor, stairwell, location 19	p		1	3/3/2020	am	✔										
2	L12, White on textured finish, ceiling, (composite)	p		1			✔										
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																	

Comments: Please report in %

Please CC Kristen Vanderburgt on results: kvanderburgt@pinchin.com

Method of Delivery: pick-up

Relinquished By (Sign):	Received by Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Nathan Cartmell	Date/Time: March 4 1:45	Date/Time: 10:07 March 5 2020	Date/Time: March 2/0
Date/Time: 3/3/2020 2:00PM	Temperature: ____ °C	Temperature: ____ °C	pH Verified [ ] By:

APPENDIX III

Methodology

1.0 GENERAL

Pinchin conducts a room-by-room survey (rooms, corridors, service areas, exterior, etc.) to identify the hazardous building materials as defined by the scope of work. All work is conducted in accordance with our own internal Standard Operating Procedures.

Information regarding the location and condition of hazardous building materials encountered and visually estimated quantities are recorded. The locations of any samples collected are recorded on small-scale plans.

As-built drawings and previous reports are referenced where provided.

1.1 Limitations on Scope

The assessment excludes the following:

- Articles belonging to the owner, tenant or occupant (e.g. stored items, furniture, appliances, etc.);
- Underground materials or equipment (e.g. vessels, drums, underground storage tanks, pipes, etc.);
- Building envelope, structural components, inaccessible or concealed materials or other items where sampling may cause consequential damage to the property;
- Energized systems (e.g. internal boiler components, elevators, mechanical or electrical components);
- Controlled products (e.g. stored chemicals, operational or process-related substances); and
- Materials not typically associated with construction (e.g. settled dust, spills, residual contamination from prior spills, etc.).

The assessment includes 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 is conducted where possible (under carpets or multiple layers of flooring). Demolition of exterior building finishes, masonry walls (chases, shafts etc.), and structural items is not conducted.

1.2 Asbestos

An inspection is conducted for the presence of 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.

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A separate set of samples is 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 are determined by visual examination and available information on the phases of construction and prior renovations.

Samples are collected at a rate that is in compliance with the requirements of local regulations and guidelines. The sampling strategy is 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 are visually identified without sample confirmation.

Drywall joint compound is sampled at exterior walls, columns or other locations that are unlikely to have been renovated in an attempt to determine the presence of asbestos in the original drywall compound. Delineation of asbestos-containing drywall compound from newer, non-asbestos drywall compound is not conducted.

Flooring mastic or adhesive is sampled and analyzed if present on the underside of flooring samples (vinyl floor tile and vinyl sheet flooring).

Limited demolition of masonry block walls (core holes) is conducted to investigate for loose fill vermiculite insulation. The core holes are temporarily patched with expanding foam or caulking.

The following materials (if present) are not sampled and will be presumed to contain asbestos:

- Roofing felts and tar, including repair mastics;
- Concrete floor levelling compound, including ceramic tile thin set;
- Elevator and lift brakes;
- Electrical components or wiring within control centers, breakers, motors or lights, insulation on wiring;
- Refractory materials and insulations in boilers, incinerators and stacks;
- Insulation under metal clad boilers and vessels;
- Mechanical packing, ropes and gaskets;
- Caulking and putties;
- Paper products under wood flooring or metal or slate roofing;
- Soffit and fascia boards at elevated heights;

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- Fire resistant doors or metal clad finishes;
- Exterior cladding;
- Stucco, plaster or other cementitious parge coatings;
- Vibration dampers on HVAC equipment; and
- Materials outside the assessed area.

The bulk samples are submitted to a NVLAP accredited laboratory for analysis. The analysis is 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 are compared to the following criteria:

Jurisdiction	Friable	Non-Friable
BC	0.5%[1]	0.5%
Alberta	Undefined[2]	Undefined[2]
Saskatchewan	>0.5%[1]	>1%
Manitoba	0.1%[1]	1%
Ontario	0.5%	0.5%
Yukon, Nunavut, Northwest Territories	1%	1%
Federal	1%	1%

The asbestos analysis is completed using a stop positive approach. Only one result meeting the above regulated criteria is 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 stops 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 are analyzed if no asbestos is detected. In some cases, all samples are analyzed in the sample set regardless of result.

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.

[1] Or any amount if vermiculite
[2] There is no criteria established for defining an asbestos-containing material by Alberta OHS Regulations. Historically, the accepted threshold was 1%, however materials that contain any asbestos will now need to be assessed before disturbance to determine the potential for fibre release based on the planned work activity.

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

- Friability (friable or non-friable);
- Condition (good, fair, poor, debris);
- Accessibility (ranking from accessible to all building users to inaccessible); and
- 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).

1.3 Lead

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

Analysis for lead in paints or surface coatings is performed at an accredited laboratory in accordance with EPA Method No. 3050B/Method No. 7420; flame atomic absorption, or equivalent.

The Ontario Ministry of Labour (MOL) has not established a lower limit for concentrations of lead in paint, below which precautions do not need to be considered during construction projects. Pinchin follows the recommendations of the Environmental Abatement Council of Ontario (EACO) Lead Guideline for Construction, Renovation, Maintenance or Repair. The Guideline suggests that 0.1% (1,000 ppm) lead in paint represents a de minimis concentration of lead in paint for construction hygiene purposes, that is a concentration below which the lead content is not the limiting hazard in any disturbance of leaded paint for non-aggressive disturbance of painted finishes, (hand powered demolition, chipping, scraping, light sanding, etc.). The use of aggressive methods such as power grinding, torching, welding, etc. may result in significant lead exposures even with low concentrations of lead in paints (below 0.1%). Paint and surface coatings are evaluated for condition such as flaking, chipping or spalling.

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

1.4 Silica

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

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1.5 Mercury

Building materials/products/equipment (e.g. thermostats, barometers, pressure gauges, light tubes), suspected to contain mercury are identified by visually inspection only. Dismantling of equipment suspected of containing mercury is not performed. Sampling of these materials for laboratory analysis of mercury content is not performed.

1.6 Polychlorinated Biphenyls

The potential for light ballast and wet transformers to contain PCBs is 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 is compared to known ban dates of PCBs and Environment Canada publications.

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

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

Non-liquid forms of PCBs (i.e. sealants or caulking) are not sampled for PCB content.

1.7 Visible Mould

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

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APPENDIX IV

Location Summary Report

HMIS
HAZARDOUS MATERIALS INVENTORY SYSTEM

LOCATIONS LIST

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Client:County Of Frontenac
Building Name: Administration Building
Surveyor: Nathan Cartmell
Reassessment Surveyor:

Site: 2069 Battersea Road, Kingston, ON

Survey Date: 2020-03-03
Last Re-Assessment:

Location No.	Name or Description	ft^2	Floor No.	Notes
1	Storage Room 1	200	0	
2	Storage Room 2	100	0	
3	Main Basement Area	3000	0	
4	File Room	300	0	
5	Storage Room 3	100	0	
6	Storage Room 4	50	0	
7	Link Corridor	200	0	
8	Records Room	600	0	
9	North East Office	400	Ground	
10	East Entrance/ Washroom	100	Ground	
11	Bud Clayton Room	400	Ground	
12	Parlor	500	Ground	
13	Main area	700	Ground	
14	Kitchen	100	Ground	
15	Offices	600	Ground	
16	South west office	450	Ground	
17	North west office	300	Ground	
18	Washroom	80	Ground	
19	Stairwell	200	0, Ground, 2	
20	Reception	500	Ground	Appears recently renovated
21	Main area	600	2	
22	North east office	400	2	
23	North office	350	2	
24	South east office	500	2	
25	South office	350	2	
26	South west office	450	2	
27	Washroom	40	2	
28	North west office	300	2	
29	Link corridor	200	2	

Quantities shown above are based on visual approximations only and may be subject to variation.
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APPENDIX V

Hazardous Materials Summary Report / Sample Log

HMIS
HAZARDOUS MATERIALS INVENTORY SYSTEM

HAZARDOUS MATERIALS SUMMARY / SAMPLE LOG

PINCHIN
1.855.PINCHIN www.pinchin.com

Client:County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building** **Surveyor: Nathan Cartmell** **Survey Date: 2020-03-03**

HAZMAT	Sample No	System/Material/Sample Description	Locations	LF	SF	EA	%	Type	Positive
Asbestos	S0001 ABC	PIPING | PARGING CEMENT | PARGING CEMENT, ELBOW	1,2,3,7,8,19	0	0	153	0	Chrysotile	Yes
Asbestos	S0002 ABCDE	WALL | PLASTER | ROUGH PLASTER ON STONE	1,3,4,5,6,8	0	2820	0	0	None Detected	No
Asbestos	S0003 ABCDEFG	CEILING, WALL | DRYWALL AND JOINT COMPOUND | DRYWALL JOINT COMPOUND	1,2,3,4,5,6,7,8	0	5990	0	0	None Detected	No
Asbestos	S0004 ABC	DUCT | MASTIC, GREY | GREY MASTIC ON DUCT JOINTS	2,4,6	45	0	0	0	None Detected	No
Asbestos	S0005 ABC	DUCT | PAPER | DUCT PAPER	3	0	6	0	0	Chrysotile	Yes
Asbestos	S0006 ABC	DUCT | MASTIC | BROWN DUCT MASTIC	3	20	0	0	0	None Detected	No
Asbestos	S0007 ABC	CEILING | CEILING TILES (GLUE-ON) | 1X1 SMALL AND MEDIUM PINHOLE	7,19	0	400	0	0	None Detected	No
Asbestos	S0008 ABCDEFG	WALL | PLASTER | SMOOTH PLASTER	7,9,10,11,12,13,14,15,16,17,18,19,20,21,22,23 24,25,26,27,28,29	0	20040	0	0	None Detected	No
Asbestos	S0009 ABC	WALL | MASTIC | BROWN BASEBOARD MASTIC	7,29	200	0	0	0	None Detected	No
Asbestos	S0010 ABC	FLOOR | VINYL FLOOR TILE AND MASTIC | 12" OFF-WHITE CONCEALED	9	0	400	0	0	Chrysotile	Yes
Asbestos	S0011 ABC	FLOOR | VINYL FLOOR TILE | 12" BEIGE CONCEALED	10	0	100	0	0	None Detected	No
Asbestos	S0012 ABC	FLOOR | VINYL SHEET FLOORING | BLUE WITH GREY SPECKS	10	0	40	0	0	None Detected	No
Asbestos	S0013 ABC	FLOOR | VINYL SHEET FLOORING | ORANGE WITH GREY SPECKS	18,27	0	160	0	0	None Detected	No
Asbestos	S0014 ABCDEFG	CEILING | TEXTURE FINISH - NON FRIABLE | TEXTURE FINISH	13,15,16,17,18,21,22,23,24,27,28	0	4360	0	0	None Detected	No
Asbestos	S0015 ABCDEFG	CEILING | PLASTER | SMOOTH PLASTER	9,10,11,12,13,14,15,16,17,18,19,21,22,23,24,25 26,27,28	0	7060	0	0	Chrysotile	Yes
Asbestos	S0016 ABC	PIPING | PAPER | PAPER CONCEALED	1	20	0	0	0	None Detected	No
Asbestos	S0017 ABC	FLOOR | VINYL FLOOR TILE AND MASTIC | 12" GREY	29	0	200	0	0	Chrysotile	Yes
Asbestos	V9500	FLOOR | CERAMIC TILES | THINSET	22	0	80	0	0	Presumed Asbestos	Yes
Asbestos	V9500	WALL | CERAMIC TILES	18,22,27	0	400	0	0	Presumed Asbestos	Yes
Asbestos	V0000	CEILING | CEILING TILE (MECHANICALLY FASTENED) | 1'X1' SMOOTH SURFACE (WOOD COMPOSITION)	25,26	0	700	0	0	Non Asbestos	No
Asbestos	V0000	CEILING | CEILING TILES (LAY-IN)	20,29	0	500	0	0	Non Asbestos	No
Lead Paint	L0001	WALL | CONCRETE (POURED) | WHITE	3	0	0	0	100		No

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

Lead Paint	L0002	FLOOR | CONCRETE (POURED) | GREY ON CONCRETE FLOOR	2,3,4,5,6,7,8	0	0	0	100		No
Lead Paint	L0003	PIPING | METAL | WHITE ON CANVAS JACKET	3,8	0	0	0	100		No
Lead Paint	L0004	CEILING | DRYWALL AND JOINT COMPOUND | WHITE ON DRYWALL	3,4,5,6,8	0	0	0	100		No
Lead Paint	L0005	WALL | DRYWALL AND JOINT COMPOUND | WHITE ON DRYWALL	3	0	0	0	100		No
Lead Paint	L0006	WALL | CONCRETE (POURED) | WHITE ON FOUNDATION WALLS	3,5,6,8	0	0	0	100		No
Lead Paint	L0007	WALL | PLASTER | YELLOW	7	0	0	0	100		No
Lead Paint	L0008	WALL | PLASTER | BEIGE	9,10,11,12,13,14,15,16,17,18,19,20,29	0	0	0	100		No
Lead Paint	L0009	CEILING | PLASTER | WHITE	9,10,11,12,14,19	0	0	0	100		No
Lead Paint	L0010	WALL | PLASTER | BEIGE	21,22,23,24,25,26,27,28	0	0	0	100		No
Lead Paint	L0011	FLOOR | CONCRETE (POURED) | ORANGE	19	0	0	0	0	Lead	Yes
Lead Paint	L0012	CEILING | TEXTURE FINISH - NON FRIABLE | WHITE	13,15,16,17,18,21,22,23,24,27,28,29	0	0	0	100		No
Lead Product	V9000	BATTERIES IN EMER. LIGHTS	13,21,29	0	0	6	0	Lead Product	Yes
Lead Product	V9000	BATTERIES IN EMER. LIGHTS	3	0	0	1	0	Lead Product	Yes
Lead Product	V9000	LEAD PIPES	1,3,8	0	0	1	100	Lead Product	Yes
PCB	V9500	LIGHT BALLASTS	1,2,3,5,6,7,8,10	0	0	18	0	Presumed PCB	Yes
Hg	V9000	FLUORESCENT LIGHT TUBE	1	0	0	2	0	Hg	Yes
Hg	V9000	FLUORESCENT LIGHT TUBE	16,17,18,19,20,21,22,23,24,25,26,27,28	0	0	56	0	Hg	Yes
Hg	V9000	FLUORESCENT LIGHT TUBE	2	0	0	2	0	Hg	Yes
Hg	V9000	FLUORESCENT LIGHT TUBE	9,10,12,13,14,15	0	0	26	0	Hg	Yes
Hg	V9000	FLUORESCENT LIGHT TUBE	5,6,7,8	0	0	12	0	Hg	Yes
Hg	V9000	FLUORESCENT LIGHT TUBE	4	0	0	2	0	Hg	Yes
Hg	V9000	FLUORESCENT LIGHT TUBE	3	0	0	16	0	Hg	Yes
Hg	V9000	FLUORESCENT LIGHT TUBE	29	0	0	4	0	Hg	Yes

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

Legend:

Sample number	
S####	Asbestos sample collected
L####	Lead sample collected
P####	PCB sample collected
M####	Mould sample collected
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

Units	
SF	Square feet
LF	Linear feet
EA	Each
%	Percentage

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

APPENDIX VI

HMIS Data Report

HMIS
HAZARDOUS MATERIALS INVENTORY SYSTEM

ALL DATA REPORT

PINCHIN
1.855.PINCHIN www.pinchin.com

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #1 : Storage Room 1 **Floor: 0** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	All	Drywall and joint compound, Drywall joint compound			A	Y		200			SF	S0003A	None Detected	N.D.	None
Duct		Fibreglass		Foil Face											
Floor	All	Concrete (poured)													
Mechanical Equipment[1]		Not Insulated													
Piping[2]	Hot Water Heating	Parging Cement, Parging cement, elbow	Elbow		A	Y		10(5)			EA	S0001A	Chrysotile	25-50%	Confirmed Asbestos(F)
Piping	Hot Water Heating	Parging Cement, Parging cement, tee	Tee		A	Y		2(5)			EA	V0001	Chrysotile	25-50%	Confirmed Asbestos(F)
Piping[3]	Hot Water Heating	Paper, Paper concealed	Straight	Canvas	D	N		20			LF	S0016ABC	None Detected	N.D.	None
Piping	Sprinkler	Not Insulated													
Piping	Unidentified Pipe	Not Insulated													
Structure		Wood													
Wall[4]	All	Plaster, Rough plaster on stone			A	Y		400			SF	S0002A	None Detected	N.D.	None

1 - Wall mounted heating unit
2 - 2 concealed fittings above drywall ceiling
3 - Paper on fiberglass insulation jacketed in canvas
4 - On stone wall

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #1 : Storage Room 1 **Floor: 0** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall[1]	Concrete (poured)	100		%		White		No

1 - And on stone

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #1 : Storage Room 1 **Floor: 0** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PB PRODUCTS		
Component	Quantity	Unit
LEAD PIPES	1	EA

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #1 : Storage Room 1 **Floor: 0** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
FLUORESCENT LIGHT TUBE[1]	2	EA

1 - T12

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #1 : Storage Room 1 **Floor: 0** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
LIGHT BALLASTS	1	EA	V9500	T12 light ballast		Presumed

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #2 : Storage Room 2 **Floor: 0** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	All	Drywall and joint compound, Drywall joint compound			A	Y		200			SF	V0003	None Detected	N.D.	None
Duct		Fibreglass		Foil Face											
Duct		Not Insulated													
Duct		Mastic, Grey, Grey mastic on duct joints	Joint		A	Y		5			LF	S0004ABC	None Detected	N.D.	None
Floor	All	Concrete (poured)													
Mechanical Equipment		None Found													
Piping	Domestic Water (Hot and Cold)	Not Insulated													
Piping[1]	Hot Water Heating	Parging Cement, Parging cement, elbow	Elbow		A	Y		15(5)			EA	V0001	Chrysotile	25-50%	Confirmed Asbestos(F)
Piping	Hot Water Heating	Parging Cement, Parging cement, tee	Tee		A	Y		2(5)			EA	V0001	Chrysotile	25-50%	Confirmed Asbestos(F)
Piping	Sprinkler	Not Insulated													
Structure		Concrete (poured)													
Structure		Wood													

1 - 3 concealed fittings above drywall ceiling

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #2 : Storage Room 2 **Floor: 0** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT

System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Floor	Concrete (poured)	100		%	V0002	Grey	0.0014 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #2 : Storage Room 2 **Floor: 0** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY

Component	Quantity	Unit
FLUORESCENT LIGHT TUBE[1]	2	EA

1 - T12

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #2 : Storage Room 2 **Floor: 0** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PCB

Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
LIGHT BALLASTS	1	EA	V9500	T12 light ballast		Presumed

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #3 : Main Basement Area **Floor: 0** **Room #:** **Area (sqft): 3000**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS

System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	All	Drywall and joint compound, Drywall joint compound			A	Y		3000			SF	S0003BCD	None Detected	N.D.	None
Duct		Fibreglass		Foil Face											
Duct[1]		Paper, Duct paper			C	N		6(7)			SF	S0005ABC	Chrysotile	50-75%	Confirmed Asbestos(NF)
Duct		Mastic, Brown duct mastic			B	Y		20			LF	S0006ABC	None Detected	N.D.	None
Floor	All	Concrete (poured)													
Mechanical Equipment[2]		Not Insulated													
Mechanical Equipment	Heating Water Tank	Fibreglass													

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Piping[3]	Hot Water Heating	Parging Cement, Parging cement, elbow	Elbow		A	Y		10(5)			EA	V0001	Chrysotile	25-50%	Confirmed Asbestos(F)
Piping	Hot Water Heating	Parging Cement, Parging cement, tee	Tee		A	Y		38(5)			EA	S0001B	Chrysotile	25-50%	Confirmed Asbestos(F)
Piping	Sprinkler	Not Insulated													
Piping	Unidentified Pipe	Not Insulated													
Structure		Wood													
Wall	All	Drywall and joint compound, Drywall joint compound			A	Y		1000			SF	S0003EF	None Detected	N.D.	None
Wall[4]	All	Plaster, Rough plaster on stone			A	Y		1900			SF	S0002BE	None Detected	N.D.	None

1 - In wall cavity on metal duct
2 - Wall mounted heating unit
3 - 2 concealed fittings above drywall ceiling
4 - On stone wall

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #3 : Main Basement Area **Floor: 0** **Room #:** **Area (sqft): 3000**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall[1]	Concrete (poured)	100		%	L0001	White	0.0035 %	No
Floor	Concrete (poured)	100		%	L0002	Grey on concrete floor	0.0014 %	No
Piping[2]	Metal	100		%	L0003	White on canvas jacket	0.0008 %	No
Ceiling	Drywall and joint compound	100		%	L0004	White on drywall	0.0007 %	No
Wall	Drywall and joint compound	100		%	L0005	White on drywall	<0.0005 %	No
Wall	Concrete (poured)	100		%	L0006	White on foundation walls	0.001 %	No

1 - On stone walls
2 - On canvas jacket

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #3 : Main Basement Area **Floor: 0** **Room #:** **Area (sqft): 3000**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PB PRODUCTS		
Component	Quantity	Unit
LEAD PIPES	100	%
BATTERIES IN EMER. LIGHTS	1	EA

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Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #3 : Main Basement Area **Floor: 0** **Room #:** **Area (sqft): 3000**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
FLUORESCENT LIGHT TUBE[1]	16	EA

1 - T12

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #3 : Main Basement Area **Floor: 0** **Room #:** **Area (sqft): 3000**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
LIGHT BALLASTS	8	EA	V9500	T12 light ballasts		Presumed

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #4 : File Room **Floor: 0** **Room #:** **Area (sqft): 300**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	All	Drywall and joint compound, Drywall joint compound			A	Y		300			SF	V0003	None Detected	N.D.	None
Duct		Fibreglass		Foil Face											
Duct		Mastic, Grey, Grey mastic on duct joints	Joint		A	Y		20			LF	V0004	None Detected	N.D.	None
Floor	All	Concrete (poured)													
Mechanical Equipment		None Found													
Piping	Domestic Water (Hot and Cold)	Not Insulated													
Piping	Sprinkler	Not Insulated													
Structure		Concrete (poured)													
Structure		Wood													
Wall		Drywall and joint compound, Drywall joint compound			A	Y		100			SF	S0003G	None Detected	N.D.	None
Wall		Plaster, Rough plaster			A	Y		100			SF	S0002C	None Detected	N.D.	None

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #4 : File Room **Floor: 0** **Room #:** **Area (sqft): 300**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

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LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Floor	Concrete (poured)	100		%	V0002	Grey	0.0014 %	No
Ceiling	Drywall and joint compound	100		%	V0004	White on drywall	0.0007 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #4 : File Room **Floor: 0** **Room #:** **Area (sqft): 300**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	2	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #5 : Storage Room 3 **Floor: 0** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	All	Drywall and joint compound, Drywall joint compound			A	Y		100			SF	V0003	None Detected	N.D.	None
Duct		Fibreglass		Foil Face											
Floor	All	Concrete (poured)													
Mechanical Equipment		None Found													
Piping	Sprinkler	Not Insulated													
Structure		Concrete (poured)													
Structure		Wood													
Wall		Drywall and joint compound			A	Y		80			SF	V0003	None Detected	N.D.	None
Wall		Plaster, Rough plaster			A	Y		100			SF	S0002D	None Detected	N.D.	None

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #5 : Storage Room 3 **Floor: 0** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Floor	Concrete (poured)	100		%	V0002	Grey	0.0014 %	No
Ceiling	Drywall and joint compound	100		%	V0004	White on drywall	0.0007 %	No
Wall	Concrete (poured)	100		%	V0006	White on foundation walls	0.001 %	No

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Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #5 : Storage Room 3 **Floor: 0** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
FLUORESCENT LIGHT TUBE[1]	2	EA

1 - T12

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #5 : Storage Room 3 **Floor: 0** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
LIGHT BALLASTS	1	EA	V9500	T12 light ballast		Presumed

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #6 : Storage Room 4 **Floor: 0** **Room #:** **Area (sqft): 50**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	All	Drywall and joint compound, Drywall joint compound			A	Y		50			SF	V0003	None Detected	N.D.	None
Duct		Fibreglass		Foil Face											
Duct		Mastic, Grey			C	N		20			LF	V0004	None Detected	N.D.	None
Floor	All	Concrete (poured)													
Mechanical Equipment		Not Insulated													
Piping	Sprinkler	Not Insulated													
Structure		Concrete (poured)													
Structure		Wood													
Wall		Drywall and joint compound			A	Y		180			SF	V0003	None Detected	N.D.	None
Wall		Plaster, Rough plaster			A	Y		20			SF	V0002	None Detected	N.D.	None

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #6 : Storage Room 4 **Floor: 0** **Room #:** **Area (sqft): 50**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Floor	Concrete (poured)	100		%	V0002	Grey	0.0014 %	No
Ceiling	Drywall and joint compound	100		%	V0004	White on drywall	0.0007 %	No
Wall	Concrete (poured)	100		%	V0006	White on foundation walls	0.001 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #6 : Storage Room 4 **Floor: 0** **Room #:** **Area (sqft): 50**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
FLUORESCENT LIGHT TUBE[1]	2	EA

1 - T12

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #6 : Storage Room 4 **Floor: 0** **Room #:** **Area (sqft): 50**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
LIGHT BALLASTS	1	EA	V9500	T12 light ballast		Presumed

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #7 : Link Corridor **Floor: 0** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	ACOUSTIC TILE	Ceiling tiles (glue-on), 1x1 small and medium pinhole			B	Y		200			SF	S0007ABC	None Detected	N.D.	None
Duct		None Found													
Floor	All	Concrete (poured)													
Mechanical Equipment		None Found													
Piping		Parging Cement, Parging cement elbow	Elbow	Canvas	A	Y		10(5)			EA	S0001C	Chrysotile	25-50%	Confirmed Asbestos(F)
Piping		Parging Cement, Parging cement tee	Tee	Canvas	A	Y		2(5)			EA	V0001	Chrysotile	25-50%	Confirmed Asbestos(F)
Piping	Sprinkler	Not Insulated													
Structure		Concrete (poured)													
Structure		Wood													

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Wall		Drywall and joint compound			A	Y		180			SF	V0003	None Detected	N.D.	None
Wall		Plaster, Smooth plaster			A	Y		600			SF	S0008A	None Detected	N.D.	None
Wall[1]		Mastic, Brown baseboard mastic		Rubber	D	Y		100			LF	S0009AB	None Detected	N.D.	None

1 - Baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #7 : Link Corridor **Floor: 0** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Floor	Concrete (poured)	100		%	V0002	Grey	0.0014 %	No
Wall	Plaster	100		%	L0007	Yellow	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #7 : Link Corridor **Floor: 0** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
FLUORESCENT LIGHT TUBE[1]	2	EA

1 - T12

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #7 : Link Corridor **Floor: 0** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
LIGHT BALLASTS	1	EA	V9500	T12 light ballast		Presumed

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #8 : Records Room **Floor: 0** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	All	Drywall and joint compound, Drywall joint compound			A	Y		600			SF	V0003	None Detected	N.D.	None
Duct		Fibreglass		Foil Face											

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Floor	All	Concrete (poured)													
Mechanical Equipment[1]		Not Insulated													
Piping	Hot Water Heating	Parging Cement, Parging cement, elbow	Elbow		A	Y		32(5)			EA	V0001	Chrysotile	25-50%	Confirmed Asbestos(F)
Piping	Hot Water Heating	Parging Cement, Parging cement, tee	Tee		A	Y		12(5)			EA	V0001	Chrysotile	25-50%	Confirmed Asbestos(F)
Piping	Sprinkler	Not Insulated													
Piping	Unidentified Pipe	Not Insulated													
Structure		Wood													
Wall	All	Plaster, Rough plaster			A	Y		300			SF	V0002	None Detected	N.D.	None

1 - Wall mounted heating unit

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #8 : Records Room **Floor: 0** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Floor	Concrete (poured)	100		%	V0002	Grey on concrete floor	0.0014 %	No
Piping[1]	Metal	100		%	L0003	White on canvas jacket	0.0008 %	No
Ceiling	Drywall and joint compound	100		%	V0004	White on drywall	0.0007 %	No
Wall	Concrete (poured)	100		%	V0006	White on foundation walls	0.001 %	No

1 - On canvas jacket

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #8 : Records Room **Floor: 0** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PB PRODUCTS		
Component	Quantity	Unit
LEAD PIPES	100	%

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #8 : Records Room **Floor: 0** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

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MERCURY		
Component	Quantity	Unit
FLUORESCENT LIGHT TUBE[1]	6	EA

1 - T12

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #8 : Records Room **Floor: 0** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
LIGHT BALLASTS	3	EA	V9500	T12 light ballasts		Presumed

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #9 : North East Office **Floor: Ground** **Room #:** **Area (sqft): 400**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		400(7)			SF	S0015A	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Duct		None Found													
Floor		Carpet													
Floor	All	Vinyl Floor Tile and Mastic, 12" off-white concealed		Carpet	D	N		400(7)			SF	S0010ABC	Chrysotile	0.5-5%	Confirmed Asbestos(NF)
Mechanical Equipment[1]		Not Insulated													
Piping	Hot Water Heating	Not Insulated													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		1000			SF	S0008B	None Detected	N.D.	None

1 - Floor mounted radiators

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #9 : North East Office **Floor: Ground** **Room #:** **Area (sqft): 400**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	L0008	Beige	<0.0005 %	No
Ceiling	Plaster	100		%	L0009	White	<0.0005 %	No

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Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #9 : North East Office **Floor: Ground** **Room #:** **Area (sqft): 400**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	12	

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #10 : East Entrance/ Washroom **Floor: Ground** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS

System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		100(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Duct		None Found													
Floor		Vinyl Sheet Flooring, Blue with grey specks			A	Y		40			SF	S0012ABC	None Detected	N.D.	None
Floor		Carpet													
Floor	All	Vinyl Floor Tile, 12" beige concealed		Carpet	D	N		100			SF	S0011ABC	None Detected	N.D.	None
Mechanical Equipment[1]		Not Insulated													
Piping	Hot Water Heating	Not Insulated													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		300			SF	V0008	None Detected	N.D.	None

1 - Floor mounted radiators

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #10 : East Entrance/ Washroom **Floor: Ground** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT

System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No
Ceiling	Plaster	100		%	V0009	White	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #10 : East Entrance/ Washroom **Floor: Ground** **Room #:** **Area (sqft): 100**

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Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube[1]	4	EA

1 - T12

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #10 : East Entrance/ Washroom **Floor: Ground** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PCB						
Component	Quantity	Unit	Sample	Sample Description	Amount	PCB
LIGHT BALLASTS	2	EA	V9500			Presumed

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #11 : Bud Clayton Room **Floor: Ground** **Room #:** **Area (sqft): 400**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		400(7)			SF	S0015D	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Duct		None Found													
Floor		Carpet													
Mechanical Equipment[1]		Not Insulated													
Piping	Hot Water Heating	Not Insulated													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		1000			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #11 : Bud Clayton Room **Floor: Ground** **Room #:** **Area (sqft): 400**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No
Ceiling	Plaster	100		%	L0009	White	<0.0005 %	No

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Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #12 : Parlor **Floor: Ground** **Room #:** **Area (sqft): 500**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		500(7)			SF	S0015C	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Duct		None Found													
Floor		Carpet													
Mechanical Equipment[1]		Not Insulated													
Piping	Hot Water Heating	Not Insulated													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		1000			SF	S0008D	None Detected	N.D.	None

1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #12 : Parlor **Floor: Ground** **Room #:** **Area (sqft): 500**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No
Ceiling	Plaster	100		%	L0009	White	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #12 : Parlor **Floor: Ground** **Room #:** **Area (sqft): 500**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #13 : Main area **Floor: Ground** **Room #:** **Area (sqft): 700**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		700(7)			SF	S0015B	Chrysotile	0.5-5%	Confirmed Asbestos(F)

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ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	All	Texture Finish - Non Friable, Texture finish			C	Y		700			SF	S0014A	None Detected	N.D.	None
Duct		None Found													
Floor		Carpet													
Mechanical Equipment[1]		Not Insulated													
Piping	Hot Water Heating	Fibreglass		Foil Face											
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		1400			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #13 : Main area **Floor: Ground** **Room #:** **Area (sqft): 700**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Ceiling	Texture Finish - Non Friable	100		%	L0012	White	<0.0005 %	No
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #13 : Main area **Floor: Ground** **Room #:** **Area (sqft): 700**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PB PRODUCTS		
Component	Quantity	Unit
Batteries in Emer. Lights	3	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #13 : Main area **Floor: Ground** **Room #:** **Area (sqft): 700**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	12	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #14 : Kitchen **Floor: Ground** **Room #:** **Area (sqft): 100**

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Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		100(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Duct		None Found													
Floor		Laminate													
Mechanical Equipment[1]		None Found													
Piping		None Found													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		300			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #14 : Kitchen **Floor: Ground** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No
Ceiling	Plaster	100		%	V0009	White	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #14 : Kitchen **Floor: Ground** **Room #:** **Area (sqft): 100**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	2	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #15 : Offices **Floor: Ground** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		600(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	All	Texture Finish - Non Friable, Texture finish			C	Y		600			SF	S0014C	None Detected	N.D.	None

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Duct		None Found													
Floor		Carpet													
Mechanical Equipment[1]		Not Insulated													
Piping		None Found													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		1400			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #15 : Offices **Floor: Ground** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No
Ceiling	Texture Finish - Non Friable	100		%	V0012	White	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #15 : Offices **Floor: Ground** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #16 : South west office **Floor: Ground** **Room #:** **Area (sqft): 450**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		450(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	All	Texture Finish - Non Friable, Texture finish			C	Y		450			SF	S0014B	None Detected	N.D.	None
Duct		None Found													
Floor		Carpet													

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ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Mechanical Equipment[1]		Not Insulated													
Piping		None Found													
Structure		Wood													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		900			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #16 : South west office **Floor: Ground** **Room #:** **Area (sqft): 450**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No
Ceiling	Texture Finish - Non Friable	100		%	V0012	White	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #16 : South west office **Floor: Ground** **Room #:** **Area (sqft): 450**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #17 : North west office **Floor: Ground** **Room #:** **Area (sqft): 300**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		300(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	All	Texture Finish - Non Friable, Texture finish			C	Y		300			SF	V0014	None Detected	N.D.	None
Duct		None Found													
Floor		Carpet													
Mechanical Equipment[1]		Not Insulated													

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Piping		None Found													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		700			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #17 : North west office **Floor: Ground** **Room #:** **Area (sqft): 300**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No
Ceiling	Texture Finish - Non Friable	100		%	V0012	White	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #17 : North west office **Floor: Ground** **Room #:** **Area (sqft): 300**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #18 : Washroom **Floor: Ground** **Room #:** **Area (sqft): 80**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		80(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	All	Texture Finish - Non Friable, Texture finish			C	Y		80			SF	V0014	None Detected	N.D.	None
Duct		None Found													
Floor		Vinyl Sheet Flooring, Orange with grey specks			A	Y		80			SF	V0013	None Detected	N.D.	None
Mechanical Equipment[1]		Not Insulated													
Piping	Domestic Water (Hot and Cold)	Not Insulated													

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		320			SF	S0008C	None Detected	N.D.	None
Wall[2]		Ceramic Tiles, 4" various colour			A	Y		160(7)			SF	V9500	Presumed Asbestos		Presumed Asbestos(NF)

1 - Electric baseboard
2 - Half wall

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #18 : Washroom **Floor: Ground** **Room #:** **Area (sqft): 80**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No
Ceiling	Texture Finish - Non Friable	100		%	V0012	White	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #18 : Washroom **Floor: Ground** **Room #:** **Area (sqft): 80**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	2	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #19 : Stairwell **Floor: 0, Ground, 2** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling[1]		Plaster, Smooth plaster			C	Y		395(7)		5(3)	SF	S0015F	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling[2]	ACOUSTIC TILE	Ceiling tiles (glue-on), 1x1 small and medium pinhole			B	Y		200			SF	V0007	None Detected	N.D.	None
Duct		None Found													
Floor		Concrete (poured)													
Mechanical Equipment[3]		Not Insulated													
Piping	Hot Water Heating	Parging Cement, Parging cement	Elbow	Canvas	B	Y		15(7)			EA	V0001	Chrysotile	25-50%	Confirmed

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
															Asbestos(F)
Piping	Hot Water Heating	Parging Cement, Parging cement	Tee	Canvas	B	Y		5(7)			EA	V0001	Chrysotile	25-50%	Confirmed Asbestos(F)
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		1200			SF	V0008	None Detected	N.D.	None

1 - Debris is in the basement level of the stairwell
2 - Second floor ceiling
3 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #19 : Stairwell **Floor: 0, Ground, 2** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No
Ceiling	Plaster	100		%	V0009	White	<0.0005 %	No
Floor	Concrete (poured)				L0011	Orange	0.162 %	Yes

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #19 : Stairwell **Floor: 0, Ground, 2** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	6	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #20 : Reception **Floor: Ground** **Room #:** **Area (sqft): 500**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	ACOUSTIC TILE	Ceiling Tiles (lay-in), 2'x2' rough surface (2010)			C	Y		300			SF	V0000	Non-Asbestos		None
Duct		Fibreglass		Foil Face											
Floor		Rubber													
Mechanical Equipment[1]		Not Insulated													

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Piping		Fibreglass		Foil Face											
Structure		Concrete (poured)													
Wall		Plaster, Smooth plaster			A	Y		700			SF	V0008	None Detected	N.D.	None

Appears recently renovated
1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #20 : Reception **Floor: Ground** **Room #:** **Area (sqft): 500**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No

Appears recently renovated

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #20 : Reception **Floor: Ground** **Room #:** **Area (sqft): 500**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	10	EA

Appears recently renovated

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #21 : Main area **Floor: 2** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		600(7)			SF	S0015G	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	All	Texture Finish - Non Friable, Texture finish			C	Y		600			SF	S0014DG	None Detected	N.D.	None
Duct		None Found													
Floor		Carpet													
Mechanical Equipment[1]		Not Insulated													
Piping		None Found													

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		1400			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #21 : Main area **Floor: 2** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Ceiling	Texture Finish - Non Friable	100		%	L0012	White	<0.0005 %	No
Wall	Plaster	100		%	V0010	Beige	0.0174 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #21 : Main area **Floor: 2** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PB PRODUCTS		
Component	Quantity	Unit
Batteries in Emer. Lights	2	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #21 : Main area **Floor: 2** **Room #:** **Area (sqft): 600**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #22 : North east office **Floor: 2** **Room #:** **Area (sqft): 400**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		400(7)			SF	S0015E	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	All	Texture Finish - Non Friable, Texture finish			C	Y		400			SF	S0014F	None Detected	N.D.	None
Duct		None Found													

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Floor		Carpet													
Floor[1]		Ceramic Tiles, thinset			A	Y		80(7)			SF	V9500	Presumed Asbestos		Presumed Asbestos(NF)
Mechanical Equipment[2]		Not Insulated													
Piping		None Found													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		1200			SF	S0008F	None Detected	N.D.	None
Wall[3]		Ceramic Tiles, thinset			A	Y		80(7)			SF	V9500	Presumed Asbestos		Presumed Asbestos(NF)

1 - in storage closet
2 - Electric baseboard
3 - in storage closet

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #22 : North east office **Floor: 2** **Room #:** **Area (sqft): 400**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Ceiling	Texture Finish - Non Friable	100		%	L0012	White	<0.0005 %	No
Wall	Plaster	100		%	L0010	Beige	0.0174 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #22 : North east office **Floor: 2** **Room #:** **Area (sqft): 400**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #23 : North office **Floor: 2** **Room #:** **Area (sqft): 350**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		350(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	All	Texture Finish - Non Friable, Texture			C	Y		350			SF	V0014	None Detected	N.D.	None

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ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
		finish													
Duct		None Found													
Floor		Carpet													
Mechanical Equipment[1]		Not Insulated													
Piping		None Found													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		1400			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #23 : North office **Floor: 2** **Room #:** **Area (sqft): 350**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Ceiling	Texture Finish - Non Friable	100		%	V0012	White	<0.0005 %	No
Wall	Plaster	100		%	V0010	Beige	0.0174 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #23 : North office **Floor: 2** **Room #:** **Area (sqft): 350**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #24 : South east office **Floor: 2** **Room #:** **Area (sqft): 500**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		500(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	All	Texture Finish - Non Friable, Texture finish			C	Y		500			SF	S0014E	None Detected	N.D.	None
Duct		None Found													
Floor		Carpet													

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ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Mechanical Equipment[1]		Not Insulated													
Piping		None Found													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		1400			SF	S0008G	None Detected	N.D.	None

1 - Electric baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #24 : South east office **Floor: 2** **Room #:** **Area (sqft): 500**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Ceiling	Texture Finish - Non Friable	100		%	V0012	White	<0.0005 %	No
Wall	Plaster	100		%	L0010	Beige	0.0174 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #24 : South east office **Floor: 2** **Room #:** **Area (sqft): 500**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #25 : South office **Floor: 2** **Room #:** **Area (sqft): 350**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster		Ceiling Tile (mechanically fastened)	C	Y		350(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	ACOUSTIC TILE	Ceiling Tile (mechanically fastened), 1'x1' smooth surface (Wood composition)			C	Y		350			SF	V0000	Non-Asbestos		None
Duct		None Found													
Floor		Carpet													
Mechanical		Not Insulated													

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ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Equipment[1]															
Piping		None Found													
Structure		Wood													
Wall[2]		Plaster, Smooth plaster		Wood	A	Y		900			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard
2 - wood panel over smooth plaster

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #25 : South office **Floor: 2** **Room #:** **Area (sqft): 350**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0010	Beige	0.0174 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #25 : South office **Floor: 2** **Room #:** **Area (sqft): 350**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #26 : South west office **Floor: 2** **Room #:** **Area (sqft): 450**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster		Ceiling Tile (mechanically fastened)	C	Y		450(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	ACOUSTIC TILE	Ceiling Tile (mechanically fastened), 1'x1' smooth surface (Wood composition)			C	Y		350			SF	V0000	Non-Asbestos		None
Duct		None Found													
Floor		Carpet													
Mechanical Equipment[1]		Not Insulated													

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Piping		None Found													
Structure		Wood													
Wall[2]		Plaster, Smooth plaster		Wood	A	Y		1100			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard
2 - wood panel over smooth plaster

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #26 : South west office **Floor: 2** **Room #:** **Area (sqft): 450**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	V0010	Beige	0.0174 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #26 : South west office **Floor: 2** **Room #:** **Area (sqft): 450**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #27 : Washroom **Floor: 2** **Room #:** **Area (sqft): 40**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		80(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	All	Texture Finish - Non Friable, Texture finish			C	Y		80			SF	V0014	None Detected	N.D.	None
Duct		None Found													
Floor		Vinyl Sheet Flooring, Orange with grey specks			A	Y		80			SF	S0013ABC	None Detected	N.D.	None
Mechanical Equipment[1]		Not Insulated													
Piping	Domestic Water (Hot and Cold)	Not Insulated													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		320			SF	V0008	None Detected	N.D.	None

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ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Wall[2]		Ceramic Tiles, 4" various colour			A	Y		160(7)			SF	V9500	Presumed Asbestos		Presumed Asbestos(NF)

1 - Electric baseboard
2 - Half wall

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #27 : Washroom **Floor: 2** **Room #:** **Area (sqft): 40**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Wall	Plaster	100		%	L0010	Beige	0.0174 %	No
Ceiling	Texture Finish - Non Friable	100		%	V0012	White	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #27 : Washroom **Floor: 2** **Room #:** **Area (sqft): 40**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	2	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #28 : North west office **Floor: 2** **Room #:** **Area (sqft): 300**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling		Plaster, Smooth plaster			C	Y		300(7)			SF	V0015	Chrysotile	0.5-5%	Confirmed Asbestos(F)
Ceiling	All	Texture Finish - Non Friable, Texture finish			C	Y		300			SF	V0014	None Detected	N.D.	None
Duct		None Found													
Floor		Carpet													
Mechanical Equipment[1]		Not Insulated													
Piping		None Found													
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		900			SF	V0008	None Detected	N.D.	None

1 - Electric baseboard

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #28 : North west office **Floor: 2** **Room #:** **Area (sqft): 300**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Ceiling	Texture Finish - Non Friable	100		%	V0012	White	<0.0005 %	No
Wall	Plaster	100		%	V0010	Beige	0.0174 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #28 : North west office **Floor: 2** **Room #:** **Area (sqft): 300**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #29 : Link corridor **Floor: 2** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

ASBESTOS															
System	Component	Material	Item	Covering	A*	V*	AP*	Good	Fair	Poor	Unit	Sample	Asbestos Type	Amount	Hazard
Ceiling	ACOUSTIC TILE	Ceiling Tiles (lay-in), 2'x4' small pinhole and fissure (2007)			C	Y		200			SF	V0000	Non-Asbestos		None
Duct		Not Insulated													
Floor		Vinyl Floor Tile and Mastic, 12" Grey			A	Y		200(7)			SF	S0017ABC	Chrysotile	0.5-5%	Confirmed Asbestos(NF)
Mechanical Equipment[1]		Not Insulated													
Piping	Hot Water Heating	Fibreglass		Foil Face											
Structure		Wood													
Wall		Plaster, Smooth plaster			A	Y		600			SF	S0008E	None Detected	N.D.	None
Wall[2]		Mastic, Brown baseboard mastic		Rubber	D	Y		100			LF	S0009C	None Detected	N.D.	None

1 - Electric baseboard
2 - Baseboard

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #29 : Link corridor **Floor: 2** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

LEAD PAINT								
System	Item	Good	Poor	Unit	Sample	Sample Description	Amount	Lead
Ceiling	Texture Finish - Non Friable	100		%	V0012	White	<0.0005 %	No
Wall	Plaster	100		%	V0008	Beige	<0.0005 %	No

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #29 : Link corridor **Floor: 2** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

PB PRODUCTS		
Component	Quantity	Unit
Batteries in Emer. Lights	1	EA

Client: County Of Frontenac **Site: 2069 Battersea Road, Kingston, ON** **Building Name: Administration Building**
Location: #29 : Link corridor **Floor: 2** **Room #:** **Area (sqft): 200**
Surveyor: Nathan Cartmell **Survey Date: 2020-03-03** **Reassessment Surveyor:** **Last Re-Assessment:**

MERCURY		
Component	Quantity	Unit
Fluorescent Light Tube	4	EA

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

Legend:

Sample number	
S####	Asbestos sample collected
L####	Lead sample collected
P####	PCB sample collected
M####	Mould sample collected
V####	Material is visually identified to be identical to S####
V0000	Known non hazardous material
V9000	Material visually identified as a Hazardous Material
V9500	Material is presumed to contain hazardous material

Units	
SF	Square feet
LF	Linear feet
EA	Each
%	Percentage
LF	Linear feet

Other	
SVM	Suspect Visible Mould
A	Access
V	Visible
AP	Air Plenum
F	Friable material
NF	Non Friable material

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

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				

Quantities shown above are based on visual approximations only and may be subject to variation. Copyright Pinchin Ltd. 2020

Appendix B

The enclosed Geotechnical Report is part of this scope of work, prepared by the Owner’s separate consultant.
During construction, notify the Owner’s Representative immediately for clarification if the contractor has any questions regarding the geotechnical report.

Geotechnical Investigation

Proposed Addition to Fairmount Home South Wing
2069 Battersea Road, Glenburnie ON

Prepared for: County of Frontenac, c/o Colbourne and Kembel Architects Inc.

March 15, 2022
File: 1583.00-101

DRAFT

Prepared by:
Malroz Engineering Inc.
308 Wellington St, 2nd Floor
Kingston, ON K7K 7A8

MALROZ

DRAFT

Geotechnical Investigation

Proposed Addition to Fairmount Home South Wing

2069 Battersea Road, Glenburnie ON

Prepared for:

County of Frontenac, c/o Colbourne and Kembel Architects Inc.

File: 1583.00-101

Colbourne and Kembel Architects Inc. – 1 PDF copy
Malroz Engineering Inc. – 1 PDF copy

Notice to Reader

This document contains the professional opinion of Malroz Engineering Inc. (Malroz), as to the matters set out herein, based on professional judgement and reasonable care. It is to be read in the context of the agreement (the Agreement) between Malroz and Colborne and Kembel Architects Inc. (the Client), the methodology, procedures and techniques used, Malroz's assumptions, and the circumstances and constraints under which its mandate was performed. This document is written solely for the purpose stated in the Agreement, and for the sole and exclusive benefit of the Client, whose remedies are limited to those set out in the Agreement. This document is meant to be read as a whole, and sections or parts thereof should not be read or relied upon out of context.

Malroz has, in preparing the geotechnical parameters and recommendations, followed accepted methodology and procedures, and exercised due care consistent with the intended level of accuracy, using its professional judgement and reasonable care, and is thus of the opinion that there is a high probability that actual geotechnical conditions will fall within the predicted range. However, no warranty should be implied as to the accuracy of estimates. Unless expressly stated otherwise, assumptions, data and information supplied by, or gathered from other sources (including the Client, other consultants, testing laboratories, equipment suppliers, etc.) upon which Malroz's opinions are based, have not been verified by Malroz; Malroz makes no representation as to their accuracy and disclaims all liability with respect thereto.

Malroz disclaims any liability to third parties in respect of the publication, reference, quotation, or distribution of this report or any of its contents and reliance thereon by any third party.

This page forms an integral part of this document and must remain with it at all times.

Respectfully submitted,

Malroz Engineering Inc.

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Table of Contents

1.0 Introduction 1
2.0 Site Description 2
3.0 Method of Investigation 3
3.1 Fieldwork 3
4.0 Subsurface Assessment 4
4.1 Surficial Materials 4
4.2 Fill Soils 4
4.3 Native Silty Clay 5
4.4 Sand 5
4.5 Limestone Bedrock 5
4.6 Groundwater 6
4.7 Existing Foundation Configuration 7
5.0 Laboratory Testing 8
5.1 Geotechnical Laboratory 8
6.0 Discussion and Recommendations 9
6.1 Excavation and Temporary Shoring 9
6.2 Dewatering 11
6.3 Foundations 11
6.3.1 Conventional Shallow Foundations 12
6.3.2 Design for Earthquakes 12
6.3.3 Foundation Dewatering 13
6.3.4 Frost Protection 13
6.4 Backfilling 13
6.5 Slabs on Grade 13
6.6 Pavement Design 14
6.6.1 Materials and Construction Considerations 14
6.7 Engineered Fill 15
7.0 General Conditions and Limitations 17
8.0 Closure 19
9.0 References 20

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List of Tables

Table 1 – Borehole/Test Pit Locations and Ground Surface Elevations 3
Table 2 – Bedrock Core Information Summary 5
Table 3 – Summary of Unconfined Compressive Strength Testing Results 8
Table 4 – OHSA Soil Types 9
Table 5 – Lateral Earth Pressure Parameters 11

List of Appendices

Appendix A Figures
Appendix B Record of Boreholes and Test Pits
Appendix C Geotechnical Laboratory Results

List of Figures – Appendix A

Figure 1 – Borehole and Test Pit Location Plan

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1.0 Introduction

Malroz Engineering Inc. (Malroz) was retained by Colbourne and Kembel Architects Inc. (the Client) to conduct a geotechnical investigation in support of the construction of an addition to the south wing of the existing Fairmount Home (the Site).

We understand that the development will consist of the demolition of a prior addition to the south wing, and construction of a new two storey addition with a new single storey below grade level. A new area of asphalt pavement north of the area of the addition will also be included as a part of the scope of this redevelopment.

This report summarizes the results of the investigation completed by Malroz in support of the proposed development. Work for this investigation was completed in general accordance with Malroz's approved proposal dated December 13, 2021 (ref. 1583.00-100-R01). The agreed scope of work consisted of the following:

1. Advancement of a total of three test pits to the maximum reach of excavating equipment or to practical refusal to excavation;
2. Advancement of one borehole in the vicinity of the proposed building addition to a depth of 6.7 metres below grade (mbg) or practical auger refusal, and one borehole in the vicinity of the proposed parking area to a depth of 1.5 mbg or practical auger refusal;
3. Submittal of one unconfined compressive strength test on recovered bedrock samples, or other substitute soil index tests as necessary;
4. Reporting of field and laboratory results.

The recommendations and comments contained herein are based on factual information obtained during the investigation and are intended only for the use of project designers and engineers. They have been prepared with the understanding that the design will be carried out in accordance with applicable codes and standards. The General Conditions and Limitations (Section 7.0 of this report) form an integral part of this report.

2.0 Site Description

The Site presently consists of the eastern portion of the existing two-storey south wing of the Fairmount Home retirement residence, with a single below grade level. The easternmost portion of the Site is a single-storey addition The Site is surrounded by Battersea Road and agricultural development to the east, a septic field and undeveloped land to the south, forested area to the west and parking and laneway areas for Fairmount Home to the north.

Photograph 1 – Site at south side of existing building (February 2022)

Topography at the Site was locally generally flat to the north of the existing south wing, sloping downwards to the south towards the septic field, and downward to the east to Battersea Road. Regional topography trends downward towards the south.

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3.0 Method of Investigation

3.1 Fieldwork

A total of two test pits, identified as TP101 and TP102 were excavated on February 16, 2022 adjacent to the existing building. A third test pit identified as TP103 was terminated near-surface due to frozen ground. Two boreholes identified as BH101 and BH102 were advanced in January 6, 2022 in the development area at locations identified by the Client in sketches provided to Malroz prior to the field investigation. A Borehole and Test Pit Pit Location Plan (Figure 1) is presented in Appendix A.

Test pits were excavated with a Caterpillar rubber tired excavator, and boreholes were advanced using a truck mounted CME-55 drill rig, under the supervision of Malroz field staff. Soil horizons were logged by hand in each test pit, and select grab samples were collected of major soil horizons. Test pits were backfilled with excavated spoils and bucket packed to the extent possible. Boreholes were advanced using continuous flight solid stem augers, with Standard Penetration Tests (SPT) being conducted at regular intervals throughout. Borehole and test pit logs are attached in Appendix B.

Locations and ground surface elevations at borehole and test pit were surveyed with a Trimble R10 Global Navigation Satellite System survey system, connected to the Can-Net Virtual Reference Station network, and are assumed to be accurate within the operating limits of the device. Survey information is summarized in the following table.

Table 1 – Borehole/Test Pit Locations and Ground Surface Elevations

Test Location	Northing	Easting	Elevation (mASL)
BH101	4907714.2	383164.5	117.1
BH102	4907670.7	383166.3	115.8
TP101	4907650.8	383137.0	115.6
TP102	4907652.1	383161.5	115.9
TP103	4907654.3	383166.9	115.9

Input By: DPH
Validated By: RF

4.0 Subsurface Assessment

Details of the subsurface conditions encountered are presented in the borehole and test pit records presented in Appendix B of this report. We strongly emphasize, however, that the soil types, their sequence, thickness, and physical properties may vary between test pits, sample and test locations, both vertically and horizontally. This information is solely for general planning purposes and should not be used for detailed quantity take-offs.

Our assessment of subsurface conditions and borehole/test pit observations are summarized in the following sections.

4.1 Surficial Materials

A surficial covering of topsoil was observed at all borehole and test pit locations, with approximate thickness ranging from roughly 100 mm to 300 mm in thickness. In our experience, topsoil thicknesses can vary greatly across a Site, between and beyond test locations. Topsoil thicknesses presented in this report should not be used for detailed quantity takeoffs. Contractors should ensure they make their own validations of topsoil thicknesses. Organics and topsoil will be thicker in areas where there is or has been tree growth. Root balls should be expected in these areas as well.

4.2 Fill Soils

Fill soils were encountered at all test pit and borehole locations, underlying the topsoil, consisting of a brown sand to gravelly sand with traces of silt. Traces of organics and/or construction debris were noted within this material at locations surrounding the existing building. This material was visually observed to be generally moist. Moisture contents measured on recovered samples of this material were found to range from 10 to 18% by dry weight. SPT ‘N’ values measured in the fill soils at borehole locations ranged from 2 to 6 blows per 300 mm of penetration, indicating a relative density ranging from very loose to loose.

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4.3 Native Silty Clay

A thin layer brown native silty clay with some sand and limestone fragments, was observed at borehole BH101 located at BH101, underlying the fill soils, and directly overlying inferred bedrock. This material was visually described as being generally wet. Moisture contents measured in this material was found to be 25% by dry weight. The SPT conducted within this material encountered refusal on inferred bedrock.

4.4 Sand

A light brown native sand with traces of silt was observed around the building at BH102 and at TP102, underlying fill soils. This material was visually described as being generally moist. Moisture contents measured within this material was found to be 18% by dry weight. The SPT conducted within this material encountered refusal on a possible boulder or weathered slab of rock.

4.5 Limestone Bedrock

Practical auger refusal was encountered at 1.8 and 3.8 mbg at boreholes BH101 and BH102, respectively, on inferred bedrock. Test pit TP101 was terminated on limestone bedrock at 2.7 mbg, while TP102 did not encounter refusal within the limits of the excavation (4.6 mbg). BH101 was further advanced into the rock using 'N' sized double tube wireline coring equipment, upon encountering refusal. A summary of the information obtained from the core drilling at BH102 is presented the following table, and core information and material descriptions are reported on the respective records of boreholes.

Table 2 – Bedrock Core Information Summary

Borehole / Core Run ID	Depth to Rock Surface (mbg/mASL)	Total Core Recovery, TCR (%)	Solid Core Recovery, SCR (%)	Rock Quality Designation, RQD (%)
BH102/RC1	3.8 / 112.0	87	87	87

Input By: DPH
Validated By: RF

Bedrock cores were described as grey limestone. A core photograph is attached in Appendix C.

Total core recovery (TCR) of the obtained core was found to be 87% and solid core recover (SCR) was also found to be 87%. The solid core recovery is generally influenced by the orientations of joints and is low when joints oblique to the axis are intercepted. The rock quality designation (RQD) is highly dependent on the frequency of joints/bedding plane partings in the retrieved cores. On the basis of the recorded RQD value of 87%, the rock quality is estimated to be good within the depths investigated.

4.6 Groundwater

Observations of groundwater seepage were made in all test pits and boreholes. An accumulation of groundwater was observed at borehole BH101, at approximately 1.5 mbg (115.6 mASL) prior to backfilling. No groundwater seepage was observed in the open test pits prior to backfilling. It should be noted that insufficient time was available for a stabilized static groundwater condition to be realized in either open boreholes or test pits. Groundwater conditions will fluctuate based on prevailing seasonal periods and in response to weather events.

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4.7 Existing Foundation Configuration

The foundations of the existing building were exposed at test pit TP101 and TP102 locations. Details of subsurface conditions at each location are mentioned in the sections above.

Photograph 2 – Test Pit TP102 showing Limestone Slab Foundation Wall

The underside of foundations at TP101 were located at approximately 2.5 mbg on existing sand fill. The footing projection was noted to be approximately 255 mm (10 inches) wide and 205 mm (8 inches) thick, with the wall being reinforced concrete. At test pit TP102, the foundation wall was noted to consist of loose limestone slabs, extending to roughly 3 mbg, with the bottom layer of slabs placed on native sand. Organic growth and infill (roots etc.) between the limestone slabs in the foundation wall was noted. The test pit was stepped away from the foundation wall to prevent undermining, and extended to the full reach of the excavator (4.6 mbg) without encountering refusal.

5.0 Laboratory Testing

5.1 Geotechnical Laboratory

Samples recovered during drilling were transported to Malroz's geotechnical laboratory in Kingston, Ontario. Two samples were submitted for hydrometer grain size analysis and. Results are summarized in the following table.

Table 3 – Summary of Unconfined Compressive Strength Testing Results

Sample ID	Unconfined Compressive Strength (MPa)
TP102-RC1	125.9

Input By: DPH
Validated By: RF

Detailed laboratory test reports are included in Appendix C of this report, and moisture contents are summarized in borehole and test pit logs in Appendix B.

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6.0 Discussion and Recommendations

Based on the results of the field investigation, we would expect that foundations for the proposed addition may span both limestone subgrade and native sandy soil, unless deep foundation walls are constructed to maintain uniform contact with a limestone subgrade all around the building exterior (however, this is not expected to be cost effective). Consideration for some limited differential settlements will be necessary through structural or architectural means, should foundations span two subgrade types.

6.1 Excavation and Temporary Shoring

Excavations up to a depth of approximately 3 to 4 m from the existing site grades may be necessary for construction of foundations, or for buried utilities or stormwater management chambers/systems. Sufficient area may be available to backslope excavations to this depth without the use of shoring at this Site, however underpinning of existing structures may be necessary. Excavations for buried utilities may extend deeper, depending on final site grading. Excavations should not extend within a zone extending 10 horizontal to 7 vertical from the bottom outside edge of any existing or newly constructed foundations on soil subgrades, and 1 horizontal to 1 vertical on rock subgrades, to prevent them from becoming undermined.

All excavations and construction of any shoring should be carried out in accordance with the latest edition of the OHSA and Regulations for Construction Projects. The OHSA regulations require that if workers must enter an excavation deeper than 1.2 m, the excavation must be suitably sloped and/or braced in accordance with OHSA requirements. OHSA specifies the maximum slope of excavations into four broad soil types, summarized as follows:

Table 4 – OHSA Soil Types

Soil Type	Maximum Slope Inclination	Base of Slope Location
Type 1	1 horizontal to 1 vertical	Within 1.2 m of base of excavation
Type 2	1 horizontal to 1 vertical	Within 1.2 m of base of excavation
Type 3	1 horizontal to 1 vertical	From bottom of excavation
Type 4	3 horizontal to 1 vertical	From bottom of excavation

At this Site, fill soils should be considered as Type 4. As the lowest soil type in any given excavation shall govern its sideslopes, Type 4 should be considered for all excavations at this Site. As mentioned above, no seepage into open test pits was observed at the time of the field investigation.

Excavations into overburden soils should be relatively easy using conventional excavating equipment; however, contractors should be prepared to manage erratic large particles up to boulder sized material that could be found within the overburden, including various construction debris (as noted in fill soils around the existing building). Rock excavation will require the use of blasting techniques or ramming equipment. The use of rippers in this limestone formation would not be feasible. Performing pre-condition surveys of existing structures would be prudent, along with selection of techniques by contractors that minimize vibrations at the building face.

Stockpiles of excavated materials should be kept away from the edges of open excavations by a distance at least equivalent to the depth of the excavation to avoid slope instability. Care should be taken to avoid overloading any underground services/structures from any construction stockpiles. It should be noted that this distance is also applicable to the passage of heavy machinery near excavations. This condition should be respected at all times, unless specific studies are conducted for individual cases.

A shoring system will be required anywhere appropriate backsloping is not possible. Shoring systems must be designed by a professional engineer licensed in the province of Ontario, in accordance with relevant codes, standards and regulations such as the latest version of the Canadian Foundation Engineering Manual and the Ontario Occupational Health and Safety Act (OHSA) Regulations for Construction Projects. The system should be designed to resist full earth and hydrostatic pressures, as well as surcharges due to construction and highway traffic loadings. The following parameters may be used in the design of temporary shoring:

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Table 5 – Lateral Earth Pressure Parameters

Soil Type	Bulk Unit Weight (kN/m^3)	Angle of Internal Friction (deg.)	Coefficient of Lateral Earth Pressure		
			K_a	K_o	K_p
Sandy Fill	19	29	0.35	0.52	2.88
Native Sand	20.5	32	0.31	0.47	3.25
Compacted Gran. 'A'	21	34	0.28	0.44	3.54
Compacted Gran. 'B' Type II	21.5	35	0.27	0.43	3.69

At rest parameters should be utilized for non-yielding shoring elements. We recommend shoring plans be reviewed by a geotechnical engineer prior to the start of construction.

Underpinning of foundations using sequential underpinning to transfer foundation loads to the underlying native sand or bedrock could be considered. Alternatively, continuous concrete shoring could be considered adjacent to existing structures, but would likely be cost prohibitive compared with other available options. A shoring specialist and/or project structural designers should be consulted if foundations are anticipated to be undermined to construct the proposed addition.

6.2 Dewatering

Based on the groundwater observations made during the field investigation program, some light seepage near the soil-rock interface should be expected, as well as through some more permeable seams within the native overburden and/or fill. However, during similar seasonal conditions, we expect that this infiltration should be able to be controlled using a number of conventional filtered sumps and construction pumps and/or passive relief wells installed below the lowest point of the excavation. Excavations extending into rock by more than 0.3 m or so may carry risk of higher groundwater infiltration. Carrying out excavations in dry seasonal conditions will reduce dewatering requirements.

6.3 Foundations

As mentioned above, we recommend that new foundations consist of conventional shallow spread, strip or pad footings constructed on native sand subgrades or directly over limestone bedrock, or alternatively on an Engineered Fill pad that has been properly constructed over either subgrade.

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6.3.1 Conventional Shallow Foundations

Conventional spread, strip or pad foundations can be designed considering a factored geotechnical bearing reaction at the ultimate limit state (ULS) of 1 MPa, if they are placed directly on limestone bedrock, with any weathered rock removed. If constructed over sand subgrades or over an Engineered Fill pad constructed over either native sand or bedrock, a factored geotechnical bearing reaction at ULS of 200 kPa, and a bearing reaction of 150 kPa at the serviceability limit state (SLS) could be considered. There would be no corresponding SLS bearing reaction for foundations constructed over rock, as a brittle failure of the rock mass would occur prior to any appreciable distortions occurring. The stated bearing reactions assume that there will be no load eccentricities, and the foundations will be constructed on flat and level ground. There is no limitation on maximum size of footings. Minimums as outlined in the Ontario Building Code should be followed.

All subgrade surfaces should be inspected by a geotechnical engineer or their designate prior to placement of foundations.

6.3.2 Design for Earthquakes

In accordance with the Ontario Building Code 2012 (OBC), foundations must be designed to withstand a minimum earthquake force. Based on a conservative assigned value of strength for the rock mass, a Site Classification for Seismic Site Response of ‘C’ could be considered by designers in accordance with OBC Table 4.1.8.4.A. A higher site class may be available by conducting in-situ shear wave velocity testing at the Site (classes ‘A’ and ‘B’ are only available via direct measurement), however may not provide significant benefits for this development. Project structural designers can be consulted to confirm whether class ‘A’ or ‘B’ would be advantageous. It is noteworthy that foundations would have to be constructed within 3 m of bedrock surface to achieve classes A or B, and therefore additional investigation on the east side of the building may be necessary to confirm top of rock elevation, in addition to in-situ shear wave velocity measurements.

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6.3.3 Foundation Dewatering

Perimeter drains should be installed around all foundation walls, and at the base of any elevator pits or similar, connected to a frost-free outlet. Surface grades should be sloped away from the building, and landscaped areas directly adjacent to the building should be capped with impermeable soils, if practicable. Foundation damp proofing should be applied at a minimum.

6.3.4 Frost Protection

Design frost depth in the Kingston area should be considered 1.5 m below unprotected surface grades. If thermal insulation is utilized as opposed to soil cover, it should be noted that some manufacturers recommend placement of foundations directly over top of insulating boards. We do not expect limestone bedrock at this Site to be frost susceptible, providing any surficial weathered layers are removed. Some isolated zones of weathering should be expected around the Site.

6.4 Backfilling

Backfill around the building should consist of non-frost susceptible, free draining granular material. Below hardscaped areas, all backfill material should be compacted to a minimum of 98% of its Standard Proctor Maximum Dry Density (SPMDD) to 1 m below the hardscape base or pavement subbase, and 100% thereafter. Elsewhere, all backfill should be compacted to 95% of its SPMDD.

Earth pressure parameters provided in Table 6 above can be used for any walls subjected to such pressures (e.g. for sump pits, etc.).

6.5 Slabs on Grade

Both the native sand and bedrock would be suitable for construction of a slab on grade for the basement slab. We recommend that a minimum of 150 mm of new Ontario Provincial Standard Specifications (OPSS) Granular ‘A’ be placed under any slabs on grade.

Modulus of subgrade reaction is not a fundamental soil property, with its value depending on size and shape of the load. Its value would change for example, in areas

where stresses are concentrated such as under columns. An iterative approach between determination of contact stresses and resultant subgrade reaction moduli should be considered. However, for initial planning purposes, based on a 100 m by 100 m square slab with a uniform load of 20 kPa, placed on 150 mm of Granular 'A', a modulus of subgrade reaction of approximately 71 MPa/m can be considered.

6.6 Pavement Design

For the new light duty parking area located in the vicinity of borehole BH101, a pavement section consisting of 60 mm of HL3 (or SP 12.5 Cat. A), overlying a base layer of 150 mm of new OPSS Granular 'A' and subbase layer of 200 mm of OPSS Granular 'B' Type II would be suitable.

6.6.1 Materials and Construction Considerations

For Site preparation, surface vegetation, tree roots, topsoil and organics should be stripped under the pavement areas, and the underlying subgrade surface proof rolled. New fill under pavement areas should be placed as an Engineered Fill operation as described in the section below.

Paving work should be completed in accordance with the requirements of applicable OPSS and municipal standards. All asphalt mix designs should be reviewed prior to the commencement of construction.

HMA used in this project should meet the minimum requirements of OPSS 1150/1151 (depending on whether Marshall or Superpave mixes are utilized). Asphalt cements should be minimum grade of PG 58-28, and meet the requirements of OPSS 1101.

Tack coat should be applied between any vertical surfaces or joints including curbs, abutting and walls, etc., butt and lap joints and at all tie-ins to other existing asphalt. SS-1 emulsified asphalts used for this purpose should meet requirements of applicable OPSS.

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6.7 Engineered Fill

Engineered Fill application may be required on this project to raise subgrade elevations during construction of the lowest elevation slab or under foundations. For any operation to be considered Engineered Fill, the following criteria must be satisfied:

- Materials used as Engineered Fill must be uniform and homogenous. The material should be free of deleterious materials and organics;
- Prior to the placement of Engineered Fill, it must be assessed in a geotechnical laboratory for, at a minimum, gradation and Standard Proctor analyses;
- The material must be within +/- 2% of its optimum moisture content, as determined through laboratory testing;
- Engineered Fill operations must take place under the supervision of a geotechnical engineer or their designate;
- Suitable compaction equipment must be selected for the operation, based on the material to be compacted;
- Materials should be placed in lifts which are suitable for the compaction equipment utilized, but generally not greater than 0.2 m loose lifts;
- Density testing must be taken on each lift of Engineered Fill. Any Engineered Fill which is tested and found to be outside of the specified density range shall be either removed, reworked or retested; and
- Under no circumstances shall frozen material be placed in any Engineered Fill operation.
- Site activities may be carried out in the winter months and periods of cold weather. The following procedures are recommended for the placement of engineered or structural fill during cold weather conditions:
    - The fill placement must be inspected by qualified field personnel on a full time basis under the supervision of a geotechnical engineer, with the authority to stop the fill operations at any time when conditions are considered to be unfavorable.
    - The intended area of fill must be clearly identified in the field prior to commencing the work.
    - Ramps for access must be constructed outside of the limits of intended fill.

- The fill material must be comprised of OPSS Granular 'B' - Type 1, or other approved equivalent granular material when temperatures are below 0^0C.
- Imported fill containing ice, snow or any frozen material cannot be accepted for use and should be returned to the source.
- Overnight frost penetration into the fill mantle in areas below intended structure construction, parking lots, and on side slopes of the fill mantle within this area must be prevented by using insulation blankets. Any frozen fill must be completely removed prior to placing subsequent lifts. Breaking the frost and frozen fill in situ will not be accepted. Following removal of frozen materials the remaining exposed surface should be compacted to a minimum of 98% of SPMDD prior to placement of new fill.
- During periods of cold where ambient temperatures are -5^0C or less, placement of engineered fill shall stop and the existing fill materials must be protected from frost penetration.

It should be noted that the placement of engineered or structural fill materials during cold weather conditions requires extra effort beyond that typical in better climatic conditions. At any time where conditions are deemed unfavourable, the Engineered Fill operation must be suspended.

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7.0 General Conditions and Limitations

This report was completed for the specific needs of County of Frontenac, c/o Colbourne and Kembel Architects Inc. and is based on a specific scope of work which is defined in the mutually agreed upon workplan. The scope of work has limitations as described throughout the report and in the notice to reader. Data, tables, charts, and interpretive illustrations presented in this document are instruments of service for this mandate and can only be properly evaluated when reviewed together with the accompanying report. Reference to this report should only be made to the complete signed document.

By issuing this report, Malroz is the Geotechnical Engineer of Record for this project. It is recommended that Malroz be retained during construction of all foundations, for earthwork operations and for paving. The intent of this requirement is to verify conditions encountered during construction are consistent with the findings in the report and, that inherent knowledge developed as a part of our study is correctly carried forward to construction phases. We should be retained to review whether our recommendations have been applied appropriately, once drawings and specifications are complete. Without this review, Malroz will not be liable for any misunderstanding of our recommendations or their application and adaptation into final designs.

The work performed in this report was carried out in accordance with the terms and conditions made as a part of our proposal and/or contract pursuant to which this report was issued, in a manner consistent with that level of care and skill ordinarily exercised by members of the Geotechnical Engineering profession currently practicing under similar conditions in the same locality. The conclusions presented in the report are based solely upon the scope of services, governed by the time and budgetary considerations to which this work was subject.

The factual data, recommendations and comments in this report pertain to the specific project as described in the report, and are not applicable to any other project or location. If the project is conceptually modified or changes location, or if it is not initiated within twelve months of the date of this report, Malroz should be given an opportunity to confirm that the information in this report is still valid and/or applicable.

The comments in this report are intended only for the guidance of project designers and engineers. Contractors bidding on or undertaking the work should rely on their own

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investigations, as well as their own interpretations of the factual borehole, test pit and in-situ test information, and how subsurface conditions may affect their work.

This report must be read as a whole, as sections taken out of context can be misleading. Drafts and working copies, whether or not marked as “draft”, “for discussion purposes” or otherwise, do not necessarily reflect Malroz’s final opinion following consideration of all matters which are subject to the study giving rise thereto; they are issued for comment and information purposes only, and are subject to change and should not be relied upon in any way or for any purpose.

It is important to emphasize that a soil investigation is, in fact, a random sampling of a site and the comments included in this report are based solely on the results obtained at the test pit locations only. Soil and groundwater conditions between and beyond the borehole and test pit locations may differ both horizontally and vertically from those encountered at the borehole and test pit locations and may become apparent during construction, which could not be detected or anticipated at the time of our investigation. Should any conditions at the site be encountered which differ from those found during this investigation, we request that we be notified immediately in order to permit a reassessment of our comment and recommendations. If changed conditions are identified during construction, no matter how minor, the recommendations in this report shall be considered invalid until sufficient review and written assessment of said conditions by Malroz has been completed.

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8.0 Closure

We trust that this report meets your present requirements. Please do not hesitate to contact us should there be any further questions or comments.

Respectfully Submitted,

Malroz Engineering Inc.,

per: Dylan Hill, P. Eng.
Geotechnical Engineer, Project Manager

reviewed: David Hodgson, P.Eng.
Senior Engineer, Principal

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9.0 References

Canadian Geotechnical Society. (2006). Canadian Foundation Engineering Manual, 4th Edition.

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Appendix A
Figures

Legend

- approximate borehole location
- approximate test pit location
- test pit not advanced due to refusal on frozen ground

Rev	Date	Description	By	Chkd
D0	2022-03-07	issued in draft	RF	DPH

Borehole and Test Pit Location Plan

County of Frontenac, c/o Colbourne and Kembel Arhcitects Inc.
Geotechnical Investigation
2069 Battersea Road, Glenburnie, ON

File: 1583.00-101

Figure 1

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Data Sources:Figure based on Malroz field observations and Google Earth imagery.

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Appendix B
Record of Boreholes and Test Pits

WELL LOG

Enclosure No.: 1

Project Name: **Geotechnical Investigation - Proposed Building Addition**		Project Number: **1583.00-101**
Client: **County of Frontenac c/o CKAI**	Well Number: **BH101**	Page: **1 of 1**
Location: **Fairmoun Home, 2069 Battersea Rd, Kingston, ON**	Date Started: **January 6, 2022**	Datum: **NAD 83 Zone 18N**
Drilling Contractor: **G.E.T. Drilling Ltd.**	Date Finished: **January 6, 2022**	Elevation: **117.07 m**
Drilling Equipment: **CME 55**	Easting: **383164.49 m**	Northing: **4907714.21 m**
Drilling and Sampling Method: **100mm Solid-Stem Augers, 50mm Split Spoons**	Logged By: **M. Storms**	Checked By: **D. Hill**

Depth BGS (m)	Elevation (m)	Stratigraphy	Description	Sample Type	Sample Number	Recovery (%)	Penetration Index / RQD	Shear Strength (kPa) (DCPT ■, SPT-N ●; PL, MC, LL)
	116.9		**TOPSOIL** dark brownish-black, moist to wet.					
	116.8		**FILL** sand and gravel.		SS1	63	6	6 ● 11 ○
0.2			**FILL** sand, brown, moist, loose.					
0.4								
0.6								
0.8								
1.0					SS2	59	2	2 ● 17 ○
1.2								
1.4								
1.6	115.6		**SILTY CLAY** some sand, limestone fragments at end, wet at soil/inferred bedrock interface.		SS3	56	R	25 ○
1.8	115.3		Borehole terminated with auger refusal at 1.8m.					
2.0								
2.2								
2.4								
2.6								
2.8								
3.0								
3.2								
3.4								
3.6								
3.8								
4.0								
4.2								
4.4								
4.6								
4.8								
5.0								
5.2								
5.4								
5.6								
5.8								

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BOREHOLE LOG

Enclosure No.: 2

Project Name: **Geotechnical Investigation - Proposed Building Addition**		Project Number: **1583.00-101**
Client: **County of Frontenac c/o CKAI**	Borehole Number: **BH102**	Page: **1 of 1**
Location: **Fairmoun Home, 2069 Battersea Rd, Kingston, ON**	Date Started: **January 6, 2022**	Datum: **NAD 83 Zone 18N**
Drilling Contractor: **G.E.T. Drilling Ltd.**	Date Finished: **January 6, 2022**	Elevation: **115.78 m**
Drilling Equipment: **CME 55**	Easting: **383166.35 m**	Northing: **4907670.74 m**
Drilling and Sampling Method: **100mm Solid-Stem Augers, 50mm Split Spoons**	Logged By: **M. Storms**	Checked By: **D. Hill**

Depth BGS (m)	Elevation (m)	Stratigraphy	Description	Sample Type	Sample Number	Recovery (%)	Penetration Index / RQD	Shear Strength (kPa) (DCPT / SPT-N)
	115.7		**TOPSOIL** dark brownish-black, moist to wet.					
0.2			**FILL** sand, trace to some silt with depth, trace organics in upper layer, loose, brown, moist.		SS1	79	4	4 / 14
0.4								
0.6								
0.8								
1.0					SS2	54	2	2 / 12
1.2								
1.4								
1.6								
1.8					SS3	63	2	2 / 10
2.0								
2.2								
2.4								
2.6					SS4	92	5	5 / 18
2.8			Becoming wet.					
3.0	112.7		**SAND** some silt, brown, moist to wet.		SS5	54	R	18
3.2			Possible boulder or weathered bedrock.					
3.4								
3.6								
3.8	112.0		**LIMESTONE** grey, good rock quality					
4.0			UCS = 125.9MPa.					
4.2								
4.4								
4.6					RC1	87	87	
4.8								
5.0								
5.2								
5.4	110.4		Borehole terminated within limestone bedrock at 5.3m.					
5.6								
5.8								

Shear Strength (kPa): 50, 100, 150, 200; DCPT; SPT-N; PL, MC, LL; 20, 40, 60, 80

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TEST PIT LOG

Enclosure No.: 3

Project Name: **Geotechnical Investigation - Proposed Building Addition**		Project Number: **1583.00-101**
Client: **County of Frontenac c/o CKAI**	Test Pit Number: **TP101**	Page: **1 of 1**
Location: **Fairmoun Home, 2069 Battersea Rd, Kingston, ON**	Date Started: **February 16, 2022**	Datum: **NAD 83 Zone 18N**
Drilling Contractor: **Harrison Excavating**	Date Finished: **February 16, 2022**	Elevation: **115.61 m**
Drilling Equipment: **Rubber-tired Excavator**	Easting: **383136.99 m**	Northing: **4907650.84 m**
Drilling and Sampling Method: **Hand grab sampling**	Logged By: **J. Payeur**	Checked By: **D. Hill**

Depth BGS (m)	Elevation (m)	Stratigraphy	Description	Sample Type	Sample Number	Recovery (%)	Penetration Index / RQD	Shear Strength (kPa) 50 100 150 200 ■ DCPT ● SPT-N ● PL MC LL 20 40 60 80
0.2	115.3		**TOPSOIL**.					
0.4			**FILL** sand, some gravel, trace construction debris.					
0.6								
0.8								
1.0								
1.2								
1.4					GS01			
1.6								
1.8								
2.0								
2.2								
2.4								
2.6					GS02			
2.8	112.9		Test pit terminated on limestone bedrock at 2.7m.					
3.0								
3.2								
3.4								
3.6								
3.8								
4.0								
4.2								
4.4								
4.6								
4.8								
5.0								
5.2								
5.4								
5.6								
5.8								

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TEST PIT LOG

Enclosure No.: 4

Project Name: **Geotechnical Investigation - Proposed Building Addition**		Project Number: **1583.00-101**
Client: **County of Frontenac c/o CKAI**	Test Pit Number: **TP102**	Page: **1 of 1**
Location: **Fairmoun Home, 2069 Battersea Rd, Kingston, ON**	Date Started: **February 16, 2022**	Datum: **NAD 83 Zone 18N**
Drilling Contractor: **Harrison Excavating**	Date Finished: **February 16, 2022**	Elevation: **115.85 m**
Drilling Equipment: **Rubber-tired Excavator**	Easting: **383161.49 m**	Northing: **4907652.07 m**
Drilling and Sampling Method: **Hand grab sampling**	Logged By: **J. Payeur**	Checked By: **D. Hill**

Depth BGS (m)	Elevation (m)	Stratigraphy	Description	Sample Type	Sample Number	Recovery (%)	Penetration Index / RQD	Shear Strength (kPa) 50 100 150 200 ■ DCPT ● SPT-N ● PL MC LL 20 40 60 80
0.2	115.5		**TOPSOIL** dark brown.					
0.4			**FILL** gravelly sand, brown, trace construction debris, trace organics.					
1.4					GS01			
3.0	112.8		**SAND** light brown.					
3.4					GS02			
4.6	111.3		Test pit terminated at maximum depth of 4.6m.					

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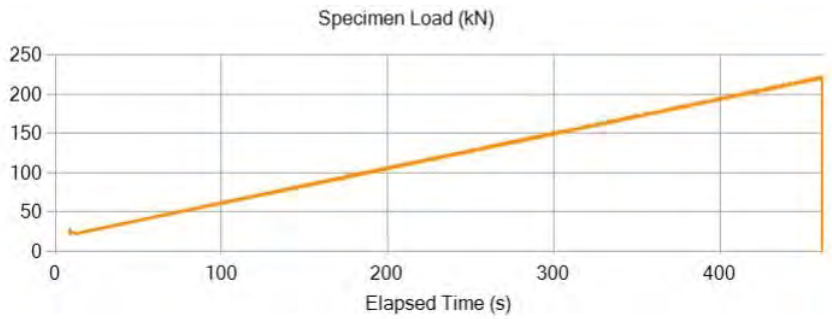
Appendix C
Geotechnical Laboratory Results

Malroz Engineering Inc. Laboratory
745 Development Drive Unit 4B
Kingston, ON, K7M 4W6

Summary of Results for Unconfined Compressive Strength

Sample ID	Density (g/cm^3)	UCS (MPa)
RC1	2.70	125.9

Client:	Colbourne & Kembel, Architects Inc.
Project No.:	1583
Location:	2069 Battersea Road, Glenburnie ON
BH:	BH102
Depth:	3.81 m – 5.33 m
Lab No.:	266A
Date Sampled:	January 6, 2022
Sampled By:	Matt Storms
Date Tested:	February 2, 2022



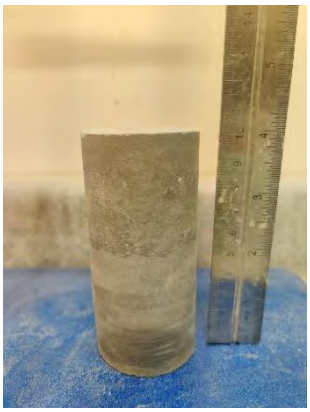


***Figure 1**: Pre- and Post-Test Specimen Photos*

Tested By: Jesse Sherwin
Approver:

Date: February 2, 2022

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