



**Waterloo Region
District School Board**

REQUEST FOR TENDER

Eastwood Collegiate Institute Washroom Renovations

Tender #7273-RW-22

ISSUE DATE: 14 March, 2022

ELECTRONIC SUBMISSIONS will be received by the Bidding System, no later than **2:00 p.m. local time, on 5 April, 2022**

1.1 The following professional seals and signatures are provided as required by Paragraph 1.21.1 (4) Division C of the Ontario Building Code and apply to the areas of expertise for which each consultant was commissioned.

1.1.1 Architect



1.1.2 Structural



1.1.3 Mechanical



1.1.4 Electrical



END OF SECTION

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1.0 INTRODUCTION

1.1. Single Point of Contact

In relation to this procurement process, all communication shall be directed to:

Rebecca Witteman
Senior Procurement Specialist
Waterloo Region District School Board

All request for information, instructions or clarifications shall be directed to the Single Point of Contact only. Requests should be made through the Bidding System by clicking on the “Submit a Question” button found within the bid detail of the specified Tender.

Vendors shall not communicate with other Waterloo Region District School Board (“Board”) employees or agents regarding this tender prior to award. Any attempt by a Vendor to bypass or influence the procurement process may result in disqualification of their Submission.

The Board will not be responsible for any verbal statement, instruction, or representations. In case of difference between any verbal information and written document, the written document shall govern. Information obtained from any source, other than the Single Point of Contact in writing, shall not be relied upon.

1.2. Consultant

The Board has hired the following consultant to assist in the preparation of this Tender: ABA Architects Inc.

Addenda will be the Board’s only form of communication. The Board will assemble addenda as required.

The consultant and any sub consultants are not to be contacted by any interested parties from the Tender issue date to the bid award notification. The consultant or any sub consultants will not respond to any direct communication.

The Board will be responsible for the contract administration of the project after the purchase order has been issued or the contract has been signed by the Board

1.3. About the Waterloo Region District School Board

The Waterloo Region District School Board is a provincially funded institution reporting to the Ministry of Education of Ontario and is one of the larger school

boards in Ontario, operating 121 school locations and serving approximately 64,000 students in the Region of Waterloo.

1.4. Electronic Bid Submission and Bid Results

All Bids shall be submitted through the Bidding System only. Bidders must have a Bidding System Vendor Account and shall ensure the account is created with the Bidders full legal company name.

Hard copy Bid Submission will not be accepted by the Board.

Bids will not be accepted after the Closing Date and Time.

There will be no public opening for this Tender.

Once an award is made, the successful Bidder will be named on the Bidding System, and an award notification will be sent.

1.5. Bid Submission

- .1 Bidders must include the appropriate submission requirements and mandatory forms specified in this section.
- .2 Bidders shall have a "Vendor Account" in the Bidding System and be registered as a "plan taker" for this Bid Solicitation Document. Only the plan takers will have access to download this Bid Solicitation Document, receive addenda email notifications, download addenda and to submit their Bid electronically through the Bidding System.
- .3 The onus is on the Bidder to ensure that the Bid is received and acknowledged in the Bidding System on or before the Closing Time. The Closing Time shall be determined by the Bidding System's web clock. The timing of the Bid submission shall be based on when the Bid is RECEIVED by the Bidding System, not when a Bid is submitted by a Bidder.
- .4 Bidders shall allow sufficient time to upload their Bid submission and attachment(s) (if applicable) and to resolve any issues that may arise as Bid transmission can be delayed in an "internet traffic jam" due to file transfer size, transmission speed, and other electronic considerations.
- .5 Upon receiving a Bid, the Bidding System will send a confirmation email to the Bidder advising that the Bid was submitted successfully. If a Bidder does not receive a confirmation email despite submitting a Bid, the Bidder should contact technical support of the service provider hosting the Bidding System via email: support@bidsandtenders.ca

- .6 The Bidding System will not accept Bids after the Closing Time as determined by the Bidding System's web clock. Bids submitted by fax or paper copy or any other format will not be accepted.
- .7 The Board hereby consent to the use of an Electronic Signature for the signing of all documents requested hereunder. Acceptable forms of signatures include, but are not limited to, the typing of the Bidder's authorized signing officer's name or the inclusion of an image of the Bidder's authorized signing officer's signature, so long as the electronic signature is sufficient to identify the Bidder's authorized signing officer. The Bidder's authorized signing officer agrees that whatever form of electronic signature is provided constitutes a signature for the purpose of executing all documents requested hereunder.

1.6. Withdrawal of Bid Submission / Irrevocable Period

Bidders may withdraw or edit and resubmit a Bid in the Bidding System at any time prior to the Closing Date and Time. The most recent submission or withdrawal received in the Bidding System on or before the Closing Time shall prevail and shall overwrite all previous submission(s) and withdrawal(s). The Closing Time shall be determined by the web clock within the Bidding System. After such time, requests to withdraw Bid Submissions will not be considered.

Bids will be irrevocable by the Bidder, and open for acceptance by the Board, for **60 (sixty)** days following the Closing Date

1.7. Bid Review

- .1 All Bids received on or before the Closing Time will be reviewed for compliance based on this Bid Solicitation Document. Non-compliant Bids may be rejected. Bids not meeting any of the mandatory requirements included in this Bid Solicitation Document may be disqualified. Bidders may be contacted to clarify its submissions.
- .2 It is the Bidder's responsibility to satisfy the Board that the Bidder can comply with the requirements contained within this Bid Solicitation Document and that the Bidder possesses the necessary inventory, equipment, facilities, resources and staff to perform the Work specified in this Bid Solicitation Document. Bidders may be required to submit evidence of above in a form acceptable to the Board. Substitution of materials, equipment, or methods different from that outlined in the terms of reference will not be accepted unless provided for within this Bid Solicitation Document or with the written approval from the Board.
- .3 The Board also reserve the right to examine Bidder's facilities, equipment and visit the sub-contractors or sub-consultants proposed or Bidder's

existing and past clients. The award decision may be revised based on the above.

- .4 The Board will not be responsible for travel costs (including, but not limited to, time and mileage) if travel is required. No additional charges will be accepted by the Board for any cost incurred by the Bidder or any other party in participating in the Bid evaluations.
- .5 The Board may, in their sole discretion, check references, conduct credit checks, review the litigation history and history of professional liability or other insurance claims, and obtain any other type of information that might aid the Board in its selection. The Board reserve the right to consider all or any information received from all available sources, whether internally or externally obtained. The Board may disqualify any Bid from further consideration based on results of reference or credit checks or review of litigation or claim history. The foregoing may include the Board's own experiences with the respective Bidder(s) or any of the subcontractors and sub-consultants proposed in its Bid.

1.8. Tie Bids

Where two (2) or more Bids have been received reflecting the same, compliant lowest Bid price, the time stamp for date and time submission in the Bidding System will dictate the award (earliest submission shall prevail).

1.9. Award Recommendation

- .1 Subject to the reserved rights of the Board and availability of funds, the lowest compliant Bid will be recommended for award.
- .2 The documents listed below will be incorporated as deemed necessary by the Board, into the Contract with the Successful Bidder. If there is a discrepancy between the wording of one document and the wording of any other document that appears on the list, the wording of the document that first appears on the list shall take precedence:
- .3 Board approved change orders or Contract or Agreement amendment.
- .4 Purchase Order, Contract or Agreement executed with the Bidder including exhibits.
- .5 Bid Solicitation Document issued by the Board, including addenda, if applicable.
- .6 Bid submitted by the Bidder.
- .7 There shall be no obligation on the Board as a result of seeking Bids or conducting the procurement process and the Board reserve the right to

cancel the Bid Solicitation, issue a revised request, or to pursue any other course of action which would aid in meeting their needs.

1.10. Documents Required for Award

Within ten (10) working days of receiving a request from the Board, the Bidder (the "Recommended Bidder") shall provide the following:

- .1 Insurance certificate with coverage specified in the Bid Solicitation Document.
- .2 WSIB clearance certificate valid on date of award or an exemption letter (if applicable and requested).
- .3 Contract security, if applicable as specified in the Bid Solicitation Document.
- .4 An executed Board issued Form of Agreement, duly signed by the authorized signatory.
- .5 Any other submittal specified in the Bid Solicitation Document as a requirement of award.

In addition to all of the Board' other remedies, if a Recommended Bidder fails to execute the Form of Agreement or satisfy any other applicable conditions within ten (10) days of notice of selection, the Board may, in their sole and absolute discretion and without incurring any liability, rescind the selection of that Bidder.

1.11. Confirmation to Proceed

No work shall commence until each of the Board's Procurement Services has issued a purchase order, contract, or letter of intent to the Successful Bidder. Goods/Service or Work, as described shall not commence until all the required documents have been submitted to Procurement Services and the Form of Agreement executed by the Successful Bidder and the Board. For payment purposes, a Purchase Order shall be generated and issued to the Successful Bidder. The Purchase Order number must appear on all invoices in order to ensure prompt payment.

1.12. Site Visit

Due to Covid-19, Proponents are to supply and wear medical grade masks and eye protection. Due to the nature of this Tender, a NON mandatory site visit has been deemed necessary. Failure to attend and register at the time and location(s) specified would NOT result in disqualification. Representatives for the Proponents are requested to sign in at the NON-mandatory site meet. The Board at its sole discretion may schedule additional non-mandatory site visits. Proponents are to reference 1.8 Timetable for site meet date and time.

The site visit will take place at: Eastwood Collegiate Institute on **March 17, 2022, commencing at 3:30pm** (meet at loading dock off of Jackson St. parking lot).

The site meet is NON-mandatory for the following: Prime Contractors
Proponents are to meet at the Main Office.

Notify via the “submit a question” feature in this bidding system to the attention of: “Site Meet Request”, the name of your company and staff that would like to attend a scheduled site meet.

Do not show up without submitting your request to attend the site meet.

The size of the groups at the site meet(s) will be limited as per current Public Health Recommendations.

An addenda prior to the site meet will be posted noting the companies and personnel and time for each scheduled site meet.

1.13. Supplemental Site Visits

Due to Covid-19, Proponents are to supply and wear medical grade masks and eye protection.

Supplemental site visits will be permitted for interested Proponents and subcontractors to gain access to the site in order to better prepare their bid submission and are not to be held prior to the mandatory or non-mandatory site visit.

When a supplemental site visit is required, the Proponent or subcontractors may only visit the school after 3:30 P.M., during a scheduled school day. The Proponent or subcontractors shall immediately report to the Main Office, sign in as per the school protocol and ask for the head custodian. The head custodian's role is to ensure that the Proponent or subcontractors are guided to the area of interest regarding this Tender document and to provide access where required.

Proponents or sub-trades may not direct any questions related to this Tender to the head custodian or any other Board staff present. Proponents asking the head custodian or Board staff questions related to the scope or Tender in general will be disqualified.

1.14. Communication

For the purpose of this Tender, the only contact for all Bidders, subcontractors if any, and any third-party suppliers of goods or services for all queries, questions and notifications, from the Tender issue date to the bid award notification date is to be directed to the submit a question feature in this bidding system:

1.15. From Issue Date to Deadline for Questions/Queries

Questions must be received by the Board's Single Point of Contact no later than the deadline for questions noted in the Anticipated Project Schedule.

If a Bidder finds any discrepancies, ambiguities or omissions within the Request for Tender (RFT) documents, or requires any clarifications regarding the RFT documents, questions and clarifications must be sent to the Board's Single Point of Contact through the Bidding System by clicking on the "Submit a Question" button found within the bid details page of that opportunity. Bidders are strongly encouraged to ask clear and concise question(s) citing the relevant section of the Bid Solicitation Document.

The Board has endeavoured to provide complete, correct information and estimates to enable Bidders to properly assess and determine the scope and complexity of the Work prior to submitting a Bid. Bidders are solely responsible for determining if they require additional information or if anything appears incorrect or incomplete. The onus is on the Bidder to contact the Board's Single Point of Contact prior to the Deadline for Questions indicated in this document, if they have any questions or queries whatsoever or find omissions from or discrepancies in this Bid Solicitation document, unnecessary restrictions in the terms of reference, or should they be in doubt as to the meaning of any part of this document. Written answers or clarifications to issues of substance will be shared with all Bidders in the form of an Addendum.

1.16. After the release of the Bid Results Notification / Debriefing Requests

In accordance with the Broader Public Sector Procurement Directive, unsuccessful Bidders are entitled to a debriefing in order to receive feedback with respect to their Bid submission. In order to obtain a debriefing, Bidders shall contact the Board's Single Point of Contact listed in this Bid Solicitation Document in writing with their request within sixty (60) days of the award notification.

1.17. Consequences of not following the Proponent Contact Protocol

Communication initiated by the Proponent, subcontractors, or third-party suppliers of goods or services during the blackout period, to the Board or consultant may be grounds for disqualification from the Tender.

Communication by Proponents, subcontractors, or third-party suppliers of goods or services, to the consultant or the Board, other than the Board contact from the issue date to the Tender to receiving the award non award notification, may be grounds for disqualification from the Tender.

1.18. Anticipated Time Table

The following table represents the anticipated project timelines. This timeline is an estimate only, and may be subject to change by the Board at any time.

DESCRIPTION	DATE
Issue Date	March 14, 2022
Non-Mandatory Site Meeting	March 17, 2022, 3:30pm local time
Deadline for Questions	March 31, 2022
Closing Date and Time	April 5, 2022, 2:00 pm local time
Anticipated Contract Start / Work begins	June 30, 2022
Substantial Completion Date	September 3, 2022
Deemed Complete Date	October 31, 2022

1.19. Blackout Period

A black out period shall exist between the deadline for questions and the date of award. During this period, there shall be no communication between the Bidders, the Board or any Board consultants, unless initiated by the Board' Single Point of Contact.

1.20. Deadline for Questions

Questions must be received by the Single Point of Contact no later than the deadline for questions noted in the Anticipated Project Schedule.

If a Bidder finds any discrepancies or omissions within the Request for Tender (RFT) documents, or requires any clarifications regarding the RFT documents, questions and clarifications must be sent to the Single Point of Contact through the Bidding System by clicking on the "Submit a Question" button found within the bid details page of that opportunity.

The Board shall not be bound by any verbal instruction or information provided by any Board employee or consultant of the Board. Only responses provided in an Addendum shall form part of this Bid Solicitation Document.

1.21. Addenda

All Addenda issued through the Bidding System shall form part of the Tender Document.

Any questions and clarifications regarding the terms of reference shall be requested through the Bidding System by the date noted above. Those that are deemed pertinent to the Tender document will be addressed in the form of an Addendum.

Bidders shall acknowledge the receipt of all Addenda in the Bidding System prior to the submission of their bid. Where Addenda has been issued, the system will not allow the Bidder to submit a bid prior to acknowledging all Addenda.

Where an Addendum is issued after a bid has been submitted, the Bidding System will automatically withdraw the submitted bid. The submission status will change to incomplete and will not be accepted by the Board as a submitted bid. It is the responsibility of the Bidder to acknowledge all Addenda and ensure the bid has been received by the Bidding System. Bidder should check the Bidding System for Addenda up until the closing date and time.

Addenda cannot be acknowledged after the Closing Date and Time.

1.22. Warranty and Maintenance

The Awarded Bidder, at the time of substantial completion shall furnish a written warranty covering material, maintenance, and work performed under the contract for a minimum period of two (2) years from the date of completion. Individual sections may extend warranties beyond the two year time frame. The Awarded Bidder is responsible for all required maintenance complete with materials and labour during the warranty period.

2.0 BOARD PURCHASE ORDER

Goods/Service or Work, as described shall not commence until all of the required documents have been submitted to Procurement Services and the CCDC 2 executed by the Awarded Bidder(s) and the Board. For Payment purposes, a Purchase Order shall be generated and issued to the Awarded Bidder(s). The Purchase Order number must appear on all invoices in order to ensure prompt payment.

3.0 THE BID CONTRACT

.1 The bidders and the Owner acknowledge that it is their intention to create a process contract (the "Bid Contract") between the Owner and any bidder whose Bid meets the Mandatory Requirements. The bidders and the Owner further acknowledge that, if a Bid Contract is created between the Owner and one or more of the bidders, the terms of the Bid Contract are represented by the Bid Documents.

4.0 DEFINITIONS

4.1. Capitalized terms not otherwise defined in this Section or elsewhere in these Instructions to Bidders shall have the meanings ascribed to them in the Contract. All references in these Instructions to Bidders to “Section” or “paragraph” shall, unless specifically indicated otherwise, refer to a Section or paragraph of these Instructions to Bidders.

- .1 **“Bid”** means the Base Bid Form and all other documents submitted by a bidder in accordance with these Instructions to Bidders.
- .2 **“Single Point of Contact”** means the Procurement Specialist of the WRDSB, NOT the prime Consultant.
- .3 **“Bid Documents”** has the meaning set out in item 7, Instructions to Bidders.
- .4 **“Bid Form”** means the Base Bid Form or any of the Supplementary Bid Forms listed in paragraph 6.1.2, section 00 21 13.
- .5 **“Black-Out Period”** is the period between the deadline for asking questions or making queries, to the Bid Award Notification.
- .6 **“Board”** means the Waterloo Region District School Board.
- .7 **“Consultant”** means Prime Consultant retained by the Board and identified in these documents.
- .8 **“Contract”** means the written agreement to be signed between the Owner and the successful bidder in the form of CCDC 2 – 2008 stipulated price contract, as amended by supplementary conditions.
- .9 **“Evaluation Score”** has the meaning set out in item 12.0 Bid Evaluation, Section 00 21 13.
- .10 **“Evaluation Team”** means the committee / team appointed to guide, monitor and direct this bid process and evaluate Bids.
- .11 **“Irrevocability Period”** has the meaning set out in Item 4.2, Section 00 72 13.
- .12 **“Mandatory Requirements”** has the meaning set out in item 12, Section 00 21 13.
- .13 **“Project Manager”** or Project Coordinator can be used interchangeably and is the Board’s representative for the project.
- .14 **“Submission Deadline”** is the date and time identified in Item 1.18, Section 00 21 13.

4.2. VENDORS OF RECORD

- .1 Bidders must be approved as a Vendor of Record by the Owner. Bids received from contractors who have not been approved prior to the Tender period will be returned unopened.

- .2 The Owner reserves the right to issue an addendum naming additional pre-qualified general contractors and additional pre-qualified Subcontractors and Suppliers.

5.0 BID DOCUMENTS

- .1 The following documents form the basis of this bid process (collectively the "Bid Documents"):
 - .1 Instructions to Bidders.
 - .2 Bid Forms comprising the Base Bid Form and, where required, the Supplementary Bid Form – List of Subcontractors, Supplementary Bid Form – Itemized, Separate and Alternative Prices, and Supplementary Bid Form – Unit Prices.
 - .3 CCDC 2 – 2008 stipulated price contract comprised of the Agreement Between Owner and Contractor, Definitions, and General Conditions of the Stipulated Price Contract.
 - .4 Supplementary Conditions.
 - .5 Specifications (as per table of contents).
 - .6 Drawings (as per list of Drawings).
 - .7 Any Reports or Studies, including, but not limited to, Asbestos, Hazardous Materials and Sub-Surface soil conditions included with the specifications or addenda.
 - .8 Addenda issued prior to the Submission Deadline.
- 5.2. Check Bid Documents for completeness upon receipt. Inform the Board's Single Point of Contact immediately, should any documents be missing or incomplete and/or upon finding any discrepancies or omissions.
- 5.3. The Bid Documents are made available only for the purpose of submitting Bids for the Project. Availability and/or use of the Bid Documents do not confer a license or grant for any other purpose.

6.0 PROHIBITION ON LOBBYING / COLLUSION

- 6.1. Bidders and/or any representatives employed or retained by them are strictly prohibited from engaging in conduct which is or could reasonably be considered as any form of political or other lobbying, or as an attempt to influence the outcome of this bid process.
- 6.2. A bidder shall not discuss or communicate directly or indirectly with any other bidder any information whatsoever regarding the preparation of a Bid. Bidders shall prepare and submit Bids independently and without any communication, knowledge, comparison of information, or arrangement, direct or indirect, with any other bidder.

- 6.3. Failure of any bidder to comply with this Section may result in the disqualification of the bidder and the rejection of its Bid.

7.0 CONFLICT OF INTEREST

- 7.1. Bidders shall disclose all perceived, potential and actual Conflicts of Interest. For the purposes of this bid process, "Conflict of Interest" includes:

- .1 any situation or circumstance where, in relation to this bid process and/or the Contract, the bidder's other commitments, relationships or financial interests could or could be perceived to exercise an improper influence over the objective, unbiased and impartial exercise of independent judgment by any member of the Evaluation Team, the Board, or the Owner;
- .2 any situation or circumstance where any person(s) employed by the Owner in any capacity, or any member of the Board:
 - .1 has a direct or indirect financial interest in the award of the Contract to any bidder;
 - .2 is currently employed by, or is a subcontractor or a consultant to a bidder;
 - .3 is negotiating or has an arrangement concerning future employment or contracting with any bidder;
 - .4 has an ownership interest in, or is an officer or director of, any bidder.

- 7.2. If a bidder discovers, at any time, any perceived, potential or actual Conflict of Interest, the bidder shall promptly disclose the perceived, potential or actual Conflict of Interest by sending a written statement in the manner described in paragraph 8. Failure of any bidder to comply with this Section may result in the disqualification of the bidder and the rejection of its Bid.

- 7.3. Without limiting the generality of Section 22, the Owner may, in its sole discretion:
- .1 exclude any bidder and its Bid on the grounds of Conflict of Interest;
 - .2 waive any and all perceived, potential or actual Conflicts of Interest upon such terms and conditions as the Owner, in its sole discretion, requires to satisfy itself that the Conflict of Interest has been appropriately managed, mitigated and minimized.

8.0 SITE INVESTIGATION

- .1 Any soils investigation, environmental, geotechnical or other reports prepared or obtained with respect to the Place of the Work (collectively the "Reports") are available from the Consultant. Where the Work involves existing buildings, structures, facilities, plant or equipment, any reports, data or as-built drawings concerning such buildings, structures, facilities, plant or equipment (collectively the "Data") are available from the Consultant. The

Reports should not be considered a representation of the site conditions of the entire Place of the Work, and the Reports and Data are provided for general information and guidance purposes only. Neither the Owner nor the Consultant guarantees the accuracy or completeness of the Reports or the Data, nor does either assume any responsibility for any interpretations or conclusions that bidders may make or draw from the Reports or the Data.

- .2 Each bidder is solely responsible, at its own cost and expense, to carry out its own independent research and due diligence, or to perform any other investigations considered necessary by the bidder to satisfy itself as to all existing conditions, circumstances and limitations affecting the Work, including the existence and/or locations of utilities and underground services. The bidders' obligations set out in this paragraph apply irrespective of any Reports, Data or any information contained in the Bid Documents.
- .3 No allowances will be made for additional costs and no claims will be entertained in connection with conditions which could reasonably have been ascertained by investigation or other due diligence undertaken prior to the Submission Deadline, and/or in connection with Work which is required and which is reasonably inferable from the Bid Documents, the Reports and/or Data as being necessary.

9.0 DESIGNATED SUBSTANCES

1. Asbestos Audit, prepared by MTE Consultants Inc. for each facility is available in the tender package as well as at the school's main office. A duplicate set is also available in the Facility Services department located at the Education Centre. Unless otherwise specifically covered by Cash Allowance or Contingency Allowance for known asbestos materials, include in this contract for the removal under abatement, in compliance with O.Reg. 278/05, of all known asbestos containing materials, as identified in the audit, within 600mm of all new services, materials, and equipment, and/or as required to complete the work. No claims for extra cost will be accepted for areas known to contain asbestos containing materials.
2. Comply with applicable legislation regarding asbestos. Should the Contractor encounter asbestos, not noted in the above Asbestos Audit, that would be disturbed during the course of the Work they should stop the work in that immediate area and report the same to the Board Contact.
3. Preliminary paint samples were collected within the work area to determine if lead-based paints are present. The analytical results are available in the tender package along with a Designated Substance Report (DSR) (for lead

- paint), where lead-based paints were identified or were deemed highly suspected.
4. Disturbance or demolition of lead-based paints, surface coatings, sheetings, mortar, piping or solders shall be conducted by the Contractor in accordance with the procedures noted in the Environmental Abatement Council of Canada (EACC) "Lead Guideline" (October 2014) and/or the Ministry of Labour (MOL) "Lead on Construction Projects" guideline (April 2011). The extent of procedures required depends on the type of work to be conducted.
 5. In addition to asbestos and/or lead, silica, and mercury are present in all WRDSB facilities. New construction, renovations or alterations require compliance by the Contractor with the applicable legislation. Other designated substances (ie. acrylonitrile, arsenic, benzene, coke oven emissions, isocyanates, ethyl oxide, and vinyl chloride) are not encountered in WRDSB facilities as significant constituents or in a form that would represent an exposure concern.
 6. Examples of common building materials that are considered as containing the additional designated substances are listed below:
 1. Lead - paints and coatings, lead sheeting, pigment mortar, lead piping, lead solder and fittings. In addition to the procedures outlined for lead paint and coatings in the DSR, the Contractor shall inform all workers of the presence of paint finishes that are lead containing. Disturbance of lead-containing paints or surface coatings shall be conducted in accordance with the procedures outlined in the Environmental Abatement Council of Canada (EACC) "Lead Guideline" (October 2014) and/or the Ministry of Labour (MOL) "Lead on Construction Projects" guideline (April 2011). The extent of procedures required depends on the type of work to be conducted. Carefully demolish and recycle of any lead sheeting, piping, solder and fittings. Waste to be handled and disposed of in accordance with O.Reg. 347. Contractor to ensure workers use appropriate PPE and follow the appropriate methods for removal stipulated by the MOL Lead on Construction Guidelines.
 2. Silica - concrete, brick, stone, terrazzo, refractory brick as well as in plaster drywall, acoustic ceiling tiles, drywall joint compound, mortars, and adhesives in low concentrations. All work involving the demolition silica-containing materials shall follow the procedures outlined in the MOL "Silica on Construction Projects" guideline. Type 1 operations may be necessary based on the type of work conducted and the Contractor shall implement dust suppression methods and protect workers.
 3. Mercury - thermometers, barometers, thermostats, gauges, electrical switches, and lighting products including fluorescent light bulbs and a

variety of High Intensity Discharge (HID) lamps as mercury vapour, metal halide and high pressure sodium lamps. Lamps and other devices that require demolition are to be handled with care and kept intact to avoid potential exposure. Any mercury-containing lamps or other equipment that are demolished are to be recycled. Waste is to be handled and disposed of in accordance with O.Reg. 347.

10.0 INSTRUCTIONS FOR COMPLETING THE BID

10.1. Listing of Subcontractors:

- .1 Where required by the Bid Documents, bidders shall complete and submit a Supplementary Bid Form – List of Subcontractors, naming the Subcontractors and Suppliers which the bidder will employ to perform an item of the Work called for by the Contract. Failure of the bidder to list Subcontractors and Suppliers, where required, may result in the Bid being declared non-compliant.
- .2 Where the Owner has provided a Vendor of Record list, for any one or more Subcontractors and/or Suppliers to perform or supply an item of the Work called for by the Contract, bidders shall select a subcontractor or supplier from that Vendor of Record list to perform or supply that item of Work. Failure to do so shall result in the Bid being declared non-compliant.
- .3 Where a bidder lists more than one Subcontractor or Supplier to perform or supply an item of the Work listed, the Subcontractor or Supplier that is listed last shall be deemed to be the Subcontractor or Supplier to be employed by the bidder to perform or supply such item of the Work.
- .4 Where a bidder lists “own forces” in place of a Subcontractor, the bidder shall carry out such item of the Work with its own forces. Where “own forces” have been listed by a bidder, the Owner reserves the right to obtain information from the bidder and from third parties respecting the qualifications and experience of the bidder’s “own forces” for such item of the Work.

10.2. Itemized, Separate and Alternative Prices:

- .1 Where required by the Bid Documents, bidders shall complete and submit a Supplementary Bid Form – Itemized, Separate and Alternative Prices. The Owner reserves the right to accept or reject any or all itemized, separate and alternative prices submitted, and such prices shall remain in effect for the duration of the Contract. Failure to submit an itemized, separate or alternative price where required may result in the Bid being declared non-compliant.

10.3. Unit Prices:

- .1 Where required by the Bid Documents, bidders shall complete and submit a Supplementary Bid Form – Unit Prices. Unit prices shall be in effect for the duration of the Contract and may be used to calculate the cost of additional work under the Contract. The Owner reserves the right to accept or reject any or all unit prices submitted, and such prices shall remain in effect for the duration of the Contract. Failure to submit a unit price where required may result in the Bid being declared non-compliant.

11.0 BID EVALUATION

11.1. Mandatory Requirements. Only bidders that submit Bids which the Evaluation Team determines meet all of the mandatory requirements set out below (collectively the “Mandatory Requirements”) on a “pass/fail” basis will be eligible to be considered for an award of the Contract:

- .1 The Bid includes the Base Bid Form which bears the bidder’s original signature.
- .2 The bidder is a valid Vendor of Record.
- .3 Where a mandatory site meeting was scheduled and held, the bidder attended the mandatory site meeting.
- .4 The Bid includes the Security Documents.
- .5 The Bid includes valid Vendor of Record Subcontractors and/or Suppliers.
- .6 The Bid substantially complies with the other requirements of the Bid Documents.

11.2. Point Based Evaluation Criteria. Only Bids which meet all of the Mandatory Requirements will be evaluated by the Evaluation Team and awarded points based on criteria set out below.

- .1 As few as zero (0) points will be awarded for each evaluation category; the maximum points available for each evaluation category are set out below.
- .2 The total points awarded to a bidder will be that bidder’s “Evaluation Score”.

CRITERIA	Points Available
<i>Mandatory bid documents</i>	Pass/Fail
Bid price offered / bid price as adjusted by the amount of any itemized, separate and/or alternative price(s) which the Owner, in its discretion, decides to accept.	100%
MAXIMUM POINTS AVAILABLE	100

12.0 AWARD OF THE CONTRACT, DOCUMENTS TO BE DELIVERED, AND EXECUTION OF THE CONTRACT

- 12.1. Within ten (10) Working Days of receiving an award letter from the Owner, and prior to commencing the Work, the successful bidder shall deliver to the Owner:
- .1 the performance bond and the labour and material payment bond described in the Bid Documents, the forms of such bonds to comply with the requirements of the Contract;
 - .2 certified true copies of the insurance policies required by the Contract or certificates of insurance, at the option of the Owner;
 - .3 a current WSIB clearance certificate;
 - .4 the bidder's health and safety policy for the Project; and
 - .5 a copy of the notice of project issued by the Ministry of Labour for the Project.
- 12.2. The successful bidder shall execute the Contract and shall deliver the executed original to the Owner within ten (10) Working Days of the bidder's receipt of the same.

13.0 PUBLIC STATEMENTS, CONFIDENTIALITY, AND MFIPPA

- 13.1. Bidders shall not publish, issue or make any statements or news release, electronic or otherwise, concerning their or any other Bid, this bid process, the evaluation of the Bids, the award of the contract, or cancellation of this bid process, without the express written consent of the Owner. The Owner's award of the Contract to a bidder does not constitute a general endorsement of that bidder's products or services.
- 13.2. All information provided by or obtained from the Owner in connection with this bid process is the sole property of the Owner and must be treated as confidential. Such information is not to be used for any purpose other than preparing a Bid.
- 13.3. By submitting a Bid, bidders acknowledge that the contents of their Bids will be disclosed, on a confidential basis, to the Evaluation Team and may be disclosed to members of the Board and the Owner's staff, agents and advisors for the purpose of evaluating or participating in the evaluation of the Bids. The Owner will use reasonable efforts to protect pricing, commercial terms, and other sensitive and confidential information provided by the bidders as part of a Bid (the "Confidential Material"), however, the Owner accepts no liability in the event that the Confidential Material, or any part of it, is disclosed even if the Evaluation Team, the Owner, its staff, agents, advisors or any other person associated with the Board or the Owner may have been negligent with respect to such disclosure.
- 13.4. Information provided in the Bids may be presented at public meetings of the Board and may be disclosed to the public. In addition, the Owner may be

required to disclose information provided in the Bids pursuant to the provisions of the Municipal Freedom of Information and Protection of Privacy Act or other legislation. By submitting a Bid each bidder agrees to such disclosure and releases the Evaluation Team, the Owner, the Board, and the Consultant from any liability for the same.

14.0 RELEVANT POLICIES

- .1 The Board has a number of relevant policies regarding tenders and bidders should familiarize themselves with the following policies:
 - .1 Purchasing Policy- www.wrdsb.ca/about-the-wrdsb/procurement-services
 - .2 Conflict of Interest - Employees or Trustees - <https://www.wrdsb.ca/wp-content/uploads/4005-Procurement.pdf>
 - .3 Acceptance of Hospitality or Gifts - <https://www.wrdsb.ca/wp-content/uploads/4005-Procurement.pdf>
 - .4 The Board also has emergency response procedures: - www.wrdsb.ca

END OF SECTION

SECTION 00 21 14 – VENDORS OF RECORD

1.0 INTRODUCTION

- 1.1. The **Waterloo Region District School Board**, in an effort to build an improved supplier database and to obtain exceptional long term value, has implemented a Vendors of Record list. This tender is open to those who are currently registered under the Board's Vendor Registration System.
- 1.2. Only those General Contractors and Subcontractors noted below may submit bids in their particular fields. Refer to specification sections for products, suppliers and installers that will be required in addition to the Vendors of Record noted below.

2.0 VENDOR REGISTRATION PROCESS

- 2.1. To become a Vendor of Record for future business opportunities, go to the Board's public website at www.wrdsb.ca and refer to *About Us - Purchasing Services - Vendor Registration*, and submit the completed application, as per instructions on the website.

3.0 PRIME / GENERAL CONTRACTORS

- 3.1. Any bid submission from bidders other than Vendors of Record contractors listed below or identified by Addendum will have their bid ruled informal.
- 3.2. The Owner reserves the right to issue an addendum naming additional general contractors as a Vendor of Record.
- 3.3. The following Prime / General Contractors are Vendors of Record with the Board and are invited to submit bids:

General Contractor	Phone	Email
2SC Contracting Inc.	(416) 992-5437	nick@2SCcontracting.com
Bestco Construction (2005) Ltd	(905) 304-4597	estimating@bestcoconstruction.com
Caird-Hall Construction Inc.	(905) 634-0903	caird-hall@bell.net
Collaborative Structures Limited	(519) 658-2750	jblackler@collaborativestructures.com
Complete Building Systems Inc.	(519) 576-5800	estimating@completebuildingsystems.ca
CPM Group Inc	(416) 227-1612	harslan@cpmgroup.ca
CRD Construction	(519) 822-1801	sbock@crdconstruction.on.ca
Dakon Construction	(519) 746-0920	james@dakon.ca
Eldale Structures Ltd	(519) 823-5500	bmcleod@eldale.com

Elgin Contracting and Restoration Ltd.	(519) 633-9969	info@elgincontracting.com
Gateman-Milloy Inc.	(519) 748-6500	info@gatemanmilloy.com
Golden Gate Contracting Inc	(905) 844-1122	estimation@ggcontracting.ca
Gordner Construction	(519) 741-0052	gordner@sympatico.ca
Hall Construction	(905) 662-9200	info@hallconstruction.ca
Harrington Construction Inc	(519) 837-3581	jason@harrcon.ca
ICIR Construction Ltd	(647) 346-8528	icirconstruction@gmail.com
K&L Construction (Ontario) Ltd	(519) 472-7164	todd.hodgins@kandlconstruction.com
Mega Group Construction Ltd	(905) 799-1212	vijay@megagroupconstruction.com
Melloul Blamey Construction	(519) 886-8850	teresa.oreilly@melloul.com
Morris-Lee Construction Corp.	(519) 746-8545	morrisee@rogers.com
Nith Valley Construction Ltd	(519) 662-1324	mail@nithvalley.com
Norfield Construction Inc.	(905) 951-3030	alves@norfieldconstruction.ca
PM Contracting Ltd	(519) 576-8327	sarahziegler@pm.on.ca
Reid & Deleye Contractors Ltd	(519) 688-2600	gregd@reid-deleye.com
RENOKREW	(416) 604-7042	info@renokrew.com
RHC	(519) 249-0758	info@rhcbuilds.ca
SG Cunningham Ltd	(519) 886-2730	allan@cunningham.on.ca
Sierra Construction	(519) 421-7413	info@sierraconstruction.ca
SPEC Construction Inc.	(519) 650-4030	info@spec-build.com
STM Construction Ltd	(519) 756-7030	robertbox@stmconstruction.com
Tambro Construction	(519) 766-1234	btami@tambro.com
TRP Construction	(905) 336-1041	info@trpconstruction.ca
Van Horne Construction Ltd	(905) 677-5150	otekin@vanhorne.ca
Zehr Levesque Inc.	(519) 576-2233	estimating@zehrgroup.ca

4.0 SUBCONTRACTORS

- 4.1. Bidders shall select only a Subcontractor or Supplier listed below to perform or supply an item of Work indicated. Failure to do so shall result in a Bid being ruled informal.
- 4.2. The Owner reserves the right to issue an addendum naming additional Subcontractors and Suppliers as a Vendor of Record.

4.3. The following Subcontractors are Vendors of Record with the Board and are invited to submit bids to the General Contractors:

Mechanical Contractor	Phone	Email
AAA Air Conditioning Inc	(519) 747-9051	igrant.aaaac@gmail.com
AIM Industrial Inc.	(519) 747-2255	craigd@aimindustrial.ca
Arcadian Projects Inc.	(519) 804-9697	cory@arcadianprojects.ca
Black & McDonald Limited	(905) 560-3100	sfernandes@blackandmcdonald.com
Brenner Mechanical Inc	(519) 746-0439	clanglois@brenner.ca
C.N. Mechanical Contractors Limited	(519) 404-8235	mclaughlin5284@rogers.com
CJ's Express Plumbing & Electrical	(519) 621-3111	noliveira@cjsexpress.ca
Conestogo Mechanical Inc	(519) 579-6740	wquickfall@conestogomech.com
Dean Lane Contractors Inc	(519) 585-0903	dean@dean-lane.com
Dordan Mechanical Inc.	(519) 662-9900	danielg@dordanmech.com
Jas 3 Limited	(519) 741-8643	jeffs@jas3heatingcooling.ca
Jay Stewart Mechanical	(519) 576-2663	admin@jaystewart.ca
Keith's Plumbing & Heating Inc.	(905) 544-8118	andrena@keithsph.com
LJ Barton Mechanical Inc.	(905) 304-1976	estimating@ljbarton.com
Nelco Mechanical Ltd	(519) 744-6511	mhobson@nelcomech.com
Reitzel Heating & Sheet Metal	(519) 884-3510	alan@reitzelheating.ca
Roberts Bros Sheet Metal Contractors Ltd.	(519) 633-1507	robertsbros@bellnet.ca
Roberts Onsite Inc	(519) 578-2230	dmagnus@robertsonsite.ca
SCT Mechanical Inc.	(519) 626-0268	jscott@sctmechanical.com
Sutherland-Schultz Ltd	(519) 653-4123	info@sutherland-schultz.com
Touchstone Building Technologies Inc.	(519) 997-2792	info@touchstonebti.ca
Trade Mark Industrial Inc	(519) 570-1511	tmoore@trade-markind.com
Velocity Mechanical Inc	(519) 896-1119	quotes@velocitymechanical.com
Vollmer Inc.	(519) 966-6100	mshaw@vollmer.ca
Wellington Plumbing & Heating Ltd.	(519) 821-4130	kyle@wellington-plumbing-hvac.com
Yorktowne Air Inc.	(905) 532-9699	klipien@yorktowneair.ca

Electrical Contractor	Phone	Email
AIM Industrial Inc.	(519) 747-2255	craigd@aimindustrial.ca
Arcadian Projects Inc.	(519) 804-9697	cory@arcadianprojects.ca
BCG Electrical/Pro Plumbing (a Lancaster Group Company)	(519) 304-8411	trankin@lancastergroup.ca
Boshart Electric Ltd.	(519) 662-1220	patf@boshartelectric.com
Cameron Electric	(519) 465-4614	greg@cameronelectric.ca
CJ's Express Plumbing & Electrical	(519) 621-3111	noliveira@cjsexpress.ca
Eby Electric Inc.	(519) 635-7642	todd@ebyelectric.com
Edge Electrical Solutions Inc.	(519) 747-3343	Kevin@EdgeElectricalSolutions.ca
Electri-tech Services Inc	(519) 743-6518	eric.karn@electri-tech.com
Energize Electric Canada	(519) 589-9630	energize@hotmail.ca
Fairway Electrical Services Incorporated	(905) 304-1133	cherd@fairwayelectrical.com
Harold Stecho Electric Ltd	(519) 746-0047	steves@stechoc.ca
JM Electrical Contracting	(519) 572-3148	johnmader@sympatico.ca
Jones Electric of Kitchener Inc.	(519) 745-5158	Office@JonesElectricofKitchener.ca
Juno Electric	(519) 821-4890	steno@junoelectric.ca
KW E Inc Electrical Contractors	(519) 653-6989	jim@kweinc.com
Live Electric	(519) 265-8566	estimates@live-electric.ca
Mendler Electric Inc.	(519) 616-1733	mendlers@rogers.com
Millers Electric Ltd	(519) 742-3465	scottg@meltd.on.ca
MJM Electric Limited	(519) 824-1989	mlang.mjm@gmail.com
Nadelec Contracting Inc	(905) 875-5239	john.nadelec@gmail.com
Nelco Mechanical Ltd	(519) 744-6511	mhobson@nelcomech.com
Pfaff Electric Limited	(519) 235-0909	jeff@pfaffelectric.com
Roberts Onsite Inc	(519) 578-2230	dmagnus@robertsonsite.ca
Sentry Electric Inc	(705) 436-4530	info@sentryelectric.ca
Sutherland-Schultz Ltd	(519) 653-4123	info@sutherland-schultz.com
Toth Inc	(519) 696-3916	tothelectric@rogers.com
Trade Mark Industrial Inc	(519) 570-1511	tmoore@trade-markind.com
Trade Service Group Inc.	(519) 591-8851	mikewernie@tradeservicegroup.com
Vollmer Inc.	(519) 966-6100	mshaw@vollmer.ca

Abatement Contractor	Phone	Email
A & O Contracting Inc	(905) 828-6868	anthony@aandocontracting.com
Azbest Environmental	(226) 751-5059	hank@azbest.ca
Biggs & Narciso Construction	(905) 470-8788	james@biggsandnarciso.com
Caliber Environmental Construction Services Inc.	(905) 884-5500	jimball@caliberenv.com
EAN Construction	(519) 603-0109	info@eanconstruction.com
Enviro-cor Enterprises	(519) 753-0993	kelly@enviro-cor.ca
FPR Environmental Inc	(519) 568-8222	frank@asbestosmouldexperts.com
GB Environmental Services	(905) 984-3455	gflett@gbenvironmental.net
I&I Construction Services Ltd	(905) 884-1290	tbarron@iandi.ca
Jobi Construction Ltd.	(519) 227-1181	bparsons@jobiconstruction.com
Power Environmental Power Vac	(905) 318-0622	info@powervachamilton.ca
Puroclean Property Restoration	(519) 653-8030	jreis@puroclean.com
Reitzel Bros. Environmental	(519) 648-2237	ddeleon@ags-environmental.com
Schouten Environmental Inc	(519) 577-8989	brant@schouten.ca
Zero Environmental Inc.	(519) 772-5500	info@zeroenvironmental.com

Flooring Contractor	Phone	Email
Flooring Plus	(519) 747-5131	vartan@flooringplus.ca
M&M Carpet Inc.	(905) 279-7875	mmcarpet@bellnet.ca
Nufloors Simcoe	(519) 426-2619	garnatfloor@eastlink.ca
Rick's Carpet and Flooring	(519) 449-2362	gcouwenberg@rickscarpet.ca
S L Marcella Carpets Ltd	(519) 885-2357	nick@marcellacarpets.ca
The Belluz Group Ltd.	(905) 385-8999	abraham@belluzgroup.ca
Twin City Tile Co Ltd	(519) 743-4179	matt@twincitytile.com
Voll's Contract Flooring	(519) 669-1151	dkirch@vollscontract.ca
Zet Master Limited	(905) 789-6560	konrad@zetmaster.com

Painting Contractor	Phone	Email
Aves & Shaw Painting	(519) 742-3486	avesandshawltd@rogers.com
CertaPro Painters of Waterloo	(519) 616-1167	adyck@certapro.com
Expert Painting Inc	(519) 635-8106	expertpainting@hotmail.com
Gateway Painting Ltd.	(519) 500-0772	info@gwpainting.ca
Mike McMahon's Painting Ltd	(519) 744-0169	mikes.painting.ltd@sympatico.ca
Northern Painters (div Connco Group Ltd)	(800) 465-6985	northpaint@conncogroup.com
Platinum Painting & Decorating Inc.	(905) 790-2111	sandro@platinumpaintdecor.com
Westwood Painting Services Inc.	(905) 575-8458	westwoodpainting@cogeco.net

Sprinkler Install Contractor	Phone	Email
C&H Fire Supression Systems	(519) 742-6030	Justin@chfireinc.com
EPI Fire Protection Inc	(416) 746-2225	jzafrani@epi-fps.ca
Georgian Bay Fire & Safety	(519) 543-5115	psmith@gbfire.com
Ideal Fire Suppression Systems	(519) 878-6776	ty@ifss.ca
LifeSafetySecurity Inc.	(844) 715-7288	rappleyard@lifesafetysecurity.com
Richardson Fire Systems Inc.	(519) 650-8057	matt.fromm@richardsonfire.com
Spira Fire Protection Ltd	(519) 823-1150	ken@spira.ca
Troy Life & Fire Safety	(519) 650-2972	tim.hallman@troylfs.com
Western Fire Protection Inc.	(519) 641-3059	todd@westernfire.ca

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SECTION 00 31 34 – SUBSURFACE INVESTIGATION REPORT

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. SUBSURFACE INVESTIGATION REPORT

- .1 An investigation report with respect to the applicable building site and important immediate affected surroundings, is titled as follows:
 - .1 Title:
 - .2 Dated:
 - .3 Prepared By:
- .2 A copy of this detailed investigation report is included as an appendix to this section.
- .3 The subsurface investigation report records properties of the soils, subgrade conditions, and offers recommendations for the design of foundations.
- .4 The report as prepared primarily for the use of the Consultants.
- .5 The recommendations given shall not be construed as a requirement of this Contract unless also contained in the Contract Documents.
- .6 The report, by its nature, cannot reveal all conditions that exist or can or might occur on the subject site. Should subsurface conditions be found or be a concern thereto, or to vary substantially from the investigation report, changes in the design and construction of foundations will be made, with resulting credits or expenditures to the Contract Price accruing to the Owner.

END OF SECTION

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Appendix 003134-A

Soils Report

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Waterloo Region
District School Board

Appendix B – Price Bid Form Sample

Instructions: Bid price shall be submitted through the Bidding System only

SCHOOL	BID PRICE	HST	TOTAL
	\$	\$	\$
	\$	\$	\$
	\$	\$	\$

END OF SECTION

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Appendix D - VENDOR PERFORMANCE EVALUATION FORM AND GUIDELINES

The Board, in an effort to build an improved supplier base and to obtain exceptional long term value, has undertaken a project to register vendors. In conjunction, performance of vendors, either Prime and/or Sub that are involved with this project may be evaluated.

The evaluation may occur at or near substantial completion.

An evaluation may also occur at any stage of the project in order to request and implement a corrective action to facilitate the successful completion of the project.

The Board will evaluate prime contractors.

Prime contractors will evaluate sub-contractors that do not meet expectations and forward the results to the Board. The Board will initiate a request for corrective action to the subcontractor. This is separate from any corrective action that the prime contractor may have. Prime contractors may address the evaluation form and processes at the start up meeting, but it is the responsibility of the prime contractor and the subcontractors to communicate, understand and adhere to the evaluation form and guidelines.

The Board will forward Performance Evaluations to the evaluated prime contractor and/or Subcontractor, here after referred to as Vendor.

A Vendor Performance Evaluation that:

1) Meets or exceeds expectations:

Is a very powerful tool that the evaluated vendor can forward as references to prospective clients giving a very accurate indication of their performance and abilities.

As such, upon request, a vendor performance evaluation will be completed and forwarded to the same vendor, who can then forward it on to their prospective client.

2) Is below expectations:

Will be forwarded to the vendor with a Request for Corrective Action.

The Board will also lower the project size capability of the vendor at this time.

Upon the vendor's successful completion and demonstration of the Request for Corrective Action, the Board may increase the project size capability of the vendor.

The Board or vendor upon the successful completion of the Request for Corrective Action may request a meeting in order to move forward in a positive manner.

Procurement Services will provide clarification and/or direction regarding the Request for Corrective Action, if requested, however the Vendor Performance Evaluation will remain as issued.

The Vendor Performance Evaluation, Requests for corrective action, and the vendor's corresponding corrective action will be filed at the Board.

The Vendor Performance Evaluation may be revised and or modified at any time without notice.



Business Services Division

Procurement Services

VENDOR PERFORMANCE EVALUATION

Vendor Name: _____

Project Name: _____

Tender Number: _____

Classification: Prime Contractor Subcontractor

CHECK ONE					
Not Applicable	Far below expectations: inadequate, containing little detail insufficient knowledge	Does not fully meet expectations: limited knowledge and requirements	Meets expectations: demonstrates ability and knowledge to address basic requirements	Exceeds expectations: demonstrates clear, concise knowledge of requirements	Far exceeds expectations: highly comprehensive, excellent response

1. **Safety & Security:** (Understands & follows requirement guides)
Comments: _____

	1		2		3		4		5
--	---	--	---	--	---	--	---	--	---

2. **Site Supervision:**
Comments: _____

	1		2		3		4		5
--	---	--	---	--	---	--	---	--	---

3. **Billing Accuracy:**
Comments: _____

	1		2		3		4		5
--	---	--	---	--	---	--	---	--	---

4. **Ability to Minimize Deficiencies:**
(Timing, follow up, documentation of actions)
Comments: _____

	1		2		3		4		5
--	---	--	---	--	---	--	---	--	---

5. **Ability to Maintain Schedule & React to Changes:**
(Completeness of work, providing appropriate manpower)
Comments: _____

	1		2		3		4		5
--	---	--	---	--	---	--	---	--	---

6. **Ability to stay focused on Scope:** (Does not seek additional work)
Comments: _____

	1		2		3		4		5
--	---	--	---	--	---	--	---	--	---

7. **Approximate dollar value evaluated:**

0-50,000	50,000. – 500,000.	500,000. +
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8. **Additional Comments:** _____

Score: _____

General Contractor: _____ Date: _____
(If evaluating subcontractor) (company name) (Project Manager) (signature)

Project Evaluator: _____ Date: _____
(print name) (signature)

Manager: _____ Date: _____
(print name) (signature)

Procurement Services action taken: File Corrective Action (overall average score <3/individual score<3)

Procurement Manager: _____ Date: _____
(or designate) (print name) (signature)

Original –Vendor File Electronic copy- to Vendor
Corrective Action documentation to be filed with Vendor Performance Evaluation
I:/Purchasing/Buyers/Bids/Templates/Doc Templates –All/RFT Construction/APPENDIX F –Vendor Performance Evaluation Form

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SECTION 00 41 73 - SUPPLEMENTARY BID INFORMATION

If requested, the **Supplementary Bid Information** must be completed and submitted at time of the tender closing. **All pricing where requested in this form is plus HST.**

GENERAL CONTRACTOR

1.1 The following personnel will be assigned to manage and supervise the Work. Personnel will be subject to approval by the Board, and cannot be changed without prior written approval from the Board.

Site Supervisor: _____

Project Manager: _____

Part 2 ALTERNATIVE PRICES

2.1 The following are the prices for the alternative work listed hereunder. Such Alternative Work and amounts are NOT included in the Bid Price.

ITEM	AMOUNT
	\$
	\$
	\$

Part 3 ITEMIZED PRICES

3.1 The following are the prices for the items of work listed hereunder. Such Work and amounts ARE included in the Bid Price.

3.2 The Board reserves the right to modify the Scope of Work and reduce the contract price accordingly, based upon the prices indicated

ITEM	AMOUNT
	\$
	\$
	\$

Part 4 IDENTIFIED PRICES

4.1 The following are the values of work listed hereunder. Such work and amounts ARE included in the Bid Price.

4.2 The Board has requested these prices for information purposes only and does not intend to modify any Scope of Work based on the prices indicated.

ITEM	AMOUNT
	\$
	\$
	\$

1.0 GENERAL

1.1. DEFINITIONS DECLARATION

- .1 CCDC 2-2008 Edition, Stipulated Price Contract as may be amended, forms the basis of Definitions between the Owner and Contractor.
- .2 These Definitions are bound to the CCDC 2 Definitions and CCDC 2 General Conditions.

1.2. SUPPLEMENTARY WORDS AND TERMS TO CCDC 2-2008

- .1 The following words and terms are additional to the CCDC 2 Definitions.
- .2 Addendum: A document that amends the Bid Documents during the Bidding Period and becomes part of the Contract Documents when a Contract is executed. (Plural: Addenda).
- .3 Agreement: The signed and sealed legal instrument binding parties in a Contract, describing in strict terms their mutual arrangement, roles and responsibilities, commencement, and completion responsibilities.
- .4 Alternative Price: The amount stipulated by a Bidder for an Alternative and stated as an addition, a deduction, or no change to the Bid Price.
- .5 Authorities: Those having jurisdiction under law over Work or Parts thereof.
- .6 Bid: To offer as a Bid stating for what price a Contractor will assume a Contract.
- .7 Bid Documents: A set of documents consisting of the Instructions to Bidders, Bid Form, Contract Documents, and other information issued for the benefit of Bidders to prepare and submit a Bid.
- .8 Bid Form: The specific and detailed form used to collect information about a Bid.
- .9 Bidding: The process of preparing and submitting a Bid.
- .10 Construction Documents: The Drawings and Project Manual. When combined with a Contract and Contract conditions, these documents form the Contract Documents.
- .11 Contingency Allowance: An additional monetary amount added to a Project cost estimate and designated to cover unpredictable or unforeseen items of Work. The amount is usually based on some percentage of the estimated cost and expended and adjusted by Change Order. It is not intended to cover additions to the scope of Work.
- .12 General Conditions: That part of the Contract Documents which sets forth many of the rights, responsibilities and relationships of the parties involved in a Contract.

- .13 Exposed: Visible at completion of Work, in useable areas as well as interior of closets, cabinets, drawers, storage and service rooms, stairwells and exterior surfaces.
- .14 Instructions To Bidders: Instructions contained in the Bid Documents to convey an Owner's expectations and criteria associated with submitting a Bid.
- .15 Section: A portion of a Project Specification covering one or more segments of the total Work or requirements. Sections are included in a Project manual as required to meet Project requirements.
- .16 Standard: A document describing a grade or a level of quality, which has been established by a recognized agency or organization, utilizing an internal voting process.
- .17 Separate Price: A separate price for work to be added to the base price if selected by the Owner. This price type is not a part of the base bid price.
- .18 Stipulated Price: An amount set forth in a Stipulated Price Contract as the total payment for the performance of the Work. Sometimes referred to as a stipulated sum or a lump sum stipulated price.
- .19 Tender: Refer to definition of Bid.
- .20 Unit Price: The amount payable for a single unit of Work as stated in a Schedule of Prices.
- .21 Install: To remove from site storage, move or transport to intended location, install in position, connect to utilities, repair site caused damage, and make ready for use.
- .22 Supply: To acquire or purchase, ship or transport to the site, unload, remove packaging to permit inspection for damage, re-package, replace damaged items, and safely store on-site.
- .23 Provide: To Supply and Install
- .24 Wherever words 'approved', 'selected', 'satisfactory', 'directed', 'permitted', 'inspected', 'instructed', 'required', 'submit', 'ordered', 'reviewed', 'reported to', or similar words or phrases are used in Contract Documents, it shall be understood, unless context provides otherwise, that words 'by Consultant' or 'to Consultants' follow.
- .25 Words 'by others' when used in Specifications or on Drawings shall not mean by someone other than Contractor. Only means by which something shown or specified shall be indicated as not being in Contract is by initials 'NIC' or words 'not in Contract', 'by Owner', or 'by Other Contractor'.

END OF SECTION

SECTION 00 72 13 – TERMS AND CONDITIONS

1.0 PROVISIONS

1.1. Proceedings Against the Board

- .1 The Proponent represents and warrants that the Proponent is not a party to any suits, actions, litigation proceedings, arbitrations, alternative dispute resolutions, investigations or claims by or against or otherwise involving the Board and the Proponent. The Board will reject the bid in the view of the current, pending or threatened litigation, arbitration, alternative dispute resolution or disputes involving the Board and Proponent. The Awarded Bidder may also be required, at the discretion of the Board, to sign a Certificate in a form satisfactory to the Board confirming that the Awarded Bidder is not associated with any company involved in litigation with the Board.

1.2. Standard of Behaviour

- .1 The Board will not knowingly purchase goods and/or services from Awarded Bidders who operate in contravention of local and international laws. Proponents submitting bids are in fact agreeing that they do not purchase or use products that are in contravention of local and international laws. If a product and/or service supplied to the Board is discovered to be in contravention, the Board reserves the right to rectify the issue with the Awarded Bidder that may include the cancellation of the contract.

1.3. Federal, Provincial, Regional and Municipal Laws

- .1 The Awarded Bidder must stay current and comply with, for the durations of the agreement, all current laws and bylaws.
- .2 No Smoking and Scent –Free
 - .1 The Province has legislated under the Smoke Free Ontario Act that smoking is not permitted on any Board owned properties. Furthermore, most Board properties are “scent free”. Smoking will not be permitted on-site. Offenders will be asked to leave the site, and infractions could result in corrective action and or fine.

1.4. Professional Conduct

- .1 All contractors must conduct themselves in a professional manner at all times when dealing with Board staff, with the public, and while working on site. Unprofessional conduct could result in immediate termination of the contract.

1.5. Sustainable Purchasing

The procurement needs of the Board represent a significant level of responsibility to demonstrate leadership and support for greener business practices. Integrating environmental performance and impact into supply chain decisions is a commitment to improvement of the environment and the quality of life.

Green procurement shall be viewed in the context of achieving value for money for the total life-cycle costs. It requires the inclusion of environmental impact considerations into the procurement process, including planning, acquisition, use and disposal. Value for money shall include the consideration of many environmental tangible and intangible factors when determining the total life-cycle costs and environmental impact.

1.6. Paramountcy Clause

.1 Proponents who have additional and/or supplementary agreements that require the Board's signature prior to providing the required products and/or services to the Board must submit that said draft agreement with their bid. No additional agreements will be accepted by the Board after the closing date Tender time of the Tender. In the event of any conflict between the provisions of the terms of the Awarded Bidder's additional and/or supplementary agreement(s) and the provisions of this Tender document, the terms of the Tender contract shall govern.

1.7. Freedom of Information

.1 To comply with the Freedom of Information and Protection of Privacy Act, all bids submitted to the Board become the property of the Board, and as such, are subject to the Freedom of Information and Protection of Privacy Act. Clearly identify any portion of the bid submission that could cause injury if disclosed.

1.8. Criminal Background Checks and Collection of Personal Information

.1 The Board must comply with Regulation 521 (Collection of Personal Information) to the Education Act with respect to criminal background checks and offence declarations.

.2 If required by the Board, the Awarded Bidder will provide the Board, or designate with a Criminal Background Check covering offences under the Criminal Code, the Controlled Drugs and Substances Act, and any other offences which would be revealed by a search of the automated Criminal Records Retrieval System.

- .3 An Offence Declaration in a Board-approved form for every individual or employee of the Awarded Bidder who may come into direct contact with Board staff and/or students on a regular basis at any Board site prior to the occurrence, and on or before September 1 each year thereafter is required. The Board will determine in its sole discretion whether an individual or employee of the Awarded Bidder come into direct contact with pupils on a regular basis.
- .4 Termination of contracts and indemnification by the Awarded Bidder will result from noncompliance.

1.9. Accessibility

- .1 Proponents shall comply with the provisions of the Accessibility for Ontarians with Disabilities Act, 2005, and the Regulations there under with regard to the provision of its goods or service to persons with disabilities. Proponents acknowledge that pursuant to the Accessibility for Ontarians with Disabilities Act, 2005, the Board must, in deciding to purchase goods or service through its procurement process, consider the accessibility for persons with disabilities to such goods or service.

2.0 COMMUNICATION

2.1. Verbal Communication

- .1 Neither the Board nor Board consultant will provide verbal direction or clarification during the tender process. As a result, verbal recollections will not be considered valid.

2.2. Request for Clarification

- .1 The Board reserves the right to seek clarification and supplementary information from Proponents after the Bid Submission Deadline. The response received by the Board from a Proponent shall, if accepted by the Board, form an integral part of that Proponent's proposal.

3.0 SPECIFICATIONS

3.1. Materials

- .1 Bid only on new materials in perfect condition. Demonstrators, seconds or defective materials are unacceptable. Any materials found not to be in a new

condition or as specified will be returned to the Awarded Bidder at the Awarded Bidder's expense.

- .2 Proponents, if requested by the Board, must furnish with their bid a materials safety data sheet (M.S.D.S.), for all products they are bidding on, where applicable. This is a requirement of the Occupational Health and Safety Act. Subsequently, should any business result from this Tender, the Board will not accept any additional charges or surcharges related to the supplying of M.S.D.S. for any item(s) on this Tender.
- .3 All electrical equipment and components must bear a C.S.A. or Electrical Safety Association (E.S.A.) label.
- .4 Bid prices must be for goods and/or services exactly as specified.

4.0 BID PREPARATION

The Board will not be liable for any costs incurred by the Proponent for the preparation of their bid.

4.1. Online Submission Forms

- .1 All forms are submitted online through the bidding system.
- .2 The bidder's signature has the authority to bind the Proponent.

4.2. Bid Price

- .1 Bid prices are to be shown as all applicable taxes extra.
- .2 Bid prices must be held firm until the project is completed to the satisfaction of the Board.
- .3 The bid price herein constitutes the total costs to the Board for all work involved in the respective items and that this cost also includes all insurance, transportation charges, use of all tools and equipment, supervision, bonds, overhead expense, warranty, all profits and all other work, services, conditions furnished in accordance with the requirements of the contract documents.
- .4 Bid prices must be in Canadian Funds.
- .5 Period for which bids are irrevocable after the tender submission deadline is: 60 days.

4.3. Bonding Requirements

- .1 Bid Amount

Bonding requirements are based on the total bid amount INCLUSIVE of ALL applicable taxes.

Bonding is not requested if the Board estimates that the project is less than \$200,000.00. The Board determines the Bonding requirements and specifies them on the Bid Sheet.

.2 Bid Bond and Agreement to Bond

Bid submissions that request Bonding are inclusive of all taxes and must be accompanied by a bid deposit in the form of a digital Bid Bond in an electronically verifiable and enforceable (e-Bond) format in the amount(s) not less than 10% of the total Contract Value made payable to the Waterloo Region District School Board (the 'Board') as surety that, if the Bid is accepted, a Contract will be entered into for the proper performance of the work. For more information, contact your surety company or visit the Surety Association of Canada website.

Bidders shall upload their digital Bid Bond to the Bidding System, in the bid submission file labeled "Digital Bid Bond & Agreement to Bond". All instruction and details for accessing authentication shall be included with the digital Bond uploaded in the Bidding System. Do not include and/or upload Performance Bond and Labour and Materials Bond in this section.

Bids that do not contain the bid deposit(s) in the required amount as specified in this paragraph will be declared non-compliant and will be rejected. A scanned PDF copy of bonds or original certified cheque, bank draft, money order, etc. are not acceptable as Bid deposit and will result in your Bid being rejected.

The bid deposit of the Bidder whose submission is accepted shall be forfeited by the Bidder should the Bidder fail to execute a Contract or provide the necessary documents as required within this Bid Solicitation document (including signed agreement, satisfactory security, insurance certificate, Workplace Safety and Insurance Board letter of clearance) within the time stipulated as a written notice from the Board.

For bid amounts where Bonding is not requested, the Awarded Bidder agrees to pay to the Board the difference in costs between the bid submitted and the final contract should the Awarded Bidder fail to either execute or deliver the contract documents in accordance with the Bid Solicitation within ten (10) working days of written notification of the award of the contract.

.3 Performance Securities

For bid amounts where bonding is required, inclusive of all taxes, upon award the successful Bidder shall provide a digital Bid Performance and Labour and Materials Bond in an electronically verifiable and enforceable (e-Bond) format in

the amount(s) of not less than 50% Performance Bond and a 50% Labour and Materials Bond of the total Contract Value made payable to the Waterloo Region District School Board (the "Board") as surety that, if the Bid is accepted, a Contract will be entered into for the proper performance of the work. For more information, contact your surety company or visit the Surety Association of Canada website.

If the successful Bidder fails to provide a performance bond when requested, the Board may declare the bid deposit forfeited and the Bidder will be held responsible for any increased costs or damages incurred by the Board. Any Bidder who fails to provide all required documents within the timelines provided, or otherwise fails to enter into an agreement with the Board upon notice of being the successful Bidder may be subject to future bidding constraints by the Board.

Performance surety shall guarantee all conditions as set out in the contract, including proper execution of the work and for all matters for which the successful Bidder is responsible for throughout the two (2) year period of maintenance and warranty.

Any costs associated with performance surety are the responsibility and cost of the Bidder.

Bonds must be submitted through the Bidding System within ten (10) days of receiving the Intent to Award.

4.4. INSURANCE

.1 Proof of WSIB Coverage (Onsite work only)

If the Proponent does not provide a policy endorsement for Employer's Liability and Voluntary Compensation, the Proponent shall submit a valid certificate of WSIB coverage to the Board, with the tender submission and any subsequent policy renewal, referencing this Agreement. The Proponent shall ensure that each Subcontractor complies with the WSIB requirements set out in this Article by obtaining similar types of coverage if the Subcontractor does not provide a policy endorsement for Employer's Liability and Voluntary Compensation.

.2 Insurance (Onsite Construction work only)

The proponent is to reference CCDC2-2008 GC 11.1 Insurance and ensure that this section is adhered to.

.3 General & Vehicle

General and vehicle liability insurance covering incidents of property damage or bodily injury (including death) for owned and non-owned vehicle accidents occurring during the work in this Tender, or actions of the employees of the Awarded Bidder while acting within the scope of their duties as required in this Tender shall be maintained. Verification of current "Good Standing" may be requested.

The inclusive per incident minimum amount of coverage is: Two Million Dollars (\$2,000,000).

5.0 BID EVALUATION

Preference will be given to the lowest compliant bid.

The "lowest bid price" shall be used to determine the lowest compliant bid. Alternate prices, separate prices and any substitutions that may affect the contract price shall not be considered in determining the "lowest bid price".

The Proponent will not be awarded the tender if the Site Supervisor and/or Project Manager identified by the Proponent are not deemed suitable by the Board.

If the Board has a sense that the Proponent with "lowest bid price" has capacity issues, then the Board will meet with the Proponent after the tender closing date and prior to the Board awarding the Tender.

At the meeting the Proponent will present the following in written form:

1. The Proponent's capacity resource plan documents which illustrates how the Proponent determines capacity.
2. The level of capacity the Proponent and its resources would be with the award of the Tender.
3. An evaluation of recent projects that the Proponent has completed, where the Proponent was at equal or greater capacity as it relates to the capacity resources available.

In order for the Proponent's bid to be considered the lowest compliant bid the Proponent will to the Board's satisfaction have presented in written from the information requested.

6.0 BID RESULTS NOTIFICATION

The Board will forward the results notification to <https://wrdsb.bidsandtenders.ca> listing the Awarded Bidder and Bid Price.

7.0 AWARD NOTIFICATION

No shipment is to be made or work to commence until a purchase order, contract, or letter of intent is issued by Procurement Services to the Awarded Bidder.

Construction Projects

For construction projects above \$200,000 the Awarded Bidder may be required to execute a “Canadian Standard Form of Construction Contract to a Stipulated Sum” (revised 2008) CCDC 2, 2008 including amendments thereto as set out in this Tender.

The Awarded Bidder shall execute the said formal contract as called for, within seven (7) working days after notification of acceptance of their Tender or forfeit the amount of Bid Bond enclosed in the Tender.

8.0 POST AWARD

8.1. Bonding (Construction)

Upon receiving the Intent to Award letter, the Bidder is solely responsible for submitting Bonding documents through the Bidding System. Payments to the Awarded Bidder will not be processed without bonding being submitted. Failure to submit bonding within seven (7) working days may result in the cancellation of the contract.

8.2. Purchase Order

For Payment purposes, a Purchase Order shall be generated and issued to the Awarded Bidder(s). The Purchase Order number must appear on all invoices in order to ensure prompt payment.

8.3. Changes

The Board may order changes in the material or work, in writing, with the contract sum being adjusted accordingly. All changes for additional material or work must be agreed upon and submitted in writing to the Board.

9.0 SUBCONTRACTING

9.1. Subcontracting

Subcontracting, beyond the original list of subcontractors submitted with bid submission, of any portion of the work outlined in these specifications will not be permitted without prior written consent of the Board.

If approval is granted, any work undertaken by subcontractors shall be as set forth in this Tender document and the use of subcontractors shall in no way relieve the Awarded Bidder of their responsibilities.

The Board reserves the right to reject a proposed subcontractor for any reasonable cause.

9.2. Assignment

Any business resulting from this Tender call shall not be assigned to any other company (or individual) without prior written approval of the Board.

10.0 FORCE MAJEURE

If Delays in a failure of performance by either party under the Contract shall not constitute default hereunder or give rise to any claim for damages if and to the extent caused by occurrences beyond the control of the party affected, including but not limited to decrees of Government, acts of God, fires, floods, explosions, pandemics, riots, war, rebellion, sabotage and atomic or nuclear incidents, lawful acts of public authorities, or delays caused by common carriers, which cannot reasonably be foreseen or provided against. However, lack of finances, strikes, or other concerted acts by workers, delay or failure arising out to the nature of the work to be done, or from the normal actions of the elements or from any normal difficulties which may be encountered in the performance of the Work, having regard to the nature thereof, shall in no event be deemed to be a cause beyond a party's control. If in the reasonable opinion of either party to this Contract that performance of the Contract is made impossible by force majeure, then either party shall notify the other in writing and the Board shall either terminate the Contract forthwith without any future payments being made or authorize the Vendor to continue performance of the Contract with such adjustments as may be required by the existence of the force majeure and agreed upon by both parties.

11.0 TERMINATION

11.1. Sufficient Cause

The Board reserves the right to terminate any contract Tender purchase order resulting from this Tender call for sufficient cause, such as: non-performance, late deliveries, inferior quality, pricing problems, customer service, etc. Should such action be necessary, the Board would provide written notice to the Awarded Bidder.

11.2. Funding Out

Should the Board fail to appropriate funds to enable payments including multi-year agreements, the Board may cancel the contract without termination charges, provided the Awarded Bidder receive thirty (30) days written notice of such termination from the Board.

12.0 RESULT DISPUTE PROCESS

Subsequent to a debriefing a Proponent may dispute the decision of the Board. The process outlined below is to be followed:

The Proponent is to file in writing their protest with the Manager of Procurement by certified mail, within force 15 business days of the Debriefing. The Protest Notice shall include:

- (i) The name and address of the Proponent.
- (ii) Identification of the RFX.
- (iii) Detailed and factual statement of the grounds for protest.
- (iv) Supporting documentation.
- (v) Desired relief, action ruling.

The Manager of Procurement will respond to the Proponent, by certified mail, within 20 business days of receiving the written notice.

If a resolution cannot be met, the Proponent must contact the Superintendent of Business and Financial Services by certified mail, within 10 business days of receiving the first response from the Manager of Procurement. The decision by the Superintendent of Business and Financial Services will be deemed final and the Proponent will receive written notice within 20 business days.

13.0 RIGHTS OF THE BOARD

In addition to any other express rights or any other rights which may be implied in the circumstances, the Board reserves the right to:

(i) Reject any bid received from a Proponent which is party to any past or existing suits, actions, and litigation proceedings, arbitration's, alternative dispute resolutions, investigations, vendor performance evaluations that are below expectations or claims by or against or otherwise involving the Board and the Proponent. Note: the Awarded Bidder(s) may also be required, at the discretion of the Board, to sign a Certificate in a form satisfactory to the Board confirming that the Awarded Bidder(s) is not associated with any company involved in litigation with the Board.

(ii) make public the names of any or all Proponents;

(iii) request written clarification or the submission of supplementary written information from any Proponent;

(iv) waive formalities and accept Bids which substantially comply with the requirements of this tender;

(v) verify with any Proponent or with a third party any information set out in a Bid;

(vi) disqualify any Proponent whose Bid contains misrepresentations or any other inaccurate or misleading information;

(vii) disqualify any Proponent or the Bid of any Proponent who has engaged in conduct prohibited by this tender;

(viii) make changes, including substantial changes, to this tender provided that those changes are issued by way of addenda in the manner set out in this tender;

(ix) accept or reject a Bid if only one Bid is submitted;

(x) accept or reject the lowest or any bid not necessarily accepted by the Board;

(xi) select any Proponent other than the Proponent whose Bid reflects the highest compliant score to the Board;

(xii) cancel this TENDER process at any stage;

(xiii) cancel this TENDER process at any stage and issue a new TENDER for the same or similar services with a minimum substantial change in scope of 10%;

- (xiv) accept any Bid in whole or in part;
- (xv) discuss with any Proponent different or additional terms to those contemplated in this tender or in any Proponent's Bid;
- (xvi) reject any or all Bids in its absolute discretion;
- (xvii) negotiate with the leading Proponent prior to award;
- (xviii) evaluate and accept Proponent's alternatives whereby possible efficiencies may prove to be advantageous to the Board;
- (xix) to all Bids, responses, inquiries, or other related correspondence in reference to this tender , and all reports, charts, and other documentation submitted by Proponents shall become the property of the Waterloo Region District School the Board when received; and the Board shall not be liable for any expenses, costs associated with the preparation and submittal of any proposal(s), or for any travel and or per diem costs that are incurred including any or all product samples that may be requested during the evaluation stage of the proposal, losses or any direct or indirect damages incurred or suffered by any Proponent or any third party resulting from the Board exercising any of its rights under this TENDER or exercising any rights, which may be implied in the circumstances.

By submitting its Bid, the Proponent authorizes the collection by the Board of the information set out under (v), (vi) and (vii) in the manner contemplated in those subparagraphs.

13.1. Volume and Exclusivity

The Board makes no guarantee of the value or volume of work to be assigned to the Awarded Bidder. Any agreement executed with the Awarded Bidder may not be an exclusive contract for the provision of the described goods/services.

END OF SECTION

**SUPPLEMENTARY CONDITIONS & AMENDMENTS TO STANDARD CONSTRUCTION
DOCUMENT CCDC2 -2008 STIPULATED PRICE SUBCONTRACT**

(the “Supplementary Conditions”)

**AGREEMENT, DEFINITIONS, AND
GENERAL CONDITIONS**

The Standard Construction Document CCDC 2 2008 for a Stipulated Price Contract, English version, consisting of the Agreement Between *Owner* and Contractor, Definitions and General Conditions of the Stipulated Price Contract, Parts 1 to 12 inclusive, governing same, together with the changes with the new *Construction Act* is hereby made part of these *Contract Documents*, with the following amendments, additions and modifications:

AGREEMENT BETWEEN OWNER AND CONTRACTOR

SC1 ARTICLE A-3 – CONTRACT DOCUMENTS

SC1.1	3.1	<p>Add the following documents to the list of <i>Contract Documents</i> in Article A-3.1:</p> <ul style="list-style-type: none"> • Waterloo Region District School Board’s Supplementary Conditions & Amendments to Standard Construction Document CCDC2 -2008 Stipulated Price Subcontract, November 2020 Version, including any Special Supplementary Conditions listed in Appendix 2 thereto • <i>Drawings</i> • <i>Specifications</i> • Performance Bond (Form 32 -Performance Bond under Section 85.1 of the <i>Act</i>) • Labour and Material Payment Bond (Form 31 – Labour and Material Payment Bond under Section 85.1 of the <i>Act</i>) [NTD: Remove documents and references if not applicable.]
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SC2 ARTICLE A-5 – PAYMENT

SC2.1	5.1	<p>In Article A-5.1 after the word “Subject to” <u>insert</u> the words “GC 13.2 and”</p> <p>-and-</p> <p><u>delete</u> the words “and, where such legislation or regulations do not exist or apply, subject to a holdback of ten + two percent (10+2%)” and <u>replace</u> them with “and the <i>Owner’s</i> right to issue <i>Notices of Non-Payment.</i>”</p>
SC2.2	5.1.1	<p><u>Delete</u> the words “amount certified by the <i>Consultant</i> together” in subparagraph 5.1.1 and <u>replace</u> them with “allowable amount set out in a <i>Proper Invoice</i>”.</p>

SC2.3	5.1.2	<p><u>Delete</u> subparagraph 5.1.2 in its entirety and <u>replace</u> it with the following:</p> <p>“.2 upon <i>Substantial Performance of the Work</i>, as certified by the <i>Consultant</i>, and on the 61st day after the publication of the certificate of <i>Substantial Performance of the Work</i> in accordance with the <i>Act</i>, there being no claims for lien registered against the title to the <i>Place of the Work</i>, pay the <i>Contractor</i> the unpaid balance of the holdback together with such <i>Value Added Taxes</i> as may be applicable to such payment, less any amount stated in the <i>Owner’s Notice of Non-Payment</i>,”</p>
SC2.4	5.1.3	<p><u>Delete</u> subparagraph 5.1.3 in its entirety and <u>replace</u> it with the following:</p> <p>“.3 upon receipt of the final certificate for payment from the <i>Consultant</i>, and on the 61st day after the date on which the <i>Contractor</i> completes the <i>Work</i>, there being no claims for lien registered against the title to the <i>Place of the Work</i>, pay the <i>Contractor</i> the unpaid balance of the <i>Contract Price</i> together with such <i>Value Added Taxes</i> as may be applicable to such payment , and”</p>
SC2.5	5.3.1	<p><u>Delete</u> paragraph 5.3.1 in its entirety and <u>replace</u> it with the following:</p> <p>“.1 Should either party fail to make payments as they become due under the terms of the <i>Contract</i> or in an award by arbitration or court, interest shall also become due and payable on such unpaid amounts at the prejudgment interest rate prescribed by the <i>Courts of Justice Act</i> (Ontario), as it may change from time to time.”</p>

SC3 *NEW* ARTICLE A-9 – CONFLICT OF INTEREST

SC3.1	Article A-9	<p><u>Add</u> new ARTICLE A-9 CONFLICT OF INTEREST as follows:</p> <p>“ARTICLE A-9 CONFLICT OF INTEREST</p> <p>9.1 The <i>Contractor</i>, <i>Subcontractors</i> and <i>Suppliers</i> and any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall not engage in any activity or provide any services where such activity or the provision of such services creates a conflict of interest (actually or potentially, in the sole opinion of the <i>Owner</i>) with the provision</p>
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		<p>of the <i>Work</i> pursuant to the <i>Contract</i>. The <i>Contractor</i> acknowledges and agrees that a conflict of interest, as described in this Article A-9, includes, but is not limited to, the use of <i>Confidential Information</i> where the <i>Owner</i> has not specifically authorized such use.</p> <p>9.2 The <i>Contractor</i> shall disclose to the <i>Owner</i>, in writing, without delay, any actual or potential situation that may be reasonably interpreted as either a conflict of interest or a potential conflict of interest, including the retention of any <i>Subcontractor</i> or <i>Supplier</i> that is directly or indirectly affiliated with or related to the <i>Contractor</i>.</p> <p>9.3 The <i>Contractor</i> covenants and agrees that it will not hire or retain the services of any employee or previous employee of the <i>Owner</i> where to do so constitutes a breach by such employee or previous employee of the <i>Owner's</i> conflict of interest policy, as it may be amended from time to time, until after completion of the <i>Work</i> under the <i>Contract</i>.</p> <p>9.4 It is of the essence of the <i>Contract</i> that the <i>Owner</i> shall not have direct or indirect liability to any <i>Subcontractor</i> or <i>Supplier</i>, and that the <i>Owner</i> relies on the maintenance of an arm's-length relationship between the <i>Contractor</i> and its <i>Subcontractors</i> and <i>Suppliers</i>. Consistent with this fundamental term of the <i>Contract</i>, the <i>Contractor</i> will not enter into any agreement or understanding with any <i>Subcontractor</i> or <i>Supplier</i>, whether as part of any contract or any written or oral collateral agreement, pursuant to which the parties thereto agree to cooperate in the presentation of a claim for payment against the <i>Owner</i>, directly or through the <i>Contractor</i>, where such claim is, in whole or in part, in respect of a disputed claim by the <i>Subcontractor</i> or <i>Supplier</i> against the <i>Contractor</i>, where the payment to the <i>Subcontractor</i> or <i>Supplier</i> by the <i>Contractor</i> is agreed to be conditional or contingent on the ability to recover those amounts or a portion thereof from the <i>Owner</i>, failing which the <i>Contractor</i> shall be saved harmless from all or a portion of those claims. The <i>Contractor</i> acknowledges that any such agreement would undermine the required arm's-length relationship and constitute a conflict of interest. For greater certainty, the <i>Contractor</i> shall only be entitled to advance claims against the <i>Owner</i> for amounts pertaining to <i>Subcontractor</i> or <i>Supplier</i> claims where the <i>Contractor</i> has actually paid or unconditionally acknowledged liability for those claims or where those claims are the subject of litigation or binding arbitration between the <i>Subcontractor</i> or <i>Supplier</i> and</p>
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		<p>the <i>Contractor</i> has been found liable for those claims.</p> <p>9.5 Notwithstanding paragraph 7.1.2 of GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, OR TERMINATE THE CONTRACT, a breach of this Article A-9 by the <i>Contractor</i>, any of the <i>Subcontractors</i>, or any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall entitle the <i>Owner</i> to terminate the <i>Contract</i>, in addition to any other rights and remedies that the <i>Owner</i> has in the <i>Contract</i>, in law, or in equity."</p>
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SC4 *NEW* ARTICLE A-10 TIME OF THE ESSENCE

SC4.1	Article A-10	<p><u>Add</u> the following new Article A-10 as follows:</p> <p>"ARTICLE A-10 TIME OF THE ESSENCE</p> <p>10.1 It is agreed that one of the reasons the <i>Contractor</i> was selected by the <i>Owner</i> for this <i>Contract</i> is the <i>Contractor's</i> representation and covenant that it will attain <i>Substantial Performance of the Work</i> within the <i>Contract Time</i> stated in Article A-1 of this <i>Contract</i>.</p> <p>10.2 The <i>Contractor</i> acknowledges and agrees that it is responsible to marshal its resources and those of its <i>Subcontractors and Suppliers</i> in a manner which will permit timely attainment of the <i>Substantial Performance of the Work</i>. The <i>Contractor</i> agrees that time is of the essence of this <i>Contract</i>."</p>
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SC5 DEFINITIONS

SC5.1	Consultant	<p><u>Amend</u> the definition of "Consultant" by <u>adding</u> the following to the end of the definition:</p> <p>"For the purposes of the <i>Contract</i>, the terms "<i>Consultant</i>", "<i>Architect</i>" and "<i>Engineer</i>" shall be considered synonymous."</p>
SC5.2	Act	<p><u>Add</u> the following definition:</p> <p>"27. Act</p>

		<p><i>Act</i> means the <i>Construction Act</i>, R.S.O. 1990, c. C.30, as amended, including all regulations passed under it that are enforceable as of the date of execution of this <i>Contract</i>. For certainty, the first procurement process for the <i>Project</i> (i.e. the “improvement” as that term is defined in the <i>Act</i>) was commenced on or after October 1, 2019).”</p>
SC5.3	Adjudication	<p><u>Add</u> the following definition:</p> <p>“28. Adjudication</p> <p><i>Adjudication</i> means construction dispute interim adjudication as defined under the <i>Act</i>.”</p>
SC5.4	Confidential Information	<p><u>Add</u> the following definition:</p> <p>“29. Confidential Information</p> <p><i>Confidential Information</i> means all the information or material of the <i>Owner</i> that is of a proprietary or confidential nature, whether it is identified as proprietary or confidential or not, including but not limited to information and material of every kind and description (such as drawings and move-lists) which is communicated to or comes into the possession or control of the <i>Contractor</i> at any time, but <i>Confidential Information</i> shall not include information that:</p> <ol style="list-style-type: none"> .1 is or becomes generally available to the public without fault or breach on the part of the <i>Contractor</i>, including without limitation breach of any duty of confidentiality owed by the <i>Contractor</i> to the <i>Owner</i> or to any third party, but only after that information becomes generally available to the public; .2 the <i>Contractor</i> can demonstrate to have been rightfully obtained by the <i>Contractor</i> from a third party who had the right to transfer or disclose it to the <i>Contractor</i> free of any obligation of confidence; .3 the <i>Contractor</i> can demonstrate to have been rightfully known to or in the possession of the <i>Contractor</i> at the time of disclosure, free of any obligation of confidence; or .4 is independently developed by the <i>Contractor</i> without use of any <i>Confidential Information</i>.”
SC5.5	Construction Schedule	<p><u>Add</u> the following definition:</p> <p>“30. Construction Schedule or construction schedule</p> <p><i>Construction Schedule</i> means the schedule for the performance</p>

		of the <i>Work</i> provided by the <i>Contractor</i> pursuant to GC 3.5, including any amendments to the <i>Construction Schedule</i> made pursuant to the <i>Contract Documents</i> .”
SC5.6	Construction Schedule Update	<p>Add the following definition:</p> <p>“31. Construction Schedule Update</p> <p><i>Construction Schedule Update</i> means an update to the <i>Construction Schedule</i> by the <i>Contractor</i> using Microsoft Project (or other approved scheduling software) that accurately depicts the progress of the <i>Work</i> relative to the critical path established in the <i>Construction Schedule</i> approved in GC 3.5.1 (or any approved successor <i>Construction Schedule</i>), aligns with the currently approved date for <i>Substantial Performance of the Work</i>, shows up-to-date projected major activity sequences and durations, and shows any changes or delays in anticipated completion dates of major activities in the <i>Work</i> relative to the last <i>Construction Schedule Update</i>, and includes the following minimum deliverables:</p> <ul style="list-style-type: none"> (a) a record version of the updated <i>Construction Schedule</i> in .pdf format; (b) an editable copy of the updated <i>Construction Schedule</i> in native format (e.g. .mpp format for Microsoft Project).”
SC5.7	Direct Costs	<p>Add the following definition:</p> <p>“32. Direct Costs</p> <p><i>Direct Costs</i> are the reasonable costs of performing the contract or subcontract including costs related to the additional supply of services or materials (including equipment rentals), insurance and surety bond premiums, and costs resulting from seasonal conditions, that would not have been incurred, but do not include indirect damages suffered, such as loss of profit, productivity or opportunity, or any head office overhead costs.”</p>
SC5.8	EFT	<p>Add the following definition:</p> <p>“33. EFT</p> <p><i>EFT</i> has the definition given to it under GC 5.3.2.”</p>
SC5.9	Force Majeure	Add the following definition:

		<p>“34. Force Majeure</p> <p><i>Force Majeure</i> means any cause, beyond either parties’ control, other than bankruptcy or insolvency, which prevents the performance by a party, or both, of any of their respective obligations under the <i>Contract</i> and the event of <i>Force Majeure</i> did not arise from a party’s default and could not be avoided or mitigated by the exercise of reasonable effort or foresight. <i>Force Majeure</i> includes: <i>Labour Disputes</i>; fire; unusual delay by common carriers or unavoidable casualties; delays in obtaining permits or licenses; civil disturbance; emergency acts, orders, legislation, regulations or directives of any government or other public authority; acts of a public enemy; war; riot; sabotage; blockage embargo; lightning; earthquake; adverse weather conditions but only if substantially beyond the weather norms of the <i>Place of the Work</i>; acts of God; or declared epidemic or pandemic outbreak or other public health emergency (e.g. SARS, COVID-19).”</p>
SC5.10	Install	<p>Add the following definition:</p> <p>“35. Install</p> <p><i>Install</i> means install and connect. <i>Install</i> has this meaning whether or not the first letter is capitalized.”</p>
SC5.11	Labour Dispute	<p>Add the following definition:</p> <p>“36. Labour Dispute</p> <p><i>Labour Dispute</i> means any lawful or unlawful labour problems, work stoppage, labour disruption, strike, job action, slow down, lock-outs, picketing, refusal to work or continue to work, refusal to supply materials, cessation or work or other labour controversy which does, or might, affect the <i>Work</i>.”</p>
SC5.12	Notice of Non-Payment	<p>Add the following definition:</p> <p>“37. Notice of Non-Payment</p> <p><i>Notice of Non-Payment</i> means a notice of non-payment of holdback (Form 6) or a notice of non-payment (Form 1.1) under the <i>Act</i>, as applicable to the circumstances.”</p>
SC5.13	OHSA	<p>Add the following definition:</p> <p>“38. OHSA</p> <p><i>OHSA</i> means the <i>Occupational Health and Safety Act</i>, R.S.O.</p>

		1990, c. O.1, as amended, including all regulations thereto.”
SC5.14	Overhead	<p>Add the following definition:</p> <p>“39. Overhead</p> <p><i>Overhead</i> means all site and head office operations and facilities, all site and head office administration and supervision; all duties and taxes for permits and licenses required by the authorities having jurisdiction at the <i>Place of the Work</i>; all requirements of Division 1, including but not limited to submittals, warranty, quality control, calculations, testing and inspections; meals and accommodations; and, tools, expendables and clean-up costs.”</p>
SC5.15	Payment Period	<p>Add the following definition:</p> <p>“40. Payment Period</p> <p><i>Payment Period</i> has the definition given to it under GC 5.2.1.”</p>
SC5.16	Pre-Invoice Submission Meeting	<p>Add the following definition:</p> <p>“41. Pre-Invoice Submission Meeting</p> <p><i>Pre-Invoice Submission Meeting</i> has the definition given to it under GC 5.2.1.”</p>
SC5.17	Proper Invoice	<p>Add the following definition:</p> <p>“42. Proper Invoice</p> <p><i>Proper Invoice</i> means a “proper invoice” as that term is defined in Section 6.1 of the <i>Act</i>, including the minimum requirements set out in Appendix “1” of the Supplementary Conditions.”</p>
SC5.18	Proper Invoice Submission Date	<p>Add the following definition:</p> <p>“43. Proper Invoice Submission Date</p> <p><i>Proper Invoice Submission Date</i> has the definition given to it under GC 5.2.2.1.”</p>
SC5.19	Request for Information (RFI)	<p>Add the following definition:</p> <p>“44. Request for Information (RFI)</p> <p><i>Request for Information</i> or <i>RFI</i> means written documentation sent by the <i>Contractor</i> to the <i>Owner</i> or to the <i>Owner’s</i> representative or the <i>Consultant</i> requesting written clarification(s) and/or interpretation(s) of the <i>Drawings</i> and/or</p>

		<i>Specifications, Contract requirements and/or other pertinent information required to complete the Work of the Contract without applying for a change or changes to the Work.</i>

GENERAL CONDITIONS OF THE STIPULATED PRICE CONTRACT

Where a General Condition or paragraph of the General Conditions of the *Contract* is deleted by these amendments, the numbering of the remaining General Conditions or paragraphs shall remain unchanged, unless stated otherwise herein, and the numbering of the deleted item will be retained, unused.

PART 1 GENERAL PROVISIONS

SC6 GC 1.1 CONTRACT DOCUMENTS

SC6.1	1.1.6	<p><u>Add</u> the following to the end of paragraph 1.1.6:</p> <p>“The <i>Specifications</i> are divided into divisions and sections for convenience but shall be read as a whole and neither such division nor anything else contained in the <i>Contract Documents</i> will be construed to place responsibility on the <i>Owner</i> or the <i>Consultant</i> to settle disputes among the <i>Subcontractors</i> and <i>Suppliers</i> with respect to such divisions. The <i>Drawings</i> are, in part, diagrammatic and are intended to convey the scope of the <i>Work</i> and indicate general and appropriate locations, arrangements and sizes of fixtures, equipment and outlets. The <i>Contractor</i> shall obtain more accurate information about the locations, arrangements and sizes from study and coordination of the <i>Drawings</i>, including <i>Shop Drawings</i> and shall become familiar with conditions and spaces affecting those matters before proceedings with the <i>Work</i>. Where site conditions require reasonable minor changes where the change requires only the additional labour of one half hour or less, the <i>Contractor</i> shall make such changes at no additional cost to the <i>Owner</i>. Similarly, where known conditions or existing conditions interfere with new installation and require relocation, the <i>Contractor</i> shall include such relocation in the <i>Work</i>. The <i>Contractor</i> shall arrange and install fixtures and equipment in such a way as to conserve as much headroom and space as possible. The schedules are those portions of the <i>Contact Documents</i>, wherever located and whenever issued, which compile information of similar content and may consist of drawings, tables and/or lists.”</p>
SC6.2	1.1.7.1	<u>Delete</u> paragraph 1.1.7.1 in its entirety and <u>replace</u> it with the

		<p>following:</p> <p>“.1 the order of priority of documents, from highest to lowest, shall be:</p> <ul style="list-style-type: none"> - the Supplementary Conditions; - the Agreement between the <i>Owner</i> and the <i>Contractor</i>, - the Definitions - the General Conditions, - Division 1 of the <i>Specifications</i>, - technical <i>Specifications</i>, - material and finishing schedules - the <i>Drawings</i>.”
SC6.3	1.1.7.5 to 1.1.7.8	<p><u>Add</u> new subparagraphs 1.1.7.5, 1.1.7.6, 1.1.7.7 and 1.1.7.8 as follows:</p> <p>“1.1.7.5 Noted materials and annotations on the <i>Drawings</i> shall govern over the graphic representation of the <i>Drawings</i>.</p> <p>1.1.7.6 Finishes in the room finish schedules shall govern over those shown on the <i>Drawings</i>.</p> <p>1.1.7.7 Architectural drawings shall have precedence over structural, plumbing, mechanical, electrical and landscape drawings insofar as outlining, determining and interpreting conflicts over the required design intent of all architectural layouts and architectural elements of construction, it being understood that the integrity and installation of the systems designed by the <i>Consultant</i> or its sub-<i>Consultants</i> are to remain with each of the applicable drawing disciplines.</p> <p>1.1.7.8 Should reference standards contained in the <i>Specifications</i> conflict with the <i>Specifications</i>, the <i>Specifications</i> shall govern. Should reference standards and <i>Specifications</i> conflict with each other or if certain requirements of the <i>Specifications</i> conflict with other requirements of the <i>Specifications</i>, the more stringent requirements shall govern.”</p>
SC6.4	1.1.8	<p><u>Delete</u> paragraph 1.1.8 in its entirety and <u>replace</u> it with the following:</p> <p>“1.1.8 The <i>Consultant</i>, on behalf of the <i>Owner</i> shall provide the <i>Contractor</i> without charge, PDF copies of the <i>Contract Documents</i>.</p>

SC7 GC 1.3 RIGHTS AND REMEDIES

SC7.1	1.3.2	In paragraph 1.3.2 <u>delete</u> the word “No” from the beginning of the paragraph and <u>replace</u> it with the words: “Except with respect to the requirements set out in paragraphs 2.2.13, 6.4.1, 6.5.4, 6.6.1 and 8.2.2, no...”
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SC8 *NEW* GC 1.5 EXAMINATION OF DOCUMENTS AND SITE

SC8.1	1.5	<p>Add new GC 1.5 – EXAMINATION OF DOCUMENTS AND SITE as follows:</p> <p>“GC 1.5 EXAMINATION OF DOCUMENTS AND SITE</p> <p>1.5.1 The <i>Contractor</i> declares and represents that in tendering for the <i>Work</i>, and in entering into a <i>Contract</i> with the <i>Owner</i> for the performance of the <i>Work</i>, it has investigated for itself the character of the <i>Work</i> to be done, based on information generally available from a visit to the <i>Place of the Work</i> and to the standard set out under GC 3.14.1 The <i>Contractor</i> has assumed and does hereby assume all risk of known conditions now existing or arising in the course of the <i>Work</i> which might or could make the <i>Work</i>, or any items thereof more expensive in character, or more onerous to fulfil, than was contemplated or known when the tender was made or the <i>Contract</i> signed.</p> <p>1.5.2 The <i>Contractor</i> also declares that in tendering for the <i>Work</i> and in entering into this <i>Contract</i>, the <i>Contractor</i> did not and does not rely upon information furnished by the <i>Owner</i> or any of its agents or servants respecting the nature or confirmation of the ground at the site of the <i>Work</i>, or the location, character, quality or quantity of the materials to be removed or to be employed in the construction of <i>Work</i>, or the character of the construction machinery and equipment or facilities needed to perform the <i>Work</i>, or the general and local performance of the work under the <i>Contract</i> and expressly waives and releases the <i>Owner</i> from all claims with respect to the said information with respect to the <i>Work</i>.</p> <p>1.5.3 <i>Contractor</i> further represents, warrants and acknowledges that it considered and took into account in the <i>Contract Price</i> all reasonably known impacts and restrictions arising from the COVID-19 pandemic, including without limitation corresponding legislative changes that may impact</p>
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		performance of the <i>Project</i> , various weather conditions that may affect the <i>Work</i> , the availability of supplies and labour or other conditions or risks that the <i>Contractor</i> knew about or reasonably ought to have known about prior to the date of the <i>Contract</i> .”
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PART 2 ADMINISTRATION OF THE CONTRACT

SC9 GC 2.2 ROLE OF THE CONSULTANT

SC9.1	2.2.4	<u>Delete</u> paragraph 2.2.4 in its entirety.
SC9.2	2.2.5	<u>Delete</u> paragraph 2.2.5 and <u>replace</u> it with the following: “2.2.5 Upon receipt of an application for payment that satisfies the requirement of a <i>Proper Invoice</i> , based on the <i>Consultant's</i> observations and evaluation of the <i>Contractor's</i> application for payment, the <i>Consultant</i> will determine the amounts owing to the <i>Contractor</i> under the <i>Contract</i> and will issue certificates for payment as provided in Article A-5 - PAYMENT, GC 5.3 PROGRESS PAYMENT, GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK, and GC 5.7 - FINAL PAYMENT. If the <i>Consultant</i> determines that the amount payable to the <i>Contractor</i> differs from the amount stated in a <i>Proper Invoice</i> , the <i>Consultant</i> shall notify the <i>Owner</i> as provided in GC 5.3.1.2 and prepare a draft of the applicable <i>Notice of Non-Payment</i> for the amount in dispute.”
SC9.3	2.2.7	<u>Delete</u> the words “Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER”.
SC9.4	2.2.13	At paragraph 2.2.13, <u>insert</u> the following at end of that paragraph: “If, in the opinion of the <i>Contractor</i> , the <i>Supplemental Instruction</i> involves an adjustment in the <i>Contract Price</i> or in the <i>Contract Time</i> , it shall, within ten (10) <i>Working Days</i> of receipt of a <i>Supplemental Instruction</i> , provide the <i>Consultant</i> with a notice in writing to that effect. Failure to provide written notification within the time stipulated in this paragraph 2.2.13 shall be deemed an acceptance of the <i>Supplemental Instruction</i> by the <i>Contractor</i> , without any adjustment in the <i>Contract Price</i> or <i>Contract Time</i> .”

SC10 GC 2.3 REVIEW AND INSPECTION OF THE WORK

SC10.1	2.3.2	<u>Amend</u> paragraph 2.3.2 by <u>adding</u> the words “and <i>Owner</i> ” after the words “ <i>Consultant</i> ” in the second and third lines.
SC10.2	2.3.3	<u>Delete</u> paragraph 2.3.3 in its entirety and <u>replace</u> it with the following: “2.3.3 The <i>Contractor</i> shall furnish promptly two copies to the <i>Consultant</i> and one copy to the <i>Owner</i> of all certificates and inspection reports relating to the <i>Work</i> .”
SC10.3	2.3.4	In paragraph 2.3.4 <u>add</u> the word “review” after the word “inspections” in the first and second lines of paragraph 2.3.4.
SC10.4	2.3.5	In paragraph 2.3.5 in the first line after the word “ <i>Consultant</i> ”, <u>add</u> “or the <i>Owner</i> ”.
SC10.5	2.3.8	<u>Add</u> a new paragraph 2.3.8 as follows: “2.3.8 The <i>Consultant</i> will conduct periodic reviews of the <i>Work</i> in progress, to determine general conformance with the requirements of the <i>Contract Documents</i> . Such reviews, or lack thereof, shall not give rise to any claims by the <i>Contractor</i> in connection with construction means, methods, techniques, sequences and procedures, nor in connection with construction safety at the <i>Place of Work</i> , responsibility for which belongs exclusively to the <i>Contractor</i> .”

SC11 GC 2.4 DEFECTIVE WORK

SC11.1	2.4.1	<u>Amend</u> GC 2.4.1 by inserting “, the <i>Owner</i> and/or its agent” in the first sentence following “rejected by the <i>Consultant</i> ”.
SC11.2	2.4.1.1 to 2.4.1.2	<u>Add</u> new paragraphs 2.4.1.1 and 2.4.1.2 as follows: “2.4.1.1 The <i>Contractor</i> shall rectify, in a manner acceptable to the <i>Consultant</i> and to the <i>Owner through the Consultant</i> all defective work and deficiencies throughout the <i>Work</i> , whether or not they are specifically identified by the <i>Consultant</i> . 2.4.1.2 The <i>Contractor</i> shall prioritize the correction of any defective work, which, in the sole discretion of the <i>Owner through the Consultant</i> , adversely affects the day to day operations of the <i>Owner</i> or which, in the sole discretion of the <i>Consultant</i> , adversely affects the progress of the <i>Work</i> .”

SC11.3	2.4.2	<p><u>Delete</u> paragraph 2.4.2 in its entirety and <u>replace</u> it with the following:</p> <p>“2.4.2 The <i>Contractor</i> shall promptly pay the <i>Owner</i> for costs incurred by the <i>Owner</i>, the <i>Owner’s</i> own forces or the <i>Owner’s</i> other contractors, for work destroyed or damaged or any alterations necessitated by the <i>Contractor’s</i> removal, replacement or re-execution of defective work.”</p>
SC11.4	2.4.4	<p><u>Add</u> new paragraph 2.4.4 as follows:</p> <p>“2.4.4 Neither acceptance of the <i>Work</i> by the <i>Consultant</i> or the <i>Owner</i>, nor any failure by the <i>Consultant</i> or the <i>Owner</i> to identify, observe or warn of defective <i>Work</i> or any deficiency in the <i>Work</i> shall relieve the <i>Contractor</i> from the sole responsibility for rectifying such defect or deficiency at the <i>Contractor’s</i> sole cost, even where such failure to identify, observe or warn is negligent.”</p>

PART 3 EXECUTION OF THE WORK

SC12 GC 3.1 CONTROL OF THE WORK

SC12.1	3.1.2	<p>Amend paragraph 3.1.2 by <u>inserting</u> the words “Construction Schedule” after the word “sequences”.</p>
SC12.2	3.1.3 & 3.1.4	<p><u>Add</u> new paragraphs 3.1.3 and 3.1.4 as follows:</p> <p>“3.1.3 Prior to commencing individual procurement, fabrication and construction activities, the <i>Contractor</i> shall verify at the <i>Place of the Work</i>, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the <i>Work</i> and shall further carefully compare such field measurements and conditions with the requirements of the <i>Contract Documents</i>. Where dimensions are not included or exact locations are not apparent, the <i>Contractor</i> shall immediately notify the <i>Consultant</i> in writing and obtain written instructions from the <i>Consultant</i> before proceedings with any part of the affected <i>Work</i>.</p> <p>3.1.4 Notwithstanding the provisions of paragraphs 3.1.1 and 3.1.2, the <i>Owner</i> shall have access to the site at all times to monitor all aspects of construction. Such access shall in no circumstances affect the obligations of the <i>Contractor</i> to fulfill its contractual obligations.”</p>

SC13 GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

SC13.1	3.2.2.1	Delete paragraph 3.2.2.1 in its entirety.
SC13.2	3.2.2.2	Delete paragraph 3.2.2.2 in its entirety.
SC13.3	3.2.2.3	Delete paragraph 3.2.2.3 in its entirety.
SC13.4	3.2.2.4	Delete paragraph 3.2.2.4 in its entirety.
SC13.5	3.2.3.2	Delete paragraph 3.2.3.2 and <u>replace</u> it with the following: “.2 co-ordinate and schedule the activities and work of other contractors and the <i>Owner's</i> own forces with the <i>Work</i> of the <i>Contractor</i> and connect as specified or shown in the <i>Contract Documents</i> .”
SC13.6	3.2.3.4	Add new paragraph 3.2.3.4 as follows: “.4 Subject to GC 9.4 CONSTRUCTION SAFETY, for the <i>Owner's</i> own forces and for other contractors, assume overall responsibility for compliance with all aspects of the applicable health and safety legislation in force at the <i>Place of the Work</i> , including all of the responsibilities of the “constructor”, pursuant to the <i>OHSA</i> .”

SC14 GC 3.3 TEMPORARY WORK

SC14.1	3.3.2	In paragraph 3.3.2, in the second line after the words “where required by law”, insert “or by the <i>Consultant</i> ”.
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SC15 GC 3.4 DOCUMENT REVIEW

SC15.1	3.4.1	Delete paragraph 3.4.1 in its entirety and <u>replace</u> it with the following: “3.4.1 The <i>Contractor</i> shall review the <i>Contract Documents</i> and shall report promptly to the <i>Consultant</i> any error, inconsistency, or omission the <i>Contractor</i> may discover. Such review by the <i>Contractor</i> shall be undertaken with the standard of care described in paragraph 3.14.1 of the <i>Contract</i> . Except for its obligation to make such review and report the result, the <i>Contractor</i> does not assume any responsibility to the <i>Owner</i> or to the <i>Consultant</i> for the accuracy of the <i>Contract Documents</i> . Provided it has exercised the degree of care and skill described in this paragraph 3.4.1, the <i>Contractor</i> shall not be liable for damage or costs resulting from such errors,
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		inconsistencies, or omissions in the <i>Contract Documents</i> , which the <i>Contractor</i> could not reasonably have discovered through the exercise of the required standard of care.”
SC15.2	3.4.2 & 3.4.3	<p>Add new paragraphs 3.4.2 and 3.4.3 as follows:</p> <p>“3.4.2 If, at any time, the <i>Contractor</i> finds errors, inconsistencies, or omissions in the <i>Contract Documents</i> or has any doubt as to the meaning or intent of any part thereof, including laying out of the <i>Work</i>, the <i>Contractor</i> shall immediately notify the <i>Consultant</i>, and request instructions, a <i>Supplemental Instruction</i>, <i>Change Order</i>, or <i>Change Directive</i>, as the case may require, and the <i>Contractor</i> shall not proceed with the work affected until the <i>Contractor</i> has received such instructions, a <i>Supplemental Instruction</i>, <i>Change Order</i> or <i>Change Directive</i>. Neither the <i>Owner</i> nor the <i>Consultant</i> will be responsible for the consequences of any action of the <i>Contractor</i> based on oral instructions.</p> <p>3.4.3 Errors, inconsistencies and/or omissions in the <i>Drawings</i> and/or <i>Specifications</i> which do not allow completion of the <i>Work</i> of the <i>Contract</i> shall be brought to the <i>Consultant’s</i> attention prior to the execution of the <i>Contract</i> by means of an <i>RFI</i>.”</p>

SC16 GC 3.5 CONSTRUCTION SCHEDULE

SC16.1	3.5.1	<p>Delete paragraph 3.5.1 in its entirety and <u>replace</u> with the following:</p> <p>“3.5.1 The <i>Contractor</i> shall:</p> <p>.1 within five (5) calendar days of receiving written confirmation of the award of the <i>Contract</i>, prepare and submit to the <i>Owner</i> and the <i>Consultant</i> for their review and approval, a construction schedule in the format indicated below that indicates the timing of the activities of the <i>Work</i> and provides sufficient detail of the critical events and their inter-relationship to demonstrate the <i>Work</i> will be performed in conformity with the <i>Contract Time</i> and in accordance with the <i>Contract Documents</i>. Such schedule is to include a delivery schedule for <i>Products</i> whose delivery is critical to the schedule for the <i>Work</i> or are required by the <i>Contract</i> to be included in a <i>Products</i> delivery schedule. The <i>Contractor</i> shall employ construction scheduling software, being the latest version</p>
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		<p>of "Microsoft Project", that permits the progress of the <i>Work</i> to be monitored in relation to the critical path established in the schedule. The <i>Contractor</i> shall provide such schedule and any successor or revised schedules in both electronic format and hard copy. Once accepted by the <i>Owner</i> and the <i>Consultant</i>, the construction schedule submitted by the <i>Contractor</i> shall become the baseline "Construction Schedule";</p> <p>.2 provide the expertise and resources, such resources including manpower and equipment, as are necessary on a best efforts basis to maintain progress under the accepted baseline <i>Construction Schedule</i> or revised construction schedule accepted by the <i>Owner</i> pursuant to GC 3.5 CONSTRUCTION SCHEDULE, which includes without limitation, the <i>Contractor's</i> use of all possible and, if necessary, extraordinary measures, to bring the progress of the <i>Work</i> into compliance with the <i>Construction Schedule</i>, such as (i) increasing the presence of its own forces at the <i>Place of the Work</i>; (ii) directing any <i>Subcontractors</i> or <i>Suppliers</i> to increase their labour forces and equipment; (iii) working overtime and extra shifts; and (iv) providing any additional supervision and coordination of the <i>Project</i>, all at the <i>Contractor's</i> own cost and expense save and except where GC 6.5.1, 6.5.2, or 6.5.3 apply; and,</p> <p>.3 monitor the progress of the <i>Work</i> on a weekly basis relative to the baseline <i>Construction Schedule</i>, or any revised <i>Construction Schedule</i> accepted by the <i>Owner</i> pursuant to GC 3.5 CONSTRUCTION SCHEDULE, deliver a <i>Construction Schedule Update</i> to the <i>Consultant</i> and <i>Owner</i> with each application for payment, at a minimum, or as may be reasonably required by the <i>Consultant</i> and advise the <i>Consultant</i> and the <i>Owner</i> weekly in writing of any variation from the baseline or slippage in the schedule; and,</p> <p>.4 if after applying the expertise and resources required under paragraph 3.5.1.2, the <i>Contractor</i> forms the opinion that the slippage in schedule reported in paragraph 3.5.1.3 cannot be recovered by the <i>Contractor</i>, it shall, in the same notice provided under paragraph 3.5.1.3, indicate to the <i>Consultant</i> if the <i>Contractor</i> intends to apply for an extension of <i>Contract Time</i> as provided in</p>
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		<p>PART 6 —CHANGES IN THE WORK; and,</p> <p>.5 ensure that the <i>Contract Price</i> shall include all costs required to phase or stage the <i>Work</i>.”</p>
SC16.2	3.5.2 & 3.5.3	<p><u>Add</u> new paragraphs 3.5.2 and 3.5.3 as follows:</p> <p>“3.5.2 If, at any time, it should appear to the <i>Owner</i> or the <i>Consultant</i> that the actual progress of the <i>Work</i> is behind schedule or is likely to become behind schedule, or if the <i>Contractor</i> has given notice of such to the <i>Owner</i> or the <i>Consultant</i> pursuant to subparagraph 3.5.1.3, the <i>Contractor</i> shall, either at the request of the <i>Owner</i> or the <i>Consultant</i>, or following giving notice pursuant to subparagraph 3.5.1.3, take appropriate steps to cause the actual progress of the <i>Work</i> to conform to the schedule or minimize the resulting delay. Within five (5) calendar days of the request by the <i>Owner</i> or the <i>Consultant</i> or the notice being given pursuant to subparagraph 3.5.1.3, the <i>Contractor</i> shall produce and present to the <i>Owner</i> and the <i>Consultant</i> a plan demonstrating how the <i>Contractor</i> will achieve the recovery of the last accepted schedule.</p> <p>3.5.3 The <i>Contractor</i> is responsible for performing the <i>Work</i> within the <i>Contract Time</i>. Any schedule submissions revised from the accepted baseline construction schedule or revised schedule accepted by the <i>Owner</i> pursuant to GC 3.5 CONSTRUCTION SCHEDULE, during construction are not deemed to be approved extensions to the <i>Contract Time</i>. All extensions to the <i>Contract Time</i> must be made in accordance with PART 6 – CHANGES IN THE WORK. “</p>

SC17 GC 3.6 SUPERVISION

SC17.1	3.6.1	<p><u>Delete</u> paragraph 3.6.1 in its entirety and <u>replace</u> with the following:</p> <p>“3.6.1 The <i>Contractor</i> shall employ a competent full-time superintendent, acceptable to the <i>Owner</i> and <i>Consultant</i>, who shall be in full time attendance at the <i>Place of Work</i> while the <i>Work</i> is being performed. The superintendent shall not be changed by the <i>Contractor</i> without valid reason which shall be provided in writing and shall not be changed without prior consultation with and agreement by the <i>Owner</i> and the <i>Consultant</i>. The <i>Contractor</i> shall replace the superintendent within 7 <i>Working Days</i> of the <i>Owner</i>’s written notification, if the superintendent’s performance is not acceptable to the <i>Owner</i>.</p>
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		The <i>Contractor</i> shall provide the <i>Owner</i> and the <i>Consultant</i> with the names, addresses and telephone numbers of the superintendent referred to in this paragraph 3.6.1 and other responsible persons who may be contacted for emergency and other reasons during non-working hours.”
SC17.2	3.6.2	<p>Delete paragraph 3.6.2 in its entirety and <u>replace</u> with the following:</p> <p>“3.6.2 The superintendent, and any project manager appointed by the <i>Contractor</i>, shall represent the <i>Contractor</i> at the <i>Place of Work</i> and shall have full authority to act on written instructions given by the <i>Consultant</i> and/or the <i>Owner</i>. Instructions given to the superintendent or the project manager shall be deemed to have been given to the <i>Contractor</i> and both the superintendent and any project manager shall have full authority to act on behalf of the <i>Contractor</i> and bind the <i>Contractor</i> in matters related to the <i>Contract</i>.”</p>
SC17.3	3.6.3 to 3.6.6	<p>Add new paragraph 3.6.3, 3.6.4, 3.6.5 and 3.6.6 as follows:</p> <p>“3.6.3 The <i>Owner</i> may, at any time during the course of the <i>Work</i>, request the replacement of the appointed representative(s). Immediately upon receipt of the request, the <i>Contractor</i> shall make arrangements to appoint an acceptable replacement, which is approved by the <i>Owner</i>.</p> <p>SC40 3.6.4 The supervisory staff assigned to the <i>Project</i> shall also be fully competent to implement efficiently all requirements for scheduling, coordination, field engineering, reviews, inspections and submittals defined in the <i>Specifications</i>, and have a minimum 5 years documented “Superintendent/Project Management” experience.</p> <p>SC41 3.6.5 The <i>Consultant and Owner</i> shall reserve the right to review the record of experience and credentials of supervisory staff assigned to the <i>Project</i> prior to commencement of the <i>Work</i>.</p> <p>SC42 3.6.6 A superintendent assigned to the <i>Work</i> shall be “Gold Seal Certified” as per the Canadian Construction Association; or a superintendent that can demonstrate the requisite experience and success related to the <i>Project</i> to the sole satisfaction of the <i>Owner</i>.”</p>

SC18 GC 3.7 SUBCONTRACTORS AND SUPPLIERS

SC18.1	3.7.1.1	In paragraph 3.7.1.1 <u>add</u> to the end of the second line the words “including any warranties and service agreements which extend beyond the term of the <i>Contract</i> .”
SC18.2	3.7.1.2	In subparagraph 3.7.1.2 after the words “the <i>Contract Documents</i> ” <u>add</u> the words “including any required surety bonding”.
SC18.3	3.7.2	<u>Delete</u> paragraph 3.7.2. in its entirety and <u>replace</u> it with the following: “3.7.2 The substitution of any <i>Subcontractor</i> and/or <i>Suppliers</i> after submission of the <i>Contractor’s</i> bid will not be accepted unless a valid reason is given in writing to and approved by the <i>Owner</i> , whose approval may be arbitrarily withheld. The reason for substitution must be provided to the <i>Owner</i> and to the original <i>Subcontractor</i> and/or <i>Supplier</i> and the <i>Subcontractor</i> and/or <i>Supplier</i> shall be given the opportunity to reply to the <i>Contractor</i> and <i>Owner</i> . The <i>Contractor</i> shall be fully aware of the capability of each <i>Subcontractor</i> and/or <i>Supplier</i> included in its bid, including but not limited to technical ability, financial stability and ability to maintain the proposed construction schedule.”
SC18.4	3.7.7, 3.7.8 & 3.7.9	<u>Add</u> new paragraphs 3.7.7, 3.7.8, and 3.7.9 as follows: “3.7.7 The <i>Consultant</i> or the <i>Owner</i> , acting reasonably, may from time to time require the <i>Contractor</i> to remove from the <i>Project</i> any personnel of the <i>Contractor</i> , including project managers, superintendents or <i>Subcontractors</i> . Such persons shall be replaced by the <i>Contractor</i> in a timely fashion to the satisfaction of the <i>Consultant</i> or the <i>Owner</i> , as the case may be, at no cost to the <i>Owner</i> . 3.7.8 Where provided in the <i>Contract</i> , the <i>Owner</i> may assign to the <i>Contractor</i> , and the <i>Contractor</i> agrees to accept, any contract procured by the <i>Owner</i> for <i>Work</i> or services required on the <i>Project</i> that has been pre-tendered or pre-negotiated by the <i>Owner</i> , and upon such assignment, the <i>Owner</i> shall have no further liability to any party for such contract. 3.7.9 The <i>Contractor</i> covenants that each subcontract or supply contract which the <i>Contractor</i> enters into for the purpose of performing the <i>Work</i> shall expressly provide for the assignment thereof to the <i>Owner</i> (at the option of the <i>Owner</i>) and the assumption by the <i>Owner</i> of the obligations of the

		<p><i>Contractor</i> thereunder, upon the termination of the <i>Contract</i> and upon written notice by the <i>Owner</i> to the other parties to such subcontracts or supply contracts, without the imposition of further terms or conditions; provided, however, that until the <i>Owner</i> has given such notice, nothing herein contained shall be deemed to create any contractual or other liability upon the <i>Owner</i> for the performance of obligations under such subcontracts or supply contracts and the <i>Contractor</i> shall be fully responsible for all of its obligations and liabilities (if any) under such subcontracts and supply contracts.”</p>
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SC19 GC 3.8 LABOUR AND PRODUCTS

SC19.1	3.8.2	<p>Delete paragraph 3.8.2 and <u>substitute</u> with the following:</p> <p>“3.8.2 <i>Products</i> provided shall be new and shall conform to all current applicable specifications of the Canadian Standards Association, Canadian Standards Board or General Standards Board, ASTM, National Building Code, provincial and municipal building codes, fire safety standards, and all governmental authorities and regulatory agencies having jurisdiction at the <i>Place of the Work</i>, unless otherwise specified. <i>Products</i> which are not specified shall be of a quality consistent with those specified and their use acceptable to the <i>Consultant</i>. <i>Products</i> brought on to the <i>Place of the Work</i> by the <i>Contractor</i> shall be deemed to be the property of the <i>Owner</i>, but the <i>Owner</i> shall be under no liability for loss thereof or damage thereto arising from any cause whatsoever. The said <i>Products</i> shall be at the sole risk of the <i>Contractor</i>. Workmanship shall be, in every respect, first class and the <i>Work</i> shall be performed in accordance with the best modern industry practice.”</p>
SC19.2	3.8.3	<p>Amend paragraph 3.8.3 by <u>adding</u> the words, “..., agents, <i>Subcontractors</i> and <i>Suppliers</i>...” after the word “employees” in the first line.</p>
SC19.3	3.8.4 to 3.8.8	<p><u>Add</u> new paragraphs 3.8.4, 3.8.5, 3.8.6, 3.8.7, and 3.8.8 as follows:</p> <p>“3.8.4 Upon receipt of a <i>Notice in Writing</i> from the <i>Owner</i>, the <i>Contractor</i> shall immediately remove from the <i>Place of the Work</i>, tradesmen and labourers or anyone whose conduct jeopardizes the safety of the <i>Owner’s</i> operations or who are considered by the <i>Owner</i> or the <i>Consultant</i> to be unskilled or otherwise objectionable. Immediately upon receipt of the request, the <i>Contractor</i> shall make arrangements to appoint an</p>

		<p>acceptable replacement.</p> <p>3.8.5 The <i>Contractor</i> shall cooperate with the <i>Owner</i> and its representatives and shall take all reasonable and necessary actions to maintain stable and harmonious labour relations with respect to the <i>Work</i> at the <i>Place of the Work</i>, including cooperation to attempt to avoid <i>Work</i> stoppages, trade union jurisdictional disputes and other <i>Labour Disputes</i>. Any costs arising from labour disputes shall be at the sole expense of the <i>Contractor</i>.</p> <p>3.8.6 The cost for overtime required beyond the normal <i>Working Day</i> to complete individual construction operations of a continuous nature, such as pouring or finishing of concrete or similar work, or <i>Work</i> that the <i>Contractor</i> elects to perform at overtime rates without the <i>Owner</i> requesting it, shall not be chargeable to the <i>Owner</i>.</p> <p>3.8.7 All manufactured <i>Products</i> which are identified by their proprietary names or by part or catalogue number in the <i>Specifications</i> shall be used by the <i>Contractor</i>. No substitutes for such specified <i>Products</i> shall be used without the written approval of the <i>Owner</i> and the <i>Consultant</i>. Substitutes will only be considered by the <i>Consultant</i> when submitted in sufficient time to permit proper review and investigation. When requesting approval for the use of substitutes, the <i>Contractor</i> shall include in its submission any proposed change in the <i>Contract Price</i>. The <i>Contractor</i> shall use all proprietary <i>Products</i> in strict accordance with the manufacturer's directions. Where there is a choice of proprietary <i>Products</i> specified for one use, the <i>Contractor</i> may select any one of the <i>Products</i> so specified for this use.</p> <p>3.8.8 Materials, appliances, equipment and other <i>Products</i> are sometimes specified by reference to brand names, proprietary names, trademarks or symbols. In such cases, the name of a manufacturer, distributor, <i>Supplier</i> or dealer is sometimes given to assist the <i>Contractor</i> to find a source <i>Supplier</i>. This shall not relieve the <i>Contractor</i> from its responsibility from finding its own source of supply even if the source names no longer supplies the <i>Product</i> specified. If the <i>Contractor</i> is unable to obtain the specified <i>Product</i>, the <i>Contractor</i> shall supply a substitute product equal to or better than the specified <i>Product</i>, as approved by the <i>Consultant</i> with no extra compensation. Should the <i>Contractor</i> be unable to obtain a</p>
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		substitute <i>Product</i> equal to or superior to the specified <i>Product</i> and the <i>Owner</i> accepts a different <i>Product</i> , the <i>Contract Price</i> shall be adjusted accordingly, as approved by the <i>Consultant</i> .”
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SC20 GC 3.9 DOCUMENTS AT THE SITE

SC20.1	3.9.1	<p>Delete paragraph 3.9.1 in its entirety and <u>substitute</u> the following:</p> <p>“3.9.1 The <i>Contractor</i> shall keep one copy of the current <i>Contract Documents</i>, <i>Supplemental Instructions</i>, contemplated <i>Change Orders</i>, <i>Change Orders</i>, <i>Change Directives</i>, cash allowance disbursement authorizations, reviewed <i>Shop Drawings</i>, submittals, reports and records of meeting at the <i>Place of the Work</i>, in good order and available to the <i>Owner</i> and <i>Consultant</i>.”</p>
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SC21 GC 3.10 SHOP DRAWINGS

SC21.1	3.10.1	<p>Delete paragraph 3.10.1 in its entirety and <u>replace</u> with the following:</p> <p>“3.10.1 The <i>Contractor</i> shall provide shop drawings as described in the <i>Contract Documents</i> and as the <i>Consultant</i> may reasonably request.”</p>
SC21.2	3.10.3	<p>Delete paragraph 3.10.3 and <u>replace</u> it with the following:</p> <p>“3.10.3 The <i>Contractor</i> shall prepare a <i>Shop Drawings</i> schedule acceptable to the <i>Owner</i> and the <i>Consultant</i> prior to the first application for payment. A draft of the proposed <i>Shop Drawings</i> schedule shall be submitted by the <i>Contractor</i> to the <i>Consultant</i> and the <i>Owner</i> for approval. The draft <i>Shop Drawings</i> schedule shall clearly indicate the phasing of <i>Shop Drawings</i> submissions. The <i>Contractor</i> shall periodically re-submit the <i>Shop Drawings</i> schedule to correspond to changes in the <i>Construction Schedule</i>.”</p>
SC21.3	3.10.9	<p>Delete paragraph 3.10.9 in its entirety and <u>substitute</u> the following:</p> <p>“3.10.9 At the time of providing <i>Shop Drawings</i>, the <i>Contractor</i> shall advise the <i>Consultant</i> in writing of any deviations in <i>Shop Drawings</i> from the requirements of the <i>Contract Documents</i>. The <i>Consultant</i> shall indicate the acceptance of such deviation expressly in writing. Where manufacturers’ literature is submitted in lieu of scaled drawings, it shall be clearly marked in ink, to indicate the specific items for which</p>

		review is requested.”
SC21.4	3.10.1 3 to 3.10.1 7	<p><u>Add</u> new paragraphs 3.10.13, 3.10.14, 3.10.15, 3.10.16, and 3.10.17 as follows:</p> <p>“3.10.13 Reviewed <i>Shop Drawings</i> shall not authorize a change in the <i>Contract Price</i> and/or the <i>Contract Time</i>.</p> <p>3.10.14 Except where the parties have agreed to a different <i>Shop Drawings</i> schedule pursuant to paragraph 3.10.3, the <i>Contractor</i> shall comply with the requirements for <i>Shop Drawings</i> submissions stated in the <i>Specifications</i>.</p> <p>3.10.15 The <i>Contractor</i> shall not use the term “by others” on <i>Shop Drawings</i> or other submittals. The related trade, <i>Subcontractor</i> or <i>Supplier</i> shall be stated.</p> <p>3.10.16 Certain <i>Specifications</i> sections require the <i>Shop Drawings</i> to bear the seal and signature of a professional engineer. Such professional engineer must be registered in the jurisdiction of the <i>Place of the Work</i> and shall have expertise in the area of practice reflected in the <i>Shop Drawings</i>.</p> <p>3.10.17 The <i>Consultant</i> will review and return <i>Shop Drawings</i> and submittals in accordance with the schedule agreed upon in paragraph 3.10.3, The <i>Contractor</i> shall allow the <i>Consultant</i> a minimum of 10 <i>Working Days</i> to review <i>Shop Drawings</i> from the date of receipt. If resubmission of <i>Shop Drawings</i> is required, a further 10 <i>Working Day</i> period is required for the <i>Consultant’s</i> review.”</p>

SC22 GC 3.11 USE OF THE WORK

SC22.1	3.11.1	In the second line between the words “permits, or” <u>add</u> , “by direction of the <i>Owner</i> or <i>Consultant</i> ”.
SC22.2	3.11.3	<p><u>Add</u> new paragraph 3.11.3 as follows:</p> <p>“3.11.3 The <i>Owner</i> shall have the right to enter or occupy the <i>Work</i> in whole or in part for the purpose of placing fittings and equipment, or for other use before <i>Substantial Performance of the Work</i>, if, in the opinion of the <i>Consultant</i>, such entry and occupation does not prevent or substantially interfere with the <i>Contractor</i> in the performance of the <i>Contract</i> within</p>

		the <i>Contract Time</i> . Such entry or occupation shall neither be considered as acceptance of the <i>Work</i> , nor in any way relieve the <i>Contractor</i> from its responsibility to complete the <i>Contract</i> .”
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SC23 GC 3.12 CUTTING AND REMEDIAL WORK

SC23.1	3.12.5 & 3.12.6	<p>Add new paragraphs 3.12.5 and 3.12.6 as follows:</p> <p>“3.12.5 Unless specifically stated otherwise in the <i>Specifications</i>, the <i>Contractor</i> shall do all cutting and making good necessary for the proper installation and performance of the <i>Work</i>.</p> <p>3.12.6 To avoid unnecessary cutting, the <i>Contractor</i> shall lay out its work and advise the <i>Subcontractors</i>, when necessary, where to leave holes for installation of pipes and other work.”</p>
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SC24 GC 3.13 CLEAN UP

SC24.1	3.13.1	<p>At the end of the paragraph 3.13.1, <u>add</u> the following:</p> <p>“The <i>Contractor</i> shall remove accumulated waste and debris at least once a week as a minimum or as required by the nature of the <i>Work</i>.”</p>
SC24.2	3.13.2	<p>In paragraph 3.13.2, in the fourth line <u>Add</u> the word “materials” between the word “tools” and the words “<i>Construction Equipment</i>”.</p>
SC24.3	3.13.3	<p>In paragraph 3.13.3, in the first and second lines <u>Add</u> the word “materials” between the word “tools” and the words “<i>Construction Equipment</i>”</p> <p>-and-</p> <p>In paragraph 3.13.3 <u>delete</u> the words “Prior to application for the final payment,” and <u>replace</u> them with “As a condition precedent to submitting its application for final payment,”.</p>
SC24.4	3.13.4 & 3.13.5	<p>Add new paragraphs 3.13.4 and 3.13.5 as follows:</p> <p>“3.13.4 The <i>Contractor</i> shall clean up garbage during and after construction and maintain the <i>Place of the Work</i> in a neat and orderly condition on a daily basis. Prior to leaving the <i>Place of the Work</i> and following completion of the <i>Work</i>, the <i>Contractor</i> shall make good all damage to the building and its</p>

		<p>components caused by the performance of the <i>Work</i> or by any <i>Subcontractor</i> or <i>Supplier</i>. The <i>Contractor</i> shall leave the <i>Place of the Work</i> in a clean and finished state; remove all <i>Construction Equipment</i> and materials; remove all paint, stains, labels, dirt, etc. from the <i>Place of the Work</i>; and touch up all damaged painted areas (if applicable). The <i>Contractor</i> shall be responsible for restoring those areas of the <i>Place of the Work</i>, impacted by the <i>Work</i>, to their original condition.”</p> <p>3.13.5 Without limitation to or waiver of the <i>Owner’s</i> other rights and remedies, the <i>Owner</i> shall have the right to back charge to the <i>Contractor</i> the cost of damage to the site caused by transportation in and out of the <i>Place of the Work</i> by the <i>Contractor</i>, <i>Subcontractors</i> or <i>Suppliers</i>, if not repaired before final payment.</p> <p>3.13.6 The <i>Contractor</i> shall dispose of debris at a location and in a manner acceptable to the <i>Owner</i> (and to the authorities having jurisdiction at the <i>Place of the Work</i> and at the disposal area) and the <i>Contractor</i> shall cover containers with tarpaulins.”</p>
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SC25 *NEW* GC 3.14 CONTRACTOR STANDARD OF CARE

SC25.1	3.14	<p>Add a new GC 3.14 – CONTRACTOR STANDARD OF CARE as follows:</p> <p>“GC 3.14 CONTRACTOR STANDARD OF CARE</p> <p>“3.14.1 In performing its services and obligations under the <i>Contract</i>, the <i>Contractor</i> shall exercise the standard of care, skill and diligence that would normally be provided by an experienced and prudent contractor supplying similar services for similar projects. The <i>Contractor</i> acknowledges and agrees that throughout the <i>Contract</i>, the performance of the <i>Contractor’s</i> obligations, duties and responsibilities shall be interpreted in accordance with this standard. The <i>Contractor</i> shall exercise the same standard of care, skill and diligence in respect of any <i>Products</i>, personnel or procedures which it may recommend to the <i>Owner</i> or employ on the <i>Project</i>.</p> <p>3.14.2 The <i>Contractor</i> further represents, covenants and warrants to the <i>Owner</i> that:</p>
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		<p>.1 the personnel it assigns to the <i>Project</i> are appropriately experienced;</p> <p>.2 it has a sufficient staff of qualified and competent personnel to replace any of its appointed representatives, subject to the <i>Owner's</i> approval, in the event of death, incapacity, removal or resignation; and</p> <p>.3 there are no pending, threatened or anticipated claims, liabilities or contingent liabilities that would have a material effect on the financial ability of the <i>Contractor</i> to perform its work under the <i>Contract</i>.”</p>
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SC26 *NEW* GC 3.15 OCCUPANCY OF THE WORK

SC26.1	3.15.1	<p><u>Add</u> a new GC 3.15 – OCCUPANCY OF THE WORK as follows:</p> <p>“GC 3.15 OCCUPANCY OF THE WORK</p> <p>3.15.1 The <i>Owner</i> reserves the right to take possession of and use for any intended purpose any portion or all of the undelivered portion of the <i>Project</i> even though the <i>Work</i> may not be substantially performed, progress of the work shall continue in such a way that it will not interfere with use of the occupied space or operation of the facility. The taking of possession or use of any such portion of the <i>Project</i> shall not be deemed to be the <i>Owner's</i> acknowledgement or acceptance of the <i>Work</i> or the <i>Project</i>, nor shall it relieve the <i>Contractor</i> of any of its obligations under the <i>Contract</i>.</p> <p>3.15.2 Whether the <i>Project</i> contemplates <i>Work</i> by way of renovations in buildings which will be in use or be occupied during the course of the <i>Work</i> or where the <i>Project</i> involves <i>Work</i> that is adjacent to a structure which is in use or is occupied, the <i>Contractor</i>, without in any way limiting its responsibilities under the <i>Contract</i>, shall take all reasonable steps to avoid interference with fire exits, building access and egress, continuity of electric power and all other utilities, the operation of HVAC systems, to suppress dust and noise and to avoid conditions likely to propagate mould or fungus of any kind and all other steps reasonably necessary to promote and maintain the safety and comfort of the users and occupants of such structures or adjacent structures.”</p>
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PART 4 ALLOWANCES

SC27 GC 4.1 CASH ALLOWANCES

SC27.1	4.1.1	<u>Delete</u> the second sentence in paragraph 4.1.1.
SC27.2	4.1.4	<p><u>Delete</u> paragraph 4.1.4 in its entirety and <u>replace</u> it with the following:</p> <p>“4.1.4 Where the actual cost of the <i>Work</i> under any cash allowance exceeds the amount of the allowance, any unexpended amounts from other cash allowances shall be reallocated, at the <i>Consultant’s</i> direction, to cover the shortfall, and, in that case, there shall be no additional amount added to the <i>Contract Price</i> for overhead and profit. Only where the actual cost of the <i>Work</i> under all cash allowances exceeds the total amount of all cash allowances shall the <i>Contractor</i> be compensated for the excess incurred and substantiated, plus an amount for overhead and profit on the excess only, as set out in the <i>Contract Documents</i>.”</p>
SC27.3	4.1.5	<p><u>Delete</u> paragraph 4.1.5 in its entirety and <u>substitute</u> the following:</p> <p>“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 <i>Contract Price</i> by <i>Change Order</i> without any adjustment for the <i>Contractor’s</i> overhead and profit on such amount.”</p>
SC27.4	4.1.8 & 4.1.9	<p><u>Add</u> new paragraphs 4.1.8 and 4.1.9 as follows:</p> <p>“4.1.8 The <i>Owner</i> reserves the right to call, or to have the <i>Contractor</i> call, for competitive bids for portions of the <i>Work</i>, which are to be paid for from cash allowances.</p> <p>4.1.9 Cash allowances cover the net cost to the <i>Contractor</i> of services, <i>Products</i>, <i>Construction Equipment</i>, freight, unloading, handling, storage, installation, provincial sales tax, and other authorized expenses incurred in performing any <i>Work</i> stipulated under the cash allowances but does not include any <i>Value Added Taxes</i> payable by the <i>Owner</i> and the <i>Contractor</i>.”</p>

PART 5 PAYMENT

SC28 GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

SC28.1	5.1	<u>Delete</u> GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER and all paragraphs thereunder, including any reference to GC 5.1 throughout the <i>Contract</i> .
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SC29 GC 5.2 APPLICATIONS FOR PROGRESS PAYMENT

SC29.1	5.2.1	<p><u>Delete</u> paragraph 5.2.1 and <u>replace</u> it with the following:</p> <p>“5.2.1 Upon execution of the <i>Contract</i>, and in any event prior to the <i>Contractor</i> submitting its first application for payment, the <i>Owner</i> shall issue a purchase order to the <i>Contractor</i> for the performance of the <i>Contract</i>. The number indicated on such purchase order must be clearly identifiable on all applications for payment. Applications for payment shall be dated the last day of each month or an alternative day of each month agreed to in writing by the parties, with each month representing one payment period under the <i>Contract</i> (each a “Payment Period”). Within 3 calendar days of the end of each <i>Payment Period</i>, the <i>Contractor</i> will submit a draft application for payment to the <i>Owner</i> and the <i>Consultant</i>. Upon receipt of the draft application for payment, and within 7 calendar days, a representative of each of the <i>Contractor</i>, <i>Owner</i>, and the <i>Consultant</i> shall attend a meeting to discuss and review the work completed during the <i>Payment Period</i>, including quantities, if applicable (the “Pre-Invoice Submission Meeting”). In the event that the scheduled date for the <i>Pre-Invoice Submission Meeting</i> is not a <i>Working Day</i>, the <i>Pre-Invoice Submission Meeting</i> shall occur on the next <i>Working Day</i>. The <i>Contractor</i> shall bring with it to the <i>Pre-Invoice Submission Meeting</i> the following:</p> <ul style="list-style-type: none"> .1 a copy of the draft application for payment; .2 any documents the <i>Contractor</i> is required to bring to the <i>Pre-Invoice Submission Meeting</i> as stipulated in the <i>Contract Documents</i> or as reasonably requested by the <i>Owner</i>, and .3 any other documents reasonably requested, in advance, by the <i>Owner</i> or the <i>Consultant</i>.”
SC29.2	5.2.2	<u>Delete</u> paragraph 5.2.2 in its entirety and <u>replace</u> it with the following:

		<p>“5.2.2 Applications for payment shall be given in accordance with the following requirements:</p> <ul style="list-style-type: none"> .1 within 5 calendar days following the <i>Pre-Invoice Submission Meeting</i>, the <i>Contractor</i> shall deliver its application for payment to the <i>Owner</i> and to the <i>Consultant</i> for <i>Work</i> performed during the <i>Payment Period</i> (“Proper Invoice Submission Date”) subject to the following: <ul style="list-style-type: none"> .1 if the fifth calendar day following the <i>Pre-Invoice Submission Meeting</i>, to which an invoice relates falls on a day that is not a <i>Working Day</i>, the <i>Proper Invoice Submission Date</i> shall be deemed to fall on the next <i>Working Day</i>. .2 the application for payment must be delivered to the <i>Owner</i> and to the <i>Consultant</i> in the same manner as a <i>Notice in Writing</i> during the hours of 9:00 am to 4:00pm (EST) on the <i>Proper Invoice Submission Date</i>. Delivery to the <i>Owner</i> shall be to the following address: finance-ap@wrdsb.ca .3 If an application for payment is received after 4:00 p.m. (EST) on the applicable <i>Proper Invoice Submission Date</i>, the application for payment will not be considered or reviewed by the <i>Owner</i> and <i>Consultant</i> until the next <i>Proper Invoice Submission Date</i>. Notwithstanding the foregoing, the <i>Owner</i> in its sole and absolute discretion may elect to accept an application for payment submitted after 4:00 p.m. on the applicable <i>Proper Invoice Submission Date</i>; however, such acceptance shall not be construed as a waiver of any of its rights or waive or release the <i>Contractor’s</i> obligations to strictly comply with the requirements prescribed in this subparagraph 5.2.2.3. .4 No applications for payment shall be accepted by the <i>Owner</i> prior to the <i>Proper Invoice Submission Date</i>.”
SC29.3	5.2.3	<p><u>Delete</u> paragraph 5.2.3 and <u>replace</u> it with the following:</p> <p>“5.2.3 The amount claimed shall be for the value, proportionate to the amount of the <i>Contract</i>, of <i>Work</i> performed and <i>Products</i></p>

		delivered and incorporated into the <i>Work</i> as of the last date of the applicable <i>Payment Period</i> . Materials may also be deemed to be supplied to an improvement, for payment purposes, when, in the <i>Owner's</i> opinion, they are placed and properly secured on the land on which the improvement is made, or placed upon land designated by the <i>Owner</i> or agent of the <i>Owner</i> , but placing the materials on the land so designated does not, of itself, make that land subject to a lien. 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. No amount claimed shall include <i>Products</i> delivered to the <i>Place of the Work</i> unless the <i>Products</i> are free and clear of all security interests, liens, and other claims of third parties.”
SC29.4	5.2.4	After the word “ <i>Consultant</i> ” in paragraph 5.2.4 <u>add</u> the words “and the <i>Owner</i> ”
SC29.5	5.2.5	After the word “ <i>Consultant</i> ” in the first line of paragraph 5.2.5 <u>add</u> the words “or the <i>Owner</i> ” -and- In the second line, <u>delete</u> the word “ <i>Consultant</i> ” and <u>replace</u> it with “ <i>Owner</i> ”.
SC29.6	5.2.7	<u>Delete</u> paragraph 5.2.7 and <u>replace</u> it with the following: “5.2.7 The <i>Contractor</i> shall prepare and maintain current as-built drawings which shall consist of the <i>Drawings</i> and <i>Specifications</i> revised by the <i>Contractor</i> during the <i>Work</i> , showing changes to the <i>Drawings</i> and <i>Specifications</i> , which current as-built drawings shall be maintained by the <i>Contractor</i> and made available to the <i>Consultant</i> for review with each application for progress payment. The <i>Consultant</i> shall recommend to the <i>Owner</i> that the <i>Owner</i> retain a reasonable amount for the value of the as-built drawings not presented for review.”

SC30 GC 5.3

PROGRESS PAYMENT

SC30.1	5.3.1.1	<u>Add</u> the following words to the end of subparagraph 5.3.1.1: “and confirm whether all of the criteria for a <i>Proper Invoice</i> are satisfied. If not, the application for payment will be returned to the
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		<i>Contractor</i> with reasons from the <i>Owner</i> or the <i>Consultant</i> setting out why the application for payment is not a valid <i>Proper Invoice</i> .”
SC30.2	5.3.1.2	<p><u>Delete</u> paragraph 5.3.1.2 and <u>replace</u> it with the following:</p> <p>“5.3.1.2 Following receipt of a <i>Proper Invoice</i>, the <i>Consultant</i>:</p> <p> .1 will issue to the <i>Owner</i> with a copy to the <i>Contractor</i>, a certificate for payment in the amount applied for, or</p> <p> .2 if the <i>Consultant</i> finds that such other amount is properly due under the application for payment or otherwise finds that the application for payment must be amended, it shall notify the <i>Owner</i> and prepare an applicable <i>Notice of Non-Payment</i> (Form 1.1) with reasons for the amendment.”</p>
SC30.3	5.3.1.3	<p><u>Delete</u> subparagraph 5.3.1.3 in its entirety and <u>substitute</u> as follows:</p> <p>“.3 the <i>Owner</i> shall make payment to the <i>Contractor</i> on account no later than 28 calendar days after the receipt by the <i>Owner</i> of a <i>Proper Invoice</i>, subject to the delivery by the <i>Owner</i> of a <i>Notice of Non-Payment</i> (Form 1.1).”</p>
SC30.4	5.3.2 to 5.3.7	<p><u>Add</u> new paragraphs 5.3.2, 5.3.3, 5.3.4, 5.3.5, 5.3.6, and 5.3.7 as follows:</p> <p>“5.3.2 All payments to the <i>Contractor</i> shall be processed using electronic funds transfer (“EFT”) and deposited directly to the <i>Contractor’s</i> bank account unless agreed to otherwise by the <i>Contractor</i> and the <i>Owner</i> in writing. Prior to the <i>Contractor</i> submitting its <i>Proper Invoice</i>, the <i>Owner</i> shall provide the <i>Contractor</i> with the necessary documents to facilitate EFT payments.</p> <p>5.3.3 Payment shall be deemed to have been made to the <i>Contractor</i> on the date in which funds are transferred via EFT to the <i>Contractor’s</i> bank account.</p> <p>5.3.4 In the event that the <i>Owner</i> disputes the amount claimed as payable in the <i>Proper Invoice</i>, within 14 calendar days of receipt of the <i>Proper Invoice</i>, the <i>Owner</i> shall provide to the <i>Contractor</i>, a <i>Notice of Non-Payment</i> (Form 1.1).</p> <p>5.3.5 Where the <i>Owner</i> has delivered a <i>Notice of Non-Payment</i>, as</p>

		<p>specified under paragraph 5.3.1.3 or 5.3.4, the <i>Owner</i> and the <i>Contractor</i> shall first engage in good faith negotiations to resolve the dispute. If within 10 calendar days following the issuance of a <i>Notice of Non-Payment</i>, the <i>Owner</i> and the <i>Contractor</i> cannot resolve the dispute, either party may issue a notice of adjudication in a form prescribed under the <i>Act</i>. The <i>Owner</i> and <i>Contractor</i> will then submit the dispute to <i>Adjudication</i> as set out under PART 8 – DISPUTE RESOLUTION.</p> <p>5.3.6 The amounts disputed and described under the <i>Notice of Non-Payment</i> shall be held by the <i>Owner</i> until all disputed amounts of the <i>Proper Invoice</i> have been resolved pursuant to PART 8 – DISPUTE RESOLUTION. Any portion of the <i>Proper Invoice</i> which is not the subject of the <i>Notice of Non-Payment</i> shall be payable within the time period set out in paragraph 5.3.1.3.</p> <p>5.3.7 The <i>Contractor</i> represents, warrants, and covenants to the <i>Owner</i> that it is familiar with its prompt payment and trust obligations under the <i>Act</i> and will take all required steps and measures to ensure that it complies with the applicable prompt payment and trust provisions under the <i>Act</i> including, without limitation, section 8.1 of the <i>Act</i>. Evidence of the <i>Contractor's</i> compliance under this GC 5.3.7, including evidence demonstrating that all EFTs by the <i>Owner</i> to the <i>Contractor</i> are kept in a bank account in the <i>Contractor's</i> name, will be made available to the <i>Owner</i> within 5 <i>Working Days</i> following receipt by the <i>Contractor</i> of a <i>Notice in Writing</i> making such request.”</p>
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SC31 GC 5.4

SUBSTANTIAL PERFORMANCE OF THE WORK

SC31.1	5.4.2	<p><u>Delete</u> paragraph 5.4.2 in its entirety and <u>substitute</u> the following:</p> <p>“5.4.2 The <i>Consultant</i> will review the <i>Work</i> to verify the validity of the application and shall promptly, and in any event, no later than 30 calendar days after receipt of the <i>Contractor's</i> complete deficiency list and application:</p> <p>.1 prepare a final deficiency list incorporating all items to be completed or corrected. Each item is to have an indicated value for correction or completion. Determination of the value for <i>Substantial Performance</i> of the <i>Work</i> is defined in GC 5.10 – DEFICIENCY</p>
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		<p>HOLDBACK. The final deficiency list complete with values is to be included with the <i>Consultant's</i> draft verification and shall be reviewed with the <i>Owner</i> prior to 5.4.2.2.</p> <p>.2 having completed 5.4.2.1:</p> <p>.1 the <i>Consultant</i> shall advise the <i>Contractor</i> in writing that the <i>Work</i> or the designated portion of the <i>Work</i> is not substantially performed and give reasons why, or</p> <p>.2 the <i>Consultant</i> shall state the date of <i>Substantial Performance of the Work</i> in a certificate and issue a copy of that certificate to each the <i>Owner</i> and the <i>Contractor</i>.”</p>
SC31.2	5.4.3	<p><u>Delete</u> paragraph 5.4.3 in its entirety and <u>substitute</u> the following:</p> <p>“5.4.3 Following the issuance of the certificate of <i>Substantial Performance of the Work</i> referenced in subparagraph 5.4.2.2.2:</p> <p>.1 the <i>Contractor</i> shall complete the <i>Work</i> within sixty (60) calendar days;</p> <p>.2 no payments will be processed nor will any <i>Proper Invoices</i> be received by the <i>Owner</i> between <i>Substantial Performance of the Work</i> and the completion of the <i>Work</i>;</p> <p>.3 The <i>Owner</i> reserves the right to contract out any or all unfinished <i>Work</i> if it has not been completed within sixty (60) days of <i>Substantial Performance of the Work</i> without prejudice to any other right or remedy and without affecting the warranty period. The cost of completing the <i>Work</i> including <i>Owner</i> and <i>Consultant</i> wages and materials shall be deducted from the <i>Contract Price</i>.”</p>
SC31.3	5.4.4 to 5.4.6	<p><u>Add</u> new paragraphs 5.4.4, 5.4.5 and 5.4.6:</p> <p>“5.4.4 The <i>Contractor</i> shall publish, in a construction trade newspaper in the area of the location of the <i>Work</i>, a copy of the certificate of <i>Substantial Performance of the Work</i> referred to in GC 5.4.2.2.2 within seven (7) days of receiving a copy of</p>

		<p>the certificate signed by the <i>Consultant</i>, and the <i>Contractor</i> shall provide suitable evidence of the publication to the <i>Consultant</i> and the <i>Owner</i>. If the <i>Contractor</i> fails to publish such notice, the <i>Owner</i> shall be at liberty to publish said certificate and back-charge the <i>Contractor</i> its reasonable costs for doing so.</p> <p>5.4.5 Prior to submitting its written application for <i>Substantial Performance of the Work</i>, the <i>Contractor</i> shall submit to the <i>Consultant</i>:</p> <ul style="list-style-type: none">.1 statutory declaration in the form of CCDC 9;.2 WSIB clearance certificate showing good standing;.3 updated insurance certificate;.4 guarantees;.5 warranties;.6 certificates;.7 final testing and balancing reports;.8 distribution system diagrams;.9 spare parts;.10 maintenance manuals;.11 samples;.12 reports and correspondence from authorities having jurisdiction in the <i>Place of the Work</i>;.13 shop drawings;.14 inspection certificates;.15 red-lined record drawings from the construction trailer in two copies. <p>and other materials or documentation required to be submitted under the <i>Contract</i>, together with written proof acceptable to the <i>Owner</i> and the <i>Consultant</i> that the <i>Work</i> has been substantially performed in conformance with the requirements of municipal, governmental, and utility authorities having jurisdiction in the <i>Place of the Work</i>. The <i>Consultant</i> shall refuse to certify <i>Substantial Performance of the Work</i> if the submittals referred to in this paragraph 5.4.5 are not provided by the <i>Contractor</i>.</p> <p>5.4.6 The <i>Owner</i> shall withhold, from amounts otherwise payable to the <i>Contractor</i>, an amount not to exceed one (1) percent of the <i>Contract Price</i> as security for the obligation of the <i>Contractor</i> to deliver two copies of the red-lined record</p>
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SC32 GC 5.5 PAYMENT OF HOLDBACK UPON SUBSTANTIAL PERFORMANCE OF THE WORK

SC32.1	5.5.1.3	<p><u>Add</u> new subparagraph 5.5.1.3 as follows:</p> <p>“.3 submit a statement that no written notices of lien have been received by the <i>Contractor</i>.”</p>
SC32.2	5.5.2	<p><u>Amend</u> paragraph 5.5.2 by <u>adding</u> the following sentence to the end of that paragraph:</p> <p>“Where after thirty (30) days following the publication of the certificate of <i>Substantial Performance of the Work</i>, pursuant to GC 5.4.4, the value of the <i>Work</i> remaining to be complete under the <i>Contract</i>, plus the estimated cost to repair any remaining deficiencies, exceeds the amount of the unpaid balance of the <i>Contract Price</i> (as determined by the <i>Payment Certifier</i>, acting reasonably), the <i>Owner</i> may publish a <i>Notice of Non-Payment</i> of holdback in accordance with the <i>Act</i> (Form 6) and retain an amount from the holdback to supplement the unpaid value of the <i>Contract Price</i> to secure the correction of deficiencies and completion of the <i>Work</i>. Such amounts may include all <i>Consultant</i> and <i>Owner</i> costs including any and all staff and material costs, design, tendering and contractor and supplier costs related to the correction of deficiencies and/or warranty claims.”</p>
SC32.3	5.5.3	<p><u>Delete</u> paragraph 5.5.3 in its entirety.</p>
SC32.4	5.5.4	<p><u>Delete</u> the first and second sentences in paragraph 5.5.4 and <u>replace</u> them with the following:</p> <p>“There being no claims for lien registered against title to the <i>Place of the Work</i>, as confirmed by a title search of the <i>Place of the Work</i> and there being no claims for lien or written notices of lien delivered to the <i>Owner</i>, the holdback amount authorized by the certificate for payment of the holdback amount issued by the <i>Consultant</i>, pursuant to GC 5.5.2, is due and payable on the 61st calendar day following the publication of the certificate of <i>Substantial Performance of the Work</i> referred to in GC 5.4.4. ”</p>
SC32.5	5.5.5	<p><u>Delete</u> paragraph 5.5.5 in its entirety and <u>replace</u> it with the following:</p> <p>“5.5.5 Notwithstanding the <i>Owner’s</i> obligation to make payment of the holdback amount in accordance with GC 5.5.4, the</p>

		processing of such payment remains subject to the <i>Owner's</i> internal EFT timing limitations. The <i>Owner</i> covenants, and the <i>Contractor</i> agrees, that payment of the holdback shall be made by EFT at the first opportunity during the <i>Owner's</i> normal processing of EFTs upon the holdback becoming due in accordance with GC 5.5.4."
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SC33 GC 5.6 PROGRESSIVE RELEASE OF HOLDBACK

SC33.1	5.6	<u>Delete</u> GC 5.6 in its entirety.
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SC34 GC 5.7 FINAL PAYMENT

SC34.1	5.7.1	<p>In paragraph 5.7.1, <u>delete</u> the words "an application for final payment" and <u>replace</u> them with the following:</p> <p>"an application for final payment that complies with the requirements for a <i>Proper Invoice</i>, accompanied by any documents or materials not yet delivered pursuant to paragraph 5.4.5, together with complete and final as-built drawings. The <i>Contractor</i> shall also provided written certification that there are no outstanding claims, pending claims or future claims from the <i>Contractor</i> or their <i>Subcontractors</i> or <i>Suppliers</i>. The <i>Consultant</i> shall promptly inform the <i>Owner</i> of the receipt the application for final payment and confirm whether all of the criteria for a <i>Proper Invoice</i> are satisfied. If not, the application for payment will be returned to the <i>Contractor</i> with reasons from the <i>Owner</i> or the <i>Consultant</i> setting out why it is not a valid <i>Proper Invoice</i>."</p>
SC34.2	5.7.2	<p><u>Delete</u> the words "10 calendar days" and <u>replace</u> them with "5 calendar days" from paragraph 5.7.2.</p> <p>-and-</p> <p><u>delete</u> the words "advise the <i>Contractor</i> in writing that the application is valid or give reasons why it is not valid." and <u>replace</u> them with the following:</p> <p>"1 no later than 5 calendar days after the receipt of the <i>Proper Invoice</i> for final payment, the <i>Consultant</i> will issue to the <i>Owner</i> and copy to the <i>Contractor</i>, a certificate for final payment in the amount applied for, or</p>

		.2 if the <i>Consultant</i> finds that such other amount is properly due under the <i>Proper Invoice</i> for final payment or otherwise finds that the <i>Proper Invoice</i> for final payment must be amended, it shall notify the <i>Owner</i> and prepare a draft <i>Notice of Non-Payment</i> (Form 1.1) with reasons for the amendment.”
SC34.3	5.7.3	<u>Delete</u> paragraph 5.7.3 in its entirety and <u>replace</u> it with the following: “5.7.3 Where the <i>Owner</i> has delivered a <i>Notice of Non-Payment</i> , as specified under paragraph 5.7.2, the <i>Owner</i> and the <i>Contractor</i> shall first engage in good faith negotiations to resolve the dispute. If within 10 calendar days following the issuance of a <i>Notice of Non-Payment</i> , the <i>Owner</i> and <i>Contractor</i> cannot resolve the dispute, either party may issue a notice of adjudication in a form prescribed under the <i>Act</i> . The <i>Owner</i> and <i>Contractor</i> will then submit the dispute to <i>Adjudication</i> as set out under PART 8 – DISPUTE RESOLUTION.”
SC34.4	5.7.4	<u>Delete</u> from the second line of paragraph 5.7.4 the words, “5 calendar days after the issuance of” and <u>substitute</u> the words “28 calendar days after receipt of a <i>Proper Invoice</i> for final payment, subject to the delivery by the <i>Owner</i> of a <i>Notice of Non-Payment</i> (Form 1.1)”.
SC34.5	5.7.5	<u>Add</u> new paragraph 5.7.5 as follows: “5.7.5 The amounts disputed and described under the <i>Notice of Non-Payment</i> shall be held by the <i>Owner</i> until all disputed portions of the <i>Proper Invoice</i> for final payment have been resolved pursuant to PART 8 – DISPUTE RESOLUTION. Any portion of the <i>Proper Invoice</i> which is not the subject of the <i>Notice of Non-Payment</i> shall be payable within the time period set out in paragraph 5.7.4.”

SC35 GC 5.8 WITHHOLDING OF PAYMENT

SC35.1	5.8.1	<u>Delete</u> paragraph 5.8.1 and <u>replace</u> with the following: “5.8.1 If because of conditions reasonably beyond the control of the <i>Contractor</i> , there are items of work that cannot be performed, payment in full for that portion of the <i>Work</i> which has been performed as certified by the <i>Consultant</i> shall not be withheld or delayed by the <i>Owner</i> on account thereof, but the <i>Owner</i> may withhold, subject to its requirement to issue a <i>Notice of</i>
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		<p><i>Non-Payment</i> under the <i>Act</i>, until the remaining portion of the <i>Work</i> is finished, only such an amount that the <i>Consultant</i> determines is sufficient and reasonable to cover the cost of performing such remaining work. The remaining work shall be valued as deficient work as defined in GC 5.10.1.”</p>
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SC36 *NEW* GC 5.10 DEFICIENCY HOLDBACK

SC36.1	5.10.1	<p><u>Add</u> new GC 5.10 – DEFICIENCY HOLDBACK as follows:</p> <p>“GC 5.10 DEFICIENCY HOLDBACK</p> <p>5.10.1 Notwithstanding any provisions contained in the <i>Contract Documents</i> concerning certification and release of monies to the <i>Contractor</i>, the <i>Owner</i> reserves the right to establish a deficiency holdback, at the time of the review for <i>Substantial Performance of the Work</i>, based on a 200% dollar value of the deficiencies listed by the <i>Consultant</i>. The value of work outstanding for the calculation of <i>Substantial Performance of the Work</i> under the <i>Act</i> shall utilize the 100% dollar value. No individual deficiency will be valued at less than two hundred dollars (\$200.00). The deficiency holdback shall be due and payable to the <i>Contractor</i> on the 61st day following completion of all of the deficiencies listed by the <i>Consultant</i>, there being no claims for lien registered against the title to the <i>Place of the Work</i> issued in accordance with the <i>Act</i>, and less any amounts disputed under an <i>Owner’s Notice of Non-Payment</i> (Form 1.1).”</p>
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PART 6 CHANGES IN THE WORK

SC37 GC 6.1 OWNER’S RIGHT TO MAKE CHANGES

SC37.1	6.1.2	<p><u>Add</u> the following to the end of paragraph 6.1.2:</p> <p>“This requirement is of the essence and it is the express intention of the parties that any claims by the <i>Contractor</i> for a change in the <i>Contract Price</i> and/or <i>Contract Time</i> shall be barred unless there has been strict compliance with PART 6 - CHANGES IN THE WORK. No verbal dealings between the parties and no implied acceptance of alterations or additions to the <i>Work</i> and no claims that the <i>Owner</i> has been unjustly enriched by any alteration or addition to the <i>Work</i>, whether in fact there is any such unjust enrichment or not, shall be</p>
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		the basis of a claim for additional payment under this <i>Contract</i> or a claim for any extension of the <i>Contract Time</i> .”
SC37.2	6.1.3 to 6.1.8	<p>Add new paragraphs 6.1.3, 6.1.4, 6.1.5, 6.1.6, 6.1.7 and 6.1.8 as follows:</p> <p>“6.1.3 The <i>Contractor</i> agrees that changes resulting from construction coordination, including but not limited to, site surface conditions, site coordination, and <i>Subcontractor and Supplier</i> coordination are included in the <i>Contract Price</i> and the <i>Contractor</i> shall be precluded from making any claim for a change in the <i>Contract Price</i> as a result of such changes.</p> <p>6.1.4 Labour costs shall be actual, prevailing rates at the <i>Place of the Work</i> paid to workers, plus statutory charges on labour including WSIB, unemployment insurance, Canada pension, vacation pay, hospitalization and medical insurance. The <i>Contractor</i> shall provide these rates, when requested by the <i>Consultant</i>, for review and/or agreement.</p> <p>6.1.5 Quotations for changes to the <i>Work</i> shall only include <i>Direct Costs</i> and be accompanied by itemized breakdowns together with detailed, substantiating quotations or cost vouchers from <i>Subcontractors</i> and <i>Suppliers</i>, submitted in a format acceptable to the <i>Consultant</i> and shall include any <i>Direct Costs</i> associated with extensions in <i>Contract Time</i>.</p> <p>6.1.6 When both additions and deletions covering related <i>Work</i> or substitutions are involved in a change to the <i>Work</i>, payment, including <i>Overhead</i> and profit, shall be calculated on the basis of the net difference, if any, with respect to that change in the <i>Work</i>.</p> <p>6.1.7 No extension to the <i>Contract Time</i> shall be granted for changes in the <i>Work</i> unless the <i>Contractor</i> can clearly demonstrate that such changes significantly alter the overall construction schedule submitted at the commencement of the <i>Work</i>. Extensions of <i>Contract Time</i> and all associated costs, if approved, shall be included in the relevant <i>Change Order</i>.</p> <p>6.1.8 When a change in the <i>Work</i> is proposed or required, the <i>Contractor</i> shall within 10 calendar days submit to the <i>Consultant</i> for review a claim for a change in <i>Contract Price</i> and/or <i>Contract Time</i>. Should 10 calendar days be insufficient to prepare the submission, the <i>Contractor</i> shall within 5 calendar days, advise the <i>Consultant</i> in writing of the</p>

		proposed date of submission of the claim. Claims submitted after the dates prescribed herein will not be considered.”
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SC38 GC 6.2 CHANGE ORDER

SC38.1	6.2.1	In paragraph 6.2.1 after the last sentence in the paragraph <u>add</u> the following: “The adjustment in the <i>Contract Time</i> and the <i>Contract Price</i> shall include an adjustment, if any, for delay or for the impact that the change in the <i>Work</i> has on the <i>Work</i> of the <i>Contractor</i> , and once such adjustment is made, the <i>Contractor</i> shall be precluded from making any further claims for delay or impact with respect to the change in the <i>Work</i> .”
SC38.2	6.2.3 to 6.2.5	<u>Add</u> new paragraphs 6.2.3, 6.2.4, and 6.2.5 as follows: “6.2.3 The value of a change shall be determined in one or more of the following methods as directed by the <i>Consultant</i> : .1 by estimate and acceptance of a lump sum; .2 by negotiated unit prices which include the <i>Contractor’s</i> overhead and profit, or; .3 by the actual <i>Direct Cost</i> to the <i>Owner</i> , such costs to be the actual cost after all credits included in the change have been deducted, plus the following ranges of mark-up on such costs: .1 Contractor on Work of their own forces, 5% overhead, 5 % profit .2 Sub-Contractor on Work of their own forces, 5% overhead, 5% profit .3 Contractor on Work of Sub-Contractor, 5% overhead only, the above includes for all site and office related overhead costs. 6.2.4 All quotations shall include <i>Direct Costs</i> and be submitted in a complete manner listing:

		<p>.1 quantity of each material, .2 unit cost of each material, .3 man hours involved, .4 cost per hour, .5 <i>Subcontractor</i> quotations submitted listing items 1 to 4 above and item 6 below. .6 mark-up.</p> <p>6.2.5 The <i>Owner</i> and the <i>Consultant</i> will not be responsible for delays to the <i>Work</i> resulting from late, incomplete or inadequately broken-down valuations submitted by the <i>Contractor</i>.”</p>
SC38.3		

SC39 GC 6.3

CHANGE DIRECTIVE

SC39.1	6.3.6.1	<p><u>Amend</u> paragraph 6.3.6.1 by deleting the final period and adding the following:</p> <p>“.1 Five percent (5%) for profit plus five percent (5%) for overhead on work by the <i>Contractor’s</i> own forces up to the value of \$15,000 and five percent (5%) for profit plus three percent (3%) for <i>Overhead</i> on work by the <i>Contractor’s</i> own forces in excess of \$15,000 and,</p> <p>.2 5 percent (5%) fee on amounts paid to <i>Subcontractors</i> or <i>Suppliers</i> under subparagraph 6.3.7.9 for changes up to the value of \$15,000 and five percent (5%) on changes over \$15,000.</p> <p>Unless a <i>Subcontractor’s</i> or <i>Supplier’s</i> price has been approved by the <i>Owner</i>, the <i>Subcontractor</i> or <i>Supplier</i> shall be entitled to its actual net cost as determined in accordance with paragraph 6.3.7, plus ten percent (5%) for profit and five percent (5%) for <i>Overhead</i> on such actual net cost for changes in the <i>Work</i>, up to the value of \$15,000 and five percent (5%) for profit and three percent (3%) for overhead on such actual net cost changes in the <i>Work</i> in excess of \$15,000.”</p>
SC39.2	6.3.6.2	<p><u>Delete</u> paragraph 6.3.6.2 and <u>replace</u> it with the following:</p> <p>“.2 If a change in the <i>Work</i> results in a net decrease in the <i>Contract Price</i> in excess of \$15,000 the amount of the credit shall be the net cost, with deduction for <i>Overhead</i> and profit. If a change in</p>

		the <i>Work</i> results in a net decrease in the <i>Contract Price</i> of \$15,000 or less, the amount of the credit shall be the net cost, without deduction for <i>Overhead</i> or profit.
SC39.3	6.3.7.1	In subparagraph 6.3.7.1 after the words “in the direct employ of the <i>Contractor</i> ” <u>add</u> the words “while directly engaged in the work attributable to the change”.
SC39.4	6.3.7	At the end of paragraph 6.3.7 <u>add</u> the following: “All other costs attributable to the change in the <i>Work</i> including the costs of all administrative or supervisory personnel are included in <i>Overhead</i> and profit calculated in accordance with the provisions of paragraph 6.1.5.”

SC40 GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

SC40.1	6.4.1	<p><u>Delete</u> paragraph 6.4.1 in its entirety and <u>replace</u> with the following:</p> <p>6.4.1.1 Prior to the submission of the bid on which the <i>Contract</i> was awarded, the <i>Contractor</i> confirms that it carefully investigated the <i>Place of the Work</i> and carried out such tests as it deemed appropriate and, in doing so, applied to that investigation the degree of care and skill required by paragraph 3.14.1. If the <i>Contractor</i> has not conducted such careful investigation, it is deemed to assume all risk of conditions or circumstances now existing or arising in the course of the <i>Work</i> which could make the <i>Work</i> more expensive or more difficult to perform than was contemplated at the time the <i>Contract</i> was executed. No allowances will be made for additional costs and no claims by the <i>Contractor</i> will be entertained in connection with conditions which could reasonably have been ascertained by such investigation or other due diligence undertaken prior to the execution of the <i>Contract</i>.</p> <p>6.4.1.2 No claim by the <i>Contractor</i> will be considered by the <i>Owner</i> or the <i>Consultant</i> in connection with conditions which could reasonably have been ascertained by such investigation or other due diligence undertaken prior to the execution of the <i>Contract</i>.</p> <p>6.4.1.3 The <i>Contractor</i> expressly acknowledges that, prior to the submission of the bid on which the <i>Contract</i> was awarded, the <i>Contractor</i> may have been prevented from carefully investigating the <i>Place of the Work</i> as a result of <i>Force</i></p>
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		<p><i>Majeure</i>. Understanding such limitations, the <i>Contractor</i> proceeded with its bid. The <i>Contractor</i> shall not, therefore, make any claim arising from <i>Force Majeure</i> conditions which may have prevented the <i>Contractor</i> from fulfilling its obligations under this GC 6.4.”</p>
SC40.2	6.4.2	<p><u>Amend</u> paragraph 6.4.2 by <u>adding</u> a new first sentence as follows:</p> <p>“Having regard to paragraph 6.4.1, if the <i>Contractor</i> believes that the conditions of the <i>Place of the Work</i> differ materially from those reasonably anticipated, differ materially from those indicated in the <i>Contract Documents</i> or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1, it shall provide the <i>Owner</i> and the <i>Consultant</i> with <i>Notice in Writing</i> no later than five (5) <i>Working Days</i> after the first observation of such conditions.”</p> <p>-and-</p> <p><u>amend</u> the existing second sentence of paragraph 6.4.2 in the second line, following the word “materially” by <u>adding</u> the words “or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1,”.</p>
SC40.3	6.4.3	<p><u>Delete</u> paragraph 6.4.3 in its entirety and <u>substitute</u> the following:</p> <p>“6.4.3 If the <i>Consultant</i> makes a finding pursuant to paragraph 6.4.2 that no change in the <i>Contract Price</i> or the <i>Contract Time</i> is justified, the <i>Consultant</i> shall report in writing the reasons for this finding to the <i>Owner</i> and the <i>Contractor</i>.”</p>
SC40.4	6.4.5	<p><u>Add</u> new paragraph 6.4.5 as follows:</p> <p>“6.4.5 No claims for additional compensation or for an extension of <i>Contract Time</i> shall be allowed if the <i>Contractor</i> fails to give <i>Notice in Writing</i> to the <i>Owner</i> or <i>Consultant</i>, as required by paragraph 6.4.2.”</p>

SC41 GC 6.5

DELAYS

SC41.1	6.5.1	<p>In paragraph 6.5.1 <u>delete</u> the words after the word “for” in the fourth line and <u>replace</u> them with the words “...reasonable <i>Direct Costs</i> directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of</p>
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		profits, loss of opportunity or loss of productivity).”
SC41.2	6.5.2	<p>In paragraph 6.5.2,</p> <p><u>delete</u> the words “not issued as the result of an act or fault of the <i>Contractor</i> or any person employed or engaged by the <i>Contractor</i> directly or indirectly,” and <u>replace</u> them with “issued on account of a direct breach, violation, contravention, or a failure to abide by any laws, ordinances, rules, regulations, or codes by the <i>Owner</i>, the <i>Owner’s</i> other contractor(s), or the <i>Consultant</i>, and relating to the <i>Work</i> or the <i>Place of the Work</i>,”</p> <p>-and-</p> <p><u>delete</u> the words after the word “for” in the fourth line of paragraph 6.5.2, and <u>replace</u> them with the words “...reasonable <i>Direct Costs</i> directly flowing from the delay, but excluding any consequential, indirect or special damages (including, without limitation, loss of profits, loss of opportunity or loss of productivity).”</p>
SC41.3	6.5.3	<p><u>Delete</u> paragraph 6.5.3 in its entirety and <u>replace</u> with the following:</p> <p>“6.5.3 If either party is delayed in the performance of their obligations under this <i>Contract</i> by <i>Force Majeure</i>, then the <i>Contract Time</i> shall be extended for such reasonable time as the <i>Owner</i> and the <i>Contractor</i> shall agree. The extension of time shall not be less than the time lost as a result of the event causing the delay, unless the parties agree to a shorter extension. Neither party shall be entitled to payment for costs incurred by such delays. Upon reaching agreement on the extension of the <i>Contract Time</i> attributable to the <i>Force Majeure</i> event, the <i>Owner</i> and the <i>Contractor</i> shall execute a <i>Change Order</i> indicating the length of the extension to the <i>Contract Time</i> and confirming that there are no costs payable by the either party for the extension of <i>Contract Time</i>. However, if at the time an event of <i>Force Majeure</i> arises a party is in default of its obligations under the <i>Contract</i> and has received a notice of default pursuant to PART 7 – DEFAULT NOTICE, this paragraph 6.5.3 shall not excuse a party from its obligation to cure the default(s). For greater certainty, the defaulting party, to the extent possible, must continue to address and cure the default notwithstanding an event of <i>Force Majeure</i>.”</p>
SC41.4	6.5.4	<p><u>Delete</u> paragraph 6.5.4 in its entirety and <u>replace</u> it with the following:</p> <p>“6.5.4 No extension or compensation shall be made for delay or</p>

		<p>impact on the <i>Work</i> unless notice in writing of a claim is given to the <i>Consultant</i> not later than ten (10) <i>Working Days</i> after the commencement of the delays or impact on the <i>Work</i>, provided however, that, in the case of a continuing cause of delay or impact on the <i>Work</i>, only one notice of claim shall be necessary.”</p>
SC41.5	6.5.6 to 6.5.8	<p><u>Add</u> new paragraphs 6.5.6, 6.5.7 and 6.5.8 as follows:</p> <p>“6.5.6 If the <i>Contractor</i> is delayed in the performance of the <i>Work</i> by an act or omission of the <i>Contractor</i> or anyone directly or indirectly employed or engaged by the <i>Contractor</i>, or by any cause within the <i>Contractor’s</i> control, then (i) firstly, at its expense, and to the extent possible, the <i>Contractor</i> shall accelerate the work and/or provide overtime work to recover time lost by a delay arising under this paragraph 6.5.6, and (ii) secondly, where it is not possible for the <i>Contractor</i> to recover the time lost by implementing acceleration measures and/or overtime work, the <i>Contract Time</i> may be extended for such reasonable time as the <i>Owner</i> may decide in consultation with the <i>Consultant</i> and the <i>Contractor</i>. The <i>Owner</i> shall be reimbursed by the <i>Contractor</i> for all reasonable costs incurred by the <i>Owner</i> as the result of such delay, including, but not limited to, <i>Owner’s</i> staff costs, the cost of all additional services required by the <i>Owner</i> from the <i>Consultant</i> or any sub-consultants, project managers, or others employed or engaged by the <i>Owner</i>, and in particular, the costs of the <i>Consultant’s</i> services during the period between the date of <i>Substantial Performance of the Work</i> stated in Article A-1 herein, as the same may be extended through the provision of these General Conditions, and any later or actual date of <i>Substantial Performance of the Work</i> achieved by the <i>Contractor</i>.</p> <p>6.5.7 Without limiting the obligations of the <i>Contractor</i> described in GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS or GC 9.4 – CONSTRUCTION SAFETY, the <i>Owner</i> or <i>Consultant</i> may, by <i>Notice in Writing</i>, direct the <i>Contractor</i> to stop the <i>Work</i> where the <i>Owner</i> or <i>Consultant</i> determines that there is an imminent risk to the safety of persons or property at the <i>Place of the Work</i>. In the event that the <i>Contractor</i> receives such notice, it shall immediately stop the <i>Work</i> and secure the site. The <i>Contractor</i> shall not be entitled to an extension of the <i>Contract Time</i> or to an increase in the <i>Contract Price</i> unless the resulting delay, if</p>

		<p>any, would entitle the <i>Contractor</i> to an extension of the <i>Contract Time</i> or the reimbursement of the <i>Contractor's</i> costs as provided in paragraphs 6.5.1, 6.5.2 or 6.5.3.</p> <p>6.5.8 No claim for delay shall be made and the <i>Contract Time</i> shall not be extended due to climatic conditions or arising from the <i>Contractor's</i> efforts to maintain the <i>Construction Schedule</i>.”</p>
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PART 7 DEFAULT NOTICE

SC42 GC 7.1 OWNER’S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR’S RIGHT TO CONTINUE WITH THE WORK OR TERMINATE THE CONTRACT

SC42.1	7.1.3.4	<p><u>Add</u> a new subparagraph 7.1.3.4 as follows:</p> <p>“.4 an “acceptable schedule” as referred to in subparagraph 7.1.3.2. means a schedule approved by the <i>Consultant</i> and the <i>Owner</i> wherein the default can be corrected within the balance of the <i>Contract Time</i> and shall not cause delay to any other aspect of the <i>Work</i> or the work of other contractors, and in no event shall it be deemed to give a right to extend the <i>Contract Time</i>.”</p>
SC42.2	7.1.4.1	<p><u>Delete</u> subparagraph 7.1.4.1 and <u>replace</u> it with the following:</p> <p>“.1 correct such default and deduct the cost, including <i>Owner's</i> expenses, thereof from any payment then or thereafter due the <i>Contractor</i>.”</p>
SC42.3	7.1.4.2	<p><u>Delete</u> subparagraph 7.1.4.2 and <u>replace</u> it with the following:</p> <p>“.2 by providing <i>Notice in Writing</i> to the <i>Contractor</i>, terminate the <i>Contractor's</i> right to continue with the <i>Work</i> in whole or in part or terminate the <i>Contract</i>, and publish a notice of termination (Form 8) in accordance with the <i>Act</i>.”</p>
SC42.4	7.1.5.3	<p>In subparagraph 7.1.5.3 <u>delete</u> the words: “however, if such cost of finishing the <i>Work</i> is less than the unpaid balance of the <i>Contract Price</i>, the <i>Owner</i> shall pay the <i>Contractor</i> the difference”</p>
SC42.5	7.1.6	<p><u>Delete</u> paragraph 7.1.6 in its entirety.</p>
SC42.6	7.1.6 to 7.1.10	<p><u>Add</u> new paragraphs 7.1.6, 7.1.7, 7.1.8, 7.1.9 and 7.1.10 as follows:</p> <p>“7.1.6 In addition to its right to terminate the <i>Contract</i> set out herein, the <i>Owner</i> may terminate this <i>Contract</i> at any time for</p>

		<p>any other reason and without cause upon giving the <i>Contractor</i> fifteen (15) <i>Working Days Notice in Writing</i> to that effect. In such event, the <i>Contractor</i> shall be entitled to be paid for all <i>Work</i> performed including reasonable profit, for loss sustained upon <i>Products</i> and <i>Construction Equipment</i>, and such other damages as the <i>Contractor</i> may have sustained as a result of the termination of the <i>Contract</i>, but in no event shall the <i>Contractor</i> be entitled to be compensated for any loss of profit on unperformed portions of the <i>Work</i>, or indirect, special, or consequential damages incurred.</p> <p>7.1.7 The <i>Owner</i> may suspend <i>Work</i> under this <i>Contract</i> at any time for any reason and without cause upon giving the <i>Contractor</i> <i>Notice in Writing</i> to that effect. In such event, the <i>Contractor</i> shall be entitled to be paid for all <i>Work</i> performed to the date of suspension and be compensated for all actual costs incurred arising from the suspension, including reasonable profit, for loss sustained upon <i>Products</i> and <i>Construction Equipment</i>, and such other damages as the <i>Contractor</i> may have sustained as a result of the suspension of the <i>Work</i>, but in no event shall the <i>Contractor</i> be entitled to be compensated for any indirect, special, or consequential damages incurred. In the event that the suspension continues for more than thirty (30) calendar days, the <i>Contract</i> shall be deemed to be terminated and the provisions of paragraph 7.1.6 shall apply.</p> <p>7.1.8 In the case of either a termination of the <i>Contract</i> or a suspension of the <i>Work</i> under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the <i>Contractor</i> shall use its best commercial efforts to mitigate the financial consequences to the <i>Owner</i> arising out of the termination or suspension, as the case may be.</p> <p>7.1.9 Upon the resumption of the <i>Work</i> following a suspension under GC 7.1 - OWNER'S RIGHT TO PERFORM THE WORK, TERMINATE THE CONTRACTOR'S RIGHT TO CONTINUE WITH THE WORK, OR TERMINATE THE CONTRACT or GC 7.2 - CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the <i>Contractor</i> will endeavour to minimize the delay and financial consequences arising out of the suspension.</p>
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		7.1.10 The <i>Contractor's</i> obligations under the <i>Contract</i> as to quality, correction, and warranty of the <i>Work</i> performed by the <i>Contractor</i> up to the time of termination or suspension shall continue after such termination of the <i>Contract</i> or suspension of the <i>Work</i> .”
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SC43 GC 7.2 CONTRACTOR’S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

SC43.1	7.2.2	<u>Delete</u> paragraph 7.2.2 and <u>replace</u> it with the following: “7.2.2 If the <i>Work</i> is suspended or otherwise delayed for a period of 40 consecutive <i>Working Days</i> or more under a stop work order issued by a court or other public authority on account of a breach, violation, contravention, or a failure to abide by any laws, ordinances, rules, regulations, or codes directly by the <i>Owner</i> , the <i>Owner's</i> other contractor(s), or the <i>Consultant</i> , and relating to the <i>Work</i> or the <i>Place of the Work</i> , the <i>Contractor</i> may, without prejudice to any other right or remedy the <i>Contractor</i> may have, terminate the <i>Contract</i> by giving the <i>Owner</i> Notice in <i>Writing</i> to that effect.”
SC43.2	7.2.3 .1	<u>Delete</u> subparagraph 7.2.3.1 in its entirety.
SC43.3	7.2.3 .2	<u>Delete</u> subparagraph 7.2.3.2 in its entirety.
SC43.4	7.2.3 .4	In subparagraph 7.2.3.4, <u>delete</u> the words "except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER".
SC43.5	7.2.5	<u>Renumber</u> paragraph 7.2.5 as paragraph 7.2.6. and <u>add</u> a new paragraph 7.2.5 as follows: “7.2.5 If the default cannot be corrected within the 5 <i>Working Days</i> specified in paragraph 7.2.4, the <i>Owner</i> shall be deemed to have cured the default if it: .1 commences correction of the default within the specified time; .2 provides the <i>Contractor</i> with an acceptable schedule for such correction; and,

		.3 completes the correction in accordance with such schedule.”
SC43.6	7.2.6	<p>Delete paragraph 7.2.6 entirely and replace with the following:</p> <p>“7.2.6 If the <i>Contractor</i> terminates the <i>Contract</i> under the conditions described in GC 7.2 – CONTRACTOR’S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the <i>Contractor</i> shall be entitled to be paid for all <i>Work</i> performed to the date of termination, as determined by the <i>Consultant</i>. The <i>Contractor</i> shall also be entitled to recover the direct costs associated with termination, including the costs of demobilization and losses sustained on <i>Products</i> and <i>Construction Equipment</i>. The <i>Contractor</i> shall not be entitled to any recovery for any special, indirect or consequential losses, including loss of profit.”</p>
SC43.7	7.2.7 to 7.2.9	<p>Add new paragraphs 7.2.7, 7.2.8 and 7.2.9 as follows:</p> <p>“7.2.7 The <i>Contractor</i> shall not be entitled to give notice of the <i>Owner’s</i> default or terminate the <i>Contract</i> in the event the <i>Owner</i> withholds certificates or payment or both in accordance with the <i>Contract</i> because of:</p> <p>.1 the <i>Contractor’s</i> failure to pay all legitimate claims promptly, or</p> <p>.2 the failure of the <i>Contractor</i> to discharge construction liens which are registered against the title to the <i>Place of the Work</i>.</p> <p>7.2.8 The <i>Contractor’s</i> obligations under the <i>Contract</i> as to quality, correction and warranty of the <i>Work</i> performed by the <i>Contractor</i> up to the effective date of termination shall continue in force and shall survive termination of this <i>Contract</i> by the <i>Contractor</i>.</p> <p>7.2.9 If the <i>Contractor</i> suspends the <i>Work</i> or terminates the <i>Contract</i> as provided for in GC 7.2 – CONTRACTOR’S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the <i>Contractor</i> shall ensure the site and the <i>Work</i> are left in a safe, secure condition as required by authorities having jurisdiction at the <i>Place of the Work</i> and the <i>Contract Documents</i>.”</p>

SC44 GC 8.1

AUTHORITY OF THE CONSULTANT

SC44.1	8.1.3	<p><u>Delete</u> paragraph 8.1.3 in its entirety and <u>substitute</u> as follows:</p> <p>“8.1.3 If a dispute is not resolved promptly, the <i>Consultant</i> will give such instruction as in the <i>Consultant’s</i> opinion are necessary for the proper performance of the <i>Work</i> and to prevent delays pending settlement of the dispute. The parties shall act immediately according to such instructions, it being understood that by doing so neither party will jeopardize any claim the party may have.”</p>
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SC45 GC 8.2

NEGOTIATION, MEDIATION AND ARBITRATION

SC45.1	8.2.1	<p><u>Amend</u> paragraph 8.2.1 by changing part of the second line from “shall appoint a <i>Project Mediator</i>” to “may appoint a <i>Project Mediator</i>, except that such an appointment shall only be made if both the <i>Owner</i> and the <i>Contractor</i> agree.”</p>
SC45.2	8.2.4	<p><u>Amend</u> paragraph 8.2.4 by changing part of the second line from “the parties shall request the <i>Project Mediator</i>” to “and subject to paragraph 8.2.1 the parties may request the <i>Project Mediator</i>”.</p>
SC45.3	8.2.6 to 8.2.8	<p><u>Delete</u> paragraphs 8.2.6, 8.2.7 and 8.2.8 in their entirety.</p>
SC45.4	8.2.6	<p><u>Add</u> new paragraph 8.2.6 as follows:</p> <p>“8.2.6 The dispute may be finally resolved by arbitration under the Rules for Arbitration of Construction Disputes as provided in CCDC 40 in effect at the time of bid closing, provided that both the <i>Contractor</i> and the <i>Owner</i> agree. If the <i>Contractor</i> and the <i>Owner</i> agree to resolve the dispute by arbitration, the arbitration shall be conducted in the jurisdiction of the <i>Place of the Work</i>.”</p>
SC45.5	8.2.9 , 8.2.1 0 & 8.2.1 1	<p><u>Add</u> a new paragraphs 8.2.9, 8.2.10, and 8.2.11 as follows:</p> <p>“8.2.9 Prior to delivering a notice of <i>Adjudication</i> in a form prescribed by the <i>Act</i>, the parties agree to first address all disputes by attending at least one meeting with the <i>Owner’s</i> representative, the <i>Consultant’s</i> representative, and the <i>Contractor’s</i> representative, prior to commencing an <i>Adjudication</i>. The parties agree that such steps will be taken</p>

		<p>to resolve any disputes in a timely and cost effective manner. If a resolution to the dispute(s) is not made at such a meeting, any party who plans to commence an <i>Adjudication</i> shall provide the other party with 5 <i>Working Days' Notice in Writing</i> of its intention to issue a notice of <i>Adjudication</i>.</p> <p>8.2.10 Other than where the <i>Contractor</i> is obliged to commence an <i>Adjudication</i> pursuant to an undertaking under the <i>Act</i>, neither the <i>Owner</i> nor the <i>Contractor</i> shall commence an <i>Adjudication</i> during the <i>Restricted Period</i>.</p> <p>8.2.11 Where either party has delivered a notice of <i>Adjudication</i> in a form prescribed by the <i>Act</i>, the procedures and rules set out under the <i>Act</i> and the regulations thereto shall govern the <i>Adjudication</i>."</p>
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SC46 GC 9.1 PROTECTION OF WORK AND PROPERTY

SC46.1	9.1.1 .1	<p><u>Delete</u> subparagraph 9.1.1.1 in its entirety and <u>substitute</u> the following:</p> <p>“.1 errors in the <i>Contract Documents</i> which the <i>Contractor</i> could not have discovered applying the standard of care described in paragraph 3.14.1;”</p>
SC46.2	9.1.2	<p><u>Delete</u> paragraph 9.1.2 in its entirety and <u>substitute</u> as follows:</p> <p>“9.1.2 Before commencing any <i>Work</i>, the <i>Contractor</i> shall determine the locations of all underground or hidden utilities and structures indicated in or inferable from the <i>Contract Documents</i>, or that are inferable from an inspection of the <i>Place of the Work</i> exercising the degree of care and skill described in paragraph 3.14.1.”</p>
SC46.3	9.1.5	<p><u>Add</u> new paragraph 9.1.5 as follows:</p> <p>“9.1.5 With respect to any damage to which paragraphs 9.1.3 or 9.1.4 apply, the <i>Contractor</i> shall neither undertake to repair or replace any damage whatsoever to the work of other contractors, or to adjoining property, nor acknowledge that the same was caused or occasioned by the <i>Contractor</i>, without first consulting the <i>Owner</i> and receiving written instructions as to the course of action to be followed from either the <i>Owner</i> or the <i>Consultant</i>. Where, however, there is danger to life, the environment, or public safety, the</p>

		<i>Contractor</i> shall take such emergency action as it deems necessary to remove the danger.”
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SC47 GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

SC47.1	9.2.5 .5	<u>Add</u> a new subparagraph 9.2.5.5 as follows: “.5 in addition to the steps described in subparagraph 9.2.5.3, take any further steps it deems necessary to mitigate or stabilize any conditions resulting from encountering toxic or hazardous substances or materials.”
SC47.2	9.2.6	<u>Add</u> the following to paragraph 9.2.6, after the word “responsible” in the second line: “or whether any toxic or hazardous substances or materials already at the <i>Place of the Work</i> (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the <i>Contractor</i> or anyone for whom the <i>Contractor</i> 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 damages to the property of the <i>Owner</i> or others,”.
SC47.3	9.2.8	<u>Add</u> the following to paragraph 9.2.8, after the word “responsible” in the second line: “or whether any toxic or hazardous substances or materials already at the <i>Place of the Work</i> (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the <i>Contractor</i> or anyone for whom the <i>Contractor</i> 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 damages to the property of the <i>Owner</i> or others,”.
SC47.4	9.2.1 0	<u>Add</u> new paragraph 9.2.10 as follows: “9.2.10 The <i>Contractor</i> , <i>Subcontractors</i> and <i>Suppliers</i> shall not bring on to the <i>Place of the Work</i> any toxic or hazardous substances and materials except as required in order to perform the <i>Work</i> . If such toxic or hazardous substances or materials are required, storage in quantities sufficient to allow work to proceed to the end of any current work week only shall be permitted. All such toxic and hazardous materials and substances shall be handled and disposed of

		only in accordance with all laws and regulations that are applicable at the <i>Place of the Work</i> .”
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SC48 GC 9.4 CONSTRUCTION SAFETY

SC48.1	9.4.1	<p><u>Delete</u> paragraph 9.4.1 in its entirety and <u>substitute</u> as follows:</p> <p>“9.4.1 The <i>Contractor</i> shall be solely responsible for construction safety at the <i>Place of the Work</i> and for compliance with the rules, regulations, and practices required by the <i>OHSA</i>, including, but not limited to those of the "constructor", and shall be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with the performance of the <i>Work</i>. Without limiting the foregoing, the <i>Contractor</i> shall be solely responsible for construction safety in respect of its <i>Consultants</i>, other <i>Consultants</i>, <i>Subcontractors</i> and <i>Suppliers</i>, the <i>Owner's</i> own forces, and other contractors, subcontractors, and suppliers during the course of the <i>Project</i>.”</p>
SC48.2	9.4.2 to 9.4.10	<p><u>Add</u> new paragraphs 9.4.2 to 9.4.10 as follows:</p> <p>9.4.2 Prior to the commencement of the <i>Work</i>, the <i>Contractor</i> shall submit to the <i>Owner</i>:</p> <ol style="list-style-type: none"> .1 the evidence of workers' compensation compliance required by GC 10.4.1; .2 copies of the <i>Contractor's</i> insurance policies having application to the <i>Project</i> or certificates of insurance, at the option of the <i>Owner</i>; .3 documentation setting out the <i>Contractor's</i> in-house safety programs; .4 a copy of the "Notice of Project" filed with the Ministry of Labour; .5 copies of any documentation or notices to be filed or delivered to the authorities having jurisdiction for the regulation of occupational health and safety at the <i>Place of the Work</i>. <p>9.4.3 The <i>Contractor</i> shall indemnify and save harmless the <i>Owner</i>,</p>

		<p>its agents, trustees, officers, directors, employees, consultants, successors, appointees, and assigns from and against the consequences of any and all safety infractions committed by the <i>Contractor</i> under the occupational health and safety legislation in force at the <i>Place of the Work</i> including the payment of legal fees and disbursements on a substantial indemnity basis.</p> <p>9.4.4 The <i>Owner</i> undertakes to include in its contracts with other contractors and in its instructions to its own forces the requirement that the other contractor or its own forces, as the case may be, comply with the policies and procedures of and the directions and instructions from the <i>Contractor</i> with respect to occupational health and safety and related matters.</p> <p>9.4.5 If the <i>Owner</i> is of the reasonable opinion that the <i>Contractor</i> has not taken such precautions as are necessary to ensure compliance with the requirements of paragraph 9.4.1, the <i>Owner</i> may take any remedial measures which it deems necessary, including stopping the performance of all or any portion of the <i>Work</i>, and the <i>Owner</i> may use its employees, the <i>Contractor</i>, any <i>Subcontractor</i> or any other contractors to perform such remedial measures.</p> <p>9.4.6 The <i>Contractor</i> shall file any notices or any similar document required pursuant to the <i>Contract</i> or the safety regulations in force at the <i>Place of the Work</i>. This duty of the <i>Contractor</i> will be considered to be included in the <i>Work</i> and no separate payment therefore will be made to the <i>Contractor</i>.</p> <p>9.4.7 Unless otherwise provided in the <i>Contract Documents</i>, the <i>Contractor</i> shall develop, maintain and supervise for the duration of the <i>Work</i> a comprehensive safety program that will effectively incorporate and implement all required safety precautions. The program shall, at a minimum, respond fully to the applicable safety regulations and general construction practices for the safety of persons or property, including, without limitation, any general safety rules and regulations of the <i>Owner</i> and any workers' compensation or occupational health and safety statutes or regulations in force at the <i>Place of the Work</i>.</p> <p>9.4.8 The <i>Contractor</i> shall provide a copy of the safety program described in paragraph 9.4.7 hereof to the <i>Consultant</i> for delivery to the <i>Owner</i> prior to the commencement of the <i>Work</i>,</p>
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		<p>and shall, ensure, as far as it is reasonably practical to do so, that every employer and worker performing work in respect of the <i>Project</i> complies with such program.</p> <p>9.4.9 The <i>Contractor</i> shall arrange regular safety meetings, and shall supply and maintain, at its own expense, at its office or other well-known place at the job site, safety equipment necessary to protect the workers and general public against accident or injury as prescribed by the authorities having jurisdiction at the <i>Place of the Work</i>, including, without limitation, articles necessary for administering first-aid to any person and an emergency procedure for the immediate removal of any inured person to a hospital or a doctor's care.</p> <p>9.4.10 The <i>Contractor</i> shall promptly report in writing to the <i>Owner</i> and the <i>Consultant</i> all accidents of any sort arising out of or in connection with the performance of the <i>Work</i>, whether on or adjacent to the job site, giving full details and statement of witnesses. If death or serious injuries or damages are caused, the accident shall be promptly reported by the <i>Contractor</i> to the <i>Owner</i> and the <i>Consultant</i> by telephone or messenger in addition to any reporting required under the applicable safety regulations."</p>
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SC49 GC 10.1 TAXES AND DUTIES

SC49.1	10.1.2	<p><u>Amend</u> paragraph 10.1.2 by <u>adding</u> the following sentence to the end of the paragraph:</p> <p>"For greater certainty, the <i>Contractor</i> shall not be entitled to any mark-up for overhead or profit on any increase in such taxes and duties and the <i>Owner</i> shall not be entitled to any credit relating to mark-up for overhead or profit on any decrease in such taxes. The <i>Contractor</i> shall provide a detailed breakdown of <u>Additional</u> taxes if requested by the <i>Owner</i> in a form satisfactory to the <i>Owner</i>."</p>
SC49.2	10.1.3	<p><u>Add</u> new paragraph 10.1.3 as follows:</p> <p>"10.1.3 Where the <i>Owner</i> is entitled to an exemption or a recovery of sales taxes, customs duties, excise taxes or <i>Value Added Taxes</i> applicable to the <i>Contract</i>, the <i>Contractor</i> shall, at the request of the <i>Owner</i>, assist with the application for any 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 <i>Owner</i>. The <i>Contractor</i> agrees to endorse over to the <i>Owner</i> any cheques received</p>

		from the federal or provincial governments, or any other taxing authority, as may be required to give effect to this paragraph.”
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SC50 GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

SC50.1	10.2.5	<p><u>Amend</u> paragraph 10.2.5 by <u>adding</u> the words “Subject to paragraph 3.4” at the beginning of the paragraph.</p> <p>-and-</p> <p><u>Add</u> the following to the end of the second sentence:</p> <p>“...and no further <i>Work</i> on the affected components of the <i>Contract</i> shall proceed until these directives have been obtained by the <i>Contractor</i> from the <i>Consultant</i>.”</p>
SC50.2	10.2.6	<p><u>Amend</u> paragraph 10.2.6 by <u>adding</u> the following sentence to the end of the paragraph:</p> <p>“In the event the <i>Owner</i> suffers loss or damage as a result of the <i>Contractor’s</i> failure to comply with paragraph 10.2.5 and notwithstanding any limitations described in paragraph 12.1.1, the <i>Contractor</i> agrees to indemnify and to hold harmless the <i>Owner</i> and the <i>Consultant</i> from and against any claims, demands, losses, costs, damages, actions suits or proceedings resulting from such failure by the <i>Contractor</i>.”</p>
SC50.3	10.2.7	<p><u>Amend</u> paragraph 10.2.7 by inserting the words “which changes were not, or could not have reasonably been known to the <i>Owner</i> or to the <i>Contractor</i>, as applicable, at the time of bid closing and which changes did not arise as a result of a public emergency or other <i>Force Majeure</i> event” to the second line, after the words “authorities having jurisdiction”.</p>
SC50.4	10.2.8	<p><u>Add</u> new paragraph 10.2.8 as follows:</p> <p>“10.2.8 The <i>Contractor</i> shall furnish all certificates that are required or given by the appropriate governmental authorities as evidence that the <i>Work</i> as installed conforms with the laws and regulations of authorities having jurisdiction, including certificates of compliance for the <i>Owner’s</i> occupancy or partial occupancy. The certificates are to be final certificates giving complete clearance of the <i>Work</i>, in the event that such governmental authorities</p>

		furnish such certificates.”
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SC51 GC 10.4 WORKERS’ COMPENSATION

SC51.1	10.4.1	<p><u>Delete</u> paragraph 10.4.1 and <u>replace</u> with the following:</p> <p>“10.4.1 Prior to commencing the <i>Work</i>, and with each and every application for payment thereafter, including the <i>Contractor’s</i> application for payment of the holdback amount following <i>Substantial Performance of the Work</i> and again with the <i>Contractor’s</i> application for final payment, the <i>Contractor</i> shall provide evidence of compliance with workers’ compensation legislation in force at the <i>Place of the Work</i>, including payments due thereunder.”</p>
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SC52 GC 11.1 INSURANCE

SC52.1	11.1	<p><u>Delete</u> entirety of GC 11.1 and <u>replace</u> with the following:</p> <p>“GC 11.1 INSURANCE</p> <p>11.1.1 Without restricting the generality of GC 12 – INDEMNIFICATION, the <i>Contractor</i> shall provide, maintain, and pay for the insurance coverages specified in GC 11.1 – INSURANCE. Unless otherwise stipulated, the duration of each insurance policy shall be from the date of commencement of the <i>Work</i> until the expiration of the warranty periods set out in the <i>Contract Documents</i>. Prior to commencement of the <i>Work</i> and upon the placement, renewal, <u>amendment</u>, or extension of all or any part of the insurance, the <i>Contractor</i> shall promptly provide the <i>Owner</i> with confirmation of coverage and, if required, a certified true copy of the policies certified by an authorized representative of the insurer together with copies of any <u>amending</u> endorsements.</p> <p>.1 General Liability Insurance</p> <p>General liability insurance shall be in the name of the <i>Contractor</i>, with the <i>Owner</i> and the <i>Consultant</i> named as <u>Additional insureds</u>, with limits of not less than \$2,000,000.00 inclusive per occurrence for bodily injury, death, and damage</p>
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		<p>to property, including loss of use thereof, for itself and each of its employees, <i>Subcontractors</i> and/or agents. The insurance coverage shall not be less than the insurance required by IBC Form 2100, or its equivalent <u>replacement</u>, provided that IBC Form 2100 shall contain the latest edition of the relevant CCDC endorsement form. To achieve the desired limit, umbrella, or excess liability insurance may be used. All liability coverage shall be maintained for completed operations hazards from the date of <i>Substantial Performance of the Work</i>, as set out in the certificate of <i>Substantial Performance of the Work</i>, on an ongoing basis for a period of 6 years following <i>Substantial Performance of the Work</i>. Where the <i>Contractor</i> maintains a single, blanket policy, the <u>Addition</u> of the <i>Owner</i> and the <i>Consultant</i> is limited to liability arising out of the <i>Project</i> and all operations necessary or incidental thereto. The policy shall be endorsed to provide the <i>Owner</i> with not less than 30 days' notice, in writing, in advance of any cancellation and of change or <u>amendment</u> restricting coverage.</p> <p>.2 Automobile Liability Insurance</p> <p>Automobile liability insurance in respect of licensed vehicles shall limits of not less than \$2,000,000.00 inclusive per occurrence for bodily injury, death and damage to property, covering all licensed vehicles <i>owned</i> or leased by the <i>Contractor</i>, and endorsed to provide the <i>Owner</i> with not less than 30 days' notice, in writing, in advance of any cancellation, change or <u>amendment</u> restricting coverage. Where the policy has been issued pursuant to a government-operated automobile insurance system, the <i>Contractor</i> shall provide the <i>Owner</i> with confirmation of automobile insurance coverage for all automobiles registered in the name of the <i>Contractor</i>.</p> <p>.3 Aircraft and Watercraft Liability Insurance</p> <p>Where determined necessary by the <i>Contractor</i>, acting reasonably, aircraft and watercraft liability insurance will be obtained in accordance with the provisions of paragraph 11.1.3. Aircraft and watercraft liability insurance with respect to owned or non-owned aircraft and watercraft if used directly or indirectly in the performance of the <i>Work</i>, including use of <u>Additional</u> premises, shall be subject to limits of not less than \$2,000,000.00 inclusive per occurrence for bodily injury,</p>
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death and damage to property, including loss of use thereof and limits of not less than \$2,000,000.00 for aircraft passenger hazard. Such insurance shall be in a form acceptable to the *Owner*. The policies shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of cancellation, change or amendment restricting coverage.

.4 Property and Boiler and Machinery Insurance

(1) Builder's Risk property insurance shall be in the name of the *Contractor* with the *Owner* and the *Consultant* named as Additional insureds. The policy shall insure against all risks of direct physical loss or damage to the property insured which shall include all property included in the *Work*, whether owned by the *Contractor* or the owner or owned by others, so long as the property forms part of the *Work*. The property insured also includes all materials and supplies necessary to complete the work, whether installed in the work temporarily or permanently, in storage on the project site, or in transit to the project site, as well as temporary buildings, scaffolding, falsework forms, hoardings, excavation, site preparation and similar work. The insurance shall be for not less than the sum of the amount of the contract price and the full value of products that are specified to be provided by the owner for incorporation into the work, if applicable, with the deductible of \$10,000.00 payable by the contractor. The insurance shall include the foregoing and, otherwise, shall not be less than the insurance required by IBC Form 4042 or its equivalent replacement provided that the IBC Form 4042 shall include the latest Addition of the relevant CCDC endorsement form. The coverage shall be based on a completed value form and shall be maintained continuously until ten (10) days after the date of the final certificate of payment.

(2) Boiler and machinery insurance shall be in the name of the *Contractor*, with the *Owner* and the *Consultant* named as Additional insureds, for not less than the replacement value of the boilers, pressure vessels and other insurable objects forming part of the *Work*. The insurance provided shall not be less than the insurance provided by the "Comprehensive Boiler and Machinery Form" and shall be maintained continuously from commencement of use or operation of the property insured and until 10 days after the date of the final certificate for payment.

		<p>(3) The policies shall allow for partial or total use or occupancy of the <i>Work</i>.</p> <p>(4) The policies shall provide that, in the case of a loss or damage, payment shall be made to the <i>Owner</i> and the <i>Contractor</i> as their respective interests may appear. The <i>Contractor</i> shall act on behalf of the <i>Owner</i> for the purpose of adjusting the amount of such loss or damage payment with the insurers. When the extent of the loss or damage is determined, the <i>Contractor</i> shall proceed to restore the <i>Work</i>. Loss or damage shall not affect the rights and obligations of either party under the <i>Contract</i> except that the <i>Contractor</i> shall be entitled to such reasonable extension of the <i>Contract Time</i>, relative to the extent of the loss or damage, as determined by the <i>Owner</i>, in its sole discretion.</p> <p>(5) The <i>Contractor</i> shall be entitled to receive from the <i>Owner</i>, in <u>Addition</u> to the amount due under the <i>Contract</i>, the amount at which the <i>Owner's</i> interest in restoration of the <i>Work</i> has been appraised, such amount to be paid as the restoration of the <i>Work</i> proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT. In <u>Addition</u>, the <i>Contractor</i> shall be entitled to receive from the payments made by the insurer the amount of the <i>Contractor's</i> interest in the restoration of the <i>Work</i>.</p> <p>(6) In the case of loss or damage to the <i>Work</i> arising from the work of other contractors, or the <i>Owner's</i> own forces, the <i>Owner</i>, in accordance with the <i>Owner's</i> obligations under paragraph 3.2.2.4 of GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, shall pay the <i>Contractor</i> the cost of restoring the <i>Work</i> as the restoration of the <i>Work</i> proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT.</p> <p>.5 Contractors' Equipment Insurance</p> <p>"All risks" contractors' equipment insurance covering construction machinery and equipment used by the <i>Contractor</i> for the performance of the <i>Work</i>, excluding boiler insurance, shall be in a form acceptable to the <i>Owner</i> and shall not allow subrogation claims by the insurer against the</p>
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		<p><i>Owner</i>. The policies shall be endorsed to provide the <i>Owner</i> with not less than 30 days' notice, in writing, in advance of cancellation, change or <u>amendment</u> restricting coverage. Subject to satisfactory proof of financial capability by the <i>Contractor</i> for self-insurance of his equipment, the <i>Owner</i> agrees to waive the equipment insurance requirement.</p> <p>11.1.2 The <i>Contractor</i> shall be responsible for deductible amounts under the policies except where such amounts may be excluded from the <i>Contractor's</i> responsibility by the terms of GC 9.1 - PROTECTION OF WORK AND PROPERTY and GC 9.2 - DAMAGES AND MUTUAL RESPONSIBILITY.</p> <p>11.1.3 Where the full insurable value of the <i>Work</i> is substantially less than the <i>Contract Price</i>, the <i>Owner</i> may reduce the amount of insurance required to waive the course of construction insurance requirement.</p> <p>11.1.4 If the <i>Contractor</i> fails to provide or maintain insurance as required by the <i>Contract Documents</i>, then the <i>Owner</i> shall have the right to provide and maintain such insurance and provide evidence of same to the <i>Contractor</i>. The <i>Contractor</i> shall pay the costs thereof to the <i>Owner</i> on demand, or the <i>Owner</i> may deduct the amount that is due or may become due to the <i>Contractor</i>.</p> <p>11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the <i>Place of the Work</i>."</p>
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SC53 GC 11.2 CONTRACT SECURITY

SC53.1	11.2.1	<p><u>Delete</u> paragraph 11.2.1 and <u>replace</u> it with the following:</p> <p>"11.2.1 If required by the <i>Contract Documents</i>, the <i>Contractor</i> shall, prior to the execution of the <i>Contract</i> and within 7 calendar days of receiving <i>Notice in Writing</i> to do so, furnish a performance bond and labour and material payment bond which meets the requirements under paragraph 11.2.2."</p>
SC53.2	11.2.2	<p><u>Delete</u> paragraph 11.2.2 and <u>replace</u> it with the following:</p> <p>"11.2.2 The performance bond and labour and material payment bond, if required, shall:</p>

		<p>.1 be issued by a duly licensed surety company, which has been approved by the <i>Owner</i> and is permitted under the <i>Construction Act</i>,</p> <p>.2 be issued by an insurer licensed under the <i>Insurance Act</i> (Ontario) and authorized to transact a business of suretyship in the Province of Ontario;</p> <p>.3 shall be in the form prescribed by the <i>Act</i>,</p> <p>.4 have a coverage limit of at least 50 per cent of the <i>Contract Price</i>, or such other percentage of the <i>Contract Price</i> as stated in the <i>Contract Documents</i>;</p> <p>.5 extends protection to <i>Subcontractors</i>, <i>Suppliers</i>, and any other persons supplying labour or materials to the <i>Project</i>; and</p> <p>.4 shall be maintained in good standing until the fulfillment of the <i>Contract</i>, including all warranty and maintenance periods set out in the <i>Contract Documents</i>.”</p>
SC53.3	11.2.3	<p>Add new paragraph 11.2.3 as follows:</p> <p>“11.2.3 It is the intention of the parties that the performance bond shall be applicable to all of the <i>Contractor’s</i> obligations in the <i>Contract Document</i> and, wherever a performance bond is provided with language which conflicts with this intention, it shall be deemed to be amended to comply. The <i>Contractor</i> represents and warrants to the <i>Owner</i> that it has provided its surety with a copy of the <i>Contract Documents</i> prior to the issuance of such bonds.”</p>

SC54 GC 12.1 INDEMNIFICATION

SC54.1	12.1	<p>Delete GC 12.1 – INDEMNIFICATION in its entirety and substitute as follows:</p> <p>“12.1.1 The <i>Contractor</i> shall indemnify and hold harmless the <i>Owner</i>, its parent, subsidiaries and affiliates, their respective partners, trustees, officers, directors, agents and employees and the <i>Consultant</i> from and against any and all claims, liabilities, expenses, demands, losses, damages, actions, costs, suits, or proceedings (hereinafter called “claims”), whether in respect of claims suffered by the <i>Owner</i> or in respect of claims by third parties, that directly or indirectly arise out of, or are attributable to, the acts or omissions of</p>
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		<p>the <i>Contractor</i>, its employees, agents, <i>Subcontractors</i>, <i>Suppliers</i> or any other persons for whom it is in law responsible (including, without limitation, claims that directly or indirectly arise out of, or are attributable to, loss of use or damage to the <i>Work</i>, the <i>Owner's</i> property or equipment, the <i>Contractor's</i> property or equipment or equipment or property adjacent to the <i>Place of the Work</i> or death or injury to the <i>Contractor's</i> personnel).</p> <p>12.1.2 The provisions of GC 12.1 - INDEMNIFICATION shall survive the termination of the <i>Contract</i>, howsoever caused and no payment or partial payment, no issuance of a final certificate of payment and no occupancy in whole or in part of the <i>Work</i> shall constitute a waiver or release of any of the provisions of GC 12.1.”</p>
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SC55 GC 12.2 WAIVER OF CLAIMS

SC55.1	12.2.1	<p>In paragraph 12.2.1 in the fourth line after the word “limitation” <u>add</u> the words “claims for delay pursuant to GC 6.5 DELAYS”</p> <p>-and-</p> <p><u>add</u> the words “(collectively “Claims”)” after “<i>Substantial Performance of the Work</i>” in the sixth line.</p>
SC55.2	12.2.1 .1	In subparagraph 12.2.1.1 change the word “claims” to “Claims” and change the word “claim” to “Claim”.
SC55.3	12.2.1 .2	In subparagraph 12.2.1.2 change the word “claims” to “Claims”.
SC55.4	12.2.1 .3	<u>Delete</u> subparagraph 12.2.1.3 in its entirety.
SC55.5	12.2.1 .4	In paragraph 12.2.1.4 change the word “claims” to “Claims”.
SC55.6	12.2.2	<p>In paragraph 12.2.2 <u>delete</u> the words “in paragraphs 12.2.1.2 and 12.2.1.3” and <u>replace</u> them with “in paragraph 12.2.1.2”</p> <p>-and-</p> <p>change the word “claims” to “Claims” in both instances and change the word “claim” to “Claim”.</p>
SC55.7	12.2.3	<u>Delete</u> paragraph 12.2.3 in its entirety.

SC55.8	12.2.4	<u>Delete</u> paragraph 12.2.4 in its entirety.
SC55.9	12.2.5	<u>Delete</u> paragraph 12.2.5 in its entirety.
SC55.10	12.2.6	In paragraph 12.2.6 change the word “claim” to “Claim” in all instances in the paragraph.
SC55.11	12.2.7	In paragraph 12.2.7 change “The party” to “The <i>Contractor</i> ” -and- change the word “claim” to “Claim” in all instances in the paragraph.
SC55.12	12.2.8	In paragraph 12.2.8 <u>delete</u> the words “under paragraphs 12.2.1 or 12.2.3” and <u>replace</u> them with “under paragraph 12.2.1” -and- change both instances of the words “the party” to “the <i>Contractor</i> ”. Change the word “claim” to “Claim” in all instances in the paragraph.
SC55.13	12.2.9	<u>Delete</u> paragraph 12.2.9 in its entirety.
SC55.14	12.2.10	<u>Delete</u> paragraph 12.2.10 in its entirety.

SC56 GC 12.3 WARRANTY

SC56.1	12.3.2	<u>Delete</u> from the first line of paragraph 12.3.2 the word, “The” and <u>substitute</u> with the words “Subject to paragraph 3.4.1, the...”
SC56.2	12.3.7 to 12.3.12	<u>Add</u> new paragraphs 12.3.7 to 12.3.12 as follows: “12.3.7 Where required by the <i>Contract Documents</i> , the <i>Contractor</i> shall provide a maintenance bond as security for the performance of the <i>Contractor’s</i> obligations as set out in GC 12.3 WARRANTY. 12.3.8 The <i>Contractor</i> shall provide fully and properly completed and signed copies of all warranties and guarantees required by the <i>Contract Documents</i> , containing: .1 the proper name of the <i>Owner</i> , .2 the proper name and address of the <i>Project</i> , .3 the date the warranty commences, which shall be at the “date of <i>Substantial Performance of the Work</i> ” unless otherwise agreed upon by the <i>Consultant</i> in writing.

		<p>.4 a clear definition of what is being warranted and/or guaranteed as required by the <i>Contract Documents</i>; and</p> <p>.5 the signature and seal (if required by the governing law of the <i>Contract</i>) of the company issuing the warranty, countersigned by the <i>Contractor</i>.</p> <p>12.3.9 Should any <i>Work</i> be repaired or replaced during the time period for which it is covered by the specified warranty, a new warranty shall be provided under the same conditions and for the same period as specified herein before. The new warranty shall commence at the completion of the repair or replacement.</p> <p>12.3.10 The <i>Contractor</i> shall ensure that its <i>Subcontractors</i> are bound to the requirements of GC 12.3 – WARRANTY for the <i>Subcontractor's</i> portion of the <i>Work</i>.</p> <p>12.3.11 The <i>Contractor</i> shall ensure that all warranties, guarantees or other obligations for <i>Work</i>, services or <i>Products</i> performed or supplied by any <i>Subcontractor</i>, <i>Supplier</i> or other person in connection with the <i>Work</i> are obtained and available for the direct benefit of the <i>Owner</i>. In the alternative, the <i>Contractor</i> shall assign to the <i>Owner</i> all warranties, guarantees or other obligations for <i>Work</i>, services or <i>Products</i> performed or supplied by any <i>Subcontractor</i>, <i>Supplier</i> or other person in connection with the <i>Work</i> and such assignment shall be with the consent of the assigning party, where required by law, or by the terms of that party's contract. Such assignment shall be in addition to, and shall in no way limit, the warranty rights of the <i>Owner</i> under the <i>Contract Documents</i>.</p> <p>12.3.12 The <i>Contractor</i> shall commence or correct any deficiency within 2 <i>Working Days</i> after receiving a <i>Notice in Writing</i> from the <i>Owner</i> or the <i>Consultant</i>, and shall complete the <i>Work</i> as expeditiously as possible, except in the case where the deficiency prevents maintaining security or where basic systems essential to the ongoing business of the <i>Owner</i> and/or its tenants cannot be maintained operational as designed. In those circumstances all necessary corrections and/or installations of temporary replacements shall be carried out immediately as an emergency service. Should the <i>Contractor</i> fail to provide this emergency service within 8 hours of a request being</p>
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		made during the normal business hours of the <i>Contractor</i> , the <i>Owner</i> is authorized, notwithstanding GC 3.1, to carry out all necessary repairs or replacements at the <i>Contractor's</i> expense.”
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***NEW* PART 13 OTHER PROVISIONS**

SC57 GC 13.1 OWNERSHIP OF MATERIALS

SC57.1	13.1	<p>Add new GC 13.1 – OWNERSHIP OF MATERIALS as follows:</p> <p>“GC 13.1 OWNERSHIP OF MATERIALS</p> <p>“13.1.1 Unless otherwise specified, all materials existing at the <i>Place of the Work</i> at the time of execution of the <i>Contract</i> shall remain the property of the <i>Owner</i>. All <i>Work</i> and <i>Products</i> delivered to the <i>Place of the Work</i> by the <i>Contractor</i> shall be the property of the <i>Owner</i>. The <i>Contractor</i> shall remove all surplus or rejected materials as its property when notified in writing to do so by the <i>Consultant</i>.”</p>
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SC58 GC 13.2 CONSTRUCTION LIENS

SC58.1	13.2	<p>Add new GC 13.2 – CONSTRUCTION LIENS as follows:</p> <p>“GC 13.2 LIENS</p> <p>13.2.1 Notwithstanding any other provision in the <i>Contract</i>, the <i>Consultant</i> shall not be obligated to issue a certificate, and the <i>Owner</i> shall not be obligated to make payment, subject to the <i>Owner's</i> requirement to issue a <i>Notice of Non-Payment</i> (Form 1.1) to the <i>Contractor</i>, if at the time such certificate or payment was otherwise due:</p> <ul style="list-style-type: none"> .1 a claim for lien has been registered against the <i>Project</i> lands by a <i>Subcontractor</i> or a <i>Supplier</i> that has not been vacated or discharged by the <i>Contractor</i> in accordance with the requirements of this <i>Contract</i>, or .2 if the <i>Owner</i> or a mortgagee of the <i>Project</i> lands has received a written notice of a lien that has not been resolved by the <i>Contractor</i> through the posting of security or otherwise.
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		<p>13.2.2 In the event a construction lien arising from the performance of the <i>Work</i> is registered or preserved against the <i>Project</i> lands by a <i>Subcontractor</i> or a <i>Supplier</i>, or a written notice of a lien is given or a construction lien action is commenced against the <i>Owner</i> by a <i>Subcontractor</i> or a <i>Supplier</i>, then the <i>Contractor</i> shall, at its own expense:</p> <ul style="list-style-type: none">.1 within 10 calendar days of registration of the construction lien, vacate or discharge the lien from title to the premises (i.e. the <i>Place of the Work</i>). If the lien is merely vacated, the <i>Contractor</i> shall, if requested, undertake the <i>Owner's</i> defence of any subsequent action commenced in respect of the lien, at the <i>Contractor's</i> sole expense;.2 within 10 calendar days of receiving notice of a written notice of a lien, post security with the Ontario Superior Court of Justice so that the written notice of a lien no longer binds the parties upon whom it was served; and.3 satisfy all judgments and pay all costs arising from such construction liens and actions and fully indemnify the <i>Owner</i> against all costs and expenses arising from same, including legal costs on a full indemnity basis. <p>13.2.3 In the event that the <i>Contractor</i> fails or refuses to comply with its obligations pursuant to paragraph 13.2.2, the <i>Owner</i> shall, at its option, be entitled to take all steps necessary to address any such construction liens including, without limitation and in addition to the <i>Owner's</i> rights under paragraph 13.2.4, the posting of security with the Ontario Superior Court of Justice to vacate the claim for lien from title to the <i>Project</i> lands, and in so doing will be entitled to a full indemnity from the <i>Contractor</i> for all legal fees, security, disbursements and other costs incurred and will be entitled to deduct same from amounts otherwise owing to the <i>Contractor</i>.</p> <p>13.2.4 In the event that any <i>Subcontractor</i> or <i>Supplier</i> registers any claim for lien with respect to all or part of the <i>Place of Work</i>, the <i>Owner</i> shall have the right to withhold, in addition to the statutory holdback, the full amount of said claim for lien plus either: (a) \$250,000 if the claim for lien is in excess of \$1,000,000 or (b) 25% of the value of the claim for lien and to bring a motion to vacate the registration of said claim for</p>
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		<p>lien and any associated certificate of action in respect of that lien, in accordance with Section 44 of the <i>Act</i>, by paying into court as security the amount withheld.</p> <p>13.2.5 Nothing in this GC 13.2 serves to preclude the <i>Contractor</i> from preserving and perfecting its lien in the event of non-payment by the <i>Owner</i>.”</p>
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**APPENDIX 1
to the Supplementary Conditions**

Project-specific requirements for a “*Proper Invoice*”

To satisfy the requirements for a *Proper Invoice*, the following criteria, as may be applicable in each case, must be included with the *Contractor’s* application for payment:

- .1 the written bill or request for payment must be in writing;
- .2 the *Contractor’s* name and current address;
- .3 the *Contractor’s* HST registration number;
- .4 the date the application for payment was prepared by the *Contractor*;
- .5 the period of time in which the services or materials were supplied to the *Owner*;
- .6 the purchase order number provided by the *Owner*;
- .7 reference to the provisions of the *Contract* under which payment is being sought (e.g. GC 5.3 – PROGRESS PAYMENTS for progress payments, GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK, GC 5.7 – FINAL PAYMENT for final payment, etc.);
- .8 a description, including quantities where appropriate, of the services or materials, or a portion thereof, that were supplied and form the basis of the *Contractor’s* request for payment;
- .9 the amount the *Contractor* is requesting to be paid by the *Owner*, set out in a statement based on the schedule of values approved under GC 5.2.5, separating out any statutory or other holdbacks, set-offs and HST;
- .10 a sworn Statutory Declaration in the form CCDC 9A-2018, only for second and subsequent progress payments;
- .11 a current Workplace Safety Insurance Board clearance certificate;
- .12 a pre-approved schedule of values, supplied by the *Contractor*, for Divisions 1 through 14 of the *Specifications* (or equivalent Construction Specifications Institute Masterformat) of the *Work*, aggregating the total amount of the *Contract Price*, including all supporting invoicing;
- .13 a separate pre-approved schedule of values, supplied by each *Subcontractor*, for each of Division 15, 16, and 17 of the *Specifications* (or equivalent Construction

- Specifications Institute Masterformat) of the *Work*, aggregating the total amount of the *Contract Price*, including all supporting invoicing;
- .14 invoices and other supporting documentation for all claims against the cash allowance;
 - .15 a current, acceptable, and up to date *Construction Schedule Update*;
 - .16 if requested by the *Owner*, a current and valid certificate(s) of insurance as required under GC 11.1 – INSURANCE;
 - .17 the name, title, telephone number and mailing address of the person at the place of business of the *Contractor* to whom payment is to be directed;
 - .18 a current, up to date, and approved *Shop Drawing* log;
 - .19 in the case of the *Contractor's* application for final payment, in addition to the foregoing requirements (as applicable):
 - (a) any documents or materials not yet delivered pursuant to paragraph 5.4.5, together with complete and final as-built drawings;
 - (b) the *Contractor's* written request for release of the deficiency holdback, including a statement that no written notices of lien have been received by it;
 - (c) the *Contractor's* written certification that there are no outstanding claims, pending claims or future claims from the *Contractor* or their *Subcontractors* or *Suppliers*; and
 - (d) sufficient evidence of the *Contractor's* compliance with GC 3.13.3.

END OF AMENDMENTS TO CCDC 2 - 2008

SECTION 01 14 00 – WORK RESTRICTIONS

1.0 GENERAL

1.1. SECTION INCLUDES

- .1 Connecting to existing services
- .2 Special scheduling requirements

1.2. RELATED SECTIONS

- .1 Section 01 53 00 - Temporary Construction.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3. EXISTING SERVICES

- .1 Notify Owner and Consultant and utility companies of intended interruption of services and obtain required permission.
- .2 Where Work involves breaking into or connecting to existing services, give Consultant and Owner, forty-eight (48) hours of notice for necessary interruption of mechanical or electrical service throughout course of work.
 - .1 Keep duration of interruptions minimum.
 - .2 Perform interruptions after normal working hours of occupants, preferably on weekends.
- .3 Provide for vehicular, pedestrian and personnel traffic.
- .4 Construct barriers in accordance with Section 01 53 00.

1.4. AFTER HOURS WORK

- .1 Schedule Work with school staff through the Board's contact so as to limit disruption to school operations. Include for any overtime, to ensure orderly and continuous progression of Work and operation of school.
- .2 Direct calls from Contractors to Board staff to adjust alarms and to arrange for access will not be accepted. All correspondence must be through the Project Manager.
- .3 Arrange 48 hours in advance with Board to obtain an access card and adjust security alarms for after hours Work.
- .4 Bidders are cautioned that the Board will be compensated by the Contractor for false alarms. Any costs associated with each false alarm will be levied against the Contractor for false fire alarm activation or security alarm activation. These costs may include, but are not limited to:

- .1 Fines or penalties imposed by the local Fire Services,
- .2 Fines or penalties imposed by the local Police Services,
- .3 Overtime costs borne by the Board.
- .5 Contractors are responsible for ensuring doors and windows are secured prior to leaving school.
- .6 Unless specifically stated otherwise school activities take precedence over Contractor's activities.

1.5. SPECIAL REQUIREMENTS

- .1 Schedule and perform work in occupied areas to Board Representative's approval.
- .2 Schedule and perform noise generating work to Board Representative's approval.
- .3 Submit schedule of special requirements or disruptions in accordance with Section 01 33 00.
- .4 All Contractor personnel are restricted to the job site and necessary access routes. No personnel shall visit other areas or buildings without specific authorization.

END OF SECTION

SECTION 01 19 00 – SPECIFICATIONS AND DOCUMENTS

1.0 GENERAL

1.1. RELATED DOCUMENTS

- .1 This section describes requirements applicable to all sections within Divisions 02 to 49.

1.2. WORDS AND TERMS

- .1 Conform to definitions and their defined meanings in the Agreement and Definitions portion of CCDC 2 for Supplementary Words and Terms listed in Section 00 56 13.

1.3. COMPLEMENTARY DOCUMENTS

- .1 Generally, drawings indicate graphically, the dimensions and location of components and equipment. Specifications indicate specific components, assemblies, and identify quality.
- .2 Drawings, specifications, diagrams and schedules are complementary, each to the other, and what is required by one, to be binding as if required by all.
- .3 Should any conflict or discrepancy appear between documents, which leaves doubt as to the intent or meaning, apply the Precedence of Documents article below or obtain guidance or direction from Consultant.
- .4 Examine all discipline drawings, specifications, schedules, diagrams and related Work to ensure that Work can be satisfactorily executed.
- .5 All specification sections of the Project Manual and Drawings are affected by requirements of Division 01 sections.

1.4. PRECEDENCE OF DOCUMENTS

- .1 In the event of conflict within and between the Contract Documents, the order of priority within specifications and drawings for this project are - from highest to lowest:
 - .1 the Agreement and Definitions between the Owner and the Construction
 - .2 the Defined Terms, Definitions;
 - .3 Supplementary Conditions;
 - .4 the General Conditions;
 - .5 Sections of Division 01 of the specifications;
 - .6 Technical specifications Sections of Divisions 02 through 49 of the specifications.

- .7 Schedules and Keynotes:
 - .1 Material and finishing schedules within the specifications, then;
 - .2 Material and finishing schedules on drawings, then;
 - .3 Keynotes and definitions thereto, then;
- .8 Drawings:
 - .1 Drawings of larger scale shall govern over those of smaller scale of the same date, then;
 - .2 Dimensions shown on drawings shall govern over dimensions scaled from drawings, then;
 - .3 Location of utility outlets indicated on architectural detail drawings takes precedence over positions or mounting heights located on mechanical or electrical Drawings.
- .9 Later dated documents shall govern over earlier documents of the same type.

1.5. SPECIFICATION GRAMMAR

- .1 Specifications are written in the imperative command mode, in an abbreviated form.
- .2 Imperative language of the technical sections is always directed to the Contractor identified as a primary constructor, as sole executor of the Contract, unless specifically noted otherwise.
 - .1 This form of imperative command mode statement requires the primary constructor to perform such action or Work.
 - .2 Perform all requirements of the Contract Documents whether stated imperatively or otherwise.
- .3 Division of the Work among subcontractors, suppliers, or others is solely the prime constructor's responsibility. The Consultant(s) and specification authors assume no responsibility to function or act as an arbiter to establish subcontract scope or limits between sections or divisions of Work.

END OF SECTION

SECTION 01 21 00 – ALLOWANCES

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Section 01 45 00 – Quality Control.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. GENERAL

- .1 Allowances included herein are for items of Work which could not be fully quantified prior to Bidding.
- .2 Expend each allowance as directed by the Consultant. Work covered by allowances shall be performed for such amounts and by such persons as directed by Consultant.
- .3 Funds will be expended by means of Cash Allowance allocations and contingency allowance allocations.
- .4 Progress payments for Work and Products authorized under allowances will be made in accordance with the payment terms set out in the Conditions of the Contract.
- .5 The Contractor shall bid the work involved and submit the Bids received to the Consultant and the Board, for approval
- .6 The Contractor shall submit 3 bids unless directed by the Board.

1.3. CASH ALLOWANCES

- .1 Cash allowances, cover the net cost to the Contractor of services, products, construction machinery and equipment, freight, handling, unloading, storage, installation where indicated, and other authorized expenses incurred in performing the Work. Cash allowances shall not be included by a subcontractor in the amount for their subcontract work.
- .2 Supply only allowances shall include:
 - .1 Net cost of Products.
 - .2 Delivery to Site.
 - .3 Applicable taxes and duties, excluding HST.
- .3 Supply and install allowances shall include:
 - .1 Net cost of Products.
 - .2 Delivery to Site.
 - .3 Unloading, storing, handling or products on site.
 - .4 Installation, finishing and commissioning of products.

- .5 Applicable taxes and duties, excluding HST.
- .4 Inspection and testing allowances shall include:
 - .1 Net cost of inspection and testing services.
 - .2 Applicable taxes and duties, excluding HST.
- .5 Other costs related to work covered by cash allowances are not covered by the allowance, but shall be included in the Contract Price.
- .6 Where costs under a cash allowance exceed the amount of the allowance, the Contractor will be compensated for any excess incurred and substantiated plus an allowance for overhead and profit as set out in the Contract Documents.
- .7 Progress payments on accounts of work authorized under cash allowances shall be included in the monthly certificate for payment.
- .8 Submit, before application for final payment, copies of all invoices and statements from suppliers and subcontractors for work which has been paid from cash allowances.

1.4. ALLOWANCES SCHEDULE

Include in the Bid Price a cash allowance of to address the cost of the following items: (Consultant to modify/edit list as required)

- .1 Designated Substance Removal. \$

(Additional removal not already identified in the ACM Summary report)
- .2 Independent Testing & Inspection (soil, concrete, mortar, structural steel, air barrier, paving, painting)
\$ _____
(As directed by the Consultant)
- .3 Window coverings \$

(Additional window coverings not addressed elsewhere in the specification)
- .4 Gas service connection fees \$

(When required)
- .5 Hydro service connection fees \$

(When required)

.6	Water service connection fees	\$

	(When required)	
.7	Data cabling installation and network equipment	\$

	(Including terminations)	
.8	Voice cabling installation and telephone equipment	
	\$ _____	
.9	Access Control & Intrusion Detection Systems (security systems)	
	\$ _____	
	(Where not otherwise identified in the Contract Documents and including all cabling)	
.10	Video surveillance system	\$

	(Where not otherwise identified in the Contract Documents and including all cabling)	
.11	Public Address (PA) systems.	\$

	(Including all cabling and hardware)	
	Total of All Allowances:	\$

END OF SECTION

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SECTION 01 31 00 – PROJECT MANAGING AND COORDINATION

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Section 01 32 00 - Construction Progress Documentation.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 Section 01 53 00 – Temporary Construction Facilities
- .4 Section 01 61 00 – Product Requirements
- .5 Section 01 78 10 – Closeout Submittals and Requirements
- .6 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. PROJECT COORDINATION

- .1 Perform coordination of progress schedules, submittals, use of site, temporary utilities, construction facilities and construction Work, with progress of Work of other contractors, under instructions of the Consultant.
- .2 The Contractor shall have total control of the Work and shall effectively direct and supervise the Work so as to ensure conformity with the Contract Documents and within the Contract Time.
- .3 The Contractor shall be solely responsible for the construction means, methods, sequences, and procedures and for coordinating parts of the Work under the contract.
- .4 Co-ordinate progress of the Work, progress schedules, submittals, use of site, temporary utilities, construction facilities, safety regulations and fire protection, as per authorities having jurisdiction codes.
- .5 The Consultant has the authority to stop the Work:
 - .1 whenever they observe or are made aware of unsafe conditions.
 - .2 whenever it is deemed necessary to protect the interests of the Board,
 - .3 whenever materials or workmanship are in contravention to the Contract Documents

1.3. SITE SUPERVISOR AND PROJECT MANAGER

- .1 If requested, the Contractor shall provide the Consultant, in writing, the name of the Project Manager and Site Supervisor, and proof of competent experience in similar projects.
- .2 Performance of the Contractors Project Manager and Site Supervisor
 - .1 If the Board and or the Consultant become concerned with any of: Site Safety, Project Schedule, or general compliance with the tender

- documents due to the performance of the Site Supervisor or Project Manager, the Consultant and or the Board will identify the concerns in writing to the Contractor.
- .2 The Contractor shall respond in writing to the Board and Consultant with a corrective action for each item within 24 hours.
 - .3 If it is found that any of the corrections are not immediately implemented, the Consultant and the Board shall meet with the General Contractor to review the credentials including curriculum vitae and comparable experience of a replacement Site Supervisor and or Project Manager proposed by that Contractor.
 - .4 All outstanding concerns initiating the replacement of the personnel will be immediately addressed to the satisfaction of the Consultant and the Board.
- .3 If the Board and or the Consultant become concerned with site safety, project schedule or general compliance with the tender documents due to the performance of the Site Supervisor or the Project Manager, the Consultant or the Board will issue the concerns in writing to the Contractor. The Contractor shall respond in writing within 24 hours to the Consultant and the Board. If any of the corrections are not immediately implemented, the Consultant or the Board will schedule a meeting with the Consultant, General Contractor and the Board. At this meeting the Contractor will introduce the new Project Manager, and or Site Supervisor and present the Curriculum Vitae for each showing proof of comparable experience in similar projects. The Contractor will then address the outstanding concerns to the satisfaction of the Consultant and the Board.
- .4 The Project Manager, and/or Site Supervisor shall not be replaced by the Contractor without prior written approval from the Board and the Consultant.

1.4. PERMITS

- .1 **The Board will obtain & pay for all building permits, but the Contractor is responsible for all other permits, including electrical inspection and fire alarm verification.**

1.5. CONSTRUCTION DOCUMENTS

- .1 The Consultant will provide the Contractor with PDF copies of both the drawings and the specification and CAD format files of the drawings at no charge to the Contractor. All printing will be at the cost of the Contractor including the AS-BUILT documents.

1.6. PRECONSTRUCTION MEETING

- .1 Immediately prior to construction and upon notification by the Consultant of a time and date, the Contractor shall attend the preconstruction meeting at a location as determined by the Consultant, along with authoritative representatives of certain key subcontractors as specifically indicated in the conference notice. Agenda to include following:
 - .1 Appointment of official representative of participants in Work.
 - .2 Project communications procedures
 - .3 Schedule of Work, progress scheduling (including long lead items, cash allowance items) as specified in Section 01 32 00.
 - .4 Schedule of submission of shop drawings, samples, colour chips as specified in Section 01 33 00.
 - .5 Requirements for temporary facilities, washrooms, refuse bin, site sign, offices, storage sheds, utilities, fences as specified in Section 01 53 00.
 - .6 Delivery schedule of specified equipment as specified in Section 01 61 00.
 - .7 Proposed changes, change orders, procedures, approvals required, mark-up percentages permitted, time extensions, overtime, and administrative requirements.
 - .8 Owner furnished products.
 - .9 Record drawings as specified in Section 01 78 10.
 - .10 Maintenance material and data as specified in Section 01 78 10.
 - .11 Take-over procedures, acceptance, and warranties as specified in Section 01 78 10.
 - .12 Monthly progress claims, administrative procedures, photographs, and holdbacks.
 - .13 Appointment of inspection and testing agencies
 - .14 Insurances and transcript of policies.
 - .15 Review Vendor Performance Evaluation for the Contractor and Subcontractors
 - .16 Hot Work Permit Process
 - .17 Security Access, Fire Alarm shut down procedures
 - .18 Any other items as required by owner, contractor or Consultant.

1.7. ON-SITE DOCUMENTS

- .1 Maintain at job site at all times, one copy (written or digital) each of the following:
 - .1 Complete set of Contract drawings.

- .2 Specifications.
- .3 All Addenda.
- .4 Site Instructions and Sketches
- .5 Reviewed shop drawings and samples.
- .6 Change Orders and Contemplated Change Orders.
- .7 Other modifications to Contract.
- .8 Site Instructions
- .9 Colour schedule
- .10 Hardware List
- .11 Field test reports.
- .12 Copy of approved Work schedule.
- .13 Manufacturers' installation and application instructions.
- .14 Progress reports and meeting minutes.
- .15 Approved building permit documents.
- .16 Copy of current Ontario Building Code and National Building Code.
- .17 CSA Standard, CGSB Specifications. ASTM Documents and other standards referenced to in the specifications.
- .18 Labour conditions and wage schedules.
- .19 Applicable current editions of municipal regulations and by-laws.
Current building codes, complete with addenda bulletins applicable to the Place of the Work.

1.8. SCHEDULES

- .1 Within three weeks following the award of the Contract, submit a detailed, trade by trade progress schedule for the work in a bar chart form acceptable to the Consultant.
- .2 Submit preliminary construction progress schedule as specified in Section 01 32 00 to Consultant coordinated with Consultant's project schedule.
- .3 After review, revise and resubmit schedule to comply with revised project schedule.
- .4 During progress of Work revise and resubmit as directed by Consultant.
- .5 Provide schedule updates every month with request for Payment, for duration of Contract.

1.9. CONSTRUCTION PROGRESS MEETINGS

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

- .2 The Contractor will organize site meetings. Ensure persons, whose presence is required, are present and relative information is available to allow meetings to be conducted efficiently.
- .3 Contractor, major subcontractors and consultants involved in Work are to be in attendance.
- .4 Post and forward copies of progress schedules for advice of Subcontractors, Owner and Consultant.
- .5 Notify parties minimum five (5) days prior to meetings.
- .6 Record minutes of meetings and circulate to attending parties and affected parties not in attendance within two (2) days after meeting.
- .7 Agenda to include following:
 - .1 Review, approval of minutes of previous meeting.
 - .2 Review of Work progress since previous meeting.
 - .3 Field observations, problems, conflicts.
 - .4 Problems which impede construction schedule.
 - .5 Review of off-site fabrication delivery schedules.
 - .6 Corrective measures and procedures to regain projected schedule.
 - .7 Revision to construction schedule.
 - .8 Progress schedule, during succeeding work period.
 - .9 Review submittal schedules: expedite as required.
 - .10 Maintenance of quality standards.
 - .11 Review proposed changes for effect on construction schedule and on completion date.
 - .12 Review site security issues.
 - .13 Other business.
- .8 Schedule additional meetings, to expedite progress, should work require it.
- .9 Keep Owner and Consultant informed of progress, of delays and potential delays during all stages of Work. Do everything possible to meet progress schedule
- .10 Schedule and administer pre-installation meetings when specified in sections and when required to coordinate related or affected Work.

1.10. SUBMITTALS

- .1 Prepare and issue submittals to Consultant for review.
- .2 Submit preliminary Shop Drawings, product data and samples for review for compliance with Contract Documents; for field dimensions and clearances, for relation to available space, and for relation to Work of other contracts. After review, revise and resubmit for transmittal to Consultant.
- .3 Submit requests for payment for review, and for transmittal to Consultant.

- .4 Submit requests for interpretation of Contract Documents, and obtain instructions through Consultant.
- .5 Process substitutions through Consultant.
- .6 Process change orders through Consultant.
- .7 Deliver closeout submittals for review and preliminary inspections, for transmittal to Consultant.

1.11. RECORD (AS-BUILT) DOCUMENTS AND SAMPLES

- .1 Procedures for record as-built documents and samples as specified in Section 01 78 10.
- .2 Keep as-built documents and samples available for inspection by Consultant.

1.12. CLOSEOUT PROCEDURES

- .1 Take-over procedures, acceptance, and warranties as specified Section 01 78 10
- .2 Notify Consultant and Board when Work is considered ready for Substantial Performance.
- .3 Accompany Consultant and Board on preliminary inspection to determine items listed for completion or correction.
- .4 Comply with Consultant's instructions for correction of items of Work listed in executed certificate of Substantial Performance.
- .5 Notify Consultant of instructions for completion of items of Work determined in Consultant's final inspection.

END OF SECTION

SECTION 01 32 00 – CONSTRUCTION PROGRESS DOCUMENTATION

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Section 01 33 00 - Submittal Procedures.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. SCHEDULES

- .1 Within seven 7 days following the award of the Contract, submit a detailed cash flow chart broken down on a monthly basis, in a manner acceptable to the Consultant. Cash flow chart shall indicate anticipated Contractor's monthly progress billings from commencement of work until completion.
- .2 Update cash flow chart whenever changes occur to scheduling and in manner and at times satisfactory to Consultant.
- .3 Submit schedule of values at least fourteen (14) days before the first application
- .4 Submit schedules as follows:
 - .1 Submittal Schedule for Shop Drawings and Product Data.
 - .2 Submittal Schedule for Samples.
 - .3 Submittal Schedule for timeliness of Owner-furnished Products.
 - .4 Product Delivery Schedule.
 - .5 Cash Allowance Schedule for acquiring Products and Installation.
 - .6 Shutdown or closure activity.

1.3. CONSTRUCTION PROGRESS SCHEDULING

- .1 Submit initial schedule to the Consultant and the Board in duplicate within seven (7) days after following the award.
- .2 Schedule Format.
 - .1 Prepare schedule in form of a horizontal bar chart.
 - .2 Split horizontally for projected and actual performance.
 - .3 Provide horizontal time scale identifying each Working Day of each week.
- .3 Schedule Submission.
 - .1 Consultant will review schedule and return reviewed copies within five (5) days after receipt.
 - .2 Submit schedules in electronic format, forward to the Consultant and Owner as a pdf. file.

- .3 Resubmit finalized schedule within five (5) days after return of review copy.
- .4 Submit revised progress schedule with each application for payment.
- .5 Distribute copies of revised schedule to:
 - .1 Job site office.
 - .2 Subcontractors.
 - .3 Other concerned parties.
- .6 Instruct Consultant to report to Contractor within ten (10) days, any problems anticipated by timetable shown in schedule.
- .4 Submit revised schedules with Application for Payment, identifying changes since previous version.
- .5 Select either of the following paragraphs to identify the type and format of schedule required.
- .6 Show complete sequence of construction by activity, identifying Work of separate stages and other logically grouped activities. Indicate the early and late start, early and late finish, float dates, and duration.
- .7 Indicate estimated percentage of completion for each item of Work at each submission.
- .8 Indicate submittal dates required for shop drawings, product data, samples, and product delivery dates, including those furnished by Owner and required by Allowances.
- .9 Include dates for commencement and completion of each major element of construction:
 - .1 Site clearing.
 - .2 Site utilities.
 - .3 Foundation Work.
 - .4 Structural framing.
 - .5 Subcontractor Work.
 - .6 Equipment Installations.
 - .7 Finishes.
- .10 Indicate projected percentage of completion of each item as of first day of month.
- .11 Indicate progress of each activity to date of submission schedule.
- .12 Indicate changes occurring since previous submission of schedule:
 - .1 Major changes in scope.
 - .2 Activities modified since previous submission.
 - .3 Revised projections of progress and completion.
 - .4 Other identifiable changes.
- .13 Provide a written report to define:

- .1 Problem areas, anticipated delays, and impact on schedule.
- .2 Corrective action recommended and its effect.
- .3 Effect of changes on schedules of other subcontractors.

1.4. PROGRESS PHOTOGRAPHS

- .1 Digital Photography:
 - .1 Submit electronic copy of progress photographs of project, Digital format, minimum 300 in megapixel resolution.
 - .2 Identification: Name and number of project and date of exposure indicated.
 - .3 Provide both interior and exterior photographs.
 - .4 Number of Viewpoints: Locations of viewpoints determined by Consultant.
 - .5 Frequency: Monthly with progress statement. Provide the required number of pictures to accurately reflect the submitted progress percentage.

1.5. SHOP DRAWING SUBMITTAL SCHEDULE

- .1 Include schedule for submitting shop drawings, product data, samples
- .2 Indicate dates for submitting, review time, resubmission time, and last date for meeting fabrication schedule.
- .3 Include dates when shop drawings and samples will be required for Owner-furnished products.
- .4 Include dates when reviewed submittals will be required from Consultant.
- .5 Provide final signed off copies of the shop drawings in digital format to the Board.

END OF SECTION

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SECTION 01 33 00 – SUBMITTAL PROCEDURES

2.0 GENERAL

2.1. RELATED SECTIONS

- .1 Section 01 32 00 - Construction Progress Documentation.
- .2 Section 01 78 10 - Closeout Submittals.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

2.2. ADMINISTRATIVE

- .1 Submit to Consultant submittals listed for review. Submit with reasonable promptness and in orderly sequence so as to not cause delay in Work. 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 Metric (SI) units. Shop drawings containing imperial measurements will be rejected.
- .4 Where items or information is not manufactured or produced in SI Metric units, converted values within the metric measurement to the next largest imperial size available. Tolerances of .0625 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.
- .6 Submittals not stamped, signed, dated, identified as to specific project, and attesting to their being reviewed will be returned without being examined and shall be considered rejected.
- .7 Shop drawings which require the approval of a legally constituted authority having jurisdiction shall be submitted by Contractor to such authority for approval. Such shop drawings shall receive final approval of authority having jurisdiction before Consultant's final review.
- .8 No work, requiring a shop drawing submission, shall be commenced until the submission has received Consultant's final review. Only shop drawings bearing Consultant's review stamp are to be sent and used on the job site.
- .9 Notify Consultant, in writing at time of submission, identifying deviations from requirements of Contract Documents stating reasons for deviations.

- .10 Shop drawings shall not contain substituted materials unless such substitutions have been requested in advance and approved by Consultant.
- .11 Verify field measurements and affected adjacent Work are coordinated.
- .12 Contractor's responsibility for errors and omissions in submission is not relieved by Consultant's review of submittals.
- .13 Contractor's responsibility for deviations in submission from requirements of Contract Documents is not relieved by Consultant review.
- .14 Keep one (1) reviewed copy of each submission on site.

2.3. 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 The term "design team" means Consultant and Sub-consultants whether Sub-consultants are employees of Consultant or not, and includes structural, mechanical, electrical, etc.
- .3 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.
- .4 Allow fourteen (14) days for Consultant's review of each submission.
- .5 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.
- .6 Make changes in Shop Drawings as Consultant may require, consistent with Contract Documents. When resubmitting, notify Consultant in writing of any revisions other than those requested.
- .7 Accompany submissions with transmittal letter, 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.
- .8 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 other parts of the Work.
- .9 After Consultant's review, distribute copies.
- .10 Submit Shop Drawings in Pdf. format for each requirement requested in specification Sections and as consultant may reasonably request.
- .11 Submit product data sheets or brochures in Pdf. format for requirements requested in specification sections and as requested by Consultant where Shop Drawings will not be prepared due to standardized manufacture of product.
- .12 Delete information not applicable to project.
- .13 Supplement standard information to provide details applicable to project.
- .14 If upon review by Consultant, no errors or omissions are discovered or if only minor corrections are made, the drawings will be stamped as reviewed or reviewed as modified and will be returned. At this point fabrication and installation of Work may proceed. If Shop Drawings are rejected, noted copy will be returned and re-submission of corrected Shop Drawings, through same procedure indicated above, must be performed before fabrication and installation of Work may proceed.
- .15 Signed drawings shall be returned to and retained by Contractor who is then responsible for distribution of copies of corrected shop drawing to

appropriate Subcontractors for appropriate action and to municipal building department for their records of those subjects required by authorities.

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

2.4. SAMPLES

- .1 Submit for review to the Consultant three (3) samples as requested in respective specification Sections.
- .2 Submit samples with identifying labels bearing material or component description, manufacturer's name and brand name, Contractor's name, project name, location in which material or component is to be used, and date.
- .3 Deliver samples prepay any shipping charges involved for delivering samples to destination point and returning to point of origin if required.
- .4 Provide samples of special products, assemblies, or components when so specified.
- .5 No work requiring a sample submission shall commence until submission has received Consultant's final review.
- .6 Notify Consultant in writing, at time of submission of deviations in samples from requirements of Contract Documents.
- .7 Where colour, pattern or texture is criterion, submit full range of samples.
- .8 Adjustments made on samples 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.
- .9 Make changes in samples which Consultant may require, consistent with Contract Documents.
- .10 Reviewed and accepted samples will become standard of workmanship and material against which installed Work will be verified.

2.5. MOCK-UP

- .1 Erect mock-ups to Section 01 45 00.

2.6. CERTIFICATES AND TRANSCRIPTS

- .1 Immediately after award of Contract, and prior to commencing the work submit the performance bond and the labour and materials payment bond as described in the bid documents.
- .2 Submit transcription of certified true copies of insurance immediately after award of Contract.
- .3 A current WSIB clearance certificate
- .4 The bidder's health and safety policy for the project.
- .5 A copy of the notice of project issued by the ministry of labour for the project
- .6 Building materials, components and elements specified without the use of trade or proprietary names shall meet requirements specified. If requested by Consultant, submit evidence of meeting requirements specified. Evidence shall consist of certification based on tests carried out by an independent testing agency. Certification based on previous tests for same materials, components or elements is acceptable. Certification shall be in form of written test reports prepared by testing agency.

END OF SECTION

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SECTION 01 35 17 – FIRE SAFETY PROCEDURES

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Section 01 14 00 – Work Restrictions.
- .2 Section 01 31 00 - Project Managing and Coordination.
- .3 Section 01 33 00 - Submittal Procedures.
- .4 Section 01 35 23 – Health and Safety
- .5 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. FIRE SAFETY PLAN

- .1 Contractors and their personnel will be familiar with this section and its requirements.
- .2 The contractor must take all necessary precautions during the carrying out of the work to prevent the possibility of fire occurring.

1.3. FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by the governing codes, regulations and bylaws.
- .2 The contractor will, at all times, when welding, brazing and performing any operation with an open flame, combustible adhesives or flammable solvents keep a portable, operable fire extinguisher within 3 meters of the operation.

1.4. HOT WORK

- .1 Take all precautions to Work safely and to provide the necessary protection to persons and property from Hot Work. This includes, but is not limited to Brazing, Cutting, Grinding, Soldering, Thawing Pipe, Torch Applied Roofing and Welding. With all such activity these steps are to be followed:
 - .1 Whenever possible, complete Hot Work in a welding shop or out of doors at the school.
 - .2 Flammable liquids, dust lint and oily deposits to be removed from within 50-ft (15m) of Work. Remove other combustibles where possible. Otherwise protect with fire-resistive tarpaulins or metal shields.
 - .3 Explosive atmosphere in area eliminated. Floors swept clean. Combustible floors wet down, covered with damp sand or fire-resistive tarpaulins.

- .4 All wall and floor openings covered. Fire-resistive tarpaulins suspended beneath Work.
- .5 For on-site Work (indoor and out of doors), advise the Head Custodian, Principal, Consultant (if assigned) and Project Coordinator prior to Work being performed, and of related dangers.
- .6 Where the Fire Alarm system is required to be set to stand-by to discourage false alarms from smoke detectors provide a firewatch throughout the building or structure being worked on. NEVER put the fire alarm system in stand-by mode when the building is occupied by staff or students.
- .7 In the event of a fire as a result of the Hot Work, notify the fire department immediately. Report incident to the head custodian, the Consultant, if assigned, and Project Coordinator immediately, whether extinguished or not. Provide a fire incident report to the Board.
- .8 Barriers must be set up to protect staff and students (i.e. pylons, shields, and caution tape) from exposure to arc flash and smoke migration.
- .9 Have all necessary doors, windows and/or drapes closed. Confer with the Head Custodian to shut down all fan systems in the area to reduce or eliminate smoke distribution.
- .10 Provide and keep fire extinguishers handy and in good Working condition. Temporarily cover all smoke detectors in area during time of Work.
- .11 Provide a fire watch/spot check for several hours after Work is completed. Uncover smoke detectors.
- .12 On new construction, the requirements of the Hot Wok permit may be waived, until such time as either Substantial Completion or Occupancy is granted, whichever comes first.
- .13 On additions to existing buildings, the requirements for Hot Work permits shall remain in place.

1.5. HOT WORK PERMIT

- .1 **A sample Hot Work Permit is attached to the specifications – refer to Appendix 013517-A**
- .2 Each permit is valid for seven (7) days only and must be renewed prior to its expiration date
- .3 The contractor must obtain Hot Work Permits from the School Board's representative prior to the start of work.

- .4 The contractor must complete the form as required and must keep the form on site.
- .5 Return each completed form to the School Board's representative on date of expiration.
- .6 The most current version of the Permit and it's requirements shall be used for the purposes of the Work.

1.6. FIRE PROTECTION SYSTEMS

- .1 Any Modifications to Fire Alarm system and it's devices including service, additions and changes in device location must be performed only by a Certified Fire Alarm Technician as per the Ontario Fire Code section 1.1, subsection 1.1.5.
- .2 The Contractor will receive from the Board's contact a contact number for the monitoring service and a school system number.
- .3 Bidders are cautioned that the Board will be reimbursed for the cost of false alarms. Refer to Section 01 14 00 Work Restrictions, Para. 1.4.4.
- .4 An approved inspection firm shall verify all new fire alarm devices, in accordance to CSA regulations. Certificate of Verification is required before occupancy.

1.7. FIRE ALARM SHUT-DOWN PROCEDURE

- .1 Do not shut the system down unless necessary. Plan the operation required to reduce system down time to the least amount possible.
- .2 Wherever possible, shut down only the zone needing Work and schedule this down time in unoccupied school hours. Allow for this in your bid pricing.
- .3 Discuss the possible down time with the head custodian and principal prior to any partial or whole system shut down.
- .4 The school or building administration shall advise all staff of fire alarm system shut down. This will include instructions to call 911 if they see a fire and when system is back on line.
- .5 Prior to alarm system shutdown and upon restoring the fire alarm system individuals supervising the shut down must contact Direct Detect at 519-741-2494 and have on hand the School System Account Number (this number can be found on the decal on the fire alarm panel). The School System Account Number will start with the prefix 209
 - .1 The Contractor shall provide full detail to the monitoring company as requested including building number and name (as identified on the fire alarm monitoring panel), contact name, company name, length of time system is down. Call shall be placed just prior to any shut down.

- .6 A fire patrol will need to be established and will include the following at the Contractor's expense:
 - .1 Patrol all halls and high-risk areas affected.
 - .2 Fire patrol shall have access to a phone and call 911 if they see a fire.
 - .3 Report all other problems they encounter.
 - .4 Remain on patrol until system is back on.
- .7 Contact Direct Detect at 519-741-2494 and inform them when the system is put back on line.
- .8 An activated system must not be reset until authorized by the Fire Department and the cause of the alarm has been investigated.

1.8. FIRE PROTECTION EQUIPMENT IMPAIRMENT

- .1 Fire Protection Equipment referred to in this section includes sprinkler systems, special fire suppression systems, and kitchen hood suppression systems.
- .2 The Contractor will take all precautions including restrict all Hot Work operations and shut down hazardous processes during all Fire protection equipment impairment.
- .3 Do not shut the Fire protection equipment down unless necessary Plan the operation required to reduce system impairment time to the least amount possible.
- .4 Wherever possible, shut down only the Fire protection equipment needing Work and schedule this impairment time for unoccupied school hours. Allow for this in your bid pricing.
- .5 Discuss the possible down time with the head custodian and principal prior to any partial or whole system impairment.
- .6 The school administration shall advise all staff of Fire protection equipment shut down. This will include instructions to call 911 if they see a fire and when system is back on line
- .7 The Contractor will plan to use temporary protection such as extra extinguishers, charged hose lines and temporary sprinkler protection during all Fire protection equipment impairment.
- .8 If the sprinkler system is restorable, either in whole or in part, the Contractor or sub-Contractor shall assign someone to restore the system promptly in the event of a fire.
- .9 A fire patrol may need to be established and will include the following at the Contractor's expense:
 - .1 Patrol all halls and high-risk areas affected.
 - .2 Fire patrol shall have access to a phone and call 911 if they see a fire.

- .3 Report all other problems they encounter.
- .4 Remain on patrol until system is back on.
- .10 The Contractor shall inform all sub trades that the Board has a Red Tag Permit System and it shall be used for all Fire protection equipment impairment.
- .11 For ease of use, a Factory Mutual hanging wall kit has been place at all Board Fire protection equipment locations. Supplies of Red Tag Permits are provided there.

1.9. FIRE ALARM MODIFICATIONS AND MAINTENANCE

- .1 Very important changes to Ontario Building Code as they relate to the Standard for the Verification of Fire Alarm Systems CAN/ULC-S537-M have taken effect December 24, 1999. (Minister's Ruling 99-BC-01)
 - .1 Clause 5.1; "Addition of conventional field device(s), or modification(s), to existing input circuit(s) or output circuit(s) shall require re-verification of all devices served by those input circuit(s) or output circuit(s)." If one device is added to a zone, the entire zone or in the case of a single zone panel the entire system is to be verified.
 - .2 Clause 5.2 "Addition of input circuit(s) or output circuit(s) to an existing fire alarm system shall require verification of the new circuit(s) in accordance with this standard, and shall also require all previously existing circuit(s) to be tested as follows:
 - .3 TEST: One conventional field device on each circuit shall be operated to confirm activation of all output circuits in accordance with the systems design." Even though no other zones have been touched, one device per input zone is to be tested when the Fire Alarm system is modified.
 - .4 Clause 5.5 "Where a transponder is added to an existing system, the transponder shall be verified in accordance with subsections 3.2, Wiring; and subsection 3.3 Control Units; and with CAN/ULC-S536, Standard for the Inspection and Testing of Fire Alarm Systems as well as re-verification of existing field devices and verification of new conventional field devices." If a new addressable device is added to a system, the new device is to be tested; as well a test must be conducted on all addressable devices on the loop.
 - .5 Clause 5.6 "Where an existing fire alarm system control unit is replaced with a new control unit, it shall be verified in accordance with CAN/ULC-S536, Standard for the Inspection and Testing of Fire Alarm Systems.

Replacement of any control panel will require the testing of all existing fire alarm devices.

- .2 The Contractor and sub-Contractors shall include in the bid price for the above ULC Standards requirements referenced in the Ontario Building Code.

1.10. INSTALLATION AND/OR REPAIR OF ROOFING

- .1 The Contractor will review with the Consultant and the Board's representative of the location of any asphalt kettles and the dates the kettles will be in use. The Contractor, in the course of performing roofing work, will ensure all personnel utilize the following precautions:
 - .1 Use only kettles equipped with thermometers or gauges in good working order.
 - .2 Locate kettles in a safe place outside of building.
 - .3 Maintain continuous supervision while kettles are in operation and provide metal covers for the kettles to smother any flames in case of fire.
 - .4 All roofing materials stored in locations no closer than 15 meters to any structures.

1.11. FIRE DEPARTMENT ACCESS

- .1 Designated fire routes must be maintained. Fire Department must be advised of any work that would impede fire apparatus response.

1.12. SMOKING PRECAUTIONS

- .1 Smoking is not permitted anywhere on Board properties. Workers who wish to smoke must leave the property, and not within sight of students. Any worker found to be in contravention of the Ontario Smoke Free Act will be subject to legislated fines.

1.13. FLAMMABLE LIQUIDS

- .1 The handling and storage on site of flammable liquids are to be governed by the current National Fire Code of Canada.
- .2 Flammable liquids such as gasoline, kerosene and naphtha may be kept for ready use in quantities not exceeding 10 imperial gallons provided they are stored in approved safety cans bearing the Underwriter's Laboratory of Canada or Factory Mutual seal of approval.
- .3 Transfer of flammable liquids is prohibited within buildings.

- .4 Transfer of flammable liquids must not be carried out in the vicinity of open flame or any type of heat producing devices.
- .5 Flammable liquids having a flash point below 100° F (37.7°C) such as naphtha or gasoline must not be used as solvents or cleaning agents.
- .6 Flammable waste liquids, for disposal, must be stored in approved containers located in a safe ventilated area. Quantities are to be kept to a minimum.

END OF SECTION

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Contractor Hot Work Permit

1. Take all precautions to Work safely and to provide the necessary protection to persons and property from Hot Work. This includes, but is not limited to Brazing, Cutting, Grinding, Soldering, Thawing Pipe, Torch Applied Roofing and Welding. With all such activity these steps are to be followed:
 - A. Whenever possible, complete Hot Work in a welding shop or out of doors at the school.
 - B. Flammable liquids, dust lint and oily deposits to be removed from within 50-ft (15m) of Work. Remove other combustibles where possible. Otherwise protect with fire-resistive tarpaulins or metal shields.
 - C. Explosive atmosphere in area eliminated. Floors swept clean. Combustible floors wet down, covered with damp sand or fire-resistive tarpaulins.
 - D. All wall and floor openings covered. Fire-resistive tarpaulins suspended beneath Work.
 - E. For Work on walls or ceilings, remove combustibles away on other side.
2. For on-site Work (indoor, out of doors), advise the Head Custodian and Principal prior to Work being performed, and of related dangers.
3. In the event of a fire as a result of the Hot Work, notify the fire department and the head custodian immediately, whether extinguished or not.
4. Barriers must be set up to protect staff and students (i.e. pylons, shields, and caution tape) from exposure to arc flash and smoke migration.
5. Have all necessary doors, windows and/or drapes closed. Request of the head custodian to shut down all fan systems in the area to reduce or eliminate smoke distribution.
6. Provide and keep fire extinguishers handy and in good Working condition. Temporarily cover all smoke detectors in area during time of Work.
7. Provide a fire watch/spot check for several hours after Work is completed. Uncover smoke detectors.



Appendix - 013517-A

Facility Services

CONTRACTOR HOT WORK PERMIT

STOP!

Avoid hot work or seek an alternative method if possible.

This hot work permit is required for any temporary operation involving open flames or producing heat and/or sparks.
This includes but is not limited to: brazing, cutting, grinding, soldering, torch-applied roofing and welding.

A SEPARATE PERMIT IS REQUIRED FOR EACH AREA

- Board Supervisor/ Manager/Proj. Coordinator Responsibilities:
- Verify precautions taken in Section A
 - Complete and retain Part 1
 - Complete Section B prior to commencement of Hot Works
 - Issue Part 2 to Contractor completing Hot Work & Post
 - Obtain Part 2 when Fire Monitoring complete
 - Return Part 1 and Part 2 to Controller, Facility Services

- Contractor Responsibilities:
- Verify precautions taken in Section A
 - Complete Section C during each day that Hot Works takes place
 - Return Part 2 to Board Supervisor/ Manager/Proj. Coordinator

PART 1

Section A	Indicate Precautions Taken
<input type="checkbox"/>	Available sprinklers, hose streams, and extinguishers available and in service
Within 35' or 11m of hot work	
<input type="checkbox"/>	Flammable liquid, dust, lint and oily deposits removed
<input type="checkbox"/>	Explosive atmosphere in area eliminated
<input type="checkbox"/>	Floors swept clean
<input type="checkbox"/>	All wall and floor openings covered
<input type="checkbox"/>	Combustible floors covered with fire resistant sheets
<input type="checkbox"/>	Protect or shut down ducts that might carry sparks/smoke
Hot work on walls, ceiling or roofs	
<input type="checkbox"/>	Construction is noncombustible and without combustible covering or insulation
<input type="checkbox"/>	Combustible materials on other side of walls, ceilings or roofs moved away
<input type="checkbox"/>	Combustible structure wetted down
Hot work on enclosed equipment	
<input type="checkbox"/>	Enclosed equipment cleaned of all combustible material
<input type="checkbox"/>	Containers purged of flammable liquid/vapour
<input type="checkbox"/>	Pressurized vessels, piping & equipment removed from service, isolated & vented
Fire watch/hot work and monitoring	
<input type="checkbox"/>	Fire watch will be provided <u>during</u> and for <u>1 hour</u> after work including break
<input type="checkbox"/>	Fire watch is trained and supplied with suitable extinguishers
<input type="checkbox"/>	Fire watch is trained in the use of sounding fire alarm
<input type="checkbox"/>	Fire watch conducted in adjoining areas, above and below the space where appropriate
<input type="checkbox"/>	Monitor hot work area for an additional <u>2 hours</u> after fire watch
<input type="checkbox"/>	Other precautions taken (please detail):

Section B	Authorization Granted
Board Supervisor/Manager/Proj. Coordinator:	_____
	Print Name Signature
Permit Valid from / to: (max. 7 days)	_____
	From This Date To This Date
(Maximum 7 days or until end of hot work whichever is sooner)	

Section C				Contractor and Location Affected			
Dates: (max. 7 days)	Name of Contractor conducting hot work	Name & signature of individual assigned to fire watch	Name & signature of individual assigned to fire monitoring				

School: _____

Room/Area: _____

Nature of Job: _____

I verify the above location has been examined each day, the precautions listed in Section A have been taken each day and permission is authorized for this work.
I further acknowledge that if activity is during school operational hours, that appropriate notification has been given to school administration.

Hot Works Contractor: _____ Signature _____

School Administrator notified: _____ Print Name _____

In Case of Emergency call: 911 - Then call: 519-570-0003 Ext. 4123

Refer to WRDSB Administration Procedure 4200 Hot Works/Fire Watch (Copies Available on Request)

I:\Facility Srv\Control\Board Procedures\2014-15\Hot Work Permit - Contractors - Final.xls

SECTION 01 35 23 – HEALTH AND SAFETY

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Section 01 31 00 - Project Managing and Coordination.
- .2 Section 01 33 00 - Submittal Procedures.
- .3 Section 01 35 17 – Fire Safety Requirements
- .4 Section 01 35 43 – Hazardous Materials
- .5 Section 01 41 00 – Regulatory Requirements
- .6 Section 01 53 00 – Temporary Construction Facilities
- .7 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. REFERENCES

- .1 Province of Ontario, including requirements for a "Prime Contractor" as defined by the Act.

1.3. SAFETY PLAN

- .1 Develop written site-specific Health and Safety Plan based on hazard assessment prior to commencing any site Work and continue to implement, maintain, and enforce plan until final demobilization from site. Health and Safety Plan must address project specifications.
- .2 Consultant may respond in writing, where deficiencies or concerns are noted and may request re-submission with correction of deficiencies or concerns.
- .3 Be governed by pertinent safety requirements of Federal or Provincial Governments and of municipal bodies having authority, particularly the Ontario Construction Safety Act, The Occupational Health and Safety Act for Ontario, and regulations of Ontario Ministry of Labour, and work in conjunction with proper safety associations operating under the authority of Ontario Workers' Compensation Act. Protect Owner, Owner's employees, the public and those employed on the Work from bodily injury and to protect adjacent public and private property and Owner's property from damage. Furnish and maintain protection, such as warning signs, tarpaulins, guard rails, barriers, guard lights, night lights, railings around shafts, pits and stairwells, etc. as required. Remove temporary protective measures when no longer required.

1.4. TEMPORARY WORK

- .1 Temporary work requiring engineering proficiency for the design, erection, operation maintenance and removal shall be designed and bear stamp of the registered professional Engineer or Architect. Detail drawings will be submitted to the Consultant for review prior to commencing any work.
- .2 Before a temporary structure is used, person responsible for design, or their representative, shall inspect structure and certify it has been constructed according to their design.

1.5. RESPONSIBILITY

- .1 The "Prime Contractor" according applicable local jurisdiction, is responsible for health and safety of persons on site, safety of property on site and for protection of persons adjacent to site and environment to extent that they may be affected by conduct of Work.
- .2 Comply with and enforce compliance by employees with safety requirements of Contract Documents, applicable federal, provincial, territorial and local statutes, regulations, and ordinances, and with site-specific Health and Safety Plan.
- .3 Should any unforeseen or peculiar safety-related factor, hazard, or condition become evident during performance of Work, and follow procedures in place for Employee's Right to Refuse Work in accordance with Acts and Regulations of Health and Safety Act having jurisdiction. Advise the Board and the Consultant verbally and in writing.
- .4 The Contractor shall make their own arrangements for emergency treatment of accidents. Any accidents shall be reported immediately to the Board contact.
- .5 The Contractor agrees to hold the Board harmless of any and all liability of every nature and description, which may be suffered through bodily injuries, involving deaths of any persons, by reasons of negligence of the Contractor, his agents, employees, or his sub-Contractors.

1.6. SUBMITTALS

- .1 Make submittals in accordance with Section 01 33 00.
- .2 Submit site-specific Health and Safety Plan: Within ten (10) days after date of Notice to Proceed and prior to commencement of Work. Health and Safety Plan must include:
 - .1 Results of site specific safety hazard assessment.
 - .2 Results of safety and health risk or hazard analysis for site tasks and operation

- .3 Submit one (1) copy of Contractor's authorized representative's work site health and safety inspection reports to Consultant and Owner.
- .4 Submit copies of reports or directions issued by Federal, Provincial and Territorial health and safety inspectors.
- .5 Submit copies of incident and accident reports.
- .6 Submit Material Safety Data Sheets (MSDS) to Consultant.
- .7 Consultant's review of Contractor's final Health and Safety plan should not be construed as approval and does not reduce the Contractor's overall responsibility for construction Health and Safety.
- .8 Medical Surveillance: Where prescribed by legislation, regulation or safety program, submit certification of medical surveillance for site personnel prior to commencement of Work, and submit additional certifications for any new site personnel to Consultant.
- .9 On-site Contingency and Emergency Response Plan: Address standard operating procedures to be implemented during emergency situations.
- .10 File Notice of Project with the Ministry of Labour prior to commencement of Work.

1.7. SAFETY ACTIVITIES

- .1 Perform site specific safety hazard assessment related to project.
- .2 Schedule and administer Health and Safety meeting with Consultant prior to commencement of Work.
- .3 Perform Work in accordance with Section 01 41 00 - Regulatory Requirements and this section.

1.8. HEALTH AND SAFETY COORDINATOR

- .1 Employ and assign to Work, competent and authorized representative as Health and Safety Coordinator. Health and Safety Coordinator must:
 - .1 have previous experience as a Health & Safety coordinator,
 - .2 have working knowledge of occupational safety and health regulations,
 - .3 be responsible for completing Contractor's Health and Safety Training Sessions and ensuring that personnel not successfully completing required training are not permitted to enter site to perform Work,
 - .4 be responsible for implementing, enforcing daily and monitoring site-specific Contractor's Health and Safety Plan, and
 - .5 be on site during execution of Work.

1.9. POSTING OF DOCUMENTS

- .1 Ensure applicable items, articles, notices and orders are posted in conspicuous location on site in accordance with Acts and Regulations of Health and Safety Act having jurisdiction, and in consultation with Consultant.

1.10. CORRECTION OF NON-COMPLIANCE

- .1 Immediately address health and safety non-compliance issues identified by authority having jurisdiction or by Consultant or by the Board.
- .2 Provide Consultant and/or Board with written report of action taken to correct non-compliance of health and safety issues identified.
- .3 Consultant and or the Board may stop Work if non-compliance of health and safety regulations is not corrected.

1.11. PROJECT/SITE CONDITIONS

- .1 Work at site will involve contact with:
 - .1 Refer to Section 01 35 43 Hazardous Materials

1.12. HAZARDOUS WORK

- .1 Blasting or other use of explosives is not permitted at the place of work.

1.13. WORK STOPPAGE

- .1 Give precedence to safety and health of public and site personnel and protection of environment over cost and schedule considerations for Work.

1.14. LOCKOUT PROCEDURES

- .1 All Work to be done on electrical systems or machinery, where the unexpected switching on of the system or machinery could result in personal injury to a student, staff, employee, or the Contractor's employee, must be done in accordance with the Contractor's standard lockout procedure.
- .2 The Contractor shall provide his/her own locks for the above procedure.
- .3 The lock shall include contact information for the person(s) locking out such device.

1.15. OVERHEAD LIFTING

- .1 Under no circumstances will a crane or lifting device be used over a occupied space.
- .2 When working adjacent to occupied spaces, ensure a clearance of one (empty) classroom, or a minimum of 10m between any occupied space and the furthest possible reach of the crane.

1.16. WARNING SIGNS AND NOTICES

- .1 Notices shall be posted advising of the hazard but will not be considered a substitute for providing approved protection, separation, and space from the hazard.

1.17. FIRE PROTECTION

- .1 Provide and maintain temporary fire protection equipment during performance of Work required by the governing codes, regulations and bylaws.
- .2 Burning rubbish and construction waste materials is not permitted on site.
- .3 Maintain placed or installed Fire Protection to protect the portions of the Work during construction.

1.18. SCENT-FREE ENVIRONMENT

- .1 The Board requires that, where advised, a building may be deemed scent-free and as such, the wearing of scented products is prohibited.
- .2 Any methods or materials that are found to create negative responses in staff or students shall cease and be removed under advisement of the Consultant and or the Board, until alternate methods can be determined.

END OF SECTION

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SECTION 01 35 43 – HAZARDOUS MATERIALS

2.0 GENERAL

2.1. RELATED SECTIONS

- .1 Section 01 35 23 – Health and Safety Requirements.
- .2 Section 01 41 00 – Regulatory Requirements.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

2.2. REFERENCES

- .1 Province of Ontario, including requirements for a "Prime Contractor" as defined by the Act.

2.3. ASBESTOS and OTHER REGULATED SUBSTANCES

- .1 An Asbestos Audit, as prepared by MTE Consultants Inc. for this facility, is attached under Appendix A. A duplicate set is also available in the Facilities Services Departments located in the Education Centre. Unless specifically covered by a Cash Allowance or Contingency Allowance that states otherwise, include in this Contract the required removal of all asbestos containing materials (ACM) to complete the work. No claims for extra costs will be accepted for areas known to contain ACM that are within the scope of this Work.
- .2 Comply with applicable legislation regarding asbestos. Should the Contractor encounter asbestos not noted in the referenced Asbestos Audit that would be disturbed during the course of the Work, they should stop the work in that immediate area and report the same to the Consultant and Board contact.
- .3 In addition, Lead, Mercury, Silica, and Isocyanates are anticipated to be present in existing facilities. New construction, renovations, or alterations require compliance by the Contractor with the applicable legislation.

2.4. PROTOCOL FOR ABATEMENT WORK

- .1 This Protocol establishes the requirements to be followed by all Asbestos Abatement Contractors involved with the Board. It applies to Type 1, Type 2 and Type 3 Operations as stated in the Regulations and applies to emergency and non-emergency work (directly retained or working as a sub-contractor).
- .2 Asbestos Abatement Contractors must maintain appropriate insurance coverage and WISB certification.

- .3 Contractors retained for asbestos abatement work shall use personnel certified by the Ontario College of Trades and must provide the Consultant and Board with proof of asbestos certification (AAS and AAW) for all supervisors / all staff involved.
- .4 School Access
 - .1 During school hours all asbestos contractors are to report to the school office upon arrival. After school hours, ensure card-in / card-out procedures are followed and building security is maintained.
- .5 Communication
 - .1 Establish communication contact list with email and phone numbers that shall include:
 - .1 Principal / Vice Principal
 - .2 Area Facility Manager
 - .3 Head Custodian
 - .4 Environmental Officer
 - .5 Manager of Mechanical, Electrical and Environmental Services
 - .6 Manager of Health Safety & Security
 - .7 Contractor staff
 - .8 Consultant
 - .2 Contact the School Principal / Vice to set up a firm date for the abatement (removal / repair). Schedule to allow at least 72 hours notice ahead of the work.
 - .3 Confirm the date by notifying via email the following:
 - .1 Principal / Vice-principal,
 - .2 Area Facility Manager, and
 - .3 Environmental Officer.
 - .4 Consultant
 - .4 Indicate the date, the start time, the anticipated completion time for the work and the work areas in the school.
 - .5 Identify personnel managing the project and provide current cell numbers for emergency contacts.
 - .6 For emergency work, as requested by Area Supervisors, Facility Managers or Environmental Officer, no notification to the school is required.
 - .7 Additionally, for Type 3 work also contact:
 - .1 Manager of Health, Safety & Security, and
 - .2 Notify the MOL (also for Type 2) where required by regulation.
 - .3 Consultant

- .8 Discussions with other groups, school staff, media and others is discouraged and shall be directed to the Board Communication Officer where warranted.
- .6 Asbestos Operations
 - .1 Emergency work shall be carried out the same day (evening/night) or under exceptional conditions the following day / evening / night. Contractors shall exercise discretion when working in the school to minimize anxiety of staff/school community. Where warranted, contact Area Supervisor, Facility Manager or Environmental Officer to obtain further direction.
 - .2 For non-emergency work, contractor is to assess the work on site and provide a cost estimate to the Environmental Officer, (daniela_budure@wrdsb.on.ca) and Consultant. Some work will require discussion with the Facility Manager or Environmental Officer to assess if additional work should be done as to completely remove all ACM material from the area or similar.
 - .3 Where the MTE report shows ACM requiring repair, remove and re-insulate where required.
 - .4 Before beginning any Type 1, Type 2 or Type 3 Operations, the work area must be secured, doors closed, warning signs added to all entrances, caution tape used in open areas and signs used to restrict access to the work area so as to keep persons not involved in the work from entering in the work area.
 - .5 Provide "Construction" warning signs on solid barriers between the Work and public areas. Install a sufficient number of "asbestos abatement" warning signs behind the barriers, posted to warn of the hazard, and that access to the work area is restricted to persons wearing protective clothing and equipment.
 - .6 The contractor is responsible to disable the mechanical ventilation serving the work area and positively prevent operation using Lock-out / Tag-out devices for each air handling unit /fan. Exercise caution during heating season to ensure areas of the building are maintained above freezing and ensure equipment is turned back on after abatement / air clearance completed.
 - .7 Contractor's employees shall put on / take off PPE within work area marked by construction signs. No employee shall leave the work area wearing PPE.

- .8 All dust and waste is to be cleaned up and removed at frequent / regular intervals as the work proceeds and immediately upon completion. No waste bags or similar are to be left behind.

2.5. SUBMITTALS

- .1 Once the abatement is completed, forward a Letter of Completion to the Environmental Officer, (daniela_budure@wrdsb.on.ca). This letter shall be received no later than 72 hours after completion and shall include any sample results.
- .2 For those projects requiring Air Clearance, ensure this info is sent without delay but in all cases no later than 24 hours after sampling. All Type 3 work must take into account that the initial samples may not pass and the contactor must allow one additional day to re-clean and re-sample before school is to resume operations. For those projects not under the direct supervision of a Environmental Consultant, the contactor is to expedite the air clearance sampling with the lab of their choice and carry these costs.
- .3 Forward Air Clearance results to:
 - .1 Principal / Vice-principal,
 - .2 Facility Manager,
 - .3 Environmental Officer,
 - .4 Manager of Mechanical, Electrical and Environmental Services, and
 - .5 Manager of Health, Safety & Security.
 - .6 Consultant

2.6. ACKNOWLEDGEMENT

- .1 The protocols for asbestos work must be read and understood by Asbestos Contractor.
- .2 Submit a signed copy of the most current copy of PROTOCOL FOR ABATEMENT WORK (ASBESTOS ABATEMENT CONTRACTORS) to the General Contractor, the Consultant, and the Board's Environmental Officer.

END OF SECTION



May 29, 2018
MTE File No.: C34532-914

Waterloo Region District School Board
51 Ardelt Avenue
Kitchener, ON N2C 2R5

**Re: 2018 Asbestos Audit Update – Eastwood Collegiate Institute
760 Weber Street East, Kitchener, Ontario**

1.0 INTRODUCTION

MTE Consultants Inc. (MTE) was authorized by the Waterloo Region District School Board (WRDSB) to conduct the 2018 Asbestos Audit Update for the subject building.

The purpose of the assignment was to re-assess and document the location, type, and condition of identified asbestos-containing materials (ACM) present within the building and make appropriate recommendations for management, abatement or remedial activities, as required.

The audit was conducted in accordance with the Ontario Ministry of Labour, *Regulation 278/05-Designated Substance-Asbestos on Construction Projects and in Buildings and Repair Operations* (O. Reg. 278/05). This report shall replace previous audit reports.

2.0 SCOPE OF WORK

The Scope of Work for this assessment was completed by MTE and included the following activities:

- Review of existing and historical reports and documentation pertaining to ACM within the building;
- Visual inspection to assess the condition of previously identified ACM, excluding portable structures;
- Collection of building material samples that are suspect ACM as applicable;
- Submission of samples to an accredited laboratory, as applicable;
- Photographic log of damaged materials; and
- Preparation of this report with findings and recommendations.

3.0 METHODOLOGY AND ASSESSMENT CRITERIA

This inspection was conducted by visual and laboratory identification methods for the assessment of ACM and their corresponding location, use, condition, and friability. The areas outlined in Section 2.0 were inspected limited to building components, materials and service connections. Notwithstanding that reasonable attempts were made to identify all ACMs, the possibility of concealed material exists and may not become visible until substantial demolition has occurred and therefore are currently undocumented and did not include the following.

- Locations that may be hazardous to the surveyor, such as electrical equipment;
- Where invasive inspection could cause consequential damage to the property or impair the integrity of the equipment, such as roof systems, underground services or components of mechanical equipment;
- Locations concealed by building finishes that require substantial demolition or removal for access or determination of quantities;
- Materials that is present in such an inconsistent fashion that without complete removal of finishes, the extent cannot be determined;
- Non-permanent items or personal contents, furnishings;
- Settled dust or airborne agents unless otherwise stated; and
- WRDSB Rooms 191, 192 – rooms are not accessible with keys or through the custodial staff.

3.1 Condition of ACM

During the audit process the general condition of ACMs were observed and noted. Materials which are damaged can pose an increased exposure risk to workers, building occupants and the public. While assessing damage can be subjective, abatement items were grouped into two categories to aid in remedial prioritization.

Monitor Annually

These are items which display minor isolated damage; however do not pose an immediate risk to workers from exposure to asbestos fibres due to the current condition of the material and/or location. No remediation is required at this time; however these items should be monitored on a yearly basis for evidence of continued degradation. Should the condition of the material change an evaluation should be completed by a competent person to determine remedial action.

Abatement Action Required

These are items which display damage and may pose potential risk to workers from exposure to asbestos fibres due to the physical condition and/or location of the material. Clean-up, repair or removal of these materials is required as soon as reasonably possible.

4.0 FINDINGS

An inspection of the building was conducted by MTE on May 4 and May 22, 2018. The three-storey school building and was constructed in 1955 with additions in 1958, 1961, 1966, 1981, and 2004. The inspection did not include areas of post 2004 new construction or renovation (where all building finishes have been removed and replaced).

The Asbestos Management Database is provided in **Appendix A** and associated Figures are provided in **Appendix B**. These together provide a current summary of the ACM identified throughout the building.

A summary of the damaged ACM identified at the time of the inspection is provided in **Appendix C**.

The bulk asbestos sample location and analytical summary is provided in **Appendix C**, and Laboratory Certificates of Analysis for any sampling conducted as part of the 2018 inspection are also provided, as applicable.

4.1 Analytical Results

During this inspection, a total of 58 building material samples that are suspect ACM were collected with a total of 52 analyses being performed. The threshold of equal to or greater than 0.5% asbestos by dry weight and is classified as ACM according to O. Reg. 278/05. Samples collected were submitted for analysis to Paracel Laboratories Ltd. (Paracel), in Mississauga, Ontario. Paracel is certified under the National Voluntary Laboratory Accreditation Program to perform asbestos analysis of bulk samples by PLM. Laboratory analysis was conducted in accordance with the United States Environmental Protection Agency, Test Method EPA/600-R-93/116: Method for the Determination of Asbestos in Bulk Building Materials, June, 1993 by Polarized Light Microscopy as prescribed by O. Reg. 278/05.

Reported laboratory detections of asbestos ranged between <MDL to 5% Chrysotile and are therefore select materials are confirmed as ACM.

4.2 Removed ACM

A summary of ACM that has been removed since the previous audit/inspection is provided in the abatement letters provided in in **Appendix D**.

4.3 Discovery of Additional ACM

ACM or suspect ACM that was not previously identified includes the following:

Non-Friable:

- Original Building – Interior dark brown sealant on door panes;
- 1966 Addition – Plaster walls;
- 1966 Addition – Mastic associated with vinyl floor tiles;
- 1981 Addition – Interior grey sealant on window frames; and
- 1981 Addition – Interior brown sealant on door panes.

4.4 Damaged ACM

A summary of all ACM that has been identified as requiring annual monitoring or Type 1 Operations in accordance with O. Reg. 278/05 is provided in **Table 1** of **Appendix C**. Type 1 abatement Operations will be conducted internally by trained and qualified WRDSB staff.

A summary of all ACM that has been identified as requiring Type 2, Type 2 Glove Bag or Type 3 Operations in accordance with O. Reg. 278/05 is provided in **Table 2** of **Appendix C**. Abatement work will be conducted by certified asbestos contractors trained and qualified to conduct the type of work required.

5.0 RECOMMENDATIONS

5.1 Remedial

Damaged ACM was identified and requires removal or repair and annual monitoring. At the time of the audit, all other ACM at the building was noted to be in good condition.

Type 1 abatement Operations will be conducted internally by trained and qualified WRDSB staff. All other abatement work will be conducted by certified asbestos contractors trained and qualified to conduct the type of work required.

All asbestos work must be conducted by staff and/or contractors who are trained and experienced in the type of asbestos operations required, and should be overseen by a qualified third party Health, Safety and Environmental professional. In order to conduct Type 3 asbestos operations, contractors must be certified as Asbestos Abatement Workers AAW (Trade code 253W) and Asbestos Abatement Supervisors AAS (Trade code 253S) by The Ministry of Training, Colleges and Universities (Ministry of Advanced Education and Skills Development) as prescribed by Section 20 of O. Reg. 278/05.

5.2 Long Term Management

This audit was conducted for the long term management of ACM within the building. Prior to future construction or renovation projects, additional assessments and/or sampling may be required.

There are no requirements under current legislation to remove ACM from a building simply because it is present. However, O. Reg. 278/05 requires that an Asbestos Management Plan be implemented and maintained. Asbestos awareness training should be provided for staff that may come in contact with ACM during routine duties or in emergency situations.

ACM that will be disturbed, or will likely be disturbed, during building maintenance, renovations, construction, or demolition activities must be handled and disposed of in accordance with the procedures prescribed by O. Reg. 278/05.

ACM may also be present in concealed locations. If any construction, renovation, alteration, or maintenance activities are required or planned, invasive inspections of concealed locations for potential ACM must be performed prior to such activities. Should any suspect ACM be discovered, work should cease and the materials should not be disturbed. Suspect ACM must be treated as asbestos-containing or sampled and proven to not contain asbestos. Any activities that require disturbance of ACM must be performed in accordance with O. Reg. 278/05.

6.0 LIMITATIONS

Services performed by **MTE Consultants Inc.** (MTE) were conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the Environmental Engineering & Consulting profession. No other representation expressed or implied as to the accuracy of the information, conclusions or recommendations is included or intended in this report.

This report was completed for the sole use of MTE and the Client. It was completed in accordance with the approved Scope of Work referred to in Section 2.0. As such, this report may not deal with all issues potentially applicable to the site and may omit issues that are or may be of interest to the reader. MTE makes no representation that the present report has dealt with all-important environmental features, except as provided in the Scope of Work. All findings and conclusions presented in this report are based on site conditions, as they existed during the time period of the investigation. This report is not intended to be exhaustive in scope or to imply a risk-free facility.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based upon it, are the responsibility of such third parties. MTE accepts no responsibility for liabilities incurred by or damages, if any, suffered by any third party as a result of decisions made or actions taken, based upon this report. Others with interest in the site should undertake their own investigations and studies to determine how or if the condition affects them or their plans.

It should be recognized that the passage of time might affect the views, conclusions and recommendations (if any) provided in this report because environmental conditions of a property can change. Should additional or new information become available, MTE recommends that it be brought to our attention in order that we may re-assess the contents of this report.

All of which is respectfully submitted,

MTE CONSULTANTS INC.



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Attach.



APPENDIX A

ASBESTOS MANAGEMENT DATABASE



School Name	Legend:	Notes:
Eastwood Collegiate Institute	HM - Homogenous Material - homogeneous with previously sampled material	All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.
Date Built:	SL - Sample Location - Material Sampled	
Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
		Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
Structure/Additions										
	Original Building	Structure	Deck	Steel	-	Non ACM	-	-	-	-
	Original Building	Structure	Concrete	Concrete	-	Non ACM	-	-	-	-
	Original Building	Façade	Brick Veneer	Brick and Mortar	-	Non ACM	-	-	-	-
	Original Building	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	VC	-	-	-
	Original Building	Windows	Interior Frames	Light Grey Sealant	-	Non ACM	SL	S09	22-May-18	ND
	Original Building	Windows	Interior Pane	Rubber Sealant	-	Non ACM	-	-	-	-
	Original Building	Windows	Exterior Frames	Light Grey Sealant	-	Non ACM	HM	S09	22-May-18	ND
	Original Building	Windows	Exterior Pane	Silicon Sealant	-	Non ACM	-	-	-	-
	Original Building	Doors	Interior Frames	Dark Grey Sealant	-	Non ACM	SL	S13	22-May-18	ND
	Original Building	Doors	Interior Pane	Dark Brown	NF	ACM	SL	S12	22-May-18	5% Chrysotile
	Original Building	Doors	Exterior Frames	Beige Sealant	-	Non ACM	SL	S10	22-May-18	ND
	Original Building	Doors	Exterior Pane	Brown Sealant	-	Non ACM	SL	S11	22-May-18	ND
	Original Building	Mastic	Mastic	Floor Tile Mastic	NF	ACM	SL	EW-S04A	12-Jan-10	2.5% Chrysotile
	Original Building	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	VC	-	-	-
	1958 Addition	Windows	Interior Frames	Light Grey Sealant	-	Non ACM	HM	S09	22-May-18	ND
	1958 Addition	Windows	Interior Pane	Rubber Sealant	-	Non ACM	-	-	-	-
	1958 Addition	Windows	Exterior Frames	Light Grey Sealant	-	Non ACM	HM	S09	22-May-18	ND
	1958 Addition	Windows	Exterior Pane	Silicon Sealant	-	Non ACM	-	-	-	-
	1958 Addition	Doors	Interior Frames	White Sealant	-	Non ACM	SL	S14	22-May-18	ND
	1958 Addition	Doors	Interior Pane	Silicon Sealant	-	Non ACM	-	-	-	-
	1958 Addition	Doors	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1958 Addition	Doors	Exterior Pane	Silicon Sealant	-	Non ACM	-	-	-	-
	1958 Addition	Mastic	Mastic	Floor Tile Mastic	NF	ACM	SL	EW-S15A	12-Jan-10	3.5% Chrysotile
	1958 Addition	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	VC	-	-	-
	1961 Addition	Windows	Interior Frames	Silicon Sealant	-	Non ACM	-	-	-	-



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WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
	1961 Addition	Windows	Interior Pane	Silicon Sealant	-	Non ACM	-	-	-	-
	1961 Addition	Windows	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1961 Addition	Windows	Exterior Pane	Silicon Sealant	-	Non ACM	-	-	-	-
	1961 Addition	Doors	Interior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1961 Addition	Doors	Interior Pane	Dark Brown	-	Non ACM	HM	S12	22-May-18	ND
	1961 Addition	Doors	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1961 Addition	Doors	Exterior Pane	Dark Brown	-	Non ACM	HM	S12	22-May-18	ND
	1961 Addition	Mastic	Mastic	Floor Tile Mastic	NF	ACM	SL	EW-S18A	12-Jan-10	3.3% Chrysotile
	1961 Addition	Roof R-O	Roofing Materials	4-Ply Roofing Membrane	-	Non ACM	SL	S01	8-Dec-16	ND
	1961 Addition	Roof R-O	Roofing Materials	Mastic on Cellulose	-	Non ACM	SL	S02	8-Dec-16	ND
	1961 Addition	Roof R-O	Roofing Materials	Mastic on Steel Deck	-	Non ACM	SL	S03	8-Dec-16	<MDL Chrysotile
	1961 Addition	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	-	-	-	-
	1966 Addition	Windows	Interior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1966 Addition	Windows	Interior Pane	Rubber Sealant	-	Non ACM	-	-	-	-
	1966 Addition	Windows	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1966 Addition	Windows	Exterior Pane	Rubber Sealant	-	Non ACM	-	-	-	-
	1966 Addition	Mastic	Mastic	Floor Tile Mastic	NF	ACM	SL	S03	22-May-18	3% Chrysotile
	1966 Addition	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	VC	-	-	-
	1981 Addition	Windows	Interior Frames	Grey Sealant	NF	ACM	SL	S15	22-May-18	2% Chrysotile
	1981 Addition	Windows	Interior Pane	Silicon Sealant	-	Non ACM	-	-	-	-
	1981 Addition	Windows	Exterior Frames	Grey Sealant	-	Non ACM	HM	S15	22-May-18	ND
	1981 Addition	Windows	Exterior Pane	Silicon Sealant	-	Non ACM	-	-	-	-
	1981 Addition	Doors	Interior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1981 Addition	Doors	Interior Pane	Rubber Sealant	-	Non ACM	-	-	-	-
	1981 Addition	Doors	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1981 Addition	Doors	Exterior Pane	Brown Sealant	NF	ACM	SL	S16	22-May-18	2% Chrysotile
	1981 Addition	Mastic	Mastic	Floor Tile Mastic	-	Non ACM	SL	S04	22-May-18	ND
	1981 Addition	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	-	-	-	-



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		Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
Basement										
1	Gym	Floor	Wood	-	-	Non ACM	-	-	-	-
1	Gym	Wall	Concrete	-	-	Non ACM	-	-	-	-
1	Gym	Ceiling	Metal Pan	-	-	Non ACM	-	-	-	-
1	Gym	Piping	Pipe Insulation	Fibreglass insulation	-	Non ACM	-	-	-	-
1	Gym	Piping	Pipe	Parged Cement	F	ACM	HM	1680.240-07	4-Jun-90	50-75% Chrysotile
2	Gym	Floor	Wood	-	-	Non ACM	-	-	-	-
2	Gym	Wall	Concrete	-	-	Non ACM	-	-	-	-
2	Gym	Ceiling	Metal Pan	-	-	Non ACM	-	-	-	-
2	Gym	Piping	Pipe Insulation	Fibreglass insulation	-	Non ACM	-	-	-	-
2	Gym	Piping	Pipe	Parged Cement	F	ACM	HM	1680.240-07	4-Jun-90	50-75% Chrysotile
3	Gym	Floor	Wood	-	-	-	-	-	-	-
3	Gym	Wall	Brick	-	-	Non ACM	-	-	-	-
3	Gym	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
3	Gym	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-
3	Gym	Piping	Pipe Insulation	Fibreglass insulation	-	Non ACM	-	-	-	-
3	Gym	Piping	Pipe	Parged Cement	F	ACM	HM	1680.240-07	4-Jun-90	50-75% Chrysotile
4	Fitness	Floor	Concrete	-	-	Non ACM	-	-	-	-
4	Fitness	Floor	Rubber Mat	Rubber	-	Non ACM	-	-	-	-
4	Fitness	Wall	Concrete	-	-	Non ACM	-	-	-	-
4	Fitness	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
4A	Fitness	Floor	Concrete	-	-	Non ACM	-	-	-	-
4A	Fitness	Floor	Rubber Mat	Rubber	-	Non ACM	-	-	-	-
4A	Fitness	Wall	Concrete	-	-	Non ACM	-	-	-	-
4A	Fitness	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
4A	Fitness	Piping	Pipe Insulation	Fibreglass insulation	-	Non ACM	-	-	-	-



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Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
5	Washroom	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2010)	-	Non ACM	-	-	-	-
5	Washroom	Wall	Concrete Block	-	-	Non ACM	-	-	-	-
5	Washroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
5	Washroom	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
5A	Washroom	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2010)	-	Non ACM	-	-	-	-
5A	Washroom	Wall	Concrete Block	-	-	Non ACM	-	-	-	-
5A	Washroom	Wall	Plaster	-	-	Non ACM	-	-	-	-
5A	Washroom	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
5B	Washroom	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2010)	-	Non ACM	-	-	-	-
5B	Washroom	Wall	Concrete Block	-	-	Non ACM	-	-	-	-
5B	Washroom	Wall	Plaster	-	-	Non ACM	-	-	-	-
5B	Washroom	Ceiling	Texture Coat	-	-	Non ACM	HM	EW-S29ABC	12-Jan-10	ND
6	Washroom	Floor	Concrete	-	-	Non ACM	-	-	-	-
6	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
6	Washroom	Deck	Concrete	-	-	Non ACM	-	-	-	-
6	Washroom	Piping	Pipe Insulation	Fibreglass insulation	-	Non ACM	-	-	-	-
6B	Washroom	Floor	Ceramic Tile	-	-	Non ACM	-	-	-	-
6B	Washroom	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
6B	Washroom	Deck	Concrete	-	-	Non ACM	-	-	-	-
6C	Storage	Floor	Ceramic Tile	-	-	Non ACM	-	-	-	-
6C	Storage	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
6C	Storage	Deck	Concrete	-	-	Non ACM	-	-	-	-
6D	Storage	Floor	Ceramic Tile	-	-	Non ACM	-	-	-	-
6D	Storage	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
6D	Storage	Deck	Concrete	-	-	Non ACM	-	-	-	-
7	Gym Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
7	Gym Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
7	Gym Storage	Ceiling	Metal Pan	-	-	Non ACM	-	-	-	-



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Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
10	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
10	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
10	Storage	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
10A	Custodial Closet	Floor	Concrete	-	-	Non ACM	-	-	-	-
10A	Custodial Closet	Wall	Concrete	-	-	Non ACM	-	-	-	-
10A	Custodial Closet	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
10A	Custodial Closet	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
10B	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
10B	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
10B	Washroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
10B	Washroom	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
10C	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
10C	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
10C	Washroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
10C	Washroom	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
10D	Shower	Floor	Concrete	-	-	Non ACM	-	-	-	-
10D	Shower	Wall	Concrete	-	-	Non ACM	-	-	-	-
10D	Shower	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
10D	Shower	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
10D	Shower	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.240-07	4-Jun-90	50-75% Chrysotile
10E	Shower	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
10E	Shower	Wall	Concrete	-	-	Non ACM	-	-	-	-
10E	Shower	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
11	Classroom	Floor	Wood	-	-	Non ACM	-	-	-	-
11	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
11	Classroom	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
11	Classroom	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
12	Classroom	Floor	Concrete	-	-	Non ACM	-	-	-	-



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12	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
12	Classroom	Ceiling	String Board	On Metal Pan	-	Non ACM	-	-	-	-
13	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
13	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
13	Classroom	Ceiling	Ceiling Tile 2'x4'	Textured Long Fissure Random Pinhole	-	Non ACM	HM	S28	12-Jan-10	ND
13A	Practice Room	Floor	Carpet	-	-	Non ACM	-	-	-	-
13A	Practice Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
13A	Practice Room	Ceiling	Ceiling Tile 2'x4'	Textured Long Fissure Random Pinhole	-	Non ACM	HM	S28	12-Jan-10	ND
13B	Work Room	Floor	Carpet	-	-	Non ACM	-	-	-	-
13B	Work Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
13B	Work Room	Ceiling	Ceiling Tile 2'x4'	Textured Long Fissure Random Pinhole	-	Non ACM	HM	S28	12-Jan-10	ND
13C	Work Room	Floor	Carpet	-	-	Non ACM	-	-	-	-
13C	Work Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
13C	Work Room	Ceiling	Ceiling Tile 2'x4'	Textured Long Fissure Random Pinhole	-	Non ACM	HM	S28	12-Jan-10	ND
13D	Practice	Floor	Carpet	-	-	Non ACM	-	-	-	-
13D	Practice	Wall	Concrete	-	-	Non ACM	-	-	-	-
13D	Practice	Ceiling	Ceiling Tile 2'x4'	Textured Long Fissure Random Pinhole	-	Non ACM	HM	S28	12-Jan-10	ND
14	Practice	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
14	Practice	Wall	Concrete	-	-	Non ACM	-	-	-	-
14	Practice	Ceiling	Ceiling Tile 2'x4'	Textured Long Fissure Random Pinhole	-	Non ACM	SL	S28abc	12-Jan-10	ND
14A	Practice	Floor	Carpet	-	-	Non ACM	-	-	-	-
14A	Practice	Wall	Concrete	-	-	Non ACM	-	-	-	-
14A	Practice	Ceiling	Ceiling Tile 2'x4'	Textured Long Fissure Random Pinhole	-	Non ACM	HM	S28	12-Jan-10	ND
15	Classroom	Floor	Wood	-	-	Non ACM	-	-	-	-
15	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	SL	S31c	12-Jan-10	ND
15	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
15	Classroom	Ceiling	String Board	On Metal Pan	-	Non ACM	-	-	-	-
15A	Storage	Floor	Wood	-	-	Non ACM	-	-	-	-



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15A	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
15A	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
15A	Storage	Ceiling	String Board	On Metal Pan	-	Non ACM	-	-	-	-
15B	Storage	Floor	Wood	-	-	Non ACM	-	-	-	-
15B	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
15B	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
15B	Storage	Ceiling	String Board	On Metal Pan	-	Non ACM	-	-	-	-
15C	Lab	Floor	Wood	-	-	Non ACM	-	-	-	-
15C	Lab	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
15C	Lab	Wall	Concrete	-	-	Non ACM	-	-	-	-
15C	Lab	Ceiling	String Board	On Metal Pan	-	Non ACM	-	-	-	-
16	Dance Studio	Floor	Rubber	-	-	Non ACM	-	-	-	-
16	Dance Studio	Wall	Concrete	-	-	Non ACM	-	-	-	-
16	Dance Studio	Ceiling	String Board	On Metal Pan	-	Non ACM	-	-	-	-
16A	Change Room	Floor	12"x12" Vinyl Floor Tile	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
16A	Change Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
16A	Change Room	Ceiling	String Board	On Metal Pan	-	Non ACM	-	-	-	-
16B	Change Room	Floor	12"x12" Vinyl Floor Tile	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
16B	Change Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
16B	Change Room	Ceiling	String Board	On Metal Pan	-	Non ACM	-	-	-	-
16C	Office	Floor	12"x12" Vinyl Floor Tile	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
16C	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
16C	Office	Ceiling	String Board	On Metal Pan	-	Non ACM	-	-	-	-
801	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
801	Corridor	Wall	Drywall	Drywall Joint Compound	-	Non ACM	SL	S31ab	12-Jan-10	ND
801	Corridor	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
801	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-
802	Corridor	Floor	12"x12" Vinyl Floor Tile	Beige with Brown Spots	-	Non ACM	HM	S22	12-Jan-10	ND



School Name	Legend:	Notes:
Eastwood Collegiate Institute	HM - Homogenous Material - homogeneous with previously sampled material	All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.
Date Built:	SL - Sample Location - Material Sampled	
Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
		Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
802	Corridor	Wall	Drywall	Drywall Joint Compound	-	Non ACM	SL	S31ab	12-Jan-10	ND
802	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
803	Corridor	Floor	Carpet	-	-	Non ACM	-	-	-	-
803	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
803	Corridor	Ceiling	Ceiling Tile 2'x4'	Textured Long Fissure Random Pinhole	-	Non ACM	HM	S28	12-Jan-10	ND
804	Corridor	Floor	Carpet	-	-	Non ACM	-	-	-	-
804	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
804	Corridor	Ceiling	Ceiling Tile 2'x4'	Textured Long Fissure Random Pinhole	-	Non ACM	HM	S28	12-Jan-10	ND
805	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
805	Corridor	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
805	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
806	Corridor	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
806	Corridor	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
806	Corridor	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
808	Corridor	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
808	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
808	Corridor	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
809	-	Floor	Carpet	-	-	Non ACM	-	-	-	-
809	-	Wall	Concrete	-	-	Non ACM	-	-	-	-
809	-	Ceiling	Ceiling Tile 2'x4'	Textured Long Fissure Random Pinhole	-	Non ACM	HM	S28	12-Jan-10	ND
901	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
901	Stairwell	Wall	Concrete Block	-	-	Non ACM	-	-	-	-
901	Stairwell	Ceiling	Ceiling Tile 1'x1'	Thick Fissure	-	Non ACM	HM	EW32	12-Jan-10	ND
902	Stairwell	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
902	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
902	Stairwell	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
904	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
904	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-



	School Name	Legend:	Notes:
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	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
904	Stairwell	Wall	Brick	-	-	Non ACM	-	-	-	-
904	Stairwell	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
904	Stairwell	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-
905	Stairwell	Floor	Terazzo	-	-	Non ACM	-	-	-	-
905	Stairwell	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
905	Stairwell	Wall	Concrete Block	-	-	Non ACM	-	-	-	-
905	Stairwell	Ceiling	Texture Coat	-	-	Non ACM	HM	EW-S29ABC	12-Jan-10	ND
906	Stairwell	Floor	Terazzo	-	-	Non ACM	-	-	-	-
906	Stairwell	Wall	Concrete Block	-	-	Non ACM	-	-	-	-
906	Stairwell	Ceiling	Texture Coat	-	-	Non ACM	HM	EW-S29ABC	12-Jan-10	ND
909	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
909	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
909	Stairwell	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
950	-	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
950	-	Wall	Concrete	-	-	Non ACM	-	-	-	-
950	-	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
Level 1										
100	Classroom	Floor	Carpet	-	-	Non ACM	-	-	-	-
100	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
100	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
100	Classroom	Ceiling	Ceiling Tile 1'x1'	-	-	Non ACM	-	-	-	-
100A	Workroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
100A	Workroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
100A	Workroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
100B	Workroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
100B	Workroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND



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Date Built:	SL - Sample Location - Material Sampled	
Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
100B	Workroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
101	Classroom	Floor	Vinyl Floor Tile 12"x12"	Beige with Brown Spots	-	Non ACM	HM	S22	12-Jan-10	ND
101	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
101	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
101	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
102	Classroom	Floor	Vinyl Floor Tile 12"x12"	Beige with Brown Spots	-	Non ACM	HM	S22	12-Jan-10	ND
102	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
102	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
102	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
103	Office	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
103	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
103	Office	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
103	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
103A	Office	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
103A	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
103A	Office	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
103A	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
104	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
104	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
104	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
104	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
105	Classroom	Floor	Wood	-	-	Non ACM	-	-	-	-
105	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
105	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
105	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
106	Classroom	Floor	Vinyl Floor Tile 9"x9"	Red	NF	ACM	HM	EW-S04	12-Jan-10	5.3% Chrysotile
106	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
106	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND



	School Name	Legend:	Notes:
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	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
106	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
107	Classroom	Floor	Vinyl Floor Tile 9"x9"	Crème with Green Streaks	NF	ACM	HM	S07	12-Jan-10	10% Chrysotile
107	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
107	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
107	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
108	Classroom	Floor	Vinyl Floor Tile 9"x9"	Beige with Red, Brown and Gold Streak	NF	ACM	HM	S19	12-Jan-10	12% Chrysotile
108	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
108	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
108	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
120	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
120	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
120	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
120	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
121	Classroom	Floor	Vinyl Floor Tile 9"x9"	Grey with White Beige and Brown Strea	NF	ACM	HM	S09	12-Jan-10	4.3% Chrysotile
121	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
121	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
121	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
122	Classroom	Floor	Vinyl Floor Tile 9"x9"	Blue with White and Black Streaks	NF	ACM	HM	S12	12-Jan-10	4.1% Chrysotile
122	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
122	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
122	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
123	Classroom	Floor	Vinyl Floor Tile 9"x9"	Brown with White and Brown Streaks	NF	ACM	SL	S27abc	12-Jan-10	7.1% Chrysotile
123	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
123	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
123	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
124	Classroom	Floor	Vinyl Floor Tile 9"x9"	Grey with White and Black Streaks	NF	ACM	HM	S14	12-Jan-10	6.6% Chrysotile
124	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
124	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND



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Date Built:	SL - Sample Location - Material Sampled	
Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
		Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
124	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
125	Classroom	Floor	Vinyl Floor Tile 9"x9"	Brown with White and Black	NF	ACM	HM	S16	12-Jan-10	5.1% Chrysotile
125	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
125	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
125	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
126	Classroom	Floor	Carpet	-	-	Non ACM	-	-	-	-
126	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
126	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
126	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
127	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
127	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
127	Classroom	Wall	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
127	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
144	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
144	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
144	Storage	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
144A	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
144A	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
144A	Storage	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
145	Washroom	Floor	Concrete	-	-	Non ACM	-	-	-	-
145	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
145	Washroom	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
146	Mechanical	Floor	Concrete	-	-	Non ACM	-	-	-	-
146	Mechanical	Wall	Concrete	-	-	Non ACM	-	-	-	-
146	Mechanical	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
146	Mechanical	Piping	Pipe Insulation	Fibreglass insulation	-	Non ACM	-	-	-	-
146	Mechanical	Piping	Pipe Fitting	Fibreglass/PVC	-	Non ACM	-	-	-	-
146A	Mechanical	Floor	Concrete	-	-	Non ACM	-	-	-	-



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Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
146A	Mechanical	Wall	Concrete	-	-	Non ACM	-	-	-	-
146A	Mechanical	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
146A	Mechanical	Piping	Pipe Insulation	Fibreglass insulation	-	Non ACM	-	-	-	-
146A	Mechanical	Piping	Pipe Fitting	Fibreglass/PVC	-	Non ACM	-	-	-	-
147	Washroom	Floor	Vinyl Floor Tile 9"x9"	Green with White	NF	ACM	HM	S24	12-Jan-10	1.2% Chrysotile
147	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
147	Washroom	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
148	Washroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
148	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
148	Washroom	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
150	Office	Floor	Vinyl Floor Tile 9"x9"	Brown with White and Black	NF	ACM	HM	S16	12-Jan-10	5.1% Chrysotile
150	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
150	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
150	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
151	Office	Floor	Vinyl Floor Tile 9"x9"	Brown with White and Black	NF	ACM	HM	S16	12-Jan-10	5.1% Chrysotile
151	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
151	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
151	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
152	Storage	Floor	Vinyl Floor Tile 9"x9"	Brown with White and Black	NF	ACM	HM	S16	12-Jan-10	5.1% Chrysotile
152	Storage	Wall	Plaster	-	-	Non ACM	SL	S33abc	12-Jan-10	ND
152	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
153	Storage	Floor	Vinyl Floor Tile 9"x9"	Red with Beige Streaks	NF	ACM	HM	S18	12-Jan-10	6.7% Chrysotile
153	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
153	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
154	Cafeteria	Floor	Concrete	-	-	Non ACM	-	-	-	-
154	Cafeteria	Wall	Concrete	-	-	Non ACM	-	-	-	-
154	Cafeteria	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
154	Cafeteria	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-



	School Name	Legend:	Notes:
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	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
155	Kitchen	Floor	Concrete	-	-	Non ACM	-	-	-	-
155	Kitchen	Wall	Concrete	-	-	Non ACM	-	-	-	-
155	Kitchen	Ceiling	Ceiling Tile 2'x4'	Smooth (Post 2010)	-	Non ACM	-	-	-	-
156	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
156	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
156	Washroom	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
156	Washroom	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
157	Staff Dining	Floor	Vinyl Floor Tile 9"x9"	Red with Beige Streak	NF	ACM	HM	S18	12-Jan-10	6.7% Chrysotile
157	Staff Dining	Floor	Vinyl Floor Tile 9"x9"	Beige with Brown Streak	NF	ACM	HM	S03	12-Jan-10	10% Chrysotile
157	Staff Dining	Wall	Concrete	-	-	Non ACM	-	-	-	-
157	Staff Dining	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
158	Showers	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
158	Showers	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
158	Showers	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
159A	Office	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
159A	Office	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
159A	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
159A	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
160	Change room	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
160	Change room	Wall	Ceramic Block	-	-	Non ACM	-	-	-	-
160	Change room	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
160	Change room	Ceiling	Plaster	Stucco	-	Non ACM	SL	S34abc	12-Jan-10	ND
161	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
161	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
161	Washroom	Ceiling	Plaster	Stucco	-	Non ACM	HM	S34	12-Jan-10	ND
162	Change room	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
162	Change room	Wall	Ceramic Block	-	-	Non ACM	-	-	-	-
162	Change room	Ceiling	Plaster	Stucco	-	Non ACM	HM	S34	12-Jan-10	ND



	School Name	Legend:	Notes:
	Eastwood Collegiate Institute	HM - Homogenous Material - homogeneous with previously sampled material	All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions. Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.
	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
163	Change room	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
163	Change room	Wall	Ceramic Block	-	-	Non ACM	-	-	-	-
163	Change room	Ceiling	Plaster	Stucco	-	Non ACM	HM	S34	12-Jan-10	ND
164	Change room	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
164	Change room	Wall	Ceramic Block	-	-	Non ACM	-	-	-	-
164	Change room	Ceiling	Plaster	Stucco	-	Non ACM	HM	S34	12-Jan-10	ND
165	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
165	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
165	Washroom	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
166	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
166	Washroom	Wall	Ceramic Block	-	-	Non ACM	-	-	-	-
166	Washroom	Ceiling	Plaster	Stucco	-	Non ACM	HM	S34	12-Jan-10	ND
168	Shower	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
168	Shower	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
168	Shower	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
169	Storage	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
169	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
169	Storage	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
170	Change room	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
170	Change room	Wall	Concrete	-	-	Non ACM	-	-	-	-
170	Change room	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
171	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
171	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
171	Storage	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
171	Storage	Firespray	Firespray	-	-	Non ACM	SL	S36abc	12-Jan-10	ND
172	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
172	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
172	Storage	Ceiling	Concrete	-	-	Non ACM	-	-	-	-



	School Name	Legend:	Notes:
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	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
173	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
173	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
173	Storage	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
174	Office	Floor	Vinyl Floor Tile 9"x 9"	Red	NF	ACM	HM	S04	12-Jan-10	5.3% Chrysotile
174	Office	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
174	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
174	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
174	Office	Ceiling	Ceiling Tile 2' x 4'	Long Fissure Random Pinhole	NF	ACM	HM	S37	12-Jan-10	3.3% Amosite
175	Office	Floor	Vinyl Floor Tile 9"x 9"	Red	NF	ACM	HM	S04	12-Jan-10	5.3% Chrysotile
175	Office	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
175	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
175	Office	Ceiling	Ceiling Tile 2' x 4'	Long Fissure Random Pinhole	NF	ACM	SL	S37abc	12-Jan-10	3.3% Amosite
176	Office	Floor	Vinyl Floor Tile 9"x 9"	Grey with Black Streaks	NF	ACM	HM	S06	12-Jan-10	12% Chrysotile
176	Office	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
176	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
176	Office	Ceiling	Ceiling Tile 2' x 4'	Long Fissure Random Pinhole	NF	ACM	SL	S37abc	12-Jan-10	3.3% Amosite
176A	Washroom	Floor	Vinyl Floor Tile 9"x9"	Red	NF	ACM	HM	EW-S04	12-Jan-10	5.3% Chrysotile
176A	Washroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
176A	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
177	Mechanical	Floor	Concrete	-	-	Non ACM	-	-	-	-
177	Mechanical	Wall	Concrete	-	-	Non ACM	-	-	-	-
177	Mechanical	Wall	Plaster	-	NF	ACM	SL	S02CD	4-May-18	1% Chrysotile
177	Mechanical	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
177	Mechanical	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.240-07	4-Jun-90	50-75% Chrysotile
179	Office	Floor	Vinyl Floor Tile 9"x9"	Green with White	NF	ACM	HM	S24	12-Jan-10	1.2% Chrysotile
179	Office	Wall	Plaster	-	NF	ACM	SL	S02CD	4-May-18	1% Chrysotile
179	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
179	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-



	School Name	Legend:	Notes:
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	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F- Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
179	Office	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
180	Office	Floor	Vinyl Floor Tile 9"x9"	Green with White	NF	ACM	HM	S24	12-Jan-10	1.2% Chrysotile
180	Office	Wall	Plaster	-	NF	ACM	HM	S02CD	4-May-18	1% Chrysotile
180	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
180	Office	Ceiling	Ceiling Tile 1'x1'	-	-	Non ACM	-	-	-	-
181	Office	Floor	Vinyl Floor Tile 9"x9"	Green with White	NF	ACM	HM	S24	12-Jan-10	1.2% Chrysotile
181	Office	Wall	Plaster	-	NF	ACM	HM	S02CD	4-May-18	1% Chrysotile
181	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
181	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
181	Office	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
182	Office	Floor	Vinyl Floor Tile 9"x9"	Green with White	NF	ACM	SL	S24abc	12-Jan-10	1.2% Chrysotile
182	Office	Wall	Plaster	-	NF	ACM	HM	S02CD	4-May-18	1% Chrysotile
182	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
182	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
182	Office	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
183	Office	Floor	Vinyl Floor Tile 9"x9"	Green with White	NF	ACM	HM	S24	12-Jan-10	1.2% Chrysotile
183	Office	Wall	Plaster	-	NF	ACM	HM	S02CD	4-May-18	1% Chrysotile
183	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
183	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
183	Office	Ceiling	Ceiling Tile 1'x1'	-	-	Non ACM	-	-	-	-
184	Office	Floor	Vinyl Floor Tile 9"x9"	Green with White	NF	ACM	HM	S24	12-Jan-10	1.2% Chrysotile
184	Office	Wall	Plaster	-	NF	ACM	HM	S02CD	4-May-18	1% Chrysotile
184	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
184	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
184	Office	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
185	Office	Floor	Vinyl Floor Tile 9"x9"	Green with White	NF	ACM	HM	S24	12-Jan-10	1.2% Chrysotile
185	Office	Wall	Plaster	-	NF	ACM	HM	S02CD	4-May-18	1% Chrysotile
185	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND



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Date Built:	SL - Sample Location - Material Sampled	
Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
		Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
185	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
185	Office	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
186	Career Centre	Floor	Vinyl Floor Tile 12"x12"	Pink Oatmeal	-	Non ACM	SL	S23abc	12-Jan-10	ND
186	Career Centre	Wall	Plaster	-	NF	ACM	HM	S02CD	4-May-18	1% Chrysotile
186	Career Centre	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
186	Career Centre	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
188	Custodian Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
188	Custodian Storage	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
188	Custodian Storage	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
189	Custodian Storage	Floor	Vinyl Floor Tile 9"x9"	Green with White	NF	ACM	HM	S24	12-Jan-10	1.2% Chrysotile
189	Custodian Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
189	Custodian Storage	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
189	Custodian Storage	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
191	IT	Not Inspected								
192	IT	Not Inspected								
192	Book Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
192	Book Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
192	Book Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
192	Book Storage	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
192	Book Storage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.240-07	4-Jun-90	50-75% Chrysotile
192A	Custodial Room	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
192A	Custodial Room	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
192A	Custodial Room	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
193	Transformer Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
193	Transformer Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
193	Transformer Room	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
194	Student Activities	Floor	Concrete	-	-	Non ACM	-	-	-	-
194	Student Activities	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND



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	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
194	Student Activities	Wall	Concrete	-	-	Non ACM	-	-	-	-
194	Student Activities	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
195	Student Activities	Floor	Concrete	-	-	Non ACM	-	-	-	-
195	Student Activities	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
195	Student Activities	Wall	Concrete	-	-	Non ACM	-	-	-	-
195	Student Activities	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
196	Student Activities	Floor	Concrete	-	-	Non ACM	-	-	-	-
196	Student Activities	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
196	Student Activities	Wall	Concrete	-	-	Non ACM	-	-	-	-
196	Student Activities	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
810	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
810	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
810	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
811	Corridor	Floor	Vinyl Floor Tile 9"x 9"	Beige with White, Black, & Red Streaks	NF	ACM	HM	S17	12-Jan-10	3.7% Chrysotile
811	Corridor	Floor	Vinyl Floor Tile 12"x12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
811	Corridor	Wall	Drywall	-	NF	ACM	SL	S02A	4-May-18	1% Chrysotile
811	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
811	Corridor	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-
811	Corridor	Piping	Pipe Insulation	Fibreglass insulation	-	Non ACM	-	-	-	-
811	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.240-07	4-Jun-90	50-75% Chrysotile
812	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
812	Corridor	Wall	Ceramic Block	-	-	Non ACM	-	-	-	-
812	Corridor	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
812	Corridor	Ceiling	Plaster	Stucco	-	Non ACM	SL	S34abc	12-Jan-10	ND
813	Corridor	Floor	Vinyl Floor Tile 9"x 9"	Crème with Black Streaks	NF	ACM	HM	EW-S21	12-Jan-10	10% Chrysotile
813	Corridor	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
813	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
813	Corridor	Ceiling	Ceiling Tile 2' x 4'	Long Fissure Random Pinhole	NF	ACM	HM	S37	12-Jan-10	3.3% Amosite



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	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
813	Corridor	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
814	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
814	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
814	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
815	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
815	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
815	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
815	Corridor	Piping	Pipe Insulation	Fibreglass insulation	-	Non ACM	-	-	-	-
816	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
816	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
816	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
816	Corridor	Piping	Pipe Insulation	Fibreglass insulation	-	Non ACM	-	-	-	-
817	Corridor	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
817	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
817	Corridor	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
817	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
901	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
901	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
901	Stairwell	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
901	Stairwell	Ceiling	Ceiling Tile 1'x1'	Thick Fissure	-	Non ACM	HM	S32	12-Jan-10	ND
902	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
902	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
902	Stairwell	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
902	Stairwell	Ceiling	Ceiling Tile 1'x1'	Thick Fissure	-	Non ACM	SL	S32abc	12-Jan-10	ND
903	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
903	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
903	Stairwell	Ceiling	Ceiling Tile 1'x1'	Thick Fissure	-	Non ACM	SL	S32abc	12-Jan-10	ND
904	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-



School Name	Legend:	Notes:
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Date Built:	SL - Sample Location - Material Sampled	
Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
904	Stairwell	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
904	Stairwell	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
904	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
904	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
904	Stairwell	Wall	Brick	-	-	Non ACM	-	-	-	-
904	Stairwell	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
904	Stairwell	Deck	Metal Pan	Steel	-	Non ACM	-	-	-	-
905	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
905	Stairwell	Wall	Ceramic Block	-	-	Non ACM	-	-	-	-
905	Stairwell	Ceiling	Plaster	Stucco	-	Non ACM	HM	S34	12-Jan-10	ND
906	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
906	Stairwell	Wall	Ceramic Block	-	-	Non ACM	-	-	-	-
906	Stairwell	Ceiling	Plaster	Stucco	-	Non ACM	HM	S34	12-Jan-10	ND
907	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
907	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
907	Stairwell	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
909	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
909	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
909	Stairwell	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
911	Stairwell	Floor	Vinyl Floor Tile 9"x9"	Beige with White, Black and Red Streak	NF	ACM	HM	S17	12-Jan-10	3.7% Chrysotile
911	Stairwell	Wall	Plaster	-	NF	ACM	SL	S02E	4-May-18	1% Chrysotile
911	Stairwell	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
911	Stairwell	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
914	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
914	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
914	Stairwell	Ceiling	Plaster	Stucco	-	Non ACM	HM	S34	12-Jan-10	ND



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	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
Level 2										
201	Classroom	Floor	Carpet	-	-	Non ACM	-	-	-	-
201	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
201	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
201	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
204	Classroom	Floor	Vinyl Floor Tile 9"x9"	Crème with Black Streaks	NF	ACM	SL	S21abc	12-Jan-10	10% Chrysotile
204	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
204	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
204	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
204	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
205	Classroom	Floor	Vinyl Floor Tile 9"x9"	Blue with White and Black Streaks	NF	ACM	HM	S12	12-Jan-10	4.1% Chrysotile
205	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
205	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
205	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
205	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
205A	Classroom	Floor	Vinyl Floor Tile 9"x9"	Green with White and Black	NF	ACM	HM	S03	12-Jan-10	4.1% Chrysotile
205A	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
205A	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
205A	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
205A	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
206	Classroom	Floor	Vinyl Floor Tile 9"x 9"	Red	NF	ACM	HM	S04	12-Jan-10	5.3% Chrysotile
206	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
206	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
206	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
206	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
207	Classroom	Floor	Vinyl Floor Tile 9"x9"	Grey with White and Black Streaks	NF	ACM	HM	S14	12-Jan-10	6.6% Chrysotile
207	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-



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Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
		Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
207	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
207	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
208	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
208	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
208	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
208	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
209	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
209	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
209	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
209	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
210	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
210	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
210	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
210	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
220	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
220	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
220	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
220	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
221	Classroom	Floor	Vinyl Floor Tile 9"x9"	Brown with White and Black	NF	ACM	HM	S16	12-Jan-10	5.1% Chrysotile
221	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
221	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
221	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
222	Classroom	Floor	Vinyl Floor Tile 9"x9"	Green with White and Black	NF	ACM	SL	S15abc	12-Jan-10	8.2% Chrysotile
222	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
222	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
222	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
223	Classroom	Floor	Vinyl Floor Tile 9"x9"	Grey with White, Black ad Red Streaks	NF	ACM	HM	S13	12-Jan-10	12% Chrysotile
223	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND



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Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
		Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
223	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
223	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
224	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
224	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
224	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
224	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
225	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
225	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
225	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
225	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
226	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
226	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
226	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
226	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
227	Classroom	Floor	Vinyl Floor Tile 9"x9"	Grey with White and Black Streaks	NF	ACM	HM	S14	12-Jan-10	6.6% Chrysotile
227	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
227	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
227	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
242	Staff Room	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
242	Staff Room	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
242	Staff Room	Wall	Concrete Block	-	-	Non ACM	-	-	-	-
242	Staff Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
243	Kitchen	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
243	Kitchen	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
243	Kitchen	Wall	Concrete Block	-	-	Non ACM	-	-	-	-
243	Kitchen	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
244	Staff Room	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
244	Staff Room	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND



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Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
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WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
244	Staff Room	Wall	Concrete Block	-	-	Non ACM	-	-	-	-
244	Staff Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
245	Staff Lockers	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
245	Staff Lockers	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
245	Staff Lockers	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
246	Washroom	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
246	Washroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
246	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
247	Washroom	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
247	Washroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
247	Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
248	Custodial	Floor	Concrete	-	-	Non ACM	-	-	-	-
248	Custodial	Wall	Concrete	-	-	Non ACM	-	-	-	-
248	Custodial	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
248	Custodial	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
249	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
249	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
249	Washroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
249	Washroom	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
250	Custodial	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
250	Custodial	Wall	Concrete	-	-	Non ACM	-	-	-	-
250	Custodial	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
250	Custodial	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
251	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
251	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
251	Washroom	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
252	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
252	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-



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WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
252	Washroom	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
253	Staff	Floor	Vinyl Floor Tile 9"x9"	Beige with White, Black and Red Streak	NF	ACM	HM	S17	12-Jan-10	3.7% Chrysotile
253	Staff	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
253	Staff	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
253	Staff	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
254	Classroom	Floor	Carpet	-	-	Non ACM	-	-	-	-
254	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
254	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
254	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
255	Custodian	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
255	Custodian	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
255	Custodian	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
255	Custodian	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
256	Storage	Floor	Vinyl Floor Tile 9"x9"	Grey with White and Black Streaks	NF	ACM	HM	S14	12-Jan-10	6.6% Chrysotile
256	Storage	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
256	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
257	Stage	Floor	Wood	-	-	Non ACM	-	-	-	-
257	Stage	Wall	Concrete	-	-	Non ACM	-	-	-	-
257	Stage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
257	Stage	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
257	Stage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.240-07	4-Jun-90	50-75% Chrysotile
257A	Auditorium	Floor	Carpet	-	-	Non ACM	-	-	-	-
257A	Auditorium	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
257A	Auditorium	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
257B	Storage	Floor	Vinyl Floor Tile 9"x9"	Green with White and Black	NF	ACM	HM	S15abc	12-Jan-10	8.2% Chrysotile
257B	Storage	Wall	Wood	-	-	Non ACM	-	-	-	-
257B	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
257B	Storage	Wall	Plaster	-	-	Non ACM	-	-	-	-



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WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
257B	Storage	Ceiling	Plaster	-	-	Non ACM	-	-	-	-
257C	Storage	Floor	Vinyl Floor Tile 9"x9"	Green with White and Black	NF	ACM	HM	S15abc	-	8.2% Chrysotile
257C	Storage	Wall	Wood	-	-	Non ACM	-	-	-	-
257C	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
257C	Storage	Wall	Plaster	-	-	Non ACM	-	-	-	-
257C	Storage	Ceiling	Plaster	-	-	Non ACM	-	-	-	-
258	Storage	Floor	Vinyl Floor Tile 9"x9"	Green with White and Black	NF	ACM	HM	S15abc	-	8.2% Chrysotile
258	Storage	Wall	Wood	-	-	Non ACM	-	-	-	-
258	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
258	Storage	Wall	Plaster	-	-	Non ACM	-	-	-	-
258	Storage	Ceiling	Plaster	-	-	Non ACM	-	-	-	-
258A	Storage	Floor	Vinyl Floor Tile 9"x9"	Green with White and Black	NF	ACM	HM	S15abc	-	8.2% Chrysotile
258A	Storage	Wall	Wood	-	-	Non ACM	-	-	-	-
258A	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
258A	Storage	Wall	Plaster	-	-	Non ACM	-	-	-	-
258A	Storage	Ceiling	Plaster	-	-	Non ACM	-	-	-	-
262	Shower	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
262	Shower	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
262	Shower	Ceiling	Plaster	-	-	Non ACM	-	-	-	-
263	Changeroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
263	Changeroom	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
263	Changeroom	Ceiling	Plaster	-	-	Non ACM	-	-	-	-
265	Shower	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
265	Shower	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
265	Shower	Ceiling	Plaster	-	-	Non ACM	-	-	-	-
266	Office	Floor	Vinyl Floor Tile 9"x9"	Red with Beige Streaks	NF	ACM	SL	S18abc	12-Jan-10	6.7% Chrysotile
266	Office	Floor	Vinyl Floor Tile 9"x9"	Beige with Red, Brown and Gold Streak	NF	ACM	SL	S19abc	12-Jan-10	12% Chrysotile
266	Office	Floor	Vinyl Floor Tile 12"x12"	Grey with White, Grey and Brown Bubbli	-	Non ACM	SL	S20abc	12-Jan-10	ND



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	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
266	Office	Wall	Concrete	-	-	Non ACM	-	-	-	-
266	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
266	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
267	Fan Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
267	Fan Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
267	Fan Room	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
269	Mechanical	Floor	Concrete	-	-	Non ACM	-	-	-	-
269	Mechanical	Wall	Concrete	-	-	Non ACM	-	-	-	-
269	Mechanical	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
270	-	Floor	Concrete	-	-	Non ACM	-	-	-	-
270	-	Wall	Concrete	-	-	Non ACM	-	-	-	-
270	-	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
270	-	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
271	Office	Floor	Carpet	-	-	Non ACM	-	-	-	-
271	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
271	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
272	VP	Floor	Carpet	-	-	Non ACM	-	-	-	-
272	VP	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
272	VP	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
273	VP	Floor	Carpet	-	-	Non ACM	-	-	-	-
273	VP	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
273	VP	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
274	Office	Floor	Carpet	-	-	Non ACM	-	-	-	-
274	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
274	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
275	-	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
275	-	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
275	-	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-



School Name	Legend:	Notes:
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Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
276	Office	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
276	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
276	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
277	Guidance	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
277	Guidance	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
277	Guidance	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
278	Conference Room	Floor	Carpet	-	-	Non ACM	-	-	-	-
278	Conference Room	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
278	Conference Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
279	Office	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
279	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
279	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
280	Office	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
280	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
280	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
281	Reception	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
281	Reception	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
281	Reception	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
282	Attendance	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
282	Attendance	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
282	Attendance	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
283	Office	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
283	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
283	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
284	Office	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
284	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
284	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
285	Office	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND



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Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
		Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
285	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
285	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
286	Admin	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
286	Admin	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
286	Admin	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
287	Conference Room	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
287	Conference Room	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
287	Conference Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
288	Work Room	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
288	Work Room	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
288	Work Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
289	Work Room	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
289	Work Room	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
289	Work Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
290	Library	Floor	Carpet	-	-	Non ACM	-	-	-	-
290	Library	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
290	Library	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
290A	Computer Room	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	HM	S11	12-Jan-10	ND
290A	Computer Room	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
290A	Computer Room	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
291	Upper Level Gym Corridor	Floor	Concrete	-	-	Non ACM	-	-	-	-
291	Upper Level Gym Corridor	Wall	Concrete Block	-	-	Non ACM	-	-	-	-
291	Upper Level Gym Corridor	Ceiling	Steel Deck	-	-	Non ACM	-	-	-	-
292	Photocopy	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
292	Photocopy	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
292	Photocopy	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
293	Photocopy	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
293		Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-



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293		Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
294	Stairwell Landing	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
294	Stairwell Landing	Wall	Concrete	-	-	Non ACM	-	-	-	-
294	Stairwell Landing	Ceiling	Plaster	Texture Coat	-	Non ACM	SL	S29abc	12-Jan-10	ND
821	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
821	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
821	Corridor	Ceiling	Plaster	Texture Coat	-	Non ACM	SL	S29abc	12-Jan-10	ND
821	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
821	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	1680.240-07	4-Jun-90	50-75% Chrysotile
821	Corridor	Overhang	Plaster	Texture Coat	-	Non ACM	SL	S18abc	22-May-18	ND
822	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
822	Corridor	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
822	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
822	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
823	Corridor	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
823	Corridor	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
823	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
824	Corridor	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
824	Corridor	Wall	Drywall	Drywall Joint Compound	-	Non ACM	-	-	-	-
824	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
825	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
825	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
825	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
826	Corridor	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
826	Corridor									
826	Corridor									
901	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
901	Stairwell	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND



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901	Stairwell	Ceiling	Ceiling Tile 1'x1'	Thick Fissure	-	Non ACM	HM	S32	12-Jan-10	ND
902	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
902	Stairwell	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
902	Stairwell	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
903	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
903	Stairwell	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
903	Stairwell	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
907	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
907	Stairwell	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
907	Stairwell	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
910	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
910	Stairwell	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
910	Stairwell	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
911	Stairwell	Floor	Vinyl Floor Tile 12"x 12"	Brown Oatmeal	-	Non ACM	HM	S02abc	12-Jan-10	ND (tile)
911	Stairwell	Wall	Plaster	-	NF	ACM	SL	S02E	4-May-18	1% Chrysotile
911	Stairwell	Wall	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole	-	Non ACM	-	-	-	-
913	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
913	Stairwell	Wall	Ceramic Tile	-	-	Non ACM	-	-	-	-
913	Stairwell	Ceiling	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
Level 3										
301	Classroom	Floor	Vinyl Floor Tile 12"x12"	White with Grey Streaks	-	Non ACM	SL	S01abc	12-Jan-10	ND
301	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
301	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
302	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	SL	S02abc	12-Jan-10	ND (tile)
302	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
302	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND



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WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
302	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
302A	Storage	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02abc	12-Jan-10	ND (tile)
302A	Storage	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
302A	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
302A	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
303	Classroom	Floor	Vinyl Floor Tile 12"x12"	White with Grey Streaks	-	Non ACM	HM	S01	12-Jan-10	ND
303	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
303	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
303	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
304	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	HM	S08	12-Jan-10	ND
304	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
304	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
304	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
305	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
305	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
305	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
305	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
306	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
306	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
306	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
306	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
307	Classroom	Floor	Vinyl Floor Tile 12"x12"	White with Grey Streaks	-	Non ACM	HM	S01	12-Jan-10	ND
307	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
307	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
307	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
308	Classroom	Floor	Vinyl Floor Tile 12"x12"	White with Grey Streaks	-	Non ACM	HM	S01	12-Jan-10	ND
308	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
308	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND



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	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
308	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
309	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
309	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
309	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
309	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
310	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
310	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
310	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
310	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
311	Classroom	Floor	Vinyl Floor Tile 12"x12"	Grey with White, Grey and Brown Bubb	-	Non ACM	SL	S20abc	12-Jan-10	ND
311	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
311	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
311	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
312	Storage	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
312	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
312	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
312	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
313	Storage	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
313	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
313	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
313A	Storage	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
313A	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
313A	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
313A	Storage	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
320	Classroom	Floor	Vinyl Floor Tile 9"x9"	Grey with White Beige and Brown Strea	NF	ACM	SL	S09abc	12-Jan-10	4.3% Chrysotile
320	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
320	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
320	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND



School Name	Legend:	Notes:
Eastwood Collegiate Institute	HM - Homogenous Material - homogeneous with previously sampled material	All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.
Date Built:	SL - Sample Location - Material Sampled	
Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.		

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
320	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
321	Classroom	Floor	Vinyl Floor Tile 12"x12"	Brown Oatmeal	-	Non ACM	HM	S02	12-Jan-10	ND (tile)
321	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
321	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
321	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
321	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
322	Classroom	Floor	Vinyl Floor Tile 12"x12"	Blue Oatmeal	-	Non ACM	SL	S10abc	12-Jan-10	ND
322	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
322	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
322	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
322	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
323	Classroom	Floor	Vinyl Floor Tile 9"x9"	Blue with White and Black Streaks	NF	ACM	SL	S12abc	12-Jan-10	4.1% Chrysotile
323	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
323	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
323	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
323	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
324	Classroom	Floor	Vinyl Floor Tile 9"x9"	Grey with White, Black and Red Streaks	NF	ACM	SL	S13abc	12-Jan-10	12% Chrysotile
324	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
324	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
324	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
324	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
325	Classroom	Floor	Vinyl Floor Tile 9"x9"	Grey with White and Black Streaks	NF	ACM	SL	S14abc	12-Jan-10	6.6% Chrysotile
325	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
325	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
325	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
325	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
326	Classroom	Floor	Vinyl Floor Tile 9"x9"	Blue with White and Black Streaks	NF	ACM	HM	S12	12-Jan-10	4.1% Chrysotile
326	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-



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Date Built:	SL - Sample Location - Material Sampled	
Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	
		Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
326	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
326	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
326	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
327	Classroom	Floor	Vinyl Floor Tile 9"x9"	Grey with White, Black ad Red Streaks	NF	ACM	HM	S13	12-Jan-10	12% Chrysotile
327	Classroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
327	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
327	Classroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
327	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
328	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	SL	S11abc	12-Jan-10	ND
328	Classroom	Wall	Concrete	Concrete Block	-	Non ACM	-	-	-	-
328	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
328	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
328A	Office Washroom	Floor	Vinyl Floor Tile 12"x12"	Beige Oatmeal	-	Non ACM	SL	S11abc	12-Jan-10	ND
328A	Office Washroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
328A	Office Washroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
344	Storage	Floor	Vinyl Floor Tile 9"x 9"	Red	NF	ACM	HM	S04	12-Jan-10	5.3% Chrysotile
344	Storage	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
344	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
344	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
345	Storage	Floor	Vinyl Floor Tile 9"x 9"	Grey with Black Streaks	NF	ACM	HM	S06	12-Jan-10	12% Chrysotile
345	Storage	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
345	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
345	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
346	Storage	Floor	Vinyl Floor Tile 9"x9"	Crème with Green Streaks	NF	ACM	SL	S07abc	12-Jan-10	10% Chrysotile
346	Storage	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
346	Storage	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
346	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
347	Workroom	Floor	Vinyl Floor Tile 12"x 12"	Grey Oatmeal	-	Non ACM	SL	S08abc	12-Jan-10	ND



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Date Built:	SL - Sample Location - Material Sampled	
Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
347	Workroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
347	Workroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
347	Workroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
348	Workroom	Floor	Vinyl Floor Tile 12"x12"	Beige with White and Brown Streaks	-	Non ACM	SL	S05abc	12-Jan-10	<0.25% Chrysotile
348	Workroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
348	Workroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
348	Workroom	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
349	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
349	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
349	Washroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
349	Washroom	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
350	Washroom	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
350	Washroom	Wall	Concrete	-	-	Non ACM	-	-	-	-
350	Washroom	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
350	Washroom	Ceiling	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
351	Office	Floor	Vinyl Floor Tile 9"x9"	Crème with Green Streaks	NF	ACM	HM	S07	12-Jan-10	10% Chrysotile
351	Office	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
351	Office	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
351	Office	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
352	Classroom	Floor	Vinyl Floor Tile 12"x 12"	Beige Oatmeal	-	Non ACM	SL	S11abc	12-Jan-10	ND
352	Classroom	Wall	Concrete	Concrete Block	-	Non ACM	-	-	-	-
352	Classroom	Wall	Plaster	-	-	Non ACM	HM	S30, S33, S35	12-Jan-10	ND
352	Classroom	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
354	Fan Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
354	Fan Room	Wall	Concrete	-	-	Non ACM	-	-	-	-
354	Fan Room	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
355	Storage	Floor	Concrete	-	-	Non ACM	-	-	-	-
355	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-



	School Name	Legend:	Notes:
	Eastwood Collegiate Institute	HM - Homogenous Material - homogeneous with previously sampled material	All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions. Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.
	Date Built:	SL - Sample Location - Material Sampled	
	Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable		

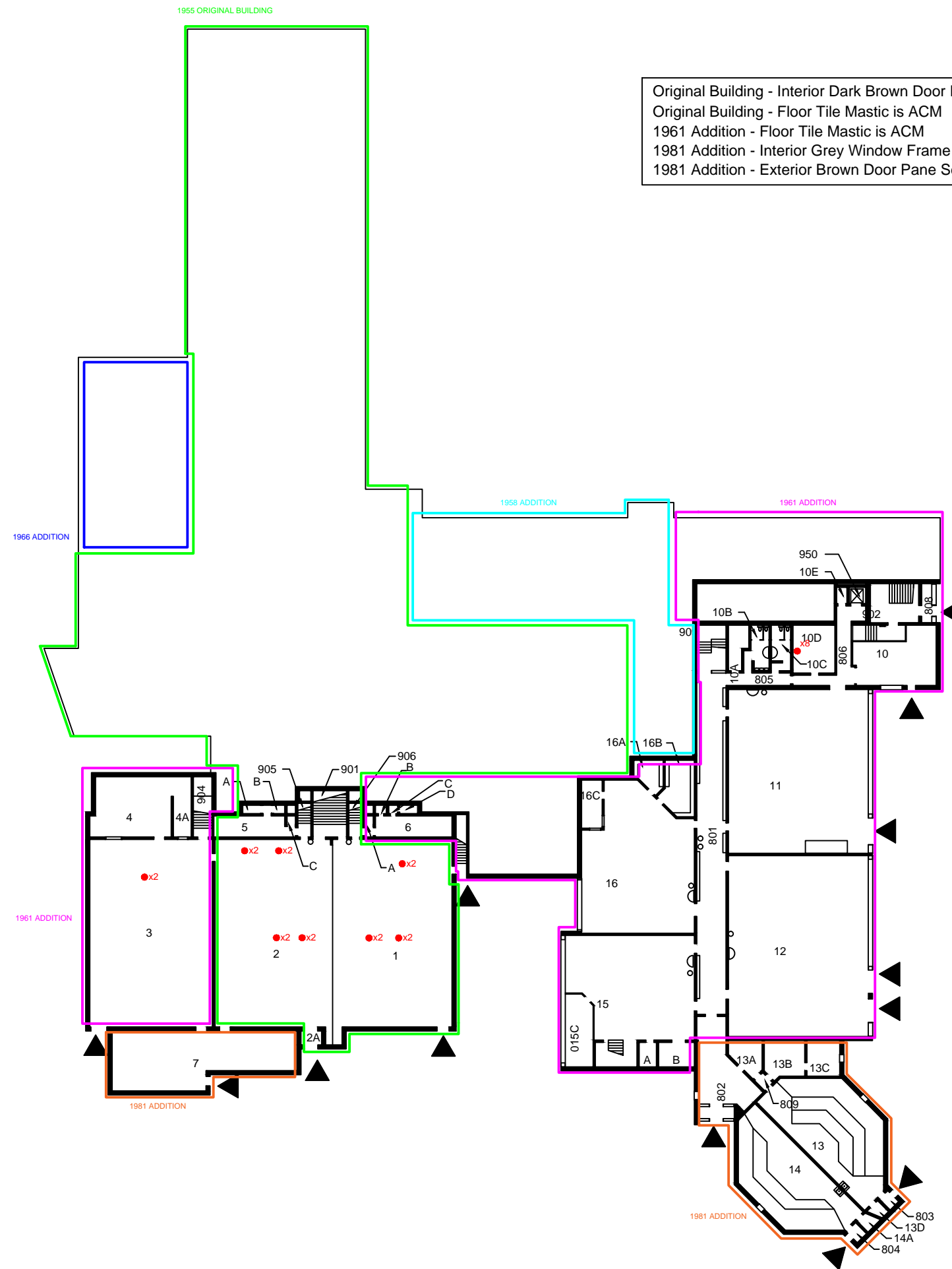
WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
355	Storage	Ceiling	Ceiling Tile 1'x1'	Cellulose	-	Non ACM	-	-	-	-
355	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
356	Custodian	Floor	Concrete	-	-	Non ACM	-	-	-	-
356	Custodian	Wall	Concrete	-	-	Non ACM	-	-	-	-
356	Custodian	Ceiling	Metal Pan	-	-	Non ACM	-	-	-	-
357	Storage	Floor	Vinyl Floor Tile 12"x12"	White with Grey Streaks	-	Non ACM	HM	S01	12-Jan-10	ND
357	Storage	Wall	Concrete	-	-	Non ACM	-	-	-	-
357	Storage	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
358	Kiln	Floor	Vinyl Floor Tile 12"x12"	White with Grey Streaks	-	Non ACM	SL	S01abc	12-Jan-10	ND
358	Kiln	Wall	Concrete	Concrete Block	-	Non ACM	-	-	-	-
831	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
831	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
831	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
832	Corridor	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
832	Corridor	Wall	Concrete	-	-	Non ACM	-	-	-	-
832	Corridor	Wall	Drywall	Drywall Joint Compound	-	Non ACM	HM	S31	12-Jan-10	ND
832	Corridor	Ceiling	Ceiling Tile 2' x 4'	Short Fissure Random Pinhole (2007)	-	Non ACM	-	-	-	-
833	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
833	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
833	Stairwell	Ceiling	Ceiling Tile 1'x1'	Thick Fissure	-	Non ACM	HM	S32	12-Jan-10	ND
901	Stairwell Landing	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
901	Stairwell Landing	Wall	Concrete	-	-	Non ACM	-	-	-	-
901	Stairwell Landing	Ceiling	Ceiling Tile 1'x1'	Thick Fissure	-	Non ACM	HM	S32	12-Jan-10	ND
902	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
902	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
902	Stairwell	Ceiling	Ceiling Tile 1'x1'	Thick Fissure	-	Non ACM	HM	S32	12-Jan-10	ND
903	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
903	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-



School Name	Legend:	Notes:
Eastwood Collegiate Institute	HM - Homogenous Material - homogeneous with previously sampled material	All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.
Date Built:	SL - Sample Location - Material Sampled	
Original: 1955	VC - Visually Confirmed - Material not sampled, deemed ACM	
Addition(s): 1958, 1961, 1966, 1981, 2004	NF - Non-Friable F - Friable	Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.

WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
903	Stairwell	Ceiling	Ceiling Tile 1'x1'	Thick Fissure	-	Non ACM	HM	S32	12-Jan-10	ND
907	Stairwell	Floor	Terrazzo	-	-	Non ACM	-	-	-	-
907	Stairwell	Wall	Concrete	-	-	Non ACM	-	-	-	-
907	Stairwell	Ceiling	Ceiling Tile 1'x1'	Thick Fissure	-	Non ACM	HM	S32	12-Jan-10	ND
Level 4										
401	Fan Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
401	Fan Room	Wall	Concrete	Concrete Block	-	Non ACM	-	-	-	-
401	Fan Room	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
401	Fan Room	Piping	Pipe Fitting	Fibreglass/PVC	-	Non ACM	-	-	-	-
402	Fan Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
402	Fan Room	Wall	Concrete	Concrete Block	-	Non ACM	-	-	-	-
402	Fan Room	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
402	Fan Room	Piping	Pipe Fitting	Fibreglass/PVC	-	Non ACM	-	-	-	-
403	Fan Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
403	Fan Room	Wall	Concrete	Concrete Block	-	Non ACM	-	-	-	-
403	Fan Room	Ceiling	Concrete	-	-	Non ACM	-	-	-	-
403	Fan Room	Piping	Pipe Fitting	Fibreglass/PVC	-	Non ACM	-	-	-	-
833	Fan Room	Floor	Concrete	-	-	Non ACM	-	-	-	-
833	Fan Room	Wall	Concrete	Concrete Block	-	Non ACM	-	-	-	-
833	Fan Room	Ceiling	Concrete	-	-	Non ACM	-	-	-	-

FIGURES



Original Building - Interior Dark Brown Door Pane Sealant is ACM
 Original Building - Floor Tile Mastic is ACM
 1961 Addition - Floor Tile Mastic is ACM
 1981 Addition - Interior Grey Window Frame Sealant is ACM
 1981 Addition - Exterior Brown Door Pane Sealant is ACM

NOTES:
 ALL DRAWINGS TO BE REFERENCED WITH THE ASSOCIATED REPORT. LOCATIONS AND QUANTITIES ARE APPROXIMATE.
 ALL KNOWN OR SUSPECT ASBESTOS-CONTAINING MATERIALS AND/OR DESIGNATED MATERIALS ARE NOT DEPICTED ON THIS DRAWING. REFER TO THE REPORT FOR A COMPLETE LIST OF IDENTIFIED MATERIALS.
 THIS FIGURE IS COLOUR DEPENDENT. PHOTOCOPIES MAY ALTER INTERPRETATION OF THE FIGURE. ALWAYS REFER TO ORIGINAL DRAWINGS AND REPORT.

Legend
 13 Fixed Reference Number
 No Access
 Post 1986 Construction

Asbestos-Containing Materials (ACM):

- Floor Tile
- Rolled Flooring
- Ceiling Tile
- Friable Soft Textured Ceiling
- Non-Friable Hard Textured Ceiling
- Spray-On Fire Proofing
- Transite (Asbestos Cement) Paneling
- Duct Insulation
- Pipe Fitting Insulation w Quantity (Brackets Indicate # of Damaged Fittings)
- Pipe Insulation (Vertical and Horizontal)
- Transite (Asbestos Cement) Pipe (Vertical and Horizontal)
- Duct Expansion Joints w Quantity (Brackets Indicate # of Damaged Joints)
- Friable Debris



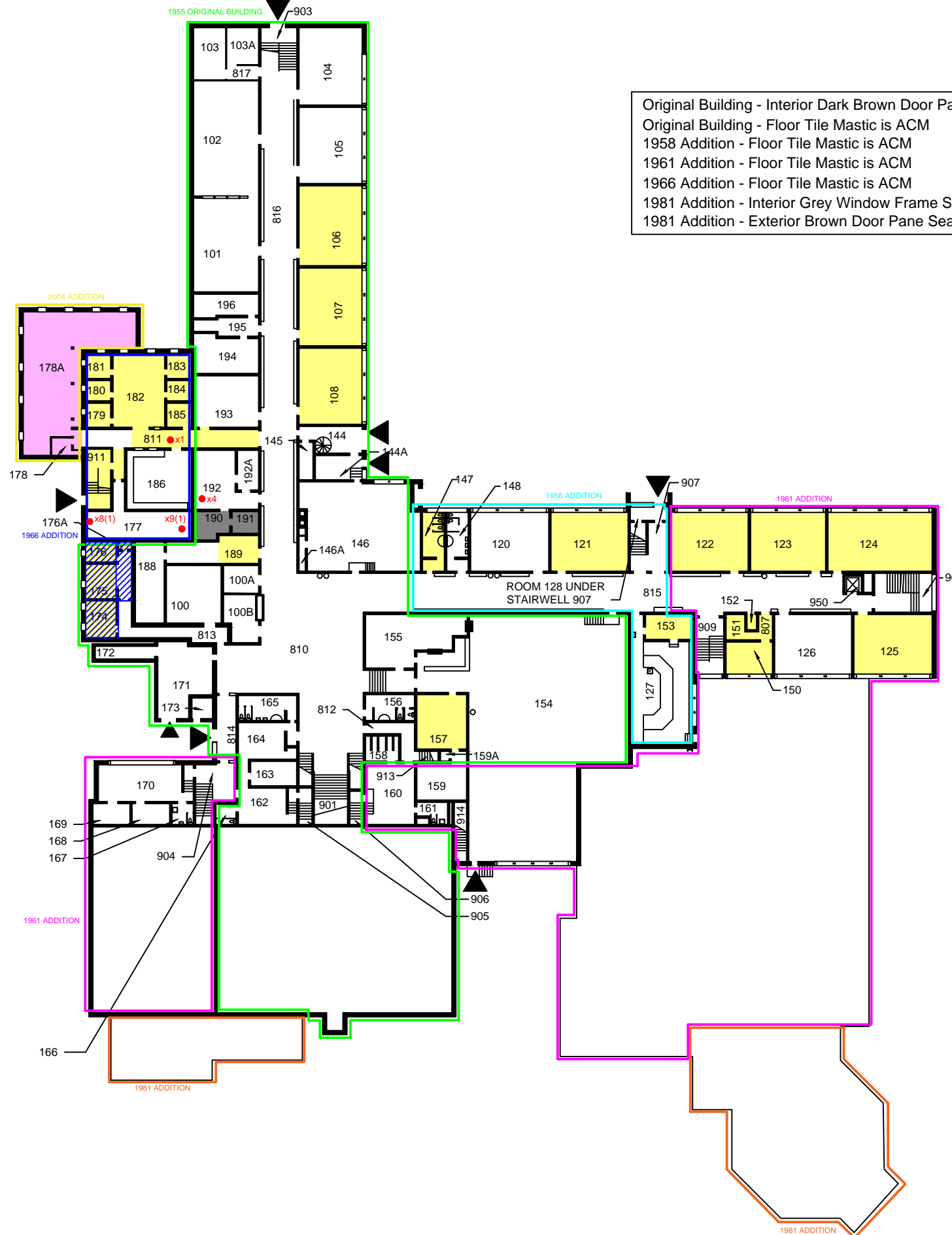
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CLIENT
 WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT
 2018 ASBESTOS AUDIT UPDATE

DRAWING
 EASTWOOD COLLEGIATE INSTITUTE
 BASEMENT

Project Manager	A. Dennett	Date	May 2018
Design By	WRDSB	Project No.	34532-914
Drawn By	S. Nieboer	Drawing No.	1.0
Scale	N.T.S.		



Original Building - Interior Dark Brown Door Pane Sealant is ACM
 Original Building - Floor Tile Mastic is ACM
 1958 Addition - Floor Tile Mastic is ACM
 1961 Addition - Floor Tile Mastic is ACM
 1966 Addition - Floor Tile Mastic is ACM
 1981 Addition - Interior Grey Window Frame Sealant is ACM
 1981 Addition - Exterior Brown Door Pane Sealant is ACM

NOTES:
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 ALL KNOWN OR SUSPECT ASBESTOS-CONTAINING MATERIALS AND/OR DESIGNATED MATERIALS ARE NOT DEPICTED ON THIS DRAWING. REFER TO THE REPORT FOR A COMPLETE LIST OF IDENTIFIED MATERIALS.
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Legend
 13 Fixed Reference Number
 No Access
 Post 1986 Construction

Asbestos-Containing Materials (ACM):
 Floor Tile
 Rolled Flooring
 Ceiling Tile
 Friable Soft Textured Ceiling
 Non-Friable Hard Textured Ceiling
 Spray-On Fire Proofing
 Transite (Asbestos Cement) Paneling
 Duct Insulation
 Pipe Fitting Insulation w Quantity (Brackets Indicate # of Damaged Fittings)
 Pipe Insulation (Vertical and Horizontal)
 Transite (Asbestos Cement) Pipe (Vertical and Horizontal)
 Duct Expansion Joints w Quantity (Brackets Indicate # of Damaged Joints)
 Friable Debris



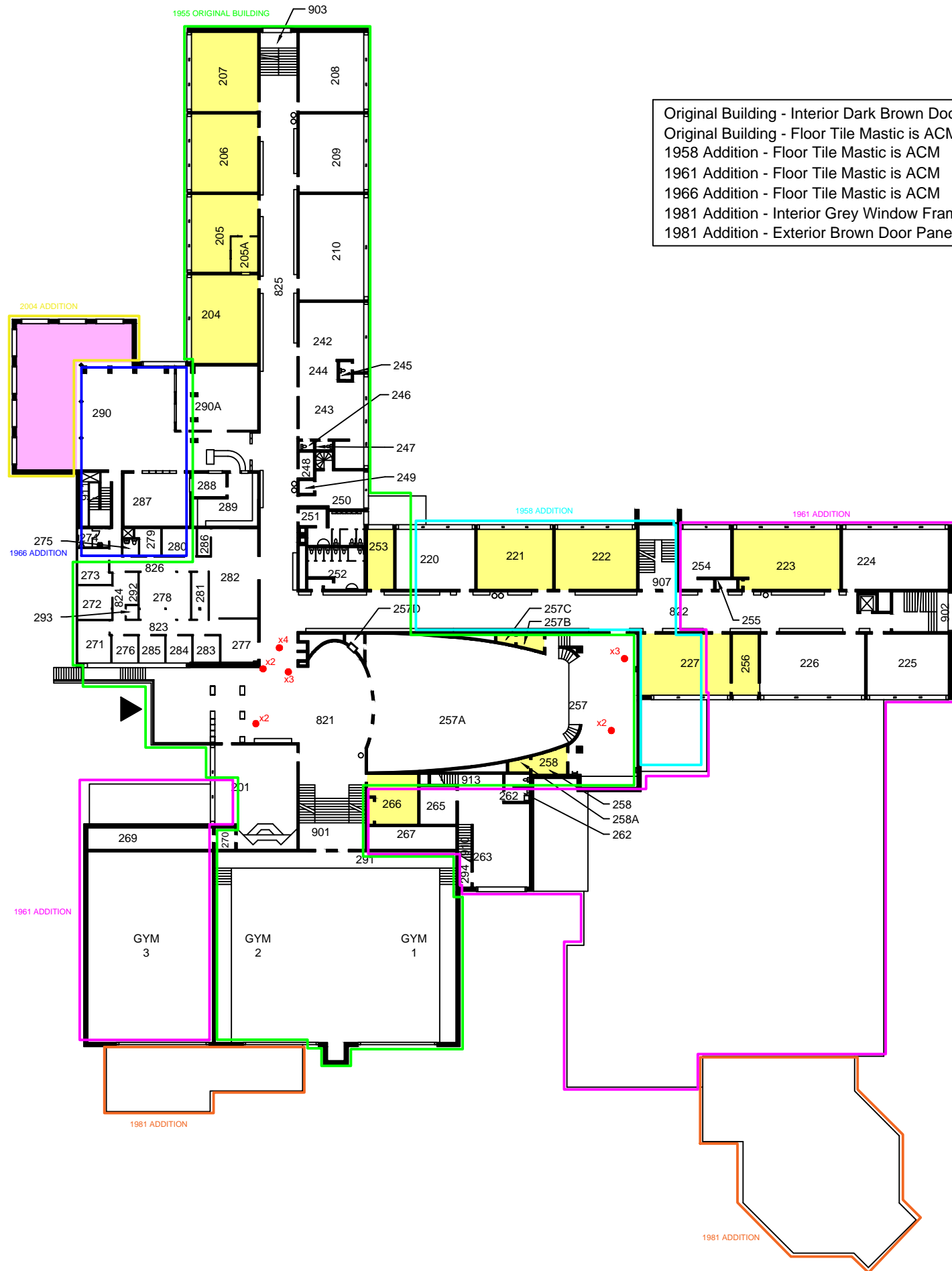
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CLIENT
 WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT
 2018 ASBESTOS AUDIT UPDATE

DRAWING
 EASTWOOD COLLEGIATE INSTITUTE
 FIRST FLOOR

Project Manager	A. Dennett	Date	May 2018
Design By	WRDSB	Project No.	34532-914
Drawn By	S. Nieboer	Drawing No.	2.0
Scale	N.T.S.		



Original Building - Interior Dark Brown Door Pane Sealant is ACM
 Original Building - Floor Tile Mastic is ACM
 1958 Addition - Floor Tile Mastic is ACM
 1961 Addition - Floor Tile Mastic is ACM
 1966 Addition - Floor Tile Mastic is ACM
 1981 Addition - Interior Grey Window Frame Sealant is ACM
 1981 Addition - Exterior Brown Door Pane Sealant is ACM

NOTES:
 ALL DRAWINGS TO BE REFERENCED WITH THE ASSOCIATED REPORT. LOCATIONS AND QUANTITIES ARE APPROXIMATE.
 ALL KNOWN OR SUSPECT ASBESTOS-CONTAINING MATERIALS AND/OR DESIGNATED MATERIALS ARE NOT DEPICTED ON THIS DRAWING. REFER TO THE REPORT FOR A COMPLETE LIST OF IDENTIFIED MATERIALS.
 THIS FIGURE IS COLOUR DEPENDENT. PHOTOCOPIES MAY ALTER INTERPRETATION OF THE FIGURE. ALWAYS REFER TO ORIGINAL DRAWINGS AND REPORT.

- Legend**
- 13 Fixed Reference Number
 - No Access
 - Post 1986 Construction

- Asbestos-Containing Materials (ACM):**
- Floor Tile
 - Rolled Flooring
 - Ceiling Tile
 - Friable Soft Textured Ceiling
 - Non-Friable Hard Textured Ceiling
 - Spray-On Fire Proofing
 - Transite (Asbestos Cement) Paneling
 - Duct Insulation
 - Pipe Fitting Insulation w Quantity (Brackets Indicate # of Damaged Fittings)
 - Pipe Insulation (Vertical and Horizontal)
 - Transite (Asbestos Cement) Pipe (Vertical and Horizontal)
 - Duct Expansion Joints w Quantity (Brackets Indicate # of Damaged Joints)
 - Friable Debris



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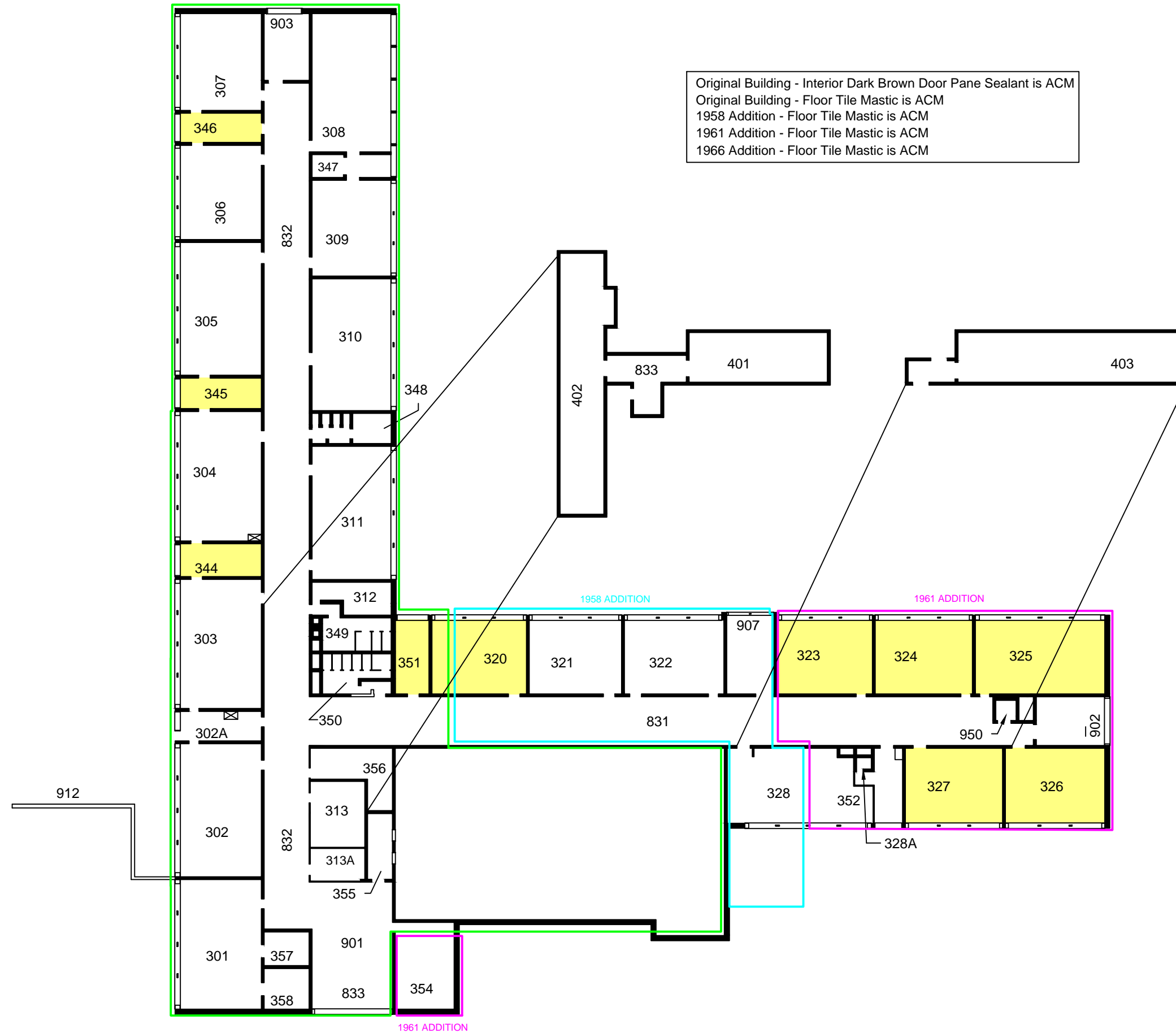
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 WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT
 2018 ASBESTOS AUDIT UPDATE

DRAWING
 EASTWOOD COLLEGIATE INSTITUTE
 SECOND FLOOR

Project Manager	A. Dennett	Date	May 2018
Design By	WRDSB	Project No.	34532-914
Drawn By	S. Nieboer	Drawing No.	3.0
Scale	N.T.S.		

1955 ORIGINAL BUILDING



Original Building - Interior Dark Brown Door Pane Sealant is ACM
 Original Building - Floor Tile Mastic is ACM
 1958 Addition - Floor Tile Mastic is ACM
 1961 Addition - Floor Tile Mastic is ACM
 1966 Addition - Floor Tile Mastic is ACM

NOTES:
 ALL DRAWINGS TO BE REFERENCED WITH THE ASSOCIATED REPORT, LOCATIONS AND QUANTITIES ARE APPROXIMATE.
 ALL KNOWN OR SUSPECT ASBESTOS-CONTAINING MATERIALS AND/OR DESIGNATED MATERIALS ARE NOT DEPICTED ON THIS DRAWING. REFER TO THE REPORT FOR A COMPLETE LIST OF IDENTIFIED MATERIALS.
 THIS FIGURE IS COLOUR DEPENDENT. PHOTOCOPIES MAY ALTER INTERPRETATION OF THE FIGURE. ALWAYS REFER TO ORIGINAL DRAWINGS AND REPORT.

Legend
 13 Fixed Reference Number
 No Access
 Post 1986 Construction

- Asbestos-Containing Materials (ACM):**
- Floor Tile
 - Rolled Flooring
 - Ceiling Tile
 - Friable Soft Textured Ceiling
 - Non-Friable Hard Textured Ceiling
 - Spray-On Fire Proofing
 - Transite (Asbestos Cement) Paneling
 - Duct Insulation
 - Pipe Fitting Insulation w Quantity (Brackets Indicate # of Damaged Fittings)
 - Pipe Insulation (Vertical and Horizontal)
 - Transite (Asbestos Cement) Pipe (Vertical and Horizontal)
 - Duct Expansion Joints w Quantity (Brackets Indicate # of Damaged Joints)
 - Friable Debris



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CLIENT
 WATERLOO REGION DISTRICT SCHOOL BOARD

PROJECT
 2018 ASBESTOS AUDIT UPDATE

DRAWING
 EASTWOOD COLLEGIATE INSTITUTE
 THIRD AND FOURTH FLOOR

Project Manager	A. Dennett	Date	May 2018
Design By	WRDSB	Project No.	34532-914
Drawn By	S. Nieboer	Drawing No.	4.0
Scale	N.T.S.		

TABLES

TABLE 1 - INTERNAL ABATEMENT MANAGEMENT










Eastwood Collegiate Institute							
Material	WRDSB Fixed Reference Number	MTE Functional Space Number	Material Description	Approximate Quantity	Photograph - Context	Photograph - Detail	Required Action
Asbestos Non-Friable	205A	2042	9" x 9" Floor Tile - Green with white and black	<1m ²	-		Monitor Annually
Asbestos Non-Friable	204	2041	9" x 9" Floor Tile - Crème with Green Streaks	<1m ²	-		Monitor Annually
Asbestos Non-Friable	258	2009	9" x 9" Floor Tile -	<1m ²	-		Monitor Annually
Asbestos Non-Friable	911	1040	9" x 9" Floor Tile - Beige with White, Black and Red Streaks	<1m ²	-		Monitor Annually
Asbestos Non-Friable	147	1071	9" x 9" Floor Tile - Green with White	<1m ²	-		Monitor Annually

TABLE 1 - INTERNAL ABATEMENT MANAGEMENT

Eastwood Collegiate Institute

Material	WRDSB Fixed Reference Number	MTE Functional Space Number	Material Description	Approximate Quantity	Photograph - Context	Photograph - Detail	Required Action
Asbestos Non-Friable	147	1071	9" x 9" Floor Tile - Green with White	<1m ²	-		Monitor Annually
Asbestos Non-Friable	147	1071	9" x 9" Floor Tile - Green with White	<1m ²	-		Monitor Annually
Asbestos Non-Friable	175	1032	2' x 4' Ceiling Tile - Long Fissure Random Pinhole	<1m ²	-		Monitor Annually
Asbestos Non-Friable	157	1015	9" x 9" Floor Tile - Beige with Brown Streak	<1m ²	-		Monitor Annually

Notes:
 1) A copy of this report should be provided to all prospective contractors prior to tender or quotation, in accordance with Section 30 of the Occupational Health and Safety Act.
 2) Recommended actions are the minimum required actions, as prescribed by the appropriate Acts, regulations, guidelines, standards, codes and general best practice measures. The Contractor may choose to alter the approach and combine or break out sections of work. This is acceptable provided that the appropriate Acts, regulations, guidelines, standards and codes are followed and afford protection for the health and safety of workers, occupants and the public that is at least equal to the protection that would be provided by complying with the minimum requirements.
 3) All waste generated is subject to characterization and disposal in accordance with Ontario Regulation 347.

TABLE 2 - EXTERNAL ABATEMENT MANAGEMENT



Eastwood Collegiate Institute							
Material	WRDSB Fixed Reference Number	MTE Functional Space Number	Material Description	Approximate Quantity	Photograph - Context	Photograph - Detail	Required Action
Asbestos Friable	177	1036	Parged Pipe Fitting	1 Fitting	-		Removal/Repair in accordance with O. Reg. 278/05 as a Type 2 Glove Bag Operation
Asbestos Friable	177	1036	Parged Pipe Insulation	<1m ²	-		Removal/Repair in accordance with O. Reg. 278/05 as a Type 2 Glove Bag Operation
<p>Notes:</p> <p>1) A copy of this report should be provided to all prospective contractors prior to tender or quotation, in accordance with Section 30 of the Occupational Health and Safety Act.</p> <p>2) Recommended actions are the minimum required actions, as prescribed by the appropriate Acts, regulations, guidelines, standards, codes and general best practice measures. The Contractor may choose to alter the approach and combine or break out sections of work. This is acceptable provided that the appropriate Acts, regulations, guidelines, standards and codes are followed and afford protection for the health and safety of workers, occupants and the public that is at least equal to the protection that would be provided by complying with the minimum requirements.</p> <p>3) All waste generated is subject to characterization and disposal in accordance with Ontario Regulation 347.</p>							

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY					
Sample #	Location	Material Description	Asbestos Content (%)	Fibre Type	Is Material ACM
2010 Asbestos Audit Update					
EW-S01A	3000	12" x 12" Floor Tile - White with grey streaks	ND	-	No
EW-S01B			ND	-	No
EW-S01C			ND	-	No
EW-S02A	3009	12" x 12" Floor Tile - Brown oatmeal	ND (tile) 1.5 (mastic)	Chrysotile	Yes
EW-S02B			ND (tile) NA (mastic)	-	Yes
EW-S02C			ND (tile) NA (mastic)	-	Yes
EW-S03A	3010	9" x 9" Floor Tile - Beige with brown and white streaks	10	Chrysotile	Yes
EW-S03B			NA	-	Yes
EW-S03C			NA	-	Yes
EW-S04A	3013	9" x 9" Floor Tile - Red	5.3 (tile) 2.5 (mastic)	Chrysotile	Yes
EW-S04B			NA	-	Yes
EW-S04C			NA	-	Yes
EW-S05A	3019	12" x 12" Floor Tile - Beige with white and brown streaks	<0.25	Chrysotile	Yes
EW-S05B			<0.25	Chrysotile	Yes
EW-S05C			<0.25	Chrysotile	Yes
EW-S06A	3021	9" x 9" Floor Tile - Grey with black streaks	12	Chrysotile	Yes
EW-S06B			NA	-	Yes
EW-S06C			NA	-	Yes
EW-S07A	3027	9" x 9" Floor Tile - Crème with green streaks	10	Chrysotile	Yes
EW-S07B			NA	-	Yes
EW-S07C			NA	-	Yes
EW-S08A	3018	12" x 12" Floor Tile - Grey oatmeal	ND	-	No
EW-S08B			ND	-	No
EW-S08C			ND	-	No
EW-S09A	3031	9" x 9" Floor Tile - Grey with white, beige and brown streaks	4.3	Chrysotile	Yes
EW-S09B			NA	-	Yes
EW-S09C			NA	-	Yes
EW-S10A	3033	12" x 12" Floor Tile - Blue oatmeal	ND	-	No
EW-S10B			ND	-	No
EW-S10C			ND	-	No
EW-S11A	3042	12" x 12" Floor Tile - Beige oatmeal	ND	-	No
EW-S11B			ND	-	No
EW-S11C			ND	-	No
EW-S12A	3035	9" x 9" Floor Tile - Blue with white and black streaks	4.1	Chrysotile	Yes
EW-S12B			NA	-	Yes
EW-S12C			NA	-	Yes
EW-S13A	3036	9" x 9" Floor Tile - Grey with white, black and red streaks	12	Chrysotile	Yes
EW-S13B			NA	-	Yes
EW-S13C			NA	-	Yes
EW-S14A	3037	9" x 9" Floor Tile - Grey with white and black streaks	6.6	Chrysotile	Yes
EW-S14B			NA	-	Yes
EW-S14C			NA	-	Yes
EW-S15A	2067	9" x 9" Floor Tile - Green with white and black	8.2	Chrysotile	Yes
EW-S15B			NA	-	Yes
EW-S15C			NA (tile) 3.5 (mastic)	Chrysotile	Yes
EW-S16A	2066	9" x 9" Floor Tile - Brown with white and black	5.1	-	Yes
EW-S16B			NA	-	Yes
EW-S16C			NA	-	Yes

Table 3 - Sample Summary Table

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY

Sample #	Location	Material Description	Asbestos Content (%)	Fibre Type	Is Material ACM
EW-S17A	2064	9" x 9" Floor Tile - Beige with white, black and red streaks	3.7	Chrysotile	Yes
EW-S17B			NA	-	Yes
EW-S17C			NA	-	Yes
EW-S18A	2005	9" x 9" Floor Tile - Red with beige streaks	6.7 (tile) 3.3 (mastic)	Chrysotile	Yes
EW-S18B			NA	-	Yes
EW-S18C			NA	-	Yes
EW-S19A	2005	9" x 9" Floor Tile - Beige with red, brown and gold streaks	12 (tile) 1.8 (mastic)	Chrysotile	Yes
EW-S19B			NA	-	Yes
EW-S19C			NA	-	Yes
EW-S20A	2005	12" x 12" Floor Tile - Grey with white, grey and brown bubbles	ND	-	No
EW-S20B			ND	-	No
EW-S20C			ND	-	No
EW-S21A	2041	9" x 9" Floor Tile - Crème with black streaks	10	Chrysotile	Yes
EW-S21B			NA (tile) 1.8 (mastic)	Chrysotile	Yes
EW-S21C			NA	-	Yes
EW-S22A	1056	12" x 12" Floor Tile - Beige with brown spots	ND	-	No
EW-S22B			ND	-	No
EW-S22C			ND	-	No
EW-S23A	1039	12" x 12" Floor Tile - Pink oatmeal	ND	-	No
EW-S23B			ND	-	No
EW-S23C			ND	-	No
EW-S24A	1047	9" x 9" Floor Tile - Green with white	1.2	Chrysotile	Yes
EW-S24B			NA	-	Yes
EW-S24C			NA	-	Yes
EW-S25A	1029	9" x 9" Floor Tile - Pink with brown and white streaks	1.5	-	No
EW-S25B			NA	-	No
EW-S25C			NA	-	No
EW-S26A	1031	9" x 9" Floor Tile - Grey with grey streaks	5.1 (tile) 1.3 (mastic)	Chrysotile	Yes
EW-S26B			NA	-	Yes
EW-S26C			NA	-	Yes
EW-S27A	1077	9" x 9" Floor Tile - Brown with white and brown streaks	7.1	Chrysotile	Yes
EW-S27B			NA	-	Yes
EW-S27C			NA	-	Yes
EW-S28A	0021	2' x 4' Ceiling Tile - Textured Long Fissure Random Pinhole	ND	-	No
EW-S28B			ND	-	No
EW-S28C			ND	-	No
EW-S29A	2013	Plaster - Texture Coat	ND	-	No
EW-S29A			ND	-	No
EW-S29A			ND	-	No
EW-S30A	Second Floor	Plaster - Wall Plaster	ND	-	No
EW-S030B			ND	-	No
EW-S30C			ND	-	No
EW-S30D			ND	-	No
EW-S30E			ND	-	No
EW-S31A	0036	DWJC - Drywall Joint Compound	ND	-	No
EW-S31B	0020		ND	-	No
EW-S31C	0020		ND	-	No
EW-S32A	1079	1' x 1' Ceiling Tile - Thick Fissure	ND	-	No
EW-S32B			ND	-	No
EW-S32C			ND	-	No

Table 3 - Sample Summary Table

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY					
Sample #	Location	Material Description	Asbestos Content (%)	Fibre Type	Is Material ACM
EW-S33A	1083	Plaster - Wall Plaster	ND	-	No
EW-S33B			ND	-	No
EW-S33C			ND	-	No
EW-S34A	1011	Plaster - Stucco	ND	-	No
EW-S34B			ND	-	No
EW-S34C			ND	-	No
EW-S35A	0004	Plaster - Ceiling Plaster	ND	-	No
EW-S35B			ND	-	No
EW-S35C			ND	-	No
EW-S36A	1022	Firespray	ND	-	No
EW-S36B			ND	-	No
EW-S36C			ND	-	No
EW-S37A	1032	2' x 4' Ceiling Tile - Long Fissure Random Pinhole	<0.25	Chrysotile & Amosite	Yes
EW-S37B			3.3	-	Yes
EW-S37C			NA	-	Yes
December 8, 2016 Roof R-O Sampling					
S01A	Roof R-O	Roof Membrane (4-Ply)	ND	-	No
S01B			ND	-	No
S01C			ND	-	No
S02A	Roof R-O	Mastic on Cellulose	ND	-	No
S02B			ND	-	No
S02C			ND	-	No
S03A	Roof R-O	Mastic on Steel Deck	<MDL	Chrysotile	No
S03B			<MDL	Chrysotile	No
S03C			<MDL	Chrysotile	No
2017 Additional Sampling					
S01A	-	1'x1' Ceiling Tile Mastic	Tile: ND	-	No
S01B			Mastic: ND	-	No
			Tile: ND	-	No
S01C			Mastic: ND	-	No
			Tile: ND	-	No
			Mastic: ND	-	No
2018 Asbestos Audit Update					
S01A	1055	Drywall Joint Compound (1955)	ND	-	No
S01B	3022		ND	-	No
S01C			ND	-	No
S02A	1041	Plaster (1966)	ND	-	No
S02B			ND	-	No
S02C	1036		<MDL	Chrysotile	No
S02D			1	Chrysotile	Yes
S02E	1040		ND	-	No
S03A	1066	Mastic Associated with Vinyl Floor Tile (1966)	3	Chrysotile	Yes
S03B			3	Chrysotile	Yes
S03C			3	Chrysotile	Yes
S04A	0029	Mastic Associated with Vinyl Floor Tile (1981)	ND	-	No
S04B			ND	-	No
S04C			ND	-	No
S05A	3015	Plaster (1955)	ND	-	No
S05B			ND	-	No
S05C	2046		ND	-	No
S05D			ND	-	No
S05E	3043		ND	-	No

Table 3 - Sample Summary Table

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY					
Sample #	Location	Material Description	Asbestos Content (%)	Fibre Type	Is Material ACM
S06A	3031	Plaster (1958)	ND	-	No
S06B	3032		ND	-	No
S06C			ND	-	No
S07A	1048	Drywall Joint Compound (1966)	ND	-	No
S07B			ND	-	No
S07C			ND	-	No
S08A	1073	Drywall Joint Compound (1958)	ND	-	No
S08B			ND	-	No
S08C			ND	-	No
S09A	Exterior 1055	Light Grey Sealant - Window Frame (1955)	ND	-	No
S09B			ND	-	No
S09C			ND	-	No
S10A	Exterior 1069	Beige Sealant - Door Frame (1955)	ND	-	No
S10B			ND	-	No
S10C			ND	-	No
S11A	Exterior 1069	Brown Sealant - Door Pane (1955)	ND	-	No
S11B			ND	-	No
S11C			ND	-	No
S12A	1064	Dark Brown Sealant - Door Pane (1955)	5	Chrysotile	Yes
S12B			NA	-	Yes
S12C			NA	-	Yes
S13A	Interior 1069	Dark Grey Sealant - Door Frame (1955)	ND	-	No
S13B			ND	-	No
S13C			ND	-	No
S14A	Interior 1074	White Sealant - Door Frame (1958)	ND	-	No
S14B			ND	-	No
S14C			ND	-	No
S15A	Interior 0036	Grey Sealant - Window Frame (1981)	2	Chrysotile	Yes
S15B			NA	-	Yes
S15C			NA	-	Yes
S16A	Interior 0029	Brown Sealant - Door Pane (1981)	2	Chrysotile	Yes
S16B			NA	-	Yes
S16C			NA	-	Yes
S17A	2001	Vinyl Floor Tile - Olive with White Streak	ND	-	No
S17B			ND	-	No
S17C			ND	-	No
S18A	Exterior 2014	Hard Texture Sealant	ND	-	No
S18B			ND	-	No
S18C			ND	-	No

NA: Not Analyzed due to stop positive method **ND:** No asbestos fibres detected above the laboratory minimum detection limit

A bulk material sample containing 0.5% or more asbestos therefore establishes that material as asbestos-containing. In accordance with Table 1 of O. Reg. 278/05, a minimum number of samples for the material to be classified as non asbestos. A homogeneous material is defined by O. Reg. 278/05 "as material that is uniform in colour and texture". Homogeneous samples are identified by an alphabetical suffix to sample names to represent multiple samples of a homogeneous material. When a homogeneous material is analysed it is determined to be asbestos-containing upon the first positive detection of asbestos equal to or greater than 0.5%. Subsequent samples of the same material are therefore not analysed. Some bulk samples are comprised of multiple layers and as such will require multiple analysis. In such cases each layer is isolated at the laboratory and analysed individually to determine asbestos content. As a result the laboratory may report additional samples beyond the submitted number of samples or include multiple analyses as subsets within a sample.

Table 3 - Sample Summary Table

Certificate of Analysis

MTE Consultants Inc. (Kitchener)

520 Bingemans Centre Dr.
Kitchener, ON N2B 3X9
Attn: Steven Nieboer

Client PO:
Project: WRDSB E.C.I - 34532-914
Custody:

Report Date: 29-May-2018
Order Date: 24-May-2018

Order #: 1821231

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1821231-01	S01A
1821231-02	S01B
1821231-03	S01C
1821231-04	S02A
1821231-05	S02B
1821231-06	S02C
1821231-07	S02D
1821231-08	S02E
1821231-09	S03A
1821231-10	S03B
1821231-11	S03C
1821231-12	S04A
1821231-13	S04B
1821231-14	S04C
1821231-15	S05A
1821231-16	S05B
1821231-17	S05C
1821231-18	S05D
1821231-19	S05E
1821231-20	S06A
1821231-21	S06B
1821231-22	S06C
1821231-23	S07A
1821231-24	S07B
1821231-25	S07C
1821231-26	S08A

Approved By:



Emma Diaz
Senior Analyst

Any use of these results implies your agreement that our total liability 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 any circumstances be liable to you in connection with this work.

Certificate of Analysis

Report Date: 29-May-2018

Client: MTE Consultants Inc. (Kitchener)

Order Date: 24-May-2018

Client PO:

Project Description: WRDSB E.C.I - 34532-914

1821231-27	S08B
1821231-28	S08C
1821231-29	S09A
1821231-30	S09B
1821231-31	S09C
1821231-32	S10A
1821231-33	S10B
1821231-34	S10C
1821231-35	S11A
1821231-36	S11B
1821231-37	S11C
1821231-38	S12A
1821231-39	S12B
1821231-40	S12C
1821231-41	S13A
1821231-42	S13B
1821231-43	S13C
1821231-44	S14A
1821231-45	S14B
1821231-46	S14C
1821231-47	S15A
1821231-48	S15B
1821231-49	S15C
1821231-50	S16A
1821231-51	S16B
1821231-52	S16C
1821231-53	S17A
1821231-54	S17B
1821231-55	S17C
1821231-56	S18A
1821231-57	S18B
1821231-58	S18C

Certificate of Analysis
 Client: MTE Consultants Inc. (Kitchener)
 Client PO:

Report Date: 29-May-2018
 Order Date: 24-May-2018
 Project Description: WRDSB E.C.I - 34532-914

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Parcel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1821231-01	04-May-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: S01A Non-Fibers	100
1821231-02	04-May-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: S01B Non-Fibers	100
1821231-03	04-May-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: S01C Non-Fibers	100
1821231-04	04-May-18	sample homogenized	White	Plaster	No	Client ID: S02A Non-Fibers	100
1821231-05	04-May-18	sample homogenized	White	Plaster	No	Client ID: S02B Non-Fibers	100
1821231-06	04-May-18	sample homogenized	Grey	Plaster	Yes	Client ID: S02C [ASTrc] Chrysotile Non-Fibers	[AS-PT, Z-01] <MDL 100
1821231-07	04-May-18	sample homogenized	Grey	Plaster	Yes	Client ID: S02D Chrysotile Non-Fibers	[Z-01] 1 99
1821231-08	04-May-18	sample homogenized	White/Grey	Plaster	No	Client ID: S02E Non-Fibers	100
1821231-09	04-May-18	sample homogenized	Black	Mastic	Yes	Client ID: S03A Chrysotile Non-Fibers	3 97
1821231-10	04-May-18	sample homogenized	Black	Mastic	Yes	Client ID: S03B Chrysotile Non-Fibers	3 97
1821231-11	04-May-18	sample homogenized	Black	Mastic	Yes	Client ID: S03C Chrysotile Non-Fibers	3 97
1821231-12	04-May-18	sample homogenized	Black	Mastic	No	Client ID: S04A Non-Fibers	100
1821231-13	04-May-18	sample homogenized	Black	Mastic	No	Client ID: S04B Non-Fibers	100
1821231-14	04-May-18	sample homogenized	Black	Mastic	No	Client ID: S04C Non-Fibers	100
1821231-15	04-May-18	sample homogenized	White	Plaster	No	Client ID: S05A Non-Fibers	100

Certificate of Analysis
 Client: MTE Consultants Inc. (Kitchener)
 Client PO:

Report Date: 29-May-2018
 Order Date: 24-May-2018
 Project Description: WRDSB E.C.I - 34532-914

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Parcel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1821231-16	04-May-18	sample homogenized	White	Plaster	No	Client ID: S05B Non-Fibers	100
1821231-17	04-May-18	sample homogenized	White	Plaster	No	Client ID: S05C Non-Fibers	100
1821231-18	04-May-18	sample homogenized	White	Plaster	No	Client ID: S05D Non-Fibers	100
1821231-19	04-May-18	sample homogenized	White	Plaster	No	Client ID: S05E Non-Fibers	100
1821231-20	04-May-18	sample homogenized	White	Plaster	No	Client ID: S06A Non-Fibers	100
1821231-21	04-May-18	sample homogenized	White	Plaster	No	Client ID: S06B Non-Fibers	100
1821231-22	04-May-18	sample homogenized	White	Plaster	No	Client ID: S06C Non-Fibers	100
1821231-23	04-May-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: S07A Non-Fibers	100
1821231-24	04-May-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: S07B Non-Fibers	100
1821231-25	04-May-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: S07C Non-Fibers	100
1821231-26	04-May-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: S08A Non-Fibers	100
1821231-27	04-May-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: S08B Non-Fibers	100
1821231-28	04-May-18	sample homogenized	White	Drywall Joint Compound	No	Client ID: S08C Non-Fibers	100
1821231-29	22-May-18	sample homogenized	Grey	Sealant	No	Client ID: S09A Non-Fibers	100
1821231-30	22-May-18	sample homogenized	Grey	Sealant	No	Client ID: S09B Non-Fibers	100
1821231-31	22-May-18	sample homogenized	Grey	Sealant	No	Client ID: S09C Non-Fibers	100
1821231-32	22-May-18	sample homogenized	Beige	Sealant	No	Client ID: S10A Non-Fibers	100

Certificate of Analysis
 Client: MTE Consultants Inc. (Kitchener)
 Client PO:

Report Date: 29-May-2018
 Order Date: 24-May-2018
 Project Description: WRDSB E.C.I - 34532-914

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Parcel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1821231-33	22-May-18	sample homogenized	Beige	Sealant	No	Client ID: S10B Non-Fibers	100
1821231-34	22-May-18	sample homogenized	Beige	Sealant	No	Client ID: S10C Non-Fibers	100
1821231-35	22-May-18	sample homogenized	Brown	Sealant	No	Client ID: S11A Non-Fibers	100
1821231-36	22-May-18	sample homogenized	Brown	Sealant	No	Client ID: S11B Non-Fibers	100
1821231-37	22-May-18	sample homogenized	Brown	Sealant	No	Client ID: S11C Non-Fibers	100
1821231-38	22-May-18	sample homogenized	Brown	Sealant	Yes	Client ID: S12A Chrysotile Non-Fibers	5 95
1821231-39	22-May-18					Client ID: S12B not analyzed	
1821231-40	22-May-18					Client ID: S12C not analyzed	
1821231-41	22-May-18	sample homogenized	Grey	Sealant	No	Client ID: S13A Non-Fibers	100
1821231-42	22-May-18	sample homogenized	Grey	Sealant	No	Client ID: S13B Non-Fibers	100
1821231-43	22-May-18	sample homogenized	Grey	Sealant	No	Client ID: S13C Non-Fibers	100
1821231-44	22-May-18	sample homogenized	White	Sealant	No	Client ID: S14A Non-Fibers	100
1821231-45	22-May-18	sample homogenized	White	Sealant	No	Client ID: S14B Non-Fibers	100
1821231-46	22-May-18	sample homogenized	White	Sealant	No	Client ID: S14C Non-Fibers	100
1821231-47	22-May-18	sample homogenized	Grey	Sealant	Yes	Client ID: S15A Chrysotile Non-Fibers	2 98
1821231-48	22-May-18					Client ID: S15B not analyzed	

Certificate of Analysis
 Client: **MTE Consultants Inc. (Kitchener)**
 Client PO:

Report Date: 29-May-2018
 Order Date: 24-May-2018
 Project Description: **WRDSB E.C.I - 34532-914**

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Paracel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1821231-49	22-May-18					Client ID: S15C not analyzed	
1821231-50	22-May-18	sample homogenized	Brown	Sealant	Yes	Client ID: S16A Chrysotile Non-Fibers	 5 95
1821231-51	22-May-18					Client ID: S16B not analyzed	
1821231-52	22-May-18					Client ID: S16C not analyzed	
1821231-53	22-May-18	sample homogenized	Grey	Vinyl Floor Tile	No	Client ID: S17A Non-Fibers	 100
1821231-54	22-May-18	sample homogenized	Grey	Vinyl Floor Tile	No	Client ID: S17B Non-Fibers	 100
1821231-55	22-May-18	sample homogenized	Grey	Vinyl Floor Tile	No	Client ID: S17C Non-Fibers	 100
1821231-56	22-May-18	sample homogenized	White	Sealant	No	Client ID: S18A Non-Fibers	 100
1821231-57	22-May-18	sample homogenized	White	Sealant	No	Client ID: S18B Non-Fibers	 100
1821231-58	22-May-18	sample homogenized	White	Sealant	No	Client ID: S18C Non-Fibers	 100

**** Analytes in bold indicate asbestos mineral content.**

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code *	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	1 - Mississauga	200863-0	25-May-18

* Reference to the NVLAP term does not permit the user of this report to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Certificate of Analysis

Report Date: 29-May-2018

Client: MTE Consultants Inc. (Kitchener)

Order Date: 24-May-2018

Client PO:

Project Description: WRDSB E.C.I - 34532-914

Qualifier Notes

Sample Qualifiers :

AS-PT: Asbestos quantitation by PLM Point Count method.

ASTrc: Trace asbestos was observed below the noted detection limit but could not be accurately quantified.

Z-01: Asbestos fibers found between plaster and paint.

Work Order Revisions / Comments

None



Client Name: MTE Consultants Inc.	Project Reference: WRDSB E.C.1 - 34532-914	TAT:
Contact Name: Steven Nieboer	Quote #: 18-226 Standing Offer 18-226	<input checked="" type="checkbox"/> Regular [] 3 Day
Address: 320 Bingemans Centre Drive, Kitchener	PO #: N/A	[] 2 Day [] 1 Day
	Email Address: snieboer@mte85.com	[] Same Day
Telephone: 519-743-6500		Date Required:

1821231

ASBESTOS ANALYSIS

Matrix: [] Air [X] Other Regulatory Guideline: O. Reg. 278/05			Required Analyses: [] PCM [X] PLM [] PLM 400PC [] PLM 1000PC [] Chatfield [] TEM				
Sample ID	Location	Matrix Description	Sampling Date	Air Volume (L)	Positive Stop? (Y/N)	Is the Sample Layered? (Y/N)	If layered, Describe Layer(s) to be Analyzed Separately* or Homogenize all **
1	S01A	1055 Drywall Joint Compound (1955)	4-May	-	N	N	
2	S01BC	3022 Drywall Joint Compound (1955)	4-May	-	N	N	
3	S02AB	1041 Plaster (1966)	4-May	-	N	N	
4	S02C	1036 Plaster (1966)	4-May	-	N	N	
5	S02D	1036 Plaster (1966)	4-May	-	N	N	
6	S02E	1040 Plaster (1966)	4-May	-	N	N	
7	S03ABC	1066 Mastic (1966)	4-May	-	N	N	
8	S04ABC	0029 Mastic (1981)	4-May	-	N	N	
9	S05A	2044 Plaster (1955)	4-May	-	N	N	
10	S05B	3015 Plaster (1955)	4-May	-	N	N	
11	S05CD	2046 Plaster (1955)	4-May	-	N	N	
12	S05E	3043 Plaster (1955)	4-May	-	N	N	
13	S06AB	3031 Plaster (1958)	4-May	-	N	N	
14	S06C	3032 Plaster (1958)	4-May	-	N	N	
15	S07ABC	1048 Drywall Joint Compound (1966)	4-May	-	N	N	

* Each layer is charged as a separate analysis ** Homogenize = Sample is combined to a uniform mixture

Comments:			Method of Delivery PULSATOR	
Relinquished By (Sign): <i>St Ni</i>	Received at Depot:	Received at Lab: <i>W. Spelman</i>	Verified By: <i>W. Spelman</i>	
Relinquished By (Print)& Date/Time: Steven Nieboer, May 23, 2018	Date/Time:	Date/Time: 24 May 18 08:35	Date/Time: 24 May 18 09:16	



Parcel ID: 1821231



tion
Init # 15
N 5M1

Chain of Custody
(Lab Use Only)

Page 2 of 2

Client Name: MTE Consultants Inc.	Project Reference: WRDSB E.C.1 - 34532-914	TAT:
Contact Name: Steven Nieboer	Quote #: 18-009 MTE Standing Offer	<input type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Address: 520 Bingham Centre Drive, Kitchener	PO #: N/A	<input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day
	Email Address: snieboer@mte85.com	<input type="checkbox"/> Same Day
Telephone: 519-743-6500		Date Required:

1821231

ASBESTOS ANALYSIS

Matrix: Air Other **Regulatory Guideline: O. Reg. 278/05** Required Analyses: PCM PLM PLM 400PC PLM 1000PC Chatfield TEM

Sample ID	Location	Matrix Description	Sampling Date	Air Volume (L)	Positive Stop? (Y/N)	Is the Sample Layered? (Y/N)	If layered, Describe Layer(s) to be Analyzed Separately* or Homogenize all **
1 S08ABC	1073	Drywall Joint Compound (1958)	4-May-		N	N	
2 S09ABC	Exterior 1055	Light Grey Sealant - Window Frame (1955)	22-May-		Y	Y	
3 S10ABC	Exterior 1069	Beige Sealant - Door Frame (1955)	22-May-		Y	Y	
4 S11ABC	Exterior 1069	Brown Sealant - Door Pane (1955)	22-May-		Y	Y	
5 S12ABC	1064	Dark Brown Sealant - Door Pane (1955)	22-May-		Y	Y	
6 S13ABC	Interior 1069	Dark Grey Sealant - Door Frame (1955)	22-May-		Y	Y	
7 S14ABC	Interior 1074	White Sealant - Door Frame (1958)	22-May-		Y	Y	
8 S15ABC	Interior 0036	Grey Sealant - Window Frame (1981)	22-May-		Y	Y	
9 S16ABC	Interior 0029	Brown Sealant - Door Pane (1981)	22-May-		Y	Y	
10 S17ABC	2001	Vinyl Floor Tile - Olive with White Streak	22-May-		Y	Y	
11 S18ABC	Exterior 2014	Hard Texture Sealant	22-May-		Y	Y	
12							
13							
14							
15							

* Each layer is charged as a separate analysis ** Homogenize = Sample is combined to a uniform mixture

Comments:		Method of Delivery PURCHASER	
Relinquished By (Sign):	Received at Depot:	Received at Lab: <i>[Signature]</i>	Verified By: <i>[Signature]</i>
Relinquished By (Print) & Date/Time: Steven Nieboer - May 23, 2018	Date/Time:	Date/Time: 24 May 18 08:35	Date/Time: 24 May 18 09:16

Certificate of Analysis

MTE Consultants Inc. (Kitchener)

520 Bingemans Centre Dr.
Kitchener, ON N2B 3X9
Attn: Aisling Dennett

Client PO:
Project: 34532-908-Eastwood CI
Custody:

Report Date: 21-Nov-2017
Order Date: 20-Nov-2017

Order #: 1747044

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
1747044-01	S01A (Mastic)
1747044-02	S01B (Mastic)
1747044-03	S01C (Mastic)
1747044-04	S01A (Tile)
1747044-05	S01B (Tile)
1747044-06	S01C (Tile)

Approved By:



Emma Diaz
Senior Analyst

Certificate of Analysis
 Client: **MTE Consultants Inc. (Kitchener)**
 Client PO:

Report Date: 21-Nov-2017
 Order Date: 20-Nov-2017

Project Description: **34532-908-Eastwood CI**

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Parcel I.D.	Sample Date	Layers Analyzed	Colour	Description	Asbestos Detected:	Material Identification	% Content
1747044-01	17-Nov-17	sample homogenized	Brown	Mastic	No	Client ID: S01A (Mastic) Non-Fibers	100
1747044-02	17-Nov-17	sample homogenized	Brown	Mastic	No	Client ID: S01B (Mastic) Non-Fibers	100
1747044-03	17-Nov-17	sample homogenized	Brown	Mastic	No	Client ID: S01C (Mastic) Non-Fibers	100
1747044-04	17-Nov-17	sample homogenized	Red	Floor Tile	No	Client ID: S01A (Tile) Non-Fibers	100
1747044-05	17-Nov-17	sample homogenized	Red	Floor Tile	No	Client ID: S01B (Tile) Non-Fibers	100
1747044-06	17-Nov-17	sample homogenized	Red	Floor Tile	No	Client ID: S01C (Tile) Non-Fibers	100

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code *	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	1 - Mississauga	200863-0	20-Nov-17

** Reference to the NVLAP term does not permit the user of this report to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.*

Work Order Revisions / Comments

None



Parcel ID: 1747044



Laurent Blvd.
 rio K1G 4J8
 :1947
 sracellabs.com

Chain of Custody
 (Lab Use Only)

Page 1 of 1

Client Name: MTE Consultants Inc	Project Reference: 34532-908 - Eastwood Ct
Contact Name: Aisling Dennett	Quote #:
Address: 520 Binjemans Centre Drive, Kitchener, ON, N2B3X9	PO #:
Telephone: 519-743-6500	Email Address: psemenuk@mte85.com, adennett@mte85.com

Turnaround Time:

Immediate 1 Day
 4 Hour 2 Day
 8 Hour 3 Day
 Regular

Date Required:

ASBESTOS & MOLD ANALYSIS

Matrix: Air Bulk Tape Lift Swab Other Regulatory Guideline: 278/05

Required Analyses: Microscopic Mold Culturable Mold Bacteria GRAM PCM PLM Chatfield TEM

Parcel Order Number: 1747044		Asbestos - Bulk						
Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Matrix Description	Positive Stop? (Y/N)	Is the Sample Layered? (Y/N)	If layered, Describe Layer(s) to be Analyzed Separately* or Homogenize all**	
1	S01A	17-Nov	-	PLM	Mastic Ceiling Tile	Y	Y <i>4</i> Mastic & tile	
2	S01B	17-Nov	-	PLM	Mastic Ceiling Tile	Y	Y <i>4</i> ↓	
3	S01C	17-Nov	-	PLM	Mastic Ceiling Tile	Y	Y <i>4</i> ↓	
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								

*Each layer will be analyzed and charged separately **Homogenize = All layers are blended into a single uniform sample.

Comments: Samples dropped off at MTE office by WRDSB

Method of Delivery: *Parcelator*

Relinquished By (Sign): <i>Paul Semenuk</i>	Received at Depot:	Received at Lab: <i>[Signature]</i>	Verified By: <i>[Signature]</i>
Relinquished By (Print): Paul Semenuk	Date/Time:	Date/Time: <i>Nov 20-17 9:00</i>	Date/Time: <i>Nov 20-17</i>
Date/Time: November 17, 2017			



ABATEMENT LETTERS



PuroCleanTM
The Paramedics of Property Damage

Confirmation of Completion

Date: November 17 2014

Attention: WRDSB

Regarding : Asbestos abatement

Location: Eastwood C.I.
760 Weber St. East, Kitchener ON.
MTE Room 1036

Description of Work: Completion of Table 2 from 2014 Asbestos Audit Update
Report prepared by MTE Consultants Inc., dated May 09, 2014

Completion Date: November 17 With (1) AAW certified staff

**Disposal of Asbestos
containing Waste:** PuroClean Property Restoration via RCT bins
licence number 3337YYS8P

Please feel free to contact us if you have any questions.

Hank Miller
Puroclean Property Restoration
hmillier@puroclean.com
519-569-9101



107 Whitney Pl,
Kitchener, ON, Canada.
N2G 2X8

Phone: (519) 498-0077
Fax: (519) 568 8426
E-mail: frank@asbestosmouldexperts.com

July 13th, 2015

Attention: Environmental Officer - WRDSB

Re: Confirmation of Completed Asbestos Removal for the Waterloo Region District School Board

Location: Eastwood Collegiate – 760 Weber Street East Kitchener, Ontario

Area: Portable #1033

Work Description:

Removal of approximately 700 sq ft of texture finishes on drywall ceiling

All work done in accordance with Ont. Reg. 278/05

Completion Date: July 13th with 01 AAS and 1 AAW certified staff.

Disposal of Asbestos Waste: Erb St. Dumping & Disposal Unit Waterloo ON

License # 7549-9EZL TL

Regards,

**Frank Parronchi,
Owner/President
519 498-0077**

SECTION 01 42 00 – REFERENCES

1.0 GENERAL

1.1. SECTION INCLUDES

- .1 References and standards.
- .2 Standards producing industry organizations and their addresses.

1.2. RELATED SECTIONS

- .1 Section 01 61 00 – Product Requirements.
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3. REFERENCES

- .1 For Products or quality specified by association, trade, or other references or consensus standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.
- .2 Conform to reference standard by Ontario Building Code except where a specific date is established or required by code.
- .3 Obtain copies of standards where required by product specification sections.
- .4 Neither the contractual relationships, duties, or responsibilities of the parties in Contract nor those of the Consultant shall be altered from the Contract Documents by mention or inference otherwise, in any reference document.

1.4. STANDARDS

- .1 The following associations and organizations are cited in specification sections. Acronym, name, address, and Internet URL addresses are as follows:
- .2 Canadian Organizations:
 - .1 **ACEC** - Association of Consulting Engineers of Canada, 130 Albert Street, Suite 616, Ottawa, ON K1P 5G4; URL: <http://www.acec.ca>.
 - .2 **AWMAC** - Architectural Woodwork Manufacturers Association of Canada, 516-4 Street West, High River, AB T1V 1B6; URL: <http://www.awmac.com>.
 - .3 **Canada Green Building Council**, 330 - 55 rue Murray Street, Ottawa, ON. K1N5M3; Tel: 613-241-1184, Fax: 613-241-5750; URL: <http://www.cagbc.org>.
 - .4 **CCA** - Canadian Construction Association, 75 Albert St., Suite 400, Ottawa, ON K1P 5E7; URL: <http://www.cca-acc.com>.

- .5 **CCDC** – Canadian Construction Documents Committee, Refer to ACEC, CCA, CSC or RAIC; URL: <http://www.CCDC.org>.
- .6 **CGA** - Canadian Gas Association, 20 Eglinton Avenue West, Suite 1305, Toronto, ON M4R 1K8; URL: <http://www.cga.ca..>
- .7 **CGSB** - Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, QC K1A 0S5; URL: <http://w3.pwgsc.gc.ca/cgsb>.
- .8 **CISC** - Canadian Institute of Steel Construction, 201 Consumers Road, Suite 300, Willowdale, ON M2J 4G8; URL: <http://www.cisc-icca.ca>.
- .9 **CLA** - Canadian Lumbermen's Association, 27 Goulburn Avenue, Ottawa, ON K1N 8C7; URL: <http://www.cla-ca.ca>.
- .10 **CNLA** - Canadian Nursery Landscape Association, RR #4, Stn. Main, 7856 Fifth Street, Milton, ON L9T 2X8; URL: <http://www.canadanursery.com>.
- .11 **CRCA** - Canadian Roofing Contractors Association, 155 Queen Street, Suite 1300, Ottawa, ON K1P 6L1; URL: <http://www.roofingcanada.com>.
- .12 **CSA** - Canadian Standards Association International, 178 Rexdale Blvd., Toronto, ON M9W 1R3; URL: <http://www.csa-international.org>.
- .13 **CSC** - Construction Specifications Canada, 120 Carlton Street, Suite 312, Toronto, ON M5A 4K2; URL: <http://www.csc-dcc.ca>.
- .14 **CSDMA** - Canadian Steel Door Manufacturers Association, One Yonge Street, Suite 1801, Toronto, ON M5E 1W7; URL: <http://www.csdma.org>.
- .15 **CSPI** - Corrugated Steel Pipe Institute, 652 Bishop Street N, Unit 2A, Cambridge, ON N3H 4V6; URL: <http://www.cspi.ca>.
- .16 **CSSBI** - Canadian Sheet Steel Building Institute, 652 Bishop St. N., Unit 2A, Cambridge, ON N3H 4V6; URL: <http://www.cssbi.ca>.
- .17 **CUFCA** - Canadian Urethane Foam Contractor's Association, Box 3214, Winnipeg, MB R3C 4E7; URL: <http://www.cufca.ca>.
- .18 **CWC** - Canadian Wood Council, 1400 Blair Place, Suite 210, Ottawa, ON K1J 9B8; URL: <http://www.cwc.ca>.
- .19 **EC** - Environment Canada, Conservation and Protection, Inquiry Centre, 351 St. Joseph Blvd, Hull, QC KIA 0H3; URL: <http://www.ec.gc.ca>.
- .20 **EFC** - Electro Federation of Canada, 5800 Explorer Drive, Suite 200, Mississauga, ON L4W 5K9; URL: <http://www.electrofed.com>.
- .21 **MPI** - The Master Painters Institute, 4090 Graveley Street, Burnaby, BC V5C 3T6; URL: <http://www.paintinfo.com>.

- .22 **NABA** - National Air Barrier Association, PO Box 2747, Winnipeg, MB R3C 4E7; URL: <http://www.naba.ca>.
- .23 **NLGA** - National Lumber Grades Authority, 406-First Capital Place, 960 Quayside Drive, New Westminster, BC V3M 6G2; URL: <http://www.nlga.org>.
- .24 **NRC** - National Research Council, Building M-58, 1200 Montreal Road, Ottawa, ON K1A 0R6; URL: <http://www.nrc.gc.ca>.
- .25 **QPL** - Qualification Program List, c/o Canadian General Standards Board, Place du Portage, Phase III, 6B1, 11 Laurier Street, Hull, QC K1A 1G6; URL: <http://www.pwgsc.gc.ca/cgsb>.
- .26 **RAIC** - Royal Architectural Institute of Canada, 55 Murray Street, Suite 330, Ottawa, ON K1N 5M3; URL: <http://www.raic.org>.
- .27 **SCC** - Standards Council of Canada, 270 Albert Street, Suite 2000, Ottawa, ON K1P 6N7; URL: <http://www.scc.ca>.
- .28 **TTMAC** - Terrazzo, Tile and Marble Association of Canada, 30 Capston Gate, Unit 5 Concord, ON L4K 3E8; URL: <http://www.ttmac.com>.
- .29 **ULC** - Underwriters' Laboratories of Canada, 7 Crouse Road, Toronto, ON M1R 3A9; URL: <http://www.ulc.ca>.
- .3 USA Organizations:
 - .1 **AA** - Aluminum Association, 900 19th Street N.W., Washington, DC 20006; URL: <http://www.aluminum.org>.
 - .2 **AASHTO** - American Association of State Highway and Transportation Officials, 444 N Capitol Street N.W., Suite 249, Washington, DC 20001; URL: <http://www.aashto.org>.
 - .3 **AHA** - American Hardboard Association, 1210W Northwest Hwy, Palatine, IL 60067; URL: <http://www.hardboard.org>.
 - .4 **AITC** - American Institute of Timber Construction, 7012 S. Revere Parkway, Suite 140, Englewood, CO 80112; URL: <http://www.aitc-glulam.org>.
 - .5 **AMCA** - Air Movement and Control Association Inc., 30 West University Drive, Arlington Heights, IL 60004-1893; URL: <http://www.amca.org>.
 - .6 **ANSI** - American National Standards Institute, 25 West 43rd Street, 4th Floor, New York, NY 10036; URL: <http://www.ansi.org>.
 - .7 **APA** - The Engineered Wood Association, P.O. Box 11700, Tacoma, WA 98411-0700; URL: <http://www.apawood.org>.
 - .8 **API** - American Petroleum Institute, 1220 L St. Northwest, Washington, DC 20005-4070; URL: <http://www.api.org>.
 - .9 **ARI** - Air Conditioning and Refrigeration Institute, 4100 N Fairfax Drive, Suite 200, Arlington, VA 22203; URL: <http://www.ari.org>.

- .10 **ASHRAE** - American Society of Heating, Refrigeration and Air-Conditioning Engineers, 1791 Tullie Circle NE, Atlanta, GA 30329; URL: <http://www.ashrae.org>.
- .11 **ASME** - American Society of Mechanical Engineers, ASME Headquarters, 3 Park Avenue, New York, NY 10016-5990; URL: <http://www.asme.org>.
- .12 **ASTM International**, 100 Barr Harbor Drive West, Conshohocken, PA 19428-2959; URL: <http://www.astm.org>.
- .13 **AWCI** - Association of the Wall and Ceiling Industries International, 803 West Broad Street, Suite 600 , Falls Church, VA 22046; URL: <http://www.awci.org>.
- .14 **AWPA** - American Wire Producer's Association, 801 N Fairfax Street, Suite 211, Alexandria, VA 22314-1757; URL: <http://www.awpa.org>.
- .15 **AWPA** - American Wood Preservers' Association, P.O. Box 5690, Granbury TX 76049-0690; URL: <http://www.awpa.com>
- .16 **AWS** - American Welding Society, 550 N.W. LeJeune Road, Miami, FL 33126; URL: <http://www.amweld.org>.
- .17 **AWWA** - American Water Works Association, 6666 W. Quincy Avenue, Denver, CO 80235; URL: <http://www.awwa.org>.
- .18 **EIMA** - EIFS Industry Manufacturer's Association, 3000 Corporate Center Drive, Suite 270, Morrow, GA 30260; URL: <http://www.eima.com>.
- .19 **ISAP** - International Society for Asphalt Paving, 400 Selby Avenue, Suite 1, St. Paul, MN 55102; URL: <http://www.asphalt.org>.
- .20 **IEEE** - Institute of Electrical and Electronics Engineers, IEE Corporate Office, 3 Park Avenue, 17th Floor, New York, NY 10016-5997; URL: <http://www.ieee.org>
- .21 **MSS** - Manufacturers Standardization Society of the Valve and Fittings Industry, 127 Park Street, N.E., Vienna, VA 22180-4602; URL: <http://www.mss-hq.com>.
- .22 **NAAMM** - National Association of Architectural Metal Manufacturers, 8 South Michigan Avenue, Suite 1000, Chicago, IL 60603; URL: <http://www.naamm.org>.
- .23 **NEMA** - National Electrical Manufacturers Association, 1300 N 17th Street, Suite 1847, Rosslyn, VA 22209; URL: <http://www.nema.org>.
- .24 **NFPA** - National Fire Protection Association, 1 Batterymarch Park, P.O. Box 9101 Quincy, MA 02269-9101; URL: <http://www.nfpa.org>.
- .25 **NFSA** - National Fire Sprinkler Association, P.O. Box 1000, Patterson, NY 12563; URL: <http://www.nfsa.org>.

- .26 **NHLA** - National Hardwood Lumber Association, 6830 Raleigh-La Grange Road, Memphis, TN 38184-0518; URL: <http://www.natlhardwood.org>.
- .27 **NSPE** - National Society of Professional Engineers, 1420 King Street, Alexandria, VA 22314-2794; URL: <http://www.nspe.org>.
- .28 **PCI** - Prestressed Concrete Institute, 209 W. Jackson Blvd., Suite 500, Chicago, IL 60606-6938; URL: <http://www.pci.org>.
- .29 **PEI** - Porcelain Enamel Institute, PO Box 920220, Norcross, GA 30010; URL: <http://www.porecelainenamel.com>.
- .30 **SSPC** - The Society for Protective Coatings, 40 24th Street, 6th Floor, Pittsburgh, PA 15222-4656; URL: <http://www.sspc.org>.
- .31 **TPI** - Truss Plate Institute, 583 D'Onofrio Drive, Suite 200, Madison, WI 53719; URL: <http://www.tpinst.org>.
- .32 **UL** - Underwriters' Laboratories, 333 Pfingsten Road, Northbrook, IL 60062-2096; URL: <http://www.ul.com>.

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SECTION 01 45 00 – QUALITY CONTROL

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Section 01 21 00 - Allowances.
- .2 Section 01 78 10 – Closeout Submittals and Requirements
- .3 Section 01 79 00 – Demonstration and Training
- .4 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. REFERENCES

- .1 **ISO/IEC** 17025-2005 - General Requirements for the Competence of Testing and Calibration Laboratories.
- .2 **SCC** (Standards Council of Canada).

1.3. INSPECTION BY AUTHORITY

- .1 Allow Authorities Having Jurisdiction 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 whenever portions of the Work are designated for special tests, inspections or approvals, either when described in the Contract Documents or when required by law in the Place of the 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.

1.4. REVIEW BY CONSULTANT

- .1 Consultant may order any part of the Work to be reviewed or inspected if Work is suspected to be not in accordance with Contract Documents.
- .2 If, upon review such work is found not in accordance with Contract Documents, correct such Work and pay cost of additional review and correction.
- .3 If such Work is found in accordance with Contract Documents, The owner will pay cost of review and replacement.

1.5. INDEPENDENT INSPECTION AGENCIES

- .1 Independent Inspection and Testing Agencies will be engaged by Contractor for purpose of inspecting and testing portions of Work.
- .2 The Board may, at their discretion, request that the Consultant direct the Contractor to engage independent inspecting and or testing agencies to review or test the Work.
- .3 Allocate Costs for inspections and testing to Section 01 21 00.
- .4 Provide equipment required for executing inspection and testing by appointed agencies.
- .5 Employment of inspection and testing agencies does not relax responsibility to perform Work in accordance with Contract Documents.
- .6 If defects are revealed during inspection and/or testing, the appointed agency will request additional inspection and testing to ascertain full degree of defect. Correct defect and irregularities as advised by Consultant at no cost to Owner. Contractor shall pay costs directly to the inspection agency for retesting and re-inspection.

1.6. ACCESS TO WORK

- .1 Allow inspection and testing agencies access to Work, off site manufacturing and fabrication plants.
- .2 Cooperate to provide reasonable access and facilities for such access.

1.7. CONTRACTOR RESPONSIBILITIES

- .1 Notify appropriate agency minimum 48 hours in advance of requirement for tests, in order that attendance arrangements can be made.
- .2 Submit samples and 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.

1.8. DUTIES & AUTHORITY OF TESTING AGENCY

- .1 Testing agency is expected to do the following:
 - .1 Act in a professional and unprejudiced basis and carry out inspection and testing functions to establish compliance with requirements of Contract Documents.
 - .2 Check work as it progresses and prepare reports stating results of tests and conditions of work and state in each report whether specimens

tested conform to requirements of Contract Documents, specifically noting deviations.

- .3 Distribute reports as follows
 - .1 Consultant
 - .2 Owner
 - .3 Contractor
- .2 Testing agency is not authorized to amend or release any requirements of Contract Documents, nor to approve or accept any portion of work.

1.9. REJECTED WORK

- .1 The Contractor shall 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, it is not expedient to correct defective Work or Work not performed in accordance with Contract Documents, the Owner may choose to accept the condition. The difference in value between Work performed and that called for by Contract Documents shall be deducted from the Contract value via Change Order. The amount of this change shall be determined by Consultant. The Contractor shall warrant the work performed for the time period specified as if it were performed in accordance with the Contract Documents.

1.10. TESTING OF EXCAVATION & BACK FILL

- .1 The Consultant must approve all Sample and fill tests prior to purchase.
- .2 In coordination with the Consultant and Contractor, inspect and test backfill and fill to ensure the degree of compaction specified has been obtained.
- .3 Inspect excavation at required levels in regard to bearing values for footings, foundations and floor slabs.
- .4 Authorization and calculation of extra excavation work, if required, due to unsatisfactory bearing shall be adjusted by Unit Price.

1.11. CONCRETE STRENGTH TESTS

- .1 Review the proposed concrete mix design and check test if considered necessary.

- .2 Obtain representative samples of fresh concrete for each mix design of concrete placed in any one day as directed by the Consultant.
- .3 Make standard slump tests.
- .4 Mould three (3) standard 150mm diameter cylindrical test specimens from each sampling of fresh concrete. Store specimens as per best practice while they are on the site. Cure all cylinders in the laboratory under standard moisture and temperature conditions. Compression test one of the cylinders at 7 days and the remaining two at 28 days after sampling. Each concrete cylinder test report shall contain the specific location of concrete represented by sample, design strength, aggregate size, admixtures used, date, hour and temperature at time of sampling, percentage air content, unit weight and test strength of cylinder.
- .5 When concrete is placed under the conditions of "Cold Weather Requirements" make one additional cylinder; store it in a heated enclosure for 24 hours and then store it on the job site in a place protected from disturbance and off the ground. Compressive test this cylinder 7 days after sampling.
- .6 Determine the air content of air entrained standard weight concrete.
- .7 Determine the air content and unit weight of light weight concrete by the volumetric method.
- .8 Additional testing required because of changes in materials or proportions of the mix requested by the Contractor as well as any extra testing of concrete or materials occasioned by their failure to meet specification requirements or testing of the structure or performance of the structure, including load testing, shall be carried out at the Contractor's expense.

1.12. INSPECTION OF STRUCTURAL STEEL

- .1 Ensure all steel has mill test reports that comply with the Specification prior to purchase.
- .2 Inspect fabrication of steel in plant.
- .3 Inspect erection work at site including fit-up, placing, plumbing, levelling, temporary bracing, field cutting and alterations.
- .4 Shop and field inspect welded and bolted connections and painting.
- .5 High strength bolts - the installation and testing of bolts shall conform to the requirements of CSA S16-1969. Check one representative connection in ten by torque testing every bolt, and check each bolt in every connection with a tap of hammer for soundness. Enforce requirements of connection type.

- .6 Examine visually all welded joints for inclusions, porosity, lack of fusion penetration or even contour, undercuts and cracks. Root passes shall be checked for penetration and cracks from the back of the joint. Any suspect welds shall be checked ultrasonically.

1.13. INSPECTION OF METAL DECK

- .1 Check deck for gauge, type and protective coating thickness to ensure compliance with Specification.
- .2 Inspect erection work at the site including anchorage.

1.14. INSPECTION AND TESTING OF PAVING

- .1 Testing shall be carried out in three stages as described below by means of sufficient site visits to ensure satisfactory results but in no case less three site visits.
- .2 Test within 16 hours from time called to do so by Contractor, since paving is a critical item at the end of the project.
- .3 Stage One:
 - .1 Visual inspection and compaction tests of subsoil.
- .4 Stage Two:
 - .1 Inspection of granular sub-base (after each layer is placed or after the last layer is placed and compacted).
 - .2 On site density tests.
 - .3 Verify thickness of various levels. (Minimum of 4 checks shall be done on thickness in a paved area of 250m² or less, and 1 additional check for each additional 250m² or part thereof).
 - .4 Laboratory tests: moisture content and grading of materials.
- .5 Stage Three:
 - .1 Inspection of asphalt installation.
 - .2 Checking of thickness and density of material and checking suitability of equipment used.
- .6 Standard Proctor Test shall be carried out for all projects.
- .7 Further, grain size analysis and Marshall test shall be carried out if visual inspection is not satisfactory or, if there is reason to suspect materials supplied are not acceptable.
- .8 All laboratory tests shall be performed according to A.S.T.M. methods, latest revisions

- .9 Paving Contractor shall obtain from their supplier grading tables of materials used and submit them to the testing laboratory for approval. The paving contractor shall ensure material delivered complies with grading tables.
- .10 Be responsible for all approvals given to Paving Contractor. At completion of paving project, inform Consultant all tests were performed according to the Specifications and the Contractor's performance has been approved.
- .11 The Consultant will not entertain any credits for work either not performed or incorrectly performed by the contractor. If thicknesses or consistencies of sub-base are not as specified, or if asphaltic material is not as specified, then the Contractor shall remove same at their expense and provide proper specified materials.

1.15. BUILDING THERMOGRAPHIC SCAN

- .1 Upon completion of the Work, the Consultant and/or Owner may arrange for an independent agency to carry out a thermographic scan of the building to determine acceptability of thermal performance of the building envelope.
- .2 Consultant, prior to start of construction work, will designate a sample area of the building to include a portion of exterior wall and roof.
- .3 Consultant will implement a special inspection program for this sample area to be carried out as construction progresses. Contractor shall not cover any completed work until notifying Consultant and receiving acceptance of completed work. Contractor shall remove and replace any work which is installed in contravention of this requirement.
- .4 Results of thermographic scan of entire building will be evaluated and compared to those of the sample area to determine acceptance or rejection of any part of the building envelope.
- .5 Contractor shall carry out remedial work as required to bring quality of any rejected portion of the building envelope to that of the sample area. Contractor shall pay for costs of any follow-up thermographic scans required to determine acceptability of remedial work. This procedure shall be repeated until all parts of the building envelope have been accepted.

1.16. 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.

1.17. MOCK-UP

- .1 Prepare mock-up for Work specifically requested in specifications. Include for Work of all Sections required to provide mock-ups.
- .2 Prepare mock-ups for Consultants review with reasonable promptness and in an orderly sequence, so as not to cause any delay in Work.
- .3 Failure to prepare mock-ups 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.
- .4 If requested, Consultant will assist in preparing a schedule fixing dates for preparation.
- .5 Remove mock-up at conclusion of Work or when acceptable to Consultant. Repair any damage and clean-up at place of mock-up.
- .6 Approved mock-up may remain as part of Work.

1.18. EQUIPMENT AND SYSTEMS

- .1 Submit adjustment and balancing reports for mechanical and electrical systems to the consultant.
- .2 Refer to Sections 01.78.10 and 01.79.00 for definitive requirements.

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SECTION 01 51 00 – TEMPORARY UTILITIES

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Section 01 52 00 - Construction Facilities.
- .2 Section 01 53 00 - Temporary Construction.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. INSTALLATION AND REMOVAL

- .1 Provide temporary utilities controls in order to execute work expeditiously.
- .2 Location of temporary facilities shall be subject to Consultant's approval.
- .3 Salvage and assist in recycling products for potential reuse wherever possible.
- .4 Remove temporary facilities from site when directed by consultant.

1.3. DEWATERING

- .1 Provide temporary drainage and pumping facilities to keep excavations and site free from standing water. Provide necessary pumps (including spare pumps) and temporary drainage for keeping the Work free of water throughout construction period. Locate sumps away from foundation elements. Control grading around excavation to prevent surface water from draining into excavation and from damaging adjoining property.

1.4. WATER SUPPLY

- .1 Provide continuous supply of potable water for construction use until such time as permanent municipal water supply is available.
- .2 Hose extensions to be provided by subcontractors requiring them.
- .3 For New Builds arrange for connection with appropriate utility company and pay all costs for installation, maintenance, removal and usage costs until occupancy has been achieved.
- .4 For Additions and renovations the contractor can use existing Board service unless noted otherwise.

1.5. TEMPORARY HEATING AND VENTILATION

- .1 Provide temporary heating required during construction period, including unit rental costs, maintenance.

- .2 Provide temporary heating fuel, if not already available on site, until such time as a permanent natural gas line is installed, and thereafter fuel costs shall be borne by the Board. The Contractor shall provide all connections and piping between the permanent fuel source and the heating appliance(s).
- .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.
 - .5 Provide adequate ventilation to meet health regulations for safe working environment.
- .4 Maintain temperatures of minimum:
 - .1 10 degrees C in areas where construction is in progress, until takeover by Board. Contractor to ensure temporary enclosures remain sealed and penetrations are repaired or closed in a timely fashion.
 - .2 16 degrees C in areas where finishes are in progress.
 - .3 16 degrees C in building once it is enclosed.
 - .4 Refer to other Sections for intermittent heating requirements up to 21 degrees C. Provide insulated tarp enclosures for openings as required to enclose the building after completion of main building shell components and roof.
 - .5 If the Contractor fails to ensure the temporary enclosures remained sealed (including temp doors when not in use) the Consultant and or the Board shall require the contractor to pay 40% of that months usage charge
- .5 Use forced hot air heaters. Open-flame type heaters or salamanders are not permitted. Ventilate direct fired heating units to the outside.
- .6 Uniformly distribute heat to avoid hot and cold areas and to prevent excessive drying.
- .7 Early heating of the building shell will be required to expedite interior finishing to meet the project schedule.
- .8 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.
- .7 Provide minimum 1 air change per hour for enclosed areas receiving architectural finishes.
- .8 Do not allow excessive build-up of moisture inside building.
- .9 The permanent mechanical systems for the new building, when installed in safe operating conditions, may be used for temporary heating or cooling if approved in writing by the Consultant, without penalty to the warranty.
- .10 Follow the requirements of "Temporary Use of New Permanent Services and Equipment" if the permanent heating system installed under the contract is intended to be used for temporary heating during the construction.
- .11 Provide competent persons to operate and maintain permanent systems for duration of temporary use period.
- .12 Perform required repairs and maintenance immediately after each inspection. Pay for operating costs. Upon termination of temporary use period, services and equipment shall be inspected, tested, adjusted, fitters replaced, balanced, cleaned and lubricated.
- .13 Permanent services and equipment shall be turned over to Owner in new and perfect operating condition.
- .14 Use of permanent systems and equipment as temporary facilities shall not affect the guarantee conditions and guarantee period for such systems and equipment. Make due allowance to ensure Owner will receive full benefits of equipment manufacturer's warranty from the date of Substantial Performance.
- .15 Ensure date of Substantial Performance of the Work and Warranties for heating system do not commence until entire system is in as near original condition as possible and is certified by Consultant.
- .16 Maintain strict supervision of operation of temporary heating and ventilating equipment to:
 - .1 Conform with applicable codes and standards.
 - .2 Enforce safe practices.
 - .3 Prevent abuse of services.
 - .4 Prevent damage to finishes.
 - .5 Vent direct-fired combustion units to outside.
- .17 Be responsible for damage to Work due to failure in providing adequate heat and protection during construction.

1.6. TEMPORARY POWER AND LIGHT

- .1 Provide temporary electrical service and system including lighting and power system for use by all Sections.
- .2 Contractor will provide a source for, and pay the costs of temporary power during construction for temporary lighting and operating of power tools until such time as permanent source is available.
- .3 Contractor to ensure that the use of power from a source provided by the Board shall not exceed the capacity of the current use required for the operation of any existing facility.
- .4 Install and maintain temporary electrical service and systems in accordance with Construction Safety Association's "Temporary Wiring Standards on Construction Sites", the Ontario Electrical Code and other authorities having jurisdiction.
- .5 Provide at least one temporary panel on each floor with service capacity suitable for construction requirements and to authorities and utilities approval.
- .6 Provide temporary wiring with lighting to all areas of each floor to provide adequate lighting.
 - .1 Lighting levels must be maintained at a minimum of 10 foot candles, or to suit the particular location or operation, whichever is greater.
 - .2 Do not use materials of the temporary service in permanent installation.
 - .3 Increase lighting levels equivalent to the final requirements when finishing operations are underway.
- .7 Extension cords, lights, etc., required by various subcontractors and run from above outlet positions will be supplied and maintained by the party or parties requiring same.
- .8 Follow requirements of "Temporary Use of New Permanent Services and Equipment" if electrical power and lighting systems installed under the contract are intended to be used for temporary electricity and lighting during the construction.
- .9 Electrical power and lighting systems installed under this contract can be used for construction provided damages are made good and all lamps that have been used for more than two months are replaced with new lamps.
- .10 For New Builds arrange for connection with appropriate utility company and pay all costs for installation, maintenance, removal and usage costs until occupancy has been achieved.
- .11 For Additions and renovations the contractor can use existing Board service unless noted otherwise.

- .12 Provide and pay for temporary power for electric cranes and other equipment requiring temporary power in excess of above noted requirements.

1.7. TEMPORARY COMMUNICATION FACILITIES

- .1 Contractor to provide and pay for temporary Phone, e-mail and printer hook up, for the duration of contract until completion for use by the contractor.
- .2 The site superintendent is to have e-mail access and a printer on site.

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SECTION 01 53 00 – TEMPORARY CONSTRUCTION FACILITIES

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Section 01 51 00 - Temporary Utilities.
- .2 Section 01 35 23 – Health and Safety
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. INSTALLATION AND REMOVAL

- .1 Provide temporary construction facilities in order to execute work expeditiously.
- .2 Remove temporary facilities from site when directed by Consultant.

1.3. 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.

1.4. PROTECTION OF SURROUNDING WORK

- .1 Provide protection for finished and partially finished Work from damage.
- .2 Provide necessary cover and protection.
- .3 Be responsible for damage incurred due to lack of or improper or inappropriate protection.

1.5. ROOF AND STRUCTURE PROTECTION

- .1 Ensure no part of Work or existing structures are subjected to a load, which will endanger its safety or will cause permanent deformation.
- .2 The Contractor when indicated by the Board Contact or Consultant shall provide roof protection. Ensure all precautions are taken to avoid liability for roof damage.
- .3 Typical roof protection shall consist of a layer of 1 inch rigid foam insulation set directly on the roof surface and a layer of 19 mm (3/4 inch) plywood in all places under scaffold legs, ladder legs and in areas of foot traffic or falling debris.

1.6. WORK SITE ENCLOSURE & SAFETY BARRIERS

- .1 Erect and maintain for the duration of the work:

- .1 a minimum 1800 mm high chain link fence or self-supporting, heavy duty, interconnected fence panels (commonly referred to as Insta-fence) for a temporary site enclosure (hoarding) completely around perimeter of work site,
- .2 any temporary posts shall be completely removed by the contractor prior to occupancy,
- .3 under no circumstance shall t-bar posts be used on board property
- .4 any additional safety devices including full hoarding as required and noted on the drawings, to protect the students, staff, public and private property from injury and damage,
- .5 any additional requirements as regulated by authorities having jurisdiction, local by-laws and zoning.
- .2 The Contractor is to assume full responsibility for any injury or damage caused due to failure to comply with Paragraph 1 above.
- .3 Any hazardous conditions identified outside of the main fenced area will be barricaded with a fence complying to the above.
- .4 Provide lockable truck entrance gate/gates and at least one (1) pedestrian door as directed and conforming to applicable traffic restrictions on adjacent streets. Equip gates with locks and keys with restricted availability, in the project office.
- .5 Erect and maintain pedestrian walkways including roof and side covers, complete with signs and electrical lighting as required by law.
- .6 Provide barriers around trees and plants designated to remain.
- .7 Protect from damage by equipment and construction procedures.

1.7. TREE PROTECTION

- .1 Protect all existing trees to remain from damage during construction period. Make good, at Contractor's expense, trees damaged during construction.
- .2 Confine movement of heavy equipment, storage of same, and storage of materials to a predetermined area. Do not store materials or place equipment over root systems of any existing trees to remain.
- .3 Install fencing or approved equal at limits of drip line of existing trees to remain unless directed otherwise. Where this case is not practical, and only if approved by the Consultant, the trunks shall be protected with an approved tree guard.
- .4 No rigging cables shall be wrapped around or installed in trees. Do not flush concrete trucks or cement mixing machines over root systems or near trees. Flush concrete trucks or cement mixing machines in areas approved by Consultant.

- .5 Areas where root systems of trees are exposed directly adjacent to a structure will be backfilled with good loam only.
- .6 Whenever excavating is required within branch spread of trees that are to remain, the contractor shall contact the consultant for direction prior to the start of work.
- .7 If any existing tree to remain is injured and does not survive the following year, it will, as determined by the Board, be removed in its entirety and be replaced with a tree of similar size and value, as directed by the Consultant.
- .8 Should the destroyed tree be of such a size or shape that it cannot be feasibly replaced, the Contractor shall compensate the Owner for the minimum sum of five thousand dollars (\$5,000.00) per destroyed tree.

1.8. GUARD RAILS AND BARRIERS

- .1 Provide secure, rigid guard rails and barricades around deep excavations, open shafts, open stair wells, open edges of floors and roofs.
- .2 Erect and maintain for the duration of the Work, safety devices and barricades including hoarding, as required, to protect the staff, students, public and private property, from injury and damage.
- .3 The Contractor is to ensure that all requirements from authorities having jurisdiction and all requirements from the Owner are met.
- .4 The Contractor is to assume full responsibility for any damage caused due to his failure to comply with paragraph 2 above.
- .5 Hazardous conditions on the exterior shall be fenced.

1.9. 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.

1.10. DUST TIGHT BARRIERS

- .1 Provide dust tight barriers and screens or 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.
- .3 Where required adjust air handling units to eliminate migration of dust.

1.11. SCAFFOLDING

- .1 Erect scaffolding independent of walls and use in such a manner limiting interference with other work. When not in use, move scaffolding as necessary to permit installation of other work. Construct and maintain scaffolding in a rigid, secure and safe manner. Remove it promptly when no longer required. Protect surface on which scaffolding is bearing.

1.12. SHORING, BRACING, PILING

- .1 Provide shoring, bracing, piling, sheeting and sheet piling and underpinning required to support soil banks, existing work and property in accordance with Construction Safety Act and other applicable regulations. Maintain shoring until building is strong enough and sufficiently braced to withstand pressure of backfilling. Make construction aids free of permanent work so they may be removed entirely when no longer required, without damaging the Work. Locate construction aids so adequate room is left for damp-proofing foundation walls, laying substructure drainage and other work.
- .2 Shoring and false work over one tier in height shall be designed and shall bear the stamp of a registered professional engineer, having experience in this field.

1.13. HOISTING

- .1 Provide, operate and maintain services required for moving of workers, materials and equipment. Make financial arrangements with Subcontractors for use thereof.
- .2 Machinery shall be operated by qualified operator.

1.14. OVERHEAD LIFTING

- .1 Any condition requiring the use of a crane or lifting device over a Board structure must follow the requirements of Health and Safety Section 01 35 23, Paragraph 1.15 Overhead Lifting.

1.15. ELEVATORS/LIFTS

- .1 When elevators/lifts are to be used by construction personnel, provide protective coverings for finish surfaces of elevator cabs and entrances.
- .2 Co-ordinate use of elevator cabs with Consultant and the Board.

1.16. USE OF THE WORK

- .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.

1.17. CONSTRUCTION PARKING

- .1 Construction personnel vehicle parking, to be confined to the work site enclosure, or.
- .2 Parking will be permitted on site only where and if it does not disrupt the employees of the place of work as directed by the Board
- .3 Permission to park vehicles on site does not imply any liability or responsibility for safe keeping of vehicles and contents thereof by the School Board.

1.18. ACCESS TO SITE

- .1 Provide and maintain adequate access to project site.
- .2 Build and maintain temporary roads where necessary and provide snow removal within the area of work, and access to the work, during period of Work. The area shall be restored to the satisfaction of the Board at the completion of the project.
- .3 If authorized to use existing roads for access to project site, maintain such roads for duration of Contract and make good damage resulting from Contractors' use of roads.
- .4 Clean roadways and taxi areas where used by Contractor's equipment.

1.19. SECURITY

- .1 The Contractor shall ensure the security of the work site, contents, and built structures for the duration of the project.
- .2 The Contractor shall be responsible to provide and pay for security personnel to guard site and contents of site after working hours and during holidays as required.
- .3 Notify the Board of the use of security guards or systems.
- .4 The Board shall not be responsible for the loss, theft, or vandalism.

1.20. OFFICES

- .1 Provide and maintain, until completion of Contract, for Contractor's use, a temporary office, large enough to accommodate site administrative activities and site meetings, complete with light, heat, air conditioning, ventilation, table and chairs. Do not store materials in office area; keep clean and tidy.
- .2 Provide a clearly marked and fully stocked first-aid case in a readily available location.

- .3 Subcontractors may provide their own offices as necessary. Direct location of these offices.

1.21. EQUIPMENT, TOOL AND MATERIALS STORAGE

- .1 Provide and maintain, in a clean and orderly condition, lockable weatherproof sheds and platforms for storage of tools, equipment and materials.
- .2 Review storage areas on site with the Consultant. Store materials and equipment to ensure preservation of quality of product and fitness for the Work. Store materials and equipment on wooden platforms or other hard, clean surfaces, raised above the ground or in water tight storage sheds of sufficient size for storage of materials and equipment which might be damaged by storage in open. Locate stored materials and equipment to facilitate prompt inspection.
- .3 Store packaged materials and equipment undamaged, in their original wrappings or containers, with manufacture's labels and seals intact.
- .4 Locate materials not required to be stored in weatherproof sheds on site in a manner to cause least interference with work activities.
- .5 Storage sheds required by subcontractors shall be provided by them.

1.22. SANITARY FACILITIES

- .1 Provide weatherproof temporary toilet/sanitary facilities for work force in accordance with governing regulations and ordinances.
- .2 Service temporary toilet/sanitary facilities as required by authorities but not less than weekly.
- .3 Post notices and take such precautions as required by local health authorities.
- .4 The use of existing washroom facilities is not allowed unless specifically approved by the Board. The Contractor will be required to clean and maintain the existing washrooms to Board standards.
- .5 Except where connected to municipal sewer system, periodically remove wastes from Site.
- .6 Keep toilet/sanitary facilities clean and sanitary and protect from freezing.
- .7 Keep sanitary facilities clean and fully stocked with the necessary supplies at all times.

END OF SECTION

SECTION 01 61 00 – PRODUCT REQUIREMENTS

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 This section describes requirements applicable to all Sections within Divisions 02 to 49.
- .2 Section 01 31 00 – Project Managing and Coordination

1.2. TERMINOLOGY

- .1 New: Produced from new materials.
- .2 Renewed: Produced or rejuvenated from an existing material to like-new condition to serve a new or existing service.
- .3 Defective: A condition determined exclusively by the Consultant.

1.3. PRODUCT QUALITY

- .1 The term 'new' in the following paragraph does not exclude re-manufactured products that have some or all of the materials recycled from other sources. Preference in recycling is for post-consumer recycled materials.
- .2 Products, materials, equipment, parts or assemblies (referred to as Products) incorporated in Work:
- .3 New Product, not damaged or defective, of best quality (compatible with specification requirements) for purpose intended. If requested, provide evidence as to type, source and quality of Products provided.
- .4 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.
- .5 Should any dispute arise as to quality or fitness of Products, decision rests strictly with Consultant.
- .6 Unless otherwise indicated in specifications, maintain uniformity of manufacture for any particular or like item throughout building.

1.4. AVAILABILITY

- .1 Immediately upon receipt of Boards Purchase Order, review Product delivery requirements and anticipate foreseeable supply delays for any items.

- .2 Immediately upon receipt of Boards Purchase Order the Contractor shall issue Purchase Orders and or Contracts to all Sub-trades. Provide proof to the Consultant and the Board within 3 days. The Sub-Contractors shall identify in writing any delivery issues within 14 days of receiving the Contractors purchase order or contract. The Schedule noted in 01-31 00 1.7.1 shall incorporate all deliveries and installation.
- .3 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.
- .4 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.

1.5. STORAGE AND PROTECTION

- .1 Store and protect Products in accordance with manufacturers' written instructions.
- .2 Store with seals and labels intact and legible.
- .3 Store sensitive Products in weather tight, climate controlled, enclosures in an environment favourable to Product.
- .4 For exterior storage of fabricated Products, place on sloped supports above ground.
- .5 Cover Products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of Products.
- .6 Store loose granular materials on solid flat surfaces in a well-drained area. Prevent mixing with foreign matter.
- .7 Provide equipment and personnel to store Products by methods to prevent soiling, disfigurement, or damage.
- .8 Arrange storage of Products to permit access for inspection. Periodically inspect to verify Products are undamaged and are maintained in acceptable condition.

1.6. TRANSPORTATION AND HANDLING

- .1 Transport and handle Products in accordance with manufacturer's written instructions.
- .2 Promptly inspect shipments to ensure that Products comply with requirements, quantities are correct, and Products are undamaged.
- .3 Provide equipment and personnel to handle Products by methods to prevent soiling, disfigurement, or damage.

- .4 Suitably pack, crate and protect products during transportation to site to preserve their quality and fitness for the purpose intended.
- .5 Store products in original, undamaged condition with manufacturer's labels and seals intact until they are being incorporated into completed work.
- .6 Protect materials from damage by extreme temperatures or exposure to the weather.

1.7. 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 the owner.
- .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.

1.8. MANUFACTURER'S WRITTEN INSTRUCTIONS

- .1 Unless otherwise indicated in specifications, install or erect Products to manufacturer's written 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.

1.9. 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 and or Board reserves right to require dismissal from site any workers deemed incompetent or careless.
- .3 Decisions as to standard or fitness of Quality of Work in cases of dispute rest solely with Consultant, whose decision is final.

- .4 Products, materials, systems and equipment shall be applied, installed, connected, erected, used, cleaned and conditioned in accordance with the applicable manufacturer's printed directions.
- .5 Where specified requirements are in conflict with manufacturer's written directions, follow manufacturer's directions. Where specified requirements are more stringent than manufacturer's directions, comply with specified requirements.

1.10. COORDINATION

- .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.
- .3 Contractor is responsible to ensure suppliers or distributors of materials specified or alternatives accepted, which he intends to use, have materials with original schedule, and similarly it shall be the responsibility of all subcontractors and suppliers to so inform the Contractor.
- .4 Contractor shall contact Consultant immediately upon receipt of information indicating materials or items, will not be available on time, in accordance with the latest approved schedule, and similarly it shall be the responsibility of all subcontractors and suppliers to so inform the Contractor.
- .5 The above, in no way releases the Contractor, or their subcontractors and suppliers of their responsibility for ensuring timely ordering of materials and items required, including the necessary expediting, to complete the Work as scheduled in accordance with the Contract Documents including temp accommodations and or materials to ensure occupancy date is achieved.

1.11. 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 at no additional cost to the Board.

1.12. 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.

1.13. LOCATION OF FIXTURES

- .1 Inform Consultant of conflicting installation. Install as directed.

1.14. 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 Type 304 or 316 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.

1.15. PROTECTION OF WORK IN PROGRESS

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

END OF SECTION

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SECTION 01 70 00 – EXAMINATION AND PREPARATION

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. REFERENCES

- .1 Owner's identification of existing survey control points and property limits.

1.3. SUBMITTALS

- .1 Submit name and address of Surveyor to Consultant.
- .2 On request of Consultant, submit documentation to verify accuracy of field engineering work.
- .3 Submit certificate signed by surveyor certifying that elevations and locations of completed Work conforms with Contract Documents.

1.4. QUALIFICATIONS OF SURVEYOR

- .1 Qualified registered land surveyor, licensed to practise in the Place of the Work.

1.5. SURVEY REFERENCE POINTS

- .1 Existing base horizontal and vertical control points are designated on Drawings.
- .2 Locate, confirm and protect control points prior to starting site Work. Preserve permanent reference points during construction.
- .3 Make no changes or relocations without prior written notice to Consultant.
- .4 Report to Consultant when reference point is lost or destroyed, or requires relocation because of necessary changes in grades or locations.
- .5 Require surveyor to replace control points in accordance with original survey control.

1.6. SURVEY REQUIREMENTS

- .1 Establish existing and new permanent bench marks on site, referenced to established bench marks by survey control points.
- .2 Record locations, with horizontal and vertical data in Project Record Documents.
- .3 Establish lines and levels, locate and lay out, by instrumentation.

- .4 Establish pipe invert elevations.
- .5 Stake batter boards
- .6 Establish foundation and floor elevations.
- .7 Establish lines and levels for mechanical and electrical work.

1.7. SUBSURFACE CONDITIONS

- .1 Promptly notify Consultant in writing if discovered surface or subsurface conditions at Place of Work differ materially from those indicated in Contract Documents.
- .2 Advise the Consultant of a reasonable assumption of probable conditions when determined.
- .3 After prompt investigation, should Consultant determine that conditions do differ materially, instructions will be issued for changes in Work.

1.8. EXAMINATION

- .1 The Contractor is expected to be totally familiar with site conditions and shall assume full responsibility for the cost involved in repairing any damage to the building, site and services, city property, adjacent buildings, etc., during general construction, regardless of the extent of the damage.
- .2 Inspect existing conditions, including elements or adjacent Work subject to irregularities, damage, movement, including Work during cutting and patching.
- .3 The Contractor shall provide all equipment necessary to make a full and detailed site evaluation. This shall include but not be limited to ladders, flashlights and hand tools.
- .4 The Contractor expressly agrees that conditions above existing suspended acoustic ceilings, but below fixed structure, unless obscured by an additional ceiling above, shall be considered exposed conditions for the purposes of making findings under the provisions of the Contract. There shall be no claims for extra costs for extra Work in these areas.
- .5 After uncovering, inspect conditions affecting performance of the Work.
- .6 Beginning of cutting or patching means acceptance of existing conditions.

1.9. PREPARATION

- .1 Provide supports to assure structural integrity of surroundings; provide devices and methods to protect other portions of project from damage.
- .2 Provide protection from elements for areas which may be exposed by uncovering work; maintain excavations free of water.

1.10. EXISTING SERVICES

- .1 Before commencing work, establish location and extent of service lines in area of Work and notify Consultant of findings.
- .2 Remove abandoned service lines running through within existing and new structures. Cap or seal lines at cut-off points as directed by Consultant.

1.11. LOCATION OF EQUIPMENT AND FIXTURES

- .1 Inform Consultant of conflicting installations, install as directed.
- .2 Locate equipment, fixtures and distribution systems to provide minimum interference and maximum usable space and in accordance with manufacturer's recommendations for safety, access and maintenance.
- .3 Inform Consultant of impending installation and obtain approval for actual location.
- .4 Submit field drawings to indicate relative position of various services and equipment when required by Consultant.

1.12. SURVEY RECORD

- .1 Maintain a complete, accurate log of control and survey work as it progresses.
- .2 On completion of foundations and major site improvements, prepare a certified survey showing dimensions, locations, angles and elevations of Work.
- .3 Record locations of maintained, re-routed and abandoned service lines.

END OF SECTION

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SECTION 01 73 30 – EXECUTION AND CUTTING AND PATCHING

2.0 GENERAL

2.1. RELATED SECTIONS

- .1 Section 01 32 00 - Construction Progress Documentation: Submittals and scheduling.
- .2 Section 01 61 00 - Product Requirements.
- .3 Section 01 70 00 – Examination and Preparation
- .4 Individual Product Specification Sections:
 - .1 Cutting and patching incidental to work of the section.
 - .2 Advance notification to other sections of openings required in Work of those sections.

2.2. 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 element.
 - .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 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.

2.3. TOLERANCES

- .1 Monitor fabrication and installation tolerance control of Products to produce acceptable Work.
- .2 Do not permit tolerances to accumulate beyond effective or practical limits.
- .3 Comply with manufacturers' tolerances. In case of conflict between manufacturers' tolerances and Contract Documents, request clarification from Consultant before proceeding.

- .4 Adjust Products to appropriate dimensions; position and confirm tolerance acceptability, before permanently securing Products in place.

3.0 PRODUCTS

3.1. MATERIALS

- .1 Primary Products: Those required for original installation.
- .2 Product Substitution: For any proposed change in materials, submit request for substitution described in Section 01 33 00.

4.0 EXECUTION

4.1. EXAMINATION

- .1 Examine existing conditions prior to commencing Work, including elements subject to damage or movement during cutting and patching.
- .2 After uncovering existing Work, assess conditions affecting performance of work.
- .3 Beginning of cutting or patching means acceptance of existing conditions.

4.2. PREPARATION

- .1 Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of Project from damage.
- .2 Provide protection from elements for areas which may be exposed by uncovering work.
- .3 Maintain excavations free of water.

4.3. CUTTING

- .1 Execute cutting and fitting as needed to complete the Work. Prior to any cutting and or coring of concrete floors the contractor shall confirm the area is free of services or rebar. Notify the Consultant of any interferences.
- .2 Uncover work to install improperly sequenced work.
- .3 Remove and replace defective or non-conforming work.
- .4 Remove samples of installed work for testing for Hazardous materials.
- .5 Provide openings in the Work for penetration of mechanical and electrical work.
- .6 Employ experienced installer to perform cutting for weather exposed and moisture resistant elements, and sight exposed surfaces.

- .7 Cut rigid materials using masonry saw or core drill. Pneumatic tools not allowed without prior approval.
- .8 Do all cutting, patching and making good, to leave a finished condition and to make the several parts of the work come together properly. Coordinate work to keep cutting and patching to a minimum.
- .9 Make cuts with clean, true, smooth edges. Fit unit to tolerance established by test standard practice for applicable work. Make patches invisible in final assembly.
- .10 Cutting shall be done in a manner to keep patching to minimum. Obtain Consultant's approval of method to be used to conceal new mechanical and electrical services before beginning cutting. Chasing of concrete surfaces is not permitted.
- .11 Cutting or coring of any structural concrete is to be reviewed and approved by the Consultant.
- .12 Do not endanger any work by cutting, digging or otherwise altering, and do not cut nor alter any load bearing element without written authorization by Consultant. Provide bracing, shoring and temporary supports as required to keep construction safely supported at all times
- .13 Any cost caused by omission or ill-timed work shall be borne by party responsible therefore.
- .14 Regardless of which Section of work is responsible for any portion of cutting and patching, in each case tradesmen qualified in work being cut and patched shall be employed to ensure it is correctly done.

4.4. PATCHING

- .1 Execute patching to complement adjacent Work.
- .2 Fit Products together to integrate with other Work.
- .3 Execute work by methods to avoid damage to other Work, and which will provide appropriate surfaces to receive patching and finishing.
- .4 Employ original installer to perform patching for weather exposed and moisture resistant elements, and sight-exposed surfaces.
- .5 Restore work with new Products in accordance with requirements of Contract Documents.
- .6 Fit work with adequate support to pipes, sleeves, ducts, conduit, and other penetrations through surfaces.
- .7 At penetrations of fire rated walls, partitions, ceiling, or floor construction, completely seal voids with firestop material.

- .8 Refinish surfaces to match adjacent finish. For continuous surfaces, refinish to nearest intersection or natural break. For an assembly, refinish entire unit.
- .9 Complete and tightly fit all construction to pipes, ducts and conduits which pass through construction to completely prevent the passage of air.
- .10 Patching and making good shall be done by trade specialists in material to be treated, and shall be made undetectable in finished work when viewed from distance of 1.5m under normal lighting.

END OF SECTION

SECTION 01 74 00 – CLEANING AND WASTE MANAGEMENT

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Common Work by All Trades
- .2 This section describes requirements applicable to all Sections within Divisions 02 to 49.
- .3 Conduct cleaning and disposal operations to comply with local ordinances and environmental protection legislation.
- .4 Store volatile wastes in covered metal containers, and remove from premises at end of each working day.
- .5 Provide adequate ventilation during use of volatile or noxious substances. Use of building ventilation systems is not permitted for this purpose.

2.0 PRODUCTS

2.1. CLEANING PRODUCTS

- .1 Cleaning Agents and Materials: Low VOC content wherever possible. The Consultant and the Board shall be notified prior to use of any exception.

3.0 EXECUTION

3.1. CLEANING DURING CONSTRUCTION

- .1 Maintain the Work in tidy condition, free from accumulation of waste products and debris, other than that caused by the Owner or other Contractors.
- .2 Remove waste material and debris from the work areas and deposit in waste container at the end of each working day.
- .3 Vacuum clean interior areas prior to start of finishing work. Maintain areas free of dust and other contaminants during finishing operations.
- .4 Individual Subcontractors are responsible for the daily clean-up and removal of debris related to, or generated by, their own work. The overall responsibility for project cleanliness rests with the Contractor.
- .5 The Contractor shall be responsible for snow removal within the construction area.
- .6 Make arrangements with and obtain permits from authorities having jurisdiction for disposal of waste and debris.
- .7 Wherever possible recycle materials

- .8 Containers:
 - .1 Provide adequate number and sizes of on-site garbage and recycling containers within designated work site as required for collection of waste materials and debris on a daily basis.
 - .2 Provide additional waste containers when extent of work warrants.
 - .3 Provide and use clearly marked, separate bins for recycling.
- .9 Dispose of waste materials and debris at registered waste disposal and recycling facility.
- .10 Remove oily rags, waste and other hazardous substances from premises at close of each day, or more often when required.
- .11 Schedule cleaning operations so that resulting dust, debris and other contaminants will not fall on wet, newly painted surfaces nor contaminate building systems.

3.2. WASTE MANAGEMENT

- .1 Audit, separate and dispose of construction waste generated by new construction or by demolition of existing structures in whole or in part, in accordance with Ontario Regulations 102/94 and 103/94 made under the Environmental Protection Act.
- .2 Containers:
 - .1 Provide adequate number and sizes of on-site garbage and recycling containers within designated work site as required for collection of waste materials and debris on a daily basis.
 - .2 Provide additional waste containers when extent of work warrants.
 - .3 Provide and use clearly marked, separate bins for recycling.
- .3 Fires, and burning of rubbish or waste on site is strictly prohibited.
- .4 Burying of rubbish or waste materials on site is strictly prohibited.
- .5 Disposal of waste or volatile materials such as mineral spirits, oil, gasoline or paint thinner into ground, waterways, or sewer systems is prohibited.
- .6 Empty waste containers on a regular basis to prevent contamination of site and adjacent properties by wind-blown dust or debris

3.3. PREPARATION FOR FINAL CLEANING

- .1 Prior to final cleaning the General Contractor shall:
 - .1 remove all surplus products, tools, construction machinery and equipment not required for the performance of remaining work, and thereafter remove any remaining materials, equipment, waste and debris,

- .2 replace all filters installed on any equipment in operation in the area of work,
- .3 remove all paint spots or overspray from all affected surfaces, and

3.4. FINAL CLEANING PRIOR TO ACCEPTANCE: INTERIOR

- .1 Prior to applying for Substantial Performance of the Work, or, prior to Owner occupancy of the building or portion of the building affected by the Work, whichever comes first, conduct full and complete final cleaning operations for the areas to be occupied.
- .2 Final cleaning operations shall be performed by an experienced professional cleaning company, possessing equipment and personnel sufficient to perform full building cleaning operations. Contractors "broom cleaning" is not acceptable as a "Final Clean". The cleaning contractor shall:
 - .1 clean interiors of all millwork and surfaces of any furniture and equipment present,
 - .2 use only cleaning materials recommended by the manufacturer of the surface to be cleaned,
 - .3 remove all stains, spots, scuff marks, dirt, dust, remaining labels, adhesives or other surface imperfections,
 - .4 clean and polish all glass and mirrors and remove remaining manufacturer's and safety "X" labels,
 - .5 clean and polish all finished metal surfaces such as enamelled or stainless steel, chrome, aluminum, brass, and bronze,
 - .6 clean and polish all vitreous surfaces such as plumbing fixtures, ceramic tile, porcelain enamel, or other such materials,
 - .7 clean all ceramic tile surfaces in accordance with the manufacturer's instructions,
 - .8 vacuum, clean and dust behind grilles, louvres and screens,
 - .9 steam clean all unprotected carpets immediately prior occupancy by Owner, and
 - .10 clean all equipment and fixtures to a sanitary condition.
- .3 For any areas to be occupied after the owner's initial occupancy, provide full cleaning operations as outlined above prior to turning over to owner,
- .4 The Board's supplies and equipment must not be used for any cleaning operations including, but not limited to: garbage cans, mops, brooms, rags, ladders, chemicals etc.

3.5. FINAL CLEANING PRIOR TO ACCEPTANCE: EXTERIOR

- .1 For areas effected by construction final exterior cleaning operations shall be performed by the General Contractor or competent sub-contractor. Contractor's "broom cleaning" only is not acceptable.
- .2 Final exterior cleaning shall include:
 - .1 broom clean and wash exterior walks, steps and surfaces; rake clean other surfaces of grounds,
 - .2 remove dirt and other disfiguration from exterior surfaces,
 - .3 sweep and wash clean paved areas,
 - .4 replace filters of mechanical equipment for all equipment that was in use during construction,
 - .5 clean all roofs, gutters, downspouts, areaways, drywells, and drainage systems,
 - .6 remove debris and surplus materials from crawl areas and other accessible concealed spaces.
 - .7 remove overspray

END OF SECTION

SECTION 01 78 10 – CLOSEOUT SUBMITTALS AND REQUIREMENTS

1.0 GENERAL

1.1. RELATED SECTIONS

- .1 Section 01 78 10 – Appendix 1 and 2 – WRDSB Warranty Card

1.2. TAKE-OVER PROCEDURES

- .1 Take over procedures will be in strict accordance with the requirements as set out in this Section.

1.3. SUBSTANTIAL PERFORMANCE

- .1 Prior to requesting a Substantial Performance deficiency inspection submit 2 hard copies, 1 digital copy of the Operating and Maintenance Manuals for Consultants approval.
- .2 Application for Substantial Performance must include.
 - .1 One (1) electronic copy of inspection and acceptance certificates required from regulatory agencies, including but not limited to.
 - .1 Certificates of Approval of the Work by the local Building Department.
 - .2 Electrical Inspection Certificate of Inspection.
 - .3 Fire Alarm Verification Certificate.
- .3 Advise Consultant in writing, when project has been substantially completed. If Consultant agrees this stage has been reached, the Consultant shall prepare a complete list of deficiencies and submit copies of this list to Contractor and the Board.

1.4. COMMENCEMENT OF LIEN PERIODS

- .1 The date of publication of the Certificate of Substantial Performance of the Work, provided to the contractor by the Consultant, shall be the date for commencement of the lien period.

1.5. TOTAL PERFORMANCE

- .1 Prior to requesting a final inspection submit written certificate that the following have been performed:
 - .1 Work has been completed and inspected for compliance with Contract Documents and is ready for final inspection
 - .2 Defects have been corrected and deficiencies have been completed.

- .3 Equipment and systems have been tested and are fully operational.
Submit two copies of the balancing reports
- .4 Certificates required by the contractor have been submitted.
- .5 Operation of systems have been demonstrated to Owner's personnel.
- .6 Submit Record drawings.
- .7 Submit maintenance materials.
- .8 Provide certified site survey
- .2 When items noted above are completed, request final inspection of Work by consultant, and building inspector. If Work is deemed incomplete by Consultant, complete outstanding items and request re-inspection.

1.6. PAYMENT OF SUBSTANTIAL PERFORMANCE HOLDBACK

- .1 Prior to the release of lien holdback provide one copy of the following by the Contractor and each subcontractor:
 - .1 Statutory Declaration or Declaration of Last supply
 - .2 Workplace Safety and Insurance Board "Certificate of Clearance".
- .2 The Contractor shall submit an application for payment of the holdback amount.
- .3 After the receipt of an application for payment which will include a Statutory Declaration and WSIB Clearance from the, the Consultant will issue a certificate for payment of the holdback amount.

1.7. FINAL PAYMENT

- .1 When the Contractor considers final deficiencies and defects have been corrected and it appears requirements of Contract have been completed, make application for final payment.
- .2 When the Consultant finds the Contractor's application for final payment valid, the Consultant will issue a final certificate of payment
- .3 The Board reserves the right to charge the Contractor for school access card(s) that have not been returned.
- .4 The cost to reprogram or replace the card(s) access system is estimated at \$50.00 (fifty dollars) for each card issued, \$30.00 (thirty dollars) for each keybox key, plus \$35.00 (thirty five dollars) administration fee.

1.8. CLOSEOUT SUBMITTALS

- .1 Prepare instructions and data using personnel experienced in maintenance and operation of described products and submit to Consultant for review.
- .2 Copy will be returned to contractor with Consultant's comments.
- .3 Revise content of documents as required prior to final submittal.

- .4 Two (2) weeks prior to Substantial Performance of the Work, submit to the Consultant, the final copies of operating and maintenance manuals.
- .5 Ensure spare parts, maintenance materials and special tools provided are new, undamaged or defective, and of same quality and manufacture as products provided in Work.
- .6 If requested, furnish evidence as to type, source and quality of products provided.
- .7 Defective products will be rejected, regardless of previous inspections. Replace products at own expense.
- .8 Pay costs of transportation.

1.9. OPERATION AND MAINTENANCE MANUAL FORMAT

- .1 Provide two copies of operating and maintenance data, prepared on 215 X 280mm sheets in printed or typewritten form, contained in 3-ring binders with soft vinyl covers for materials and equipment which require special maintenance or operating procedures.
- .2 When multiple binders are used, correlate data into related consistent groupings. Identify contents of each binder at the front of each volume.
- .3 Cover: Identify each binder with type or printed title 'Project Record Documents'; list title of project and identify subject matter of contents.
- .4 Arrange content by the divisions of the specifications under Section numbers and sequence of Table of Contents.
- .5 Provide tabbed fly leaf for each separate product and system, with typed description of product and major component parts of equipment.
- .6 Include the following in each manual:
 - .1 Complete list of subcontractors and suppliers, their addresses and telephone numbers. Provide 24 hour emergency telephone number for such subcontractors as Plumbing, Electrical, Sprinklers, Fire System, Heating, etc.
 - .2 Specified warranties for contractor, each subcontractor and supplier.
 - .3 WRDSB Warranty Card
 - .4 Copy of finish hardware list, complete with all amendments and revisions and lock manufacturer's descriptive and service literature.
 - .5 Schedule of paints and coatings. Include sufficient explanation to fully identify each surface with the applicable paint or coating used. Enclose copy of colour schedule.
 - .6 Maintenance instructions for finished surfaces.
 - .7 Brochures, cuts of equipment and fixtures.
 - .8 Operating and maintenance instructions for equipment.

- .9 Submit copies of letters from manufacturers of equipment and systems indicating their technical representatives have inspected and tested systems and are satisfied with methods of installation, connection and operations. These letters shall state names of persons present at testing, methods used and list of functions performed.
- .10 Submit one complete set of reviewed shop drawings of architectural, structural, mechanical and electrical items, folded to 215 x 280mm size, contained in heavy duty manila envelopes, numbered and labelled. Follow specification format with no more than one Section per envelope, hard copy and PDF.
- .11 Relevant certificates issued by authorities having jurisdiction
- .12 Computer disc or flash drive with all the above documentation in PDF format

1.10. RECORDING ACTUAL SITE CONDITIONS

- .1 Record information on set of black line opaque drawings, and within the Project Manual.
- .2 Annotate with coloured felt tip marking pens, maintaining separate colours for each major system, for recording changed information.
- .3 Record information concurrently with construction progress. Do not conceal Work of the Project until required information is accurately recorded.
- .4 Contract drawings and shop drawings: legibly mark each item to record actual construction, including:
 - .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 warranties, test reports and samples required by individual specifications sections.

1.11. RECORD (AS-BUILT) DOCUMENTS AND SAMPLES

- .1 Store AS-BUILT documents and samples in field office apart from documents used for construction. Provide files, racks, and secure storage.
- .2 Label AS-BUILT documents and file in accordance with section number listings in List of Contents of the Project Manual. Label each document AS-BUILT DOCUMENTS in neat, large, printed letters.
- .3 Maintain AS-BUILT documents in clean, dry and legible condition. Do not use as-built documents for construction purposes.
- .4 Keep as-built documents and samples available for inspection by Consultant.

1.12. RECORD DRAWINGS

- .1 Prior to Substantial Performance of the Work, update the marked up information from the AS-BUILT documents to a master set of drawing.
- .2 Submit one set of completed AS-BUILT documents to the Consultant for review.
- .3 Documents will be returned to contractor with Consultant's comments.
- .4 Revise content of documents as required prior to final submittal.
- .5 After the review is completed resubmit to the Consultant for Consultant to produce electronic record drawings for the owner to use.

1.13. SPARE PARTS

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Receive and catalogue all items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.
- .4 Obtain receipt for delivered products and submit prior to final payment.

1.14. REPLACEMENT (MAINTENANCE) MATERIALS

- .1 Deliver to site, unload and store where directed, replacement (maintenance) materials as required elsewhere in these Specifications. Obtain signed receipt from Owner's Representative for delivered materials and include copy of receipt in Operation and Maintenance manuals.
- .2 Package materials so they are protected from damage and loss of essential properties.

- .3 Label packaged materials for proper identification of contents.

1.15. SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Receive and catalogue all items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual

1.16. FINAL SITE SURVEY

- .1 Submit final site survey certificate in accordance with Section 01 70 00, certifying that elevations and locations of completed Work are in conformance Contract Documents.

1.17. WARRANTIES AND BONDS

- .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 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. The date of Substantial Performance of the Work shall be the date for commencement of the warranty period.
- .4 Verify that documents are in proper form, contain full information, and are notarized.
- .5 Co-execute submittals when required.
- .6 Retain warranties and bonds until time specified for submittals.

END OF SECTION

SECTION 01 78 40 – MAINTENANCE REQUIREMENTS

1.0 GENERAL

1.1. SECTION INCLUDES

- .1 Equipment and systems.
- .2 Materials and finishes.
- .3 Spare parts
- .4 Maintenance manuals.
- .5 Special tools.
- .6 Storage, handling and protection.
- .7 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.2. RELATED SECTIONS

- .1 Section 01 45 00 - Quality Control.
- .2 Section 01 78 40 – Maintenance Requirements.
- .3 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3. 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
- .2 Panel board circuit directories: provide electrical service characteristics, controls, and communications.
- .3 Include installed colour coded wiring diagrams.
- .4 Operating Procedures: include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, 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 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 in Section 01 45 00.
- .15 Additional requirements: As specified in individual specification sections.

2.0 PRODUCTS

2.1. MATERIALS AND FINISH

- .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 Building Envelope: include copies of drawings of building envelope components, illustrating the interface with similar or dissimilar items to provide an effective air, vapour and thermal barrier between indoor and outdoor environments. Include an outline of requirements for regular inspections and for regular maintenance to ensure that on-going performance of the building envelope will meet the initial building envelope criteria.
- .5 Additional Requirements: as specified in individual specifications sections.

2.2. SPARE PARTS

- .1 Provide spare parts, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Receive and catalogue all items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

- .4 Obtain receipt for delivered products and submit prior to final payment.

2.3. MAINTENANCE MATERIALS

- .1 Provide maintenance and extra materials, in quantities specified in individual specification sections.
- .2 Provide items of same manufacture and quality as items in Work.
- .3 Receive and catalogue all items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.
- .4 Obtain receipt for delivered products and submit prior to final payment.

2.4. SPECIAL TOOLS

- .1 Provide special tools, in quantities specified in individual specification section.
- .2 Provide items with tags identifying their associated function and equipment.
- .3 Receive and catalogue all items. Submit inventory listing to Consultant. Include approved listings in Maintenance Manual.

3.0 EXECUTION

3.1. DELIVERY TO SITE

- .1 Deliver to place of work and store.
- .2 General Contractor to receive and acknowledge delivery from contractors and sub-contractors of all parts and materials assembled for maintenance requirements. Provide a summary inventory list to the Consultant and/or the Board after all materials are gathered and verification of location. Signatures of receipt will not be accepted from anyone except the General Contractor's representative.

3.2. STORAGE, HANDLING AND PROTECTION

- .1 Consult with the Board to determine location for storage.
- .2 Store spare parts, maintenance materials, and special tools in manner to prevent damage or deterioration.
- .3 Store in original and undamaged condition with manufacturer's seal and labels intact.
- .4 Store components subject to damage from weather in weatherproof enclosures.
- .5 Store paints and freezable materials in a heated and ventilated room.
- .6 Remove and replace damaged products at own expense and to satisfaction of Consultant.

END OF SECTION

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SECTION 01 79 00 – DEMONSTRATION AND TRAINING

1.0 GENERAL

1.1. SECTION INCLUDES

- .1 Procedures for demonstration and instruction of Products, equipment and systems to Owner's personnel.
- .2 Seminars and demonstrations.

1.2. RELATED SECTIONS

- .1 This section describes requirements applicable to all Sections within Divisions 02 to 49.

1.3. DESCRIPTION

- .1 At Substantial Performance, at a time acceptable to Owner and Consultant, but not before operations and maintenance manual have been reviewed and accepted by the consultant; contractor shall give a complete demonstration in the presence of consultant; Sub-consultants, Owner and Owner's personnel of operation and maintenance of systems and equipment once they are 100% complete.
- .2 Owner will provide list of personnel to receive instructions and will coordinate their attendance at agreed-upon times.

1.4. COMPONENT DEMONSTRATION

- .1 Manufacturer to provide authorized representative to demonstrate operation of equipment and systems.
- .2 Instruct Owner's personnel, and provide written report that demonstration and instructions have been completed.

1.5. SUBMITTALS

- .1 Submit schedule of time and date for demonstration of each item of equipment and each system one (1) week prior to designated dates, for Consultant's approval.
- .2 Submit reports within forty eight (48) after completion of demonstration, that demonstration and instructions have been satisfactorily completed.
- .3 Give time and date of each demonstration, with list of persons present.

1.6. CONDITIONS FOR DEMONSTRATIONS

- .1 Equipment has been inspected and put into operation in accordance with manufacturer's instructions and contract requirements.
- .2 Testing, adjusting, and balancing have been performed in accordance with manufacturer's instructions and contract requirements, and equipment and systems are fully operational.
- .3 Provide information packages as required for use in demonstrations and instructions.

2.0 PRODUCTS

2.1. NOT USED

- .1 Not used.

3.0 EXECUTION

3.1. PREPARATION

- .1 Verify that suitable conditions for demonstration and instructions are available.
- .2 Verify that designated personnel are present.
- .3 Prepare agendas and outlines.
- .4 Establish seminar organization.
- .5 Explain component design and operational philosophy and strategy.
- .6 Develop equipment presentations.
- .7 Present system demonstrations.
- .8 Accept and respond to seminar and demonstration questions with appropriate answers.

3.2. PREPARATION OF AGENDAS AND OUTLINES

- .1 Prepare agendas and outlines including the following:
 - .1 Equipment and systems to be included in seminar presentations.
 - .2 Name of companies and representatives presenting at seminars.
 - .3 Outline of each seminar's content.
 - .4 Time and date allocated to each system and item of equipment.
 - .5 Provide separate agenda for each system.

3.3. SEMINAR ORGANIZATION

- .1 Coordinate content and presentations for seminars.
- .2 Coordinate individual presentations and ensure representatives scheduled to present at seminars are in attendance.

- .3 Arrange for presentation leaders familiar with the design, operation, maintenance and troubleshooting of the equipment and systems. Where a single person is not familiar with all aspects of the equipment or system, arrange for specialists familiar with each aspect.
- .4 Coordinate proposed dates for seminars with Owner and select mutually agreeable dates.

3.4. EXPLANATION OF DESIGN STRATEGY

- .1 Explain design philosophy of each system. Include following information:
 - .1 An overview of how system is intended to operate.
 - .2 Description of design parameters, constraints and operational requirements.
 - .3 Description of system operation strategies.
 - .4 Information to help in identifying and troubleshooting system problems.

3.5. DEMONSTRATION AND INSTRUCTIONS

- .1 Demonstrate start-up, operation, control, adjustment, trouble-shooting, servicing, and maintenance of each item of equipment.
- .2 Instruct personnel in all phases of operation and maintenance using operation and maintenance manuals as the basis of instruction.
- .3 Instruct personnel on control and maintenance of sensory equipment and operational equipment associated with maintaining energy efficiency and longevity of service.
- .4 Review contents of manual in detail to explain all aspects of operation and maintenance.
- .5 Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instructions.

END OF SECTION

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1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Requirements for selective demolition of portion, or portions, of existing buildings in preparation for renovation or re-modeling. Demolition work shall include the draining and capping of existing building services, protection of remaining structure and other building elements, and removal of debris;
 - .1 Demolition of existing doors, screens, floors and walls as noted on the drawings.

1.3 REFERENCES

- .1 CSA S350; Code of Practice for Safety in Demolition of Structures.

1.4 SUBMITTALS

- .1 Demolition Drawings
 - .1 Submit drawings, diagrams, and/or details for approval, clearly indicating sequence of demolition work, support of existing structures, shoring, and underpinning.
 - .2 Where required by authorities having jurisdiction, such drawings shall bear the stamp of qualified professional engineer registered or licensed in the Place of the Work.
 - .3 Drawing, indicating location of hoardings, as required.
- .2 Proposed schedule providing the following for each separate Work Area:
 - .1 Duration of work in each Work Area.
 - .2 Proposed shut-down of utilities or services.
- .3 Any proposed deviation from specifications, procedures, or drawings.
- .4 Documentation including test results, fire and flammability data, and Material Safety Data Sheets for chemicals or material used in the course of the Project.
- .5 Pre-demolition survey and photographic record of damage to properties, sidewalks and streets.

- .6 Name and address of recycling facilities for waste brick, masonry rubble, concrete, gypsum waste, waste wood and metals.
- .7 Submit completed Waste Manifest forms on a weekly basis and upon completion of the work.

1.5 QUALITY ASSURANCE

- .1 Requirements of Regulatory Agencies; Conform to the requirements of:
 - .1 all pertinent codes, by-laws and regulations.
 - .2 NFPA 51B Fire Prevention in use of cutting and welding processes.
 - .3 Ministry of Transportation Regulations for the transport of waste, including the Federal Transportation of Dangerous Goods Act.
 - .4 CSA S350 - Code of practice of Safety in Demolition in Structures.
 - .5 BC Ministry of Environment 3R Regulations for the reducing, reusing and recycling of generated waste material.
- .2 Carry out demolition in strict accordance with federal, provincial and municipal regulations as applicable.

1.6 SITE CONDITIONS

- .1 Protection
 - .1 Protect the Public and all users of streets. Coordinate traffic control requirements with, and obtain any required permit from local traffic authorities.
 - .2 Protect immediate and adjacent property against damage which might occur from falling debris or other cause; do not interfere with use of or safe passage to and from buildings.
 - .3 Take precautions to guard against damaging vibration, movement or settlement of adjacent portions of structure or buildings; design, provide and place bracing or shoring as required; be responsible for safety and support of such elements; be liable for any such movement or settlement, any damage or injury caused thereby or resulting therefrom. If at any time safety of any adjacent building appears to be endangered, cease operations, notify Consultant, take precautions to support structure; do not resume operations until permission has been granted. If such movement or settlement of adjacent portion of building is caused by negligence or default of Contractor, restore the structural integrity of the structure to the Consultant's design at no extra cost to Owner. When Consultant considers additional bracing or shoring necessary to safeguard or prevent such movement or settlement, install bracing and shoring upon order.
 - .4 Take precautions to guard against movement, settlement or collapse of any adjacent services, sidewalks, driveways; be liable for such movement, settlement or collapse caused by Contractor's negligence or default; repair promptly such damage when so ordered.
 - .5 Provide and maintain all legal and necessary guards, railings, lights, warning signs, morality lights, and watchmen during execution of Work to fully protect all persons and Owner from loss, damage, death or injury through neglect, carelessness or incompetence of Contractor or his employees or condition or handling of materials.
 - .6 Selling, burying or burning of debris on site is not permitted.

- .7 Blasting of existing structures is not permitted.
- .8 Provide adequate tree protection around existing trees as noted on the drawings.
- .9 Prevent debris from blocking the drainage systems.
- .10 Do not commence demolition operations until complete site Hoarding/Fencing is in place. Refer to Section 01 50 00.

1.7 HAZARDOUS MATERIALS ABATEMENT

- .1 Should any designated substances be encountered in the course of demolition work, that are not already identified in the Asbestos Audit Update, stop work and notify the Consultant immediately. Do not proceed until written instructions have been received from the Consultant.
- .2 The Contractor will remove all designated substances encountered. Work will be paid for under a cash allowance.
- .3 Record with photographs and sketches, the location and extent of all materials encountered before proceeding with removals.
- .4 Refer to attached Asbestos Update Report for material information.

2 PRODUCTS

NOT APPLICABLE.

3 EXECUTION

3.1 PROTECTION

- .1 Prevent movement, settlement or damage of adjacent structures, services, and other parts of existing building to remain. Provide all bracing, shoring, and/or underpinning required. Make good damage caused by demolition.
- .2 Take precautions to support affected structures and if safety of building being demolished, or adjacent structures or services appears to be endangered, cease operations and notify Consultant.
- .3 Prevent dust and debris from blocking surface drainage systems, or affecting elevators, mechanical, and/or electrical systems which must remain in operation.
- .4 Adhere strictly to requirements of Sections 01 50 00 and 01 57 19 during demolition and removal process. Provide all temporary safety controls, as required by Federal and Provincial regulations, and Section 01 50 00.
- .5 Ensure that secure site hoarding and/or fencing is in place and complete, prior to commencement of demolition operations. Maintain hoarding during demolition operations. Replace or repair sections of hoarding damaged or removed, as a result of demolition operations.

- .6 The Project includes the protection and restoration of the existing historic North and East facades of the building. Provide all necessary bracing, support and protection for these facades during demolition and construction operations.
- 3.2 PREPARATION
- .1 Locate and mark all buried, enclosed or hidden services within the structure, and on the site.
 - .2 Disconnect and re-route electrical and telephone service lines entering or traversing areas to be demolished, in accordance with authorities having jurisdiction. Post warning signs on electrical lines and equipment which must remain energized during period of demolition.
 - .3 Disconnect and cap, designated mechanical services in accordance with authorities having jurisdiction;
 - .1 Natural gas supply lines to be removed by local gas authority where required, or by qualified tradesman in accordance with gas authority instructions.
 - .2 Disconnect, and cap remove sewer and water lines to point indicated on drawings.
 - .4 Do not disrupt active or energized utilities traversing premises, designated to remain undisturbed.
- 3.3 SAFETY CODE
- .1 Unless otherwise specified, carry out demolition work in accordance with CSA S350.
- 3.4 DEMOLITION
- .1 Demolish parts of building to permit construction of addition and/or remedial work as indicated on the drawings.
 - .2 All concrete and masonry broken from demolition work to be removed from open basements or excavations.
 - .3 Remove existing equipment, services, and obstacles where required for refinishing or making good of existing surfaces, and replace same as work progresses.
 - .4 At end of each day's work, leave work in safe condition so that no part is in danger of toppling or falling. Protect interiors of parts not to be demolished from exterior elements at all times.
 - .5 Demolish to minimize dusting. Keep dusty materials wetted as directed by Consultant.
 - .6 Demolish masonry and concrete walls in small sections to prevent damage to existing structure or surfaces to remain.
 - .7 Remove contaminated or dangerous materials, as defined by authorities having jurisdiction, from site, and dispose of in strict accordance with by-laws, regulations and/or guidelines applicable to such material.
 - .8 Salvaged Materials
 - .1 Carefully remove materials and equipment intended for salvage. Store, protect and leave ready for installation by other trades.

- .2 Refer to the Demolition Notes on the Drawings for items to be salvaged for re-use.
- .3 Salvage existing split-rib architectural block for use in patch and repair work. Clean block of all mortar and stack on pallets for later use.

3.5 SITE CLEANING

- .1 Promptly remove and dispose of demolished materials except where noted otherwise, in accordance with authorities having jurisdiction.
- .2 Do not sell, bury or burn materials on site.
- .3 Leave interior areas in a "swept clean" condition after demolition in preparation for remedial work.
- .4 Where affected by demolition, leave exterior soft areas in a "raked clean" condition, and clear of all debris. Leave paved areas in a "swept clean" condition, and clear of all dirt, debris, and other contamination.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of labour, materials and equipment to provide general concrete work including formwork, reinforcing and cast-in-place concrete.

1.3 REFERENCES

- .1 ASTM A307-00; Specification for Carbon Steel Bolts and Studs, 60 000 psi Tensile Strength
- .2 ASTM A563-00; Specification for Carbon and Alloy Steel Nuts [Metric]
- .3 ASTM A653/A653M-01a; Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc Iron-Alloy Coated (Galvanealed) by the Hot Dip Process.
- .4 ASTM C156-98; Test Method for Water Retention by Concrete Curing Methods
- .5 ASTM C260-00; Standard Specification For Air-Entraining Admixtures for Concrete
- .6 ASTM C309-98a; Specification For Liquid Membrane - Forming Compounds for Curing Concrete
- .7 ASTM C494/C494M-99a; Standard Specification For Chemical Admixtures for Concrete
- .8 ASTM D698-00; Test Methods for Laboratory Compaction Characteristics of Soils Using Standard Effort (12,400ft-lb/ft³- (600Kn m/m³).
- .9 CAN/ULC S701-1997; Thermal Insulation, Polystyrene, Boards and Pipe Covering
- .10 CAN/CGSB-51.34-M86; Vapour Barrier, Polyethylene Sheet for Use in Building Construction
- .11 CAN/CSA-A23.1/A23.2-00; Concrete Materials and Methods of Concrete Construction/Methods.
- .12 CAN3-A23.3-M94; Design of Concrete Structures.
- .13 CAN3-A362-M98; Blended Hydraulic Cements
- .14 CAN/CSA-A363-M98; Cementitious Hydraulic Slag
- .15 CAN/CSA A 3000-98; Cementitious Materials Compendium (Consists of A5-98, A8-98, A23.5-98, A362-98, A363-98, A456.1-98, A456.2-98, A456.3-98)
- .16 CSA G30.3- (1998); Cold Drawn Steel Wire for Concrete Reinforcement
- .17 CSA G30.5-M83 (R1998); Welded Steel Wire Fabric for Concrete Reinforcement
- .18 CSA G30.14-1983 (R1998); Deformed Steel Wire for Concrete Reinforcement.
- .19 CSA G30.15-M83 (R1998); Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
- .20 CAN/CSA-G30.18-M92 (1998); Billet-Steel Bars for Concrete Reinforcement
- .21 CAN/CSA-G40.20/G40.21-98; Structural Quality Steels, General Requirements For Rolled or Welded Structural quality Steel/Structural Quality Steel.

- .22 CAN/CSA G164-M92 (R1998); Hot Dip Galvanizing of Irregularly Shaped Articles
- .23 CSA O121-M78; Douglas Fir Plywood
- .24 CAN/CSA-S269.3-M92; Formwork
- .25 CAN/CSA-S448.1-M93; Repair of Reinforced Concrete in Buildings
- .26 CSA W186-M90; Welding of Reinforcing Bars in Reinforced Concrete Construction

1.4 DELIVERY, STORAGE AND HANDLING

- .1 Deliver and store materials on Site in manner to prevent damage thereto. Protect from weather. Comply with CAN/CSA A23.1/A23.2.
- .2 Protect work of this Section from damage. Protect other work from damage resulting from this work. Replace damaged work which cannot be satisfactorily repaired.

1.5 PRE-CONSTRUCTION MEETING

- .1 Prior to start of work, arrange for meeting of all parties associated with work of this Section. Presided by Consultant, include Contractor, Sub-Contractor, Testing Company's Representative and Structural Design Engineer.
- .2 Review Specification for work included under this Section and determine complete understanding of requirements and responsibilities relative to work included, storage and handling of materials, materials to be used, installation of materials, sequence and quality control, Project staffing, restrictions on areas of concrete placement and other matters affecting construction, to permit compliance with intent of this Section.

2 PRODUCTS

2.1 MATERIALS

- .1 Ensure concrete materials conform to standards specified herein except where specified otherwise.
- .2 Porous Fill (under slabs on grade): Approved clean, pit run gravel or crushed stone containing not more than 60% material that will pass 6 mm screen and no stones larger than 38 mm.
- .3 Sand: Clean, washed, coarse sand free from clay, shale and organic matter.
- .4 Forms: New G1S Douglas Fir plywood to CSA O121-M, or prefabricated steel forms free of dents and deformations for exposed concrete. Used formwork may be used for surfaces which will be concealed.
- .5 Water Based Formwork Release Agent: premixed, rust inhibitive; non-staining and non-reacting organic chemical emulsifier, compatible with all types of forms;
 - .1 Acceptable Products
 - .1 Euclid Admixture Canada Inc. Eucoslip Vox
 - .2 W.R. Meadows of Canada Ltd. Sealtight Duoguard II
- .6 Welded Steel Wire Fabric: CSA G30.5-M, flat sheets (rolls not acceptable).
- .7 Portland Cement: CAN/CSA-A5-M, Normal Type 10 Portland Cement.
- .8 Cementitious Hydraulic Slag: CAN/CSA-A363-M.
- .9 Blended Hydraulic Cement: CAN3-A362-M.
- .10 Coarse Aggregate: CAN/CSA A23.1/A23.2, Group I, 40-5 mm for slabs on grade, 20-5

mm for other slabs, and 9 mm maximum aggregate size for concrete fill on concrete filled steel stair treads and landings and steel deck.

- .11 Fine Aggregate: CAN/CSA A23.1/A23.2.
- .12 Water: CAN/CSA A23.1/A23.2.
- .13 Epoxy Bonding Agent: to ASTM C881, two component.
 - .1 Acceptable Products
 - .1 Sika Canada Inc. Sika-Dur 32 Hi-Mod
 - .2 Master Builders Technologies Limited Concrevice Standard Liquid
 - .3 Euclid Admixture Canada Inc. Euco 452LV
 - .4 W.R. Meadows of Canada Ltd. Rezi-Weld 1000
 - .5 CPD Services Cipadite 35
- .14 Liquid Curing/Sealing Compound: ASTM C309 Type 1, Class B and CAN/CSA A23.1/A23.2, water based acrylic curing/sealing compound.
 - .1 Acceptable Products
 - .2 Sika Canada Inc. Florseal W.B.
 - .3 Euclid Admixture Canada Inc. Aqua-Cure VOX
 - .4 W.R. Meadows of Canada Ltd. Sealtight Vocomp-20
 - .5 CPD Services CPD Acrylic Cure and Seal
- .15 Wet Curing: Water to CAN/CSA A23.1/A23.2, clear and entirely free from any elements which might cause staining of concrete, and minimum 0.1 mm (4 mils) thick polyethylene film as specified herein.
- .16 Premoulded Joint Fillers: Flexible foam type, adhesive for securing joint filler to abutting adjacent structures.
 - .1 Acceptable Products
 - .1 Sika Canada Inc. Sika Eva Joint
 - .2 W.R. Meadows of Canada Ltd. Sealtight Ceramar
 - .3 CPD Services CPD Closed Cell Foam Joint Filler
- .17 Sealant (for Reglets and Isolation Joints): 2 component, chemically reactive polyurethane modified sealant; self-levelling or non-sag type, grey colour.
 - .1 Acceptable Products
 - .1 Sika Canada Inc. Sikaflex 2C SL
 - .2 Master Builders Technologies Limited Concrevice Standard Liquid
 - .3 Euclid Admixture Canada Inc. Eucolastic II Pourable
 - .4 W.R. Meadows of Canada Ltd. Sealtight Pourthane
 - .5 Tremco Ltd. Vulkem 245/227

3 EXECUTION

3.1 FORMWORK ERECTION

- .1 Verify lines, levels, and dimensions before proceeding with formwork and ensure dimensions agree with Drawings.
- .2 Erect formwork in accordance with can/CSA A23.1/A23.2, except where indicated otherwise. Do not leave lumber in concrete. Clean formwork in accordance with can/CSA A23.1/A23.2 prior to placing concrete. Advise and request Consultant to review completed formwork before placing concrete.
- .3 Assume full responsibility for complete design and engineering of formwork including shoring and bracing to resist loads due to wet concrete, forms, wind and other forces

arising from use of equipment to place concrete.

- .4 Construct forms to produce finished concrete conforming to shape, texture, dimensions, locations and levels indicated within tolerances in accordance with CAN/CSA-S269.3M.
- .5 Apply release agent by spray in accordance with manufacturer's recommendations. Ensure surfaces of form receive uniform coating.
- .6 Align form joints and make watertight. Keep form joints to minimum.
- .7 Form for chases, slots, openings, drips, recesses, depressions, expansion and control joints as indicated.
- .8 Take particular care in forming corners and openings. Ensure formwork is tight and braced so no movement occurs.

3.2 REINFORCING

- .1 Refer to Drawings for steel reinforcement.
- .2 Place reinforcement in accordance with reviewed shop drawings. Support with chairs or spacers in as close spacing as possible to prevent displacement of reinforcement from intended bar position, before and during pouring of concrete. Pieces of block and wood are not acceptable as chairs and spacers.
- .3 Lap wire mesh sections minimum 150 mm and wire together securely; discontinue wire mesh at joints.

3.3 UNDERFLOOR FILL

- .1 Grade and compact fill after installation and review of underground services. Prior to filling, proof roll existing earth subgrade in order to identify inconsistencies or soft areas. Proceed with filling operations only after inconsistencies or soft areas have been reworked and compacted or excavated, backfilled and compacted as required to eliminate such conditions.
- .2 Level fill to required elevations within tolerance of 13 mm under 3 m straight edge.
- .3 Compact porous fill with vibratory compactors to 98% minimum, unless indicated on Structural Drawings to ASTM D698 Standard Proctor Maximum Dry Density (SPMDD).

3.4 PLACING OF CONCRETE

- .1 Confirm surfaces on which concrete is to be placed are free of frost, water and debris before placing concrete.
- .2 Place concrete in accordance with can/CSA A23.1/A23.2.
- .3 Ensure reinforcement, inserts and other built-in work are in place and secured before pouring concrete.
- .4 Before placing fresh concrete against set or partially set concrete, clean surfaces to remove dirt, scum, shavings, debris and laitance. On set surfaces, brush on with bonding mixture to manufacturer recommended rate.
- .5 Check work frequently with accurate instruments during placing of concrete.

3.5 INSTALLATION

- .1 Comply to protection requirements of standards specified herein for hot and cold weather

concreting. Do not place concrete during or prior to rain. If rain occurs after placing and before initial set of concrete, cover with waterproof material until set.

.2 When ready-mixed (mixed in transit) concrete is used, discharge of concrete shall be complete within period of 1 hr after mixing water has been added to dry material. Concrete delivered at air temperature below 5 deg C (40 deg F) shall have temperature at work of not less than 16 deg C (60 deg F) or more than 27 deg C (90 deg F).

.3 Floor and Slabs on Grade: Lay as follows:

.1 To minimum thickness of 100 mm unless indicated otherwise on Drawings. Place over granular fill and reinforce as indicated on Drawings.

.2 With construction joints between concrete placings keyed, with reinforcing carried through, and top of joint slightly rounded with small edging tool.

3.6 STRIPPING FORMWORK

.1 Strip formwork in accordance with CAN/CSA A23.1/A23.2 Forms may be removed any time after 3 days from date of placing concrete or otherwise as directed by Consultant. (Remove plastic spreader cones from architectural form ties in preparation for installation of tie hole plugs or grouting application.)

3.7 FINISHING

.1 Formed Concrete Surfaces:

.1 After removal of fins, fill honeycombing or defects in exposed concrete surfaces to standards specified herein. Refer honeycombed areas for inspection and designation as structural or non-structural and repair as directed.

.2 Bring surfaces of exposed interior and exterior concrete to smooth rubbed finish not later than 5-6 hrs after removal of forms unless otherwise specified.

.3 Production of smooth surfaces by means of cement plaster not permitted unless otherwise specified or scheduled.

.2 Concrete Floors: Finish as follows:

.1 Leave slabs level or uniformly sloped to drain where indicated, ready for finishing. Meet requirements of floor tolerance classification specified herein for floor finish tolerance. Determine in accordance with straight edge method.

.2 Classification

.1 Conventional: 12mm

.2 Moderately flat: 8 mm

.3 Flat: 5mm

.4 Very flat: 3mm

.3 Machine float and hand finish to steel trowel finish to produce smooth, dense, satisfactory surface free from ridges, voids or machine marks, whether scheduled to be left exposed or covered.

.4 Use only competent mechanics to produce workmanship of highest quality.

.5 Curing and Sealing: Treat concrete surfaces with specified compound where floor is to be left exposed with no other finish. Apply in accordance with manufacturer's instructions. Do not apply membrane forming curing compound to floor surfaces subsequently to receive additional applied floor finish.

3.8 PATCHING

- .1 Make good temporary openings left in concrete work for pipes, conduit, ducts, shoring and other such work during construction using mix of same proportions as surrounding work, reinforced with wire mesh as required, and finish to match surrounding work. Carry out patching as specified in standards specified herein.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Masonry Procedures.
- .2 Mortar and Grout for Masonry.
- .3 Masonry Reinforcing & Connectors.
- .4 Masonry Accessories.
- .5 Plain Concrete Unit Masonry.

1.3 REFERENCES

- .1 CSA-A165 Series; CSA Standards on Concrete Masonry Units.
- .2 CSA-A179; Mortar and Grout for Unit Masonry.
- .3 CSA-A370; Connectors for Masonry.
- .4 CSA-A371; Masonry Construction for Buildings.
- .5 CSA-S304.1; Masonry Design for Buildings (Limit States Design).

1.4 SUBMITTALS

- .1 Source Quality Control
 - .1 Manufacturers of concrete masonry units must submit independent laboratory test reports performed within a 24 month period immediately prior to date of delivery of material, certifying compliance of masonry units and mortar components with specification requirements, in accordance with Section 01 30 00.
 - .2 All concrete masonry units supplied for this project must be from one supplier only.

1.5 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.

- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
 - .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.
 - .4 Pre-application Meeting
 - .1 Convene a pre-application meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
 - .1 Contractor (Site Superintendent & Project Manager)
 - .2 Application Subcontractor (Site Foreman & Project Manager)
 - .3 Product Manufacturer and/or Distributor (Technical Representatives)
 - .4 Related Subcontractors whose work is affected by that of this Section.
- 1.6 DELIVERY, STORAGE & HANDLING
- .1 Deliver materials to job site in dry condition. Keep materials dry until use except where wetting is specified.
 - .2 Deliver all masonry units cubed and banded on hardwood pallets, with polyethylene "shrink-wrap", or other non-staining covering. Prevent damage to units.
 - .3 Deliver mortar materials in original unbroken and undamaged packages with manufacturer's name and brand distinctly marked thereon, and upon delivery store in dry shed until used on work.
 - .4 Store or pile sand on a plank platform and protect from dirt and rubbish. Store mortar materials and sand in such a manner as to prevent deterioration or contamination by foreign materials.
 - .5 Lift skids with proper and sufficiently long slings or forks with protection to prevent damage to units. Protect edges and corners.
 - .6 Store masonry in a manner designed to prevent damage and staining of units.
 - .7 Place polyethylene or other plastic film between wood and other finished surfaces of units when stored for extended periods of time.
 - .8 Cover stored units with protective enclosure if exposed to weather.
 - .9 Do not use salt or calcium-chloride to remove ice from masonry surfaces.
- 1.7 PROJECT CONDITIONS
- .1 Cold Weather Requirements
 - .1 Supplement Clause 5.16.2.1 of CSA-A371 with the following:
 - .1 Maintain mortar temperature between 5°C and 50°C for a minimum of 3 days after setting.
 - .2 Hot Weather Requirements
 - .1 Supplement Clause 5.16.4 of CSA-A371 with the following:

- .1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.

2 PRODUCTS

2.1 MATERIALS

- .1 Use same suppliers of masonry units, accessory materials and source of aggregate for entire project.
- .2 Portland cement: Type 10 to CSA-A5.
- .3 Blended Cement: to CSA-A362.
- .4 Aggregates: to CSA-A23.1.
- .5 Hydrated Lime: to ASTM C207.
- .6 Supplementary Cementing Materials: to CSA-A23.5.

2.2 CONCRETE MASONRY UNITS (CMU)

- .1 The physical properties of the concrete masonry units at the time of delivery by the manufacturer to the site, shall conform to the requirements of Table 1 of CSA-A165.1, as classified herein. Test reports submitted to the Construction Manager by the manufacturer prior to delivery shall verify conformance, in order for material to be acceptable.
- .2 Provide special shapes such as return corners, ashlar blocks, lintels, universal knock-outs, A-blocks, sash blocks, piers, bull-nosed blocks, etc., to perform masonry work with minimal cutting or breaking of masonry units.
- .3 Lightweight Concrete Masonry Units: to CSA-A165.1.
 - .1 Classification: H/15/D/M.
 - .2 Size: OCBA metric modular. Thicknesses as indicated on the drawings.
 - .3 Colour: natural.
- .4 Solid Concrete Masonry Units: to CSA-A165.1.
 - .1 Classification: S/15/A/M.
 - .2 Size: OCBA metric modular. Thicknesses as indicated on the drawings.

2.3 HORIZONTAL REINFORCEMENT

- .1 Horizontal reinforcement shall be sized to suit width of masonry in accordance with CSA-A371. Undersized or oversized reinforcing is not acceptable.
- .2 Provide pre-manufactured "L" and "T" corner units. Crimped metal strap ties are not acceptable for connecting intersecting walls.
- .3 Corrosion protection: to CSA-A370, hot-dip galvanized for metal ties and horizontal reinforcing in exterior walls.
- .4 Single Wythe Masonry: Standard 3.66mm wire with hot-dip galvanized finish after fabrication to CSA-A371;
 - .1 Ladder Type:
 - .1 Blok-Lok® BL-10, by Blok-Lok Ltd.

- .2 220 Ladder Mesh, by Hohmann & Barnard Inc.
- .2 Truss type:
 - .1 Blok-Trus® BL-30, by Blok-Lok Ltd.
 - .2 120 Truss Mesh, by Hohmann & Barnard Inc.
- .5 Double Wythe Masonry (no cavity): Standard 3.66mm wire, hot-dip galvanized finish after fabrication to CSA-A371;
 - .1 Block-Trus® BL32, by Blok Lok Ltd.
 - .2 140 Truss Twin Mesh, by Hohmann & Barnard Inc.

2.4 MORTAR AND GROUT

- .1 Use aggregate passing 1.18mm sieve where 6 mm thick joints are indicated, to CSA-A179.
- .2 Mortar for foundation walls, manholes, sewers, pavements, walks, patios and other exterior masonry at or below grade and under joist and beam bearings and other locations noted on the structural drawings: Type "M" based on specifications of CSA-A179.
- .3 Mortar for interior concrete masonry and all load-bearing masonry above grade, including inner wythe of exterior cavity walls: Type "S" based on specifications of CSA-A179.
- .4 Mortar Colour
 - .1 Concrete Block: Natural.
- .5 All mortar products for masonry work shall be batch plant mixed on site for quality control. No hand mixing will be permitted. Use Maxi-Mix or other similar batch plant silo system.
- .6 Grout: for masonry shall be pre-mixed, high strength, non-shrink cementitious grout, to CSA-A179, with minimum compressive strength of 30MPa.

2.5 ACCESSORIES

- .1 Control Joint Block Fillers: "Titewall" by Bloc-Lok Ltd., or "RS Series" by Hohmann & Barnard Inc.

3 EXECUTION

3.1 QUALITY OF WORK

- .1 Perform masonry work in accordance with CSA-A371, except where specified otherwise.
- .2 Build masonry plumb, level, and true to line, with vertical joints in alignment.
- .3 Perform masonry mortar and grout work in accordance with CSA-A179 except where specified otherwise.
- .4 Provide temporary bracing of all masonry walls until permanent bracing is installed.
- .5 Lay out coursing and bond to achieve correct coursing heights and continuity of bond above and below openings, with minimum of cutting.
- .6 Machine cut all exposed masonry units where adjusted in size.
- .7 Tolerances in notes to Article 5.3 of CSA-A371 apply.

- .8 Remove chipped, cracked, or otherwise damaged units and replace with new.
- .9 Coordinate work of this section with work of mechanical and electrical trades for conduit, piping, and other items built-in to masonry work. Masonry Subcontractor must cooperate with mechanical and electrical trades, for placement of such items within masonry walls.

3.2 LAYING CONCRETE MASONRY UNITS

- .1 Bond: Standard Running Bond.
- .2 Coursing Heights: 200mm for one 190mm high block + one joint.
- .3 Construct all masonry walls full height to underside of structure or deck above, unless otherwise shown. Leave 25mm void between top of wall and structure above. Fill void with 25x152mm mineral wool insulation. Where walls are fire separations, firestop to Section 07 84 00.
- .4 Set bearing plates for joists, beams, etc., at locations and elevations indicated, and grout into place.
- .5 Jointing
 - .1 Concave: interior and exterior block (all joints).
 - .2 Flush: all concealed joints, and all joints within wall cavities.
- .6 Special Shapes
 - .1 Provide Universal Knock-out blocks for chases for piping and conduit.
 - .2 Provide A-Blocks for all vertical reinforcing locations.
 - .3 Provide Lintel blocks over all openings where steel lintels are not specified.
 - .4 Bullnosed block: at all openings (provide square edge block above openings where abutting other materials).
- .7 Provide lightweight block for all applications.
- .8 Provide solid masonry units where required for mechanically fastening of blocking, furring or mechanically applied finishes.
- .9 Do not form chases in load-bearing walls less than 240mm thick. Do not form chases closer than 2m apart in any wall, unless otherwise shown.
- .10 Do not construct horizontal chases for piping or conduit unless other reasonable means of allowing for services are impossible. Where horizontal chases are required, construct chases using lintel blocks filled solid with concrete fill as specified.
- .11 Build in conduits as required without breaking bond.

3.3 CONCRETE MASONRY LINTELS

- .1 Install reinforced concrete masonry lintels over all openings in masonry wider than 400mm where steel or reinforced concrete lintels are not indicated.
- .2 Reinforced concrete masonry lintels may be formed on the ground and lifted into place.
- .3 End bearing shall be not less than 200mm.

- .4 Maintain sufficient support for lintels until initial compressive strength of concrete fill is reached (min. 7 days).

3.4 VERTICAL REINFORCING

- .1 Refer to Structural details and drawings.
- .2 Place vertical reinforcement in cells of concrete unit masonry as detailed on the drawings. Provide A-Blocks where required to facilitate ease of placement.
- .3 Place vertical reinforcement accurately and secure against displacement by using ties or clips. Tack welding of reinforcement to secure in place will not be permitted.
- .4 Secure vertical reinforcement in walls using sufficient spacers on each face to maintain the requisite distance between reinforcement and wall face and so that vertical bars are plumb. Provide spreader bars spaced at 2m centres in both directions.
- .5 Place concrete fill in masonry unit cells, in maximum 2 course lifts. Vibrate to remove all air pockets.

3.5 HORIZONTAL REINFORCING

- .1 At all single and double wythe concrete masonry walls, install reinforcing at vertical intervals of 400mm maximum and lapped 152mm at each splice.
- .2 Provide reinforcement in the first, second and top bed joints at 200mm vertical spacing, every second joint thereafter.
- .3 Provide additional reinforcement immediately above lintel and below sill courses, extending 600mm beyond each jamb.
- .4 Provide masonry veneer ties at exterior cavity walls with CMU back-up, at vertical intervals of 400 mm maximum, and horizontal intervals of 600mm maximum.
- .5 Install insulation retainers at every veneer tie point.

3.6 LATERAL SUPPORT AND ANCHORAGE

- .1 Provide lateral support and anchorage in accordance with CAN3-S304, and as indicated on the drawings.

3.7 CONTROL JOINTS

- .1 Provide vertical control joints to CSA-A371, and as shown on the drawings.
- .2 Width of control joints shall be 10mm.
- .3 Horizontal reinforcing shall be continuous across control joints.
- .4 Control joints shall be continuous across thickness of exterior wall. Where vertical joints in wythes of brick and block do not align, offset of maximum 200mm is allowable.
- .5 Where not otherwise shown or detailed, the following minimum requirements for vertical control joints in unit masonry shall apply:
 - .1 Above all openings in masonry, extending from end point of lintel to top of masonry.
 - .2 At all structural column or pilaster locations.

- .3 All locations where structural substrate changes.
- .4 At all uninterrupted panels of masonry. Maximum panel width 7m.
- .5 Within 1000mm each side of changes in direction of wall.

3.8 JOINTING

- .1 Allow joints to set sufficiently to remove excess water;
 - .1 Concave Joints: tool with round jointer to provide smooth, compressed, uniformly concave joints.
 - .2 Strike flush all joints concealed in walls and joints in walls to receive plaster, tile, insulation, or other applied material except paint or similar thin finish coating.
- .2 Remove all excess mortar from surface of masonry.

3.9 JOINING OF WORK

- .1 Where necessary to temporarily stop horizontal runs of masonry, and in building corners, step-back masonry diagonally to lowest course previously laid. Do not "tooth-in" new masonry. Fill in adjacent courses before heights of stepped masonry reach 1220mm.

3.10 SUPPORT OF LOADS

- .1 For all masonry under concentrated loads, where concrete fill is used in lieu of solid units, use minimum 15MPa concrete for width and depth equal to 3 times the length of bearing.
- .2 Use grout to CSA-A179 where grout is used in lieu of solid units.
- .3 Install building paper below voids to be filled with concrete. Keep paper 13mm back from faces of units.

3.11 FIELD QUALITY CONTROL

- .1 The work of this section is subject to inspection and testing as specified in Section 01 40 00. Allow for independent inspection by an Independent Testing Authority. Costs for inspection and testing will be paid from a cash allowance, as allocated in Section 01 21 00.
- .2 Prior to commencement of construction, the masonry Subcontractor shall prepare and mix on-site, under supervision of the Construction Manager and the Inspection and Testing Authority, mortar samples to determine compliance with the specifications
- .3 Tests of such samples shall determine a ratio-by-mass value or "control value" for mortar mixes.
- .4 Masonry Mortar shall be tested in accordance with CSA-A179; Mortar and Grout for Unit Masonry, supplemented as follows:
 - .1 Additional cubes shall be poured under on-site conditions for comparison with "ideal" samples.
- .5 Subsequent sample ratio tests taken during the course of construction shall not vary from the control value by more than 15%.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide all miscellaneous metal fabrications.

1.2 REFERENCE STANDARDS

- .1 ASTM-A53/A53M-01; Specification for Pipe, Steel Black and Hot-Dipped, Zinc Coated, Welded and Seamless.
- .2 ASTM-A269-01; Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
- .3 ASTM-A276-00a; Specification for Stainless Steel Bars and Shapes.
- .4 ASTM-A325-00; Specification for High Strength Bolts for Structural Steel Joints.
- .5 ASTM-A563-00; Specification for Carbon and Alloy Steel Nuts.
- .6 ASTM-C1107-99; Specification for Packaged Dry, Hydraulic-Cement Grout (Non-Shrink).
- .7 CSA-W47.1-92 (R2001); Certification of Companies for Fusion Welding of Steel Structures.
- .8 CSA-W55.3-1965 (R1998); Resistance Welding Qualification Code for Fabricators of Structural Members Used in Buildings.
- .9 CSA-W59-M1989 (R2001); Welded Steel Construction (Metal Arc Welding).
- .10 CSA-G40.20/G40.21-98; General Requirements for Rolled or Welded Structural Quality Steel / Structural Quality Steels.
- .11 CAN/CSA-G164-M92 (R1998); Hot Dip Galvanizing of Irregular Shaped Articles.
- .12 CAN/CGSB-1.40-97; Primer, Structural Steel, Oil Alkyd Type.
- .13 CAN/CGSB-1.181-99; Ready-Mixed Organic Zinc-Rich Coating.

1.3 QUALITY ASSURANCE

- .1 **Manufacture & Fabrication**
 - .1 Companies to be certified under Division 1 or 2.1 of CSA-W47.1 for fusion welding, and CSA-W55.3 for resistance welding. Provide certification that all welded joints are certified by Canadian Welding Bureau.
 - .2 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.

- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.
- .4 Pre-application Meeting
 - .1 Convene a pre-application meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
 - .1 Contractor (Site Superintendent & Project Manager)
 - .2 Application Subcontractor (Site Foreman & Project Manager)
 - .3 Product Manufacturer and/or Distributor (Technical Representatives)
 - .4 Related Subcontractors whose work is affected by that of this Section.
- 1.4 SUBMITTALS
 - .1 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 30 00.
 - .2 Each shop drawing submitted shall bear the stamp and signature of a qualified Professional Engineer registered in the Place of the Work who has coverage of minimum \$1,000,000 liability insurance.
 - .3 Submit all necessary shop drawings, bearing the professional seal and signature of the Subcontractor' Engineer, including design calculations for review by the Consultant. Shop drawings to include all necessary shop details and erection diagrams with;
 - .1 member sizes, locations, thickness (exclusive of coatings), metallic coatings and mechanical properties,
 - .2 connection details for attaching framing to itself and to the structure,
 - .3 dimensions, requirements of related work, and critical installation procedures,
 - .4 temporary bracing required for erection purposes,
 - .5 design loads, and
 - .6 welds indicated by welding symbols as defined in CSA-W59.
 - .4 Submit copies of engineering calculations and/or certified data verifying the capacity of members, connectors, connections, and the ability of assemblies to meet the design requirements, signed and sealed by the Subcontractor's Engineer.
 - .5 Do not fabricate until submittals are reviewed and approved by Consultant.
- 2 PRODUCTS**
- 2.1 MATERIALS
 - .1 Steel Sections And Plates: to CAN/CSA-G40.21, grade 300W.
 - .2 Steel Pipe: to ASTM-A53/A53M, standard weight, yield strength 240 MPa, black or galvanized finish.

- .3 Stainless Steel Sections And Plates: commercial grade, Type 304, to ASTM-A276, AISI No. 4 finish.
- .4 Stainless Steel Tubing: commercial grade, Type 302 welded, to ASTM-A269, AISI No. 4 finish.
- .5 Welding Materials: to CSA-W59.
- .6 Bolts And Nuts: to ASTM-A325 and ASTM-A563.
- .7 Galvanizing: hot dipped galvanizing with minimum zinc coating in accordance with Table 1 of CAN/CSA-G164.
- .8 Shop Primer: oil-alkyd type, to CAN/CGSB-1.40.
- .9 Galvanized Primer: zinc-rich, ready mix to CAN/CGSB-1.181.
- .10 Grout: to ASTM-1107, non-shrink, non-metallic, flowable, minimum compressive strength of 30Mpa after 24 hours, pull-out strength 7.9 Mpa;
 - .1 M-Bed® Superflow by Sika Canada Inc., or
 - .2 Sealtight® CG-86™ by W.R. Meadows of Canada.

2.2 FABRICATION

- .1 Fabricate work square, true, straight, and accurate to required size, with joints closely fitted and properly secured.
- .2 Use self-tapping shake-proof oval headed screws on items requiring assembly by screws. Use screws for interior metal work. Use welded connections for exterior metal work unless otherwise detailed or approved by Consultant.
- .3 Where possible, fit and shop assemble work, ready for erection.
- .4 Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush.

2.3 FINISHES

- .1 Prime Painted Steel
 - .1 Shop Painting: Apply one shop coat of alkyd steel primer to metal items, with exception of concrete encased items. Use primer unadulterated, as prepared by manufacturer. Paint on dry surfaces, free from rust, scale, grease. Do not paint when temperature is lower than 7°C.
 - .2 Clean surfaces to be field welded; do not paint.
 - .3 Refer to Sections 09 91 13, 09 91 16, and 09 97 13.23 for finish painting.
- .2 Galvanized Steel
 - .1 Clean surfaces to be field welded; do not paint.
 - .2 Refer to Sections 09 91 13 and 09 97 13.23 for finish painting.
- .3 Stainless Steel
 - .1 Clean surfaces with mineral spirits.

3 EXECUTION

3.1 ERECTION

- .1 Do welding work in accordance with CSA-W59 unless specified otherwise.
- .2 Erect metalwork square, plumb, straight, and true, accurately fitted, with tight joints and intersections.
- .3 Provide suitable means of anchorage acceptable to Consultant such as dowels, anchor clips, bar anchors, expansion bolts and shields, and toggles.
- .4 Exposed fastening devices to match finish and be compatible with material through which they pass.
- .5 Provide components for building-in by other sections in accordance with shop drawings and schedule.
- .6 Make field connections with high tensile bolts, or weld.
- .7 Touch-up rivets, field welds, bolts and burnt or scratched surfaces after completion of erection, with primer. Touch-up galvanized surfaces burned by field welding with zinc rich primer.

3.2 SCHEDULE

- .1 The following is a general list of the miscellaneous metal fabrication items required for the Work. The Contractor is responsible to review the drawings and determine all items required whether or not they are listed herein.
 - .1 Posts, supports, plates, and girts related to hollow metal screens
 - .2 Misc. steel angles, plates, and lintels not indicated on structural drawings

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide rough carpentry work, including but not limited to, the following:
 - .1 Miscellaneous furring and blocking,
 - .2 Wood nailers, and curbs for roofing,
 - .3 Electrical mounting boards, and
 - .4 Rough blocking in walls for support of wall-mounted items.

1.3 REFERENCES

- .1 CSA-B111-1974 (R1998); Wire Nails, Spikes and Staples.
- .2 CAN/CSA-G164-M92 (R1998); Hot Dip Galvanizing of Irregularly Shaped Articles.
- .3 CSA-O80 Series-97; CSA Standards for Wood Preservation.
- .4 CSA-O86-09; Engineering Design in Wood.
- .5 CSA-O112 Series-M1977 (R2001); CSA Standards for Wood Adhesives.
- .6 CSA-O121-M1978 (R1998); Douglas Fir Plywood.
- .7 CAN/CSA-O141-91 (R1999); Softwood Lumber.
- .8 CSA-O151-M1978 (R1998); Canadian Softwood Plywood.
- .9 CAN/CSA-O325.0-92 (R1998); Construction Sheathing.
- .10 CAN/ULC-S102; Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .11 National Lumber Grades Authority (NLGA) Special Products Standard for Finger joined Structural Lumber SPS-1991.
- .12 National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber-2007.

1.4 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.

2 PRODUCTS

2.1 LUMBER MATERIAL

- .1 Lumber: SPF softwood, NLGA No. 2 Grade or better, S4S, kiln-dried with moisture content 19% or less in accordance with CAN/CSA-O141.
- .2 Machine stress-rated lumber is acceptable for all purposes.
- .3 Glued end-jointed (finger-jointed) lumber products certified under NLGA Special Products Standard 1-81 are acceptable except for material for "A" appearance framing to be left unfinished or to be finished with transparent or translucent type coating.
- .4 Furring, blocking, nailing strips, grounds, rough bucks, curbs, fascia backing, and sleepers:
 - .1 S2S is acceptable.
 - .2 Board sizes: "Standard" or better grade.
 - .3 Dimension sizes: "Standard" light framing or better grade.
- .5 Pressure Preservative Treated Lumber: SPF softwood, NLGA No. 2 Grade or better, S4S, kiln-dried with moisture content 19% or less in accordance with CAN/CSA-O141; pressure preservative treated with Copper Azole (CBA-A or CA-B), or Alkaline Copper Quaternary (ACQ) to CSA-O80 Series.

2.2 PANEL MATERIALS

- .1 Construction Sheathing: to CAN/CSA-O325.0, thickness as indicated.
- .2 Canadian Softwood Plywood: to CSA-O151, standard construction, thickness as indicated.
- .3 Pressure Preservative Treated Plywood: Canadian softwood plywood (CSP) to CSA-O151, standard construction; pressure preservative treated with Copper Azole (CBA-A or CA-B), or Alkaline Copper Quaternary (ACQ) to CSA-O80.9 and kiln-dried to a moisture content of 15% or less. Thickness as indicated.
- .4 Fire Retardant Treated Lumber & Plywood: Douglas Fir Plywood (DFP) to CSA-O121, standard construction; SPF lumber to CSA-O141; fire retardant treated to CSA-O80.27, kiln-dried to a moisture content of 15% or less, Flame Spread Rating of less than 25 to CAN/ULC-S102. Product must be UL or ULC labeled. Thickness as indicated.

2.3 ACCESSORIES

- .1 Sealants: in accordance with Section 07 92 00.
- .2 General Purpose Adhesive: to CSA-O112 Series.
- .3 Nails, Spikes And Staples: to CSA-B111.
- .4 Proprietary Fasteners: toggle bolts, expansion shields and lag bolts, screws and lead or inorganic fibre plugs, explosive actuated fastening devices, recommended for purpose by manufacturer.
- .5 Nailing Discs: flat caps, minimum 25mm diameter, minimum 0.4mm thick, sheet metal, formed to prevent dishing. Bell or cup shapes not acceptable.

- .6 Finishes
 - .1 Hot-dip galvanized connectors and fasteners to CAN/CSA-G164 minimum 610g/m² coating for:
 - .1 Exterior work (outside of building vapour barrier)
 - .2 Interior highly humid areas
 - .3 Pressure-preservative treated wood, and
 - .4 Fire-retardant treated wood
 - .7 Surface-applied wood preservative: to CAN/CSA-O80 Series; Copper Azole (CBA-A or CA-B) or Alkaline Copper Quaternary (ACQ).

3 EXECUTION

3.1 PREPARATION

- .1 Treat cut surfaces of pressure preservative treated material exposed by cutting, trimming, or boring with wood preservative before installation.
- .2 Apply preservative by dipping, or by brush to completely saturate and maintain wet film on surface for minimum 3 minute soak on lumber and one minute soak on plywood.

3.2 INSTALLATION

- .1 Install members true to line, levels and elevations, square and plumb.
- .2 Install spanning members with "crown edge" up. Construct continuous members from pieces of longest practical length.
- .3 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding, electrical equipment mounting boards, and other work as required.
- .4 Install furring to support siding applied vertically where there is no blocking and where sheathing is not suitable for direct nailing.
- .5 Align and plumb faces of furring and blocking to tolerance of 1:600.
- .6 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
- .7 Install pressure preservative treated wood nailers, curbs, and other wood roof supports as required and secure using galvanized steel fasteners. Install pressure preservative treated sleepers and curbs with top set level as indicated.
- .8 Install fire retardant treated plywood backboards at all electrical panels.
- .9 Use pressure preservative treated lumber and plywood for all applications outside the building envelope.
- .2 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
- .3 Countersink bolts where necessary to provide clearance for other work.

END OF SECTION

S1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide all Finish Carpentry including the following:
 - .1 Supply and installation of all miscellaneous wood & trim
 - .2 Installation of all wood doors.
 - .3 Installation of all hollow metal doors and frames.
 - .4 Installation of all finish hardware.
 - .5 Installation of architectural woodwork.

1.3 REFERENCES

- .1 CSA-B111; Wire Nails, Spikes and Staples.
- .2 CAN/CSA-G164; Hot Dip Galvanizing of Irregularly Shaped Articles.
- .3 CSA-O115; Hardwood and Decorative Plywood.
- .4 CSA-O112 Series; CSA Standards for Wood Adhesives.
- .5 CSA-O121; Douglas Fir Plywood.
- .6 CAN/CSA-O141; Softwood Lumber.
- .7 CSA-O151; Canadian Softwood Plywood.
- .8 CAN4-S104; Fire Tests of Door Assemblies.
- .9 CAN/ULC-S706; Standard For Wood Fibre Thermal Insulation For Buildings.
- .10 CAN4-S105; Fire Door Frames.
- .11 CAN/CGSB-11.3; Hardboard.
- .12 ANSI A208.1; Particleboard, Mat-formed Wood.
- .13 ANSI A208.2; Medium Density Fiberboard.
- .14 AWMAC / AWI Quality Standards Illustrated.
- .15 National Lumber Grades Authority (NLGA) Standard Grading Rules for Canadian Lumber.
- .16 National Hardwood Lumber Association (NHLA) Rules for the Measurement and Inspection of Hardwood and Cypress.

1.4 SAMPLES

- .1 Submit samples of each type and profile of all standing and running trim, in accordance with Section 01 30 00. Submit samples of finished Carpentry items in the finishes

specified for review by the Consultant. Approved samples shall represent the minimum quality of work for this section.

1.5 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 30 00.
- .2 Indicate details of construction, profiles, jointing, fastening and other related details.
- .3 Indicate all materials, thicknesses, finishes and hardware.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Protect materials against dampness during and after delivery.
- .2 Store materials in ventilated areas, protected from extreme changes of temperature or humidity.

1.7 GUARANTEE

- .1 Guarantee finish carpentry work for a period of two years from the Date of Substantial Performance against warpage, opening of joints, shrinkage and similar defects.

2 PRODUCTS

2.1 LUMBER MATERIALS

- .1 Hardwood Lumber for Finished Work (exposed to view): AWMAC/AWI QSI - Section 100 Grade II and the following requirements: with vertical grain, of quality suitable for transparent finish;
 - .1 Trim, edging and other solid members exposed to view, as noted on the drawings:
 - .1 Species: White Hard Maple; plain sliced.
 - .2 Softwood Lumber for Concealed Work (blocking and furring): AWMAC/AWI QSI - Section 100 Grade 3, of quality suitable for opaque finish;
 - .1 Cabinet Frame and Internal Construction(concealed):
 - .1 Species: Eastern or Northern Pine, Yellow Poplar, Yellow Birch, Basswood or equivalent "whitewood".
 - .3 Softwood Finish Lumber (ceiling/soffit): Western Red Cedar species, NLGA No. 1 Grade, S4S, kiln-dried with moisture content 19% or less in accordance with CAN/CSA-O141. 16mm x 140mm T&G siding with chamfered edges.

2.2 PANEL MATERIALS

- .1 Hardwood Veneers:
 - .1 AWMAC/AWI QSI - Section 200, with vertical grain, of quality suitable for transparent finish;
 - .1 Species: White Maple - Grade: 40% AA, 40% A, and 20% ranging between A and AA, Rotary cut, no cathedral, minimal flakes.
 - .2 Veneer Match: Adjacent Veneer Leaves on Single Panel: Centre Balanced, Slip match.
 - .3 Individual Panel Faces: Running match.
 - .4 Stacked Panels: End match.

- .2 Hardwood Plywood: thickness as noted on the drawings, to CSA O115 - M graded in accordance with AWMAC/AWI, core materials of veneer, type of glue recommended for application; face veneer and cuts as follows:
 - .1 Core veneers: Poplar or Birch hardwood
 - .2 Face veneer: White Maple, rotary cut.
 - .3 Shelving: 19mm thickness for spans up to 700, 25mm thickness for longer spans., Poplar or Birch hardwood core veneers, White Maple veneer as noted.
 - .4 Douglas Fir Plywood: to CSA-O121, G2S, standard construction, thickness as indicated.
 - .5 Canadian Softwood Plywood: to CSA-O151, G2S, standard construction, thickness as indicated.
 - .6 Particleboard: interior mat-formed wood, to ANSI-A208.1, Grade M-2, minimum density 641 kg/m³, thickness as indicated.
 - .7 Hardboard: to ANSI A135.4, Class 1 (tempered), thickness as indicated.
 - .8 Medium Density Fibreboard: to ANSI-A208.2, Grade 130, density 769 kg/m³, thickness as indicated.
 - .9 Wood Veneer Panels
 - .1 Core: Medium Density Fiberboard (MDF) to ANSI A208.2, minimum density 769 kg/m³.
 - .2 Face Veneer & Edges: AWI/AWMAC Premium Grade, White Maple, slip-matched veneers with face characteristics 40% AA, 40% A, and 20% ranging between A and AA.
- 2.3 ACCESSORIES
- .1 Nails and staples: to CSA-B111; galvanized to CAN/CSA-G164 for exterior work, interior humid areas and for treated lumber; plain steel finish elsewhere.
 - .2 Wood screws: to CSA-B35.4, electroplated steel, type and size to suit application.
 - .3 Splines: wood or metal.
 - .4 Closet Rods and Accessories:
 - .1 Closet Rod: 32 mm Dia. CBH - No. 762 Finish: 32D
 - .2 Rod Flanges: CBH - No. 752
 - .3 Rod Supports: CBH - No. 731- length to suit, Finish: C26
 - .4 Closet Shelf Brackets: CBH No. 780 Finish: 32D depth to suit.
 - .5 Handrail Brackets: Onward 2281SC-V Handrail Bracket Satin Chrome, as supplied by Monaghan Lumber.
- 2.4 ADHESIVES
- .1 Contact Adhesive: conforming to CAN/CGSB-71.20.
 - .2 Hot Melt Adhesive: of approved manufacturer.
 - .3 Sealer: approved water-resistant sealer or glue.

2.2 FINISHES

- .1 Shop finish work of this section in accordance with AWMAC/AWI QSI Section 1500 and the following; field finish only where shop finish is not practical or desirable.
- .2 Provide Custom Grade Finish as amended by the following:
 - .1 Finish of concealed areas and back priming: apply two coats of sealer to concealed surfaces and backs.
 - .3 Transparent Finish: minimum 3 coats clear, UV-cured system; "Aqualux II" water-based preservative/basecoat, and topcoat finish, by Chromos-Svjetlost.
 - .4 Stained/Transparent Finish
 - .1 Base Stain: water-based semi-transparent stain; Sikkens Cetol water-based wood stain. Colour as selected by the Consultant.
 - .2 Finish Coats: minimum 3 coats clear, UV cured system; "Aqualux II" water-based topcoat finish, by Chromos-Svjetlost.
 - .5 Use wood filler which matches surrounding surfaces and of types recommended for applied finishes.

3 EXECUTION

3.1 INSTALLATION

- .1 Do finish carpentry to AWMAC/AWI Quality Standards Illustrated (QSI), except where specified otherwise.
- .2 Scribe and cut as required, fit to abutting walls, and surfaces, fit properly into recesses and to accommodate piping, columns, fixtures, outlets, or other projecting, intersecting or penetrating objects. Form joints to conceal shrinkage.
- .3 Perform door and frame installation in accordance with National Fire Codes, Volume 4, produced by National Fire Protection Association (NFPA) 80.

3.2 CONSTRUCTION

- .1 Fastening
 - .1 Position items of finished carpentry work accurately, level, plumb, true and fasten or anchor securely.
 - .2 Design and select fasteners to suit size and nature of components being joined. Use proprietary devices as recommended by manufacturer.
 - .3 Set finishing nails to receive filler. Where screws are used to secure members, countersink screw in round cleanly cut hole and plug with wood plug to match material being secured.
 - .4 Replace items of finish carpentry with damage to wood surfaces including hammer and other bruises.

3.3 DOOR INSTALLATION

- .1 Install doors and hardware in accordance with hardware templates and manufacturer's instructions and Section 08 71 00.

- .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 flooring and thresholds: 13mm (6mm at rated doors).
 - .3 Adjust operable parts for correct function.
- 3.4 **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 Touch up galvanized finishes damaged during installation with zinc-rich primer.
- 3.5 **INSTALLATION OF FINISH HARDWARE**
- .1 Neatly mortise and fit finishing hardware. Cut mortises straight and sharp without ragged edges and sized accurately to accommodate hardware. Where mortising and application of finishing hardware has not been done in a first class manner, replace such work.
 - .2 Coordinate with hardware supplier for correct installation.
 - .3 Adjust all hardware for correct function.

END OF SECTION

1. GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.
- .5 REPORT IN WRITING TO THE CONTRACTOR, ANY DEFECTS OF SURFACES OR WORK PREPARED BY OTHER TRADES WHICH AFFECT THE QUALITY OR DIMENSIONS OF THIS CONTRACTOR'S WORK. COMMENCEMENT OF WORK SHALL IMPLY COMPLETE ACCEPTANCE OF ALL WORK BY OTHER TRADES OR OF EXISTING ROOM CONDITIONS AND LOCATIONS.

1.2 REFERENCE STANDARDS

- .1 Standard of finished carpentry, metalwork and cabinet work in accordance with the "Millwork Standards" of the Architectural Woodwork Manufacturers Association of Canada (AWMAC).

1.3 QUALIFICATIONS

- .1 Work of this section shall be performed by firms identified in WRDSB Vendor of Record List.

1.4 WORK INCLUDED

- .1 Provide all millwork and casework as shown on the drawings, including but not limited to the following. Provide prefinished cabinets, display cases, shelving units, counters, vanities, and similar items where shown on drawings as specified herein, and as needed for a complete and proper installation.
- .2 Provision of rough hardware, including fastening devices required to secure in place items of carpentry and millwork.
- .3 Supply and installation of finishing hardware for millwork.
- .4 Supply and installation of grilles, etc. on millwork items.
- .5 Installation of all miscellaneous metals for millwork items including but not limited to vanity & display cabinets. Metal brackets for change room benches to be supplied and installed by miscellaneous metals contractor.
- .6 Supply and installation miscellaneous trims, scribes, filler panels.
- .7 Provide cutouts in the counter tops for the sinks, electrical outlets and all other necessary cutouts regarding the millwork.

1.5 SHOP DRAWINGS

- .1 Submit Shop Drawings for all millwork in accordance with Section 01 30 00.
- .2 Before shop drawings and fabrication is started, take critical measurements at the site to facilitate installation, fitting of work and access required to move millwork into final location. Take such measurements prior to fabrication of the work of this section and in ample time to avoid delays in the work.
- .3 Draw Shop Drawings in related and/or dimensional positions with sections. Scale minimum 1:10.
- .4 Shop Drawings shall show fabrication details, materials, jointing, description of anchorage and hardware.
- .5 Do not commence work until reviewed shop drawings have been returned as approved by Consultant and WRDSB.
- .6 The drawings are to be photo copied, confirmed, to fit openings and sizes, mark up, in red, and return for approval.

1.6 DELIVERY AND STORAGE

- .1 Give Painter sufficient notice so that untreated or unprimed carpentry items or materials can be primed immediately upon delivery to site.
- .2 No equipment shall be delivered to the site until portion of the building in which it is to be installed is completely ready for equipment as approved by Consultant.
- .3 Store finished work properly and keep under cover both in transit and at site. Finish woodwork shall not be delivered to site until concrete and masonry work has dried out.
- .4 Cover all plastic laminate and prefinished top surfaces at shop with heavy Kraft Paper.
- .5 Carefully protect from damage of any kind.

1.7 RELATED WORK SPECIFIED ELSEWHERE

- .1 Finish Carpentry - Section 06 20 00
- .2 Miscellaneous Metals - Section 05 50 00
- .3 Gypsum Drywall - Section 09 21 13
- .4 Resilient Base - Section 09 65 13
- .5 Concrete Masonry - Section 04 22 00
- .6 Electrical - Division 26
- .7 Mechanical – Plumbing Division 22
- .8 Interior Painting - Section 09 91 16

1.8 SHOP FINISH

- .1 All cabinet work, and all cabinet trims, to be shop finished by this Section.

1.9 SAMPLES

- .1 Samples melamine 305x305mm, plastic laminate, edging, hinges, pulls, bumpers, drawer slides, and shelf clip.
- .2 Submit duplicate 12" (300 mm) long samples of each type of molding.
- .3 Submit samples of construction methods and of all hardware.

1.10 INTENT

- .1 The intent of this Section is that casework shall be manufactured and finished at the plant, delivered to the Site and immediately installed by this Section including provision of necessary strapping, backings, bearers, rough hardware and finish hardware and miscellaneous support metals and stainless steel metal components. Touch up finish immediately prior to completion of the Work and leave in perfect condition.

1.11 CO-OPERATION

- .1 Water, drainage and air piping, faucets, hose cocks, retort rod and bases, traps, ventilation ducts, sinks, electric receptacles and wiring are supplied and installed by the Mechanical and Electrical Sections at all rooms. Co-ordinate the work with these trades and make provision in the construction of the fitments to accommodate this work. Methods of construction shall be such as to permit mechanical and electrical work being concealed in the fitments, cut and frame accordingly, provide removal access panels in the units or provide proper access for installation and repairs.
- .2 Cabinet hardware, pilaster strips, locks, finishing hardware will be supplied by this section. Miscellaneous metals used in this section will be supplied and installed by miscellaneous metals contractor unless otherwise noted.
- .3 Woodwork, not shop primed, will be primed and back painted as per painting section immediately upon delivery to the site. Care shall be taken that all surfaces cut after priming are brush coated with an approved primer before installation.

1.12 MAINTENANCE

- .1 Provide Owner with printed instructions for "Care and Maintenance of Plastic Laminate" and millwork finishes.

1.13 WARRANTY

- .1 Warranty workmanship against manufacturing defects, including warpage or delamination, for a period of five (5) years from date of acceptance of the completed installation. Make good or replace work showing defects in this period, as requested, at no expense to the Owner.
- .2 Warranty shall cover complete replacement costs, including all labour and materials, shipping, handling and delivery, and all removal/installation costs.

2. PRODUCTS

2.1 MATERIALS

- .1 Finishing Work: Materials used for finish work shall be sound, free from defects that would mar finished appearance, well seasoned and air-dried and of good quality for intended purposes. Wood laminates pressure bonded.
- .2 Plywood: Plain Sawn, book matched architectural Grade 'A' No. 1 Face grade; and yellow birch rotary cut select white (varnish grade) as in compliance with C.S.A. 0115-M1982 with a minimum 5 ply plywood veneer waterproof core, laminated with waterproof adhesive. Plywood shall be good both sides except where concealed by construction. Exposed faces to be natural grade per AWI/AWMAC. Interior of doors to be classified as exposed.
 - .1 Face Veneers
 - .1 White (Hard) Maple.

- .3 Melamine Faced Particleboard: to CAN3-0.188.1-M78, grade "H" particleboard sanded faces, 13 mm, 16 mm, 19 mm, 28.6 mm and 32 mm thickness, faced with laminated plastic. Melamine resin impregnated cover sheet with coloured and/or patterned paper inner layer. Melamine shall be thermally fused to rigid particle board substrate. Melamine faces shall be 120 Gram Weight Paper. Colour to be Hardrock Maple or as noted on the drawings. Maximum of three colours/patterns to be chosen by Consultant from manufacturer's full range.
 - .1 Acceptable Material: Flakeboard, Uniboard or approved equal. Final colour by Consultant at Shop Drawing submission.
- .4 Particleboard: to CSA-0118-1975 Type 11, Grade R, minimum 690 Kg/m³, 4.5 to 8% moisture content.
- .5 Hardwood: shall be Plain Sawn, book matched Architectural Grade (knots will not be accepted). It shall be selected for colours and graining when used for stain work.
 - .1 White (Hard) Maple.
- .6 Wood Edging: 1/4" (6 mm) hardwood to match plywood unless indicated otherwise.
- .7 Melamine Faced Particle Board Edge Banding: solid polyvinylchloride (PVC), 3 mm thickness x full width of board, wood core, wood grain type to match melamine face by Canada Wood tape or approved colour equal. Edging rigid PVC with a measured degree of hardness of "95 shore D" and thickness of "3mm (+0.15mm, -0.2mm)" with the primer side having a concave measuring 0.10 to 0.25mm.
 - .1 Edging adhesive Ethylene vinylacetate thermalset adhesive with a temperature resistance of not less than 100 degrees C; A Processing range of 190 degrees - 200 degrees C and natural in colour.
 - .2 Edging is to be applied using only equipment designed for the application of thick PVC in strict accordance with the specifications of both the thick PVC and hot-melt adhesive manufacturers. All edges and all corners of this 3mm PVC edgebanding are to be machined to a 3mm radius for all cabinet parts.
 - .3 Care should be taken during application to achieve the thinnest glueline consistent with a good bond without causing skips or unspread areas. Final colour by Consultant.
- .8 Plywood Concealed by Construction: Douglas Fir plywood shall be veneer core, waterproof, bonded, sanded, complying with C.S.A. 0121-M1978. Solid grade where concealed by construction.
- .9 Concealed Framing Lumber: N.L.G.A.C. select eastern white pine, kiln dried to a 5% moisture content.
- .10 Unexposed Plywood for Framing: Waterproof fir plywood minimum 1/2" (12.7 mm) thickness unless indicated otherwise.
- .11 Adhesive:
 - .1 Waterproof synthetic resinous glue of approved general type conforming to C.S.A. 0112.
 - .2 For plastic laminate - as recommended by plastic laminate manufacturer and to conform to C.S.A. 0120-M1978.
 - .3 Waterproof type.
- .12 Plastic Laminate
 - .1 Laminated Plastic for Flatwork: 0.050" (1.27mm) thick decorative, melamine surfaced, high pressure laminated plastic sheeting in suede finish to conform to

- CAN3-A172-M1979 Grade G.P., Type 1. Manufacturer shall thoroughly sand back of sheet to form a homogeneous bonding surface. Plastic laminates shall be as manufactured by Arborite, Formica, Wilsonart or Nevamar. Backing sheet .020" (.5 mm) thick, sanded one side. Products may be selected based upon manufacturer's full standard range of colours and patterns.
- .2 Laminated plastic for postforming work and preforming work: to CAN3-A172-M79 Grade P.F., Type 3, .050" (1.25 mm) thick, based on standard colours with suede finishes as selected by Consultant.
- .3 Colours and Finishes
- .1 PLAM-1 (Countertop): Formica Colour: 8958 Bubble Art, with 38mm deep nosing and 6mm radius edges.
- .2 PLAM-2 (Window Sills): Wilsonart – Colour: 1573-60 Frosty White, with square edge and matching PLAM edge banding.
- .13 Cork: 1/4" (6mm) natural fine grain sheet cork. Cork to be Fabro from Architectural School Products or approved equal. Colour to be selected and approved. Fabric covering over cork, as indicated, to be supplied and installed by this section.
- .14 Nails and Staples: To C.S.A. B111. Use spiral threaded nails and barbed staples.
- .15 Shelves: adjustable shelves longer than 950 mm and fixed shelves without centre supports longer than 950 mm to be 28.6 mm thick wood veneer plywood or melamine faced particleboard as detailed. Shelves shorter than lengths specified above are to be 19 mm thick wood veneer plywood core and melamine faced particleboard for alternate price items. Front edges of adjustable shelves to be edge-banded. Front edges of fixed shelves to edge banded, rear edge to be secured to cabinet back panel.
- .16 Glazing: clear tempered glazing, for all glass doors and shelves.
- .17 Exposed Fasteners: All millwork units secured to walls shall be secured with Tapcon screws and cup washers. All specialty fasteners such as acorn head bolts shall be supplied and installed by this section. Submit samples for Consultant's approval.
- .18 Countertops: to be plastic laminate postformed on particleboard or veneer core plywood or as noted on the drawings.
- .1 Adhesives: to CSA 0112.5M, waterproof type.
- .2 Counter tops are postformed D profile.
- .19 Countertops for Science Rooms (SURF-1): solid phenolic high-pressure laminate to CAN3-A172-M79, Type SS, 25mm thick, Black, with matt finish; acid resistant phenolic Lab top; Durcon chemical resistant solid phenolic.
- .20 Window Sills: to be plastic laminate on veneer core waterproof plywood with hardwood edge, as detailed and noted on the drawings.
- .21 Backer Standard: to be .028 thick. Panels shown to have backer panel shall be balanced with 0.5mm (0.030) backing sheet manufactured by the same manufacture as the facing sheet. Core CSA 0115-M1982 (G/SO) or CSA0121-M1978 Grade "B" or CAN3-0188.1-M78, Grade R.
- .22 Stainless Steel Panels (SS-1): 16 gauge Type 304 Stainless Steel sheet, #4 finish, formed and bonded to 3/4" Plywood with wrapped square edges.

2.2 HARDWARE

- .1 The cabinetwork manufacturer shall furnish and install cabinet hardware. Finish of hardware shall be used US26D or US28 depending on base material. Hardware shall be manufactured as follows or approved equal:
 - .1 Pulls - door and drawer, Contemporary Pull 305, brushed nickel, 156mm, Richelieu #30576195.
 - .2 Hinges - Blum model 170BL91-653 with Blum mounting plate BL175.810 or approved equal, or specified other on drawings. Or Hafela Aximat hinges self-closing 270 degree if noted on drawings.
 - .3 Cabinet locks door and drawer - National # C8053-5 or approved equal. All cupboard doors in a room to be keyed the same. Each room to be keyed different. Provide 6 master keys for cupboard locks.
 - .4 Shelf support - Richelieu - # 5834-180 for 32mm spaced holes in all gables or recessed pilaster strips see drawings.
 - .5 Door Bumper - Richelieu # AMP5312-11.
 - .6 Elbow Catch - Richelieu # BP3675-2G.
 - .7 Toe Kick Vent - Richelieu # 010533-30.
 - .8 Drawer slides - Blum Metabox 320M integrated runner system using epoxy steel carcasses, adjustable front fixing brackets and 12mm Melamine with 3mm PVC on all exposed edges for bottoms and back panels. Install screws to all pre-drilled holes. Use deepest Metabox possible for space available or approved equal.
 - .1 See drawings for other slides called for specific locations.
 - .9 Rough Hardware - Nails, screws, bolts, lag screws, anchors, special fastening devices and supports required for erection of carpentry components. Use galvanized components if exposed to exterior atmosphere. Galvanize in accordance with the requirements of CSAG164-M1981.
 - .1 Install all hardware to manufacturer specifications.
 - .10 Glass Doors & Shelves: 8mm tempered glass doors c/w ground in finger pulls 12mm x 64mm. Glass shelves to be 10mm tempered. All edges polished.
 - .11 Display Case Hardware:
 - .1 Standards – concealed "T" – No. 704 and 705, by Richelieu; length to suit
 - .2 Brackets – No. 742, by Richelieu.
 - .3 Cushions for Brackets: No. 109100, by Richelieu.
 - .4 Sliding Door Track Assembly – Richelieu 1551210 & BP15510.
 - .5 Provide Richelieu JCB-B bolts at time capsule panel.
 - .12 Hooks for Hook Strips & Teacher's Cabinets: high-strength polycarbonate, magnetic safety release coat hooks; "HenkelHook" by Henkel Diversified Inc., colours as selected by Consultant. Release Weight: 26 lbs. +/- 2 lbs. (11.8 kg. +/- 0.9 kg.)
 - .13 Coat Rods and Flanges: Richelieu # 122108140 and 1225140.
 - .14 Teachers Cabinet Lock: Schlage CL-888 Series.

2.3 FINISHES

- .1 Melamine Composite Panels;
 - .1 MEL-1: Uniboard TFL, Colour; 992 Hardrock Maple, Dolomite finish.
 - .2 MEL-2: Uniboard TFL, Colour; 113 Super White, Dolomite finish.
- .2 Edge Banding: to match panels.

2.4 FABRICATION

- .1 General
 - .1 Fitments shall be machined, assembled in mill where possible and delivered to job in units. Construct in accordance with details using first class cabinet construction with joints dowelled, glued and properly fastened. Machine all surfaces of finished woodwork to an even smooth surface; fit all joints and miters accurately. Frame materials with tight joints held in place.
 - .2 Conceal joints and connections where possible. Joints made on site shall be equal in quality of work to joints made in the shop.
 - .3 Check job dimensions and conditions and notify the Consultant in writing of unacceptable conditions. Design construction methods for expansion. Do not proceed until remedial instructions are received.
 - .4 Deliver work to the job ready for installation. Leave ample allowance for fitting and scribing on the job. Shop assemble work for delivery to site in size easily handled and to ensure passage through building openings, Design units to fit together if site assembly is required.
 - .5 Fabricate work square and to the required lines. Recess and conceal fasteners and anchor heads. Fill with matching wood plugs.
 - .6 Comply with glue manufacturer's recommendations for lumber moisture content, glue life, pot life, working life, mixing spreading, assembly time, time under pressure and ambient temperature.
 - .7 The interior of counters, cupboards, shelving units, desks, shall be considered "exposed". Finish all exposed edges with 3mm thick PVC edge banding material, applied by an Edge-Bander using Hot Melt adhesive. Colour to match the melamine. Radius all exposed edges and corners (PVC edging or Wood edging). Counter tops which are to receive plastic laminate coverings may be 3/4" (19 mm) thick sanded veneer core plywood where specified. Particle core shall be used for shelving and gables, countertops specifically called for as solid material or as otherwise specified. Include all filler strips and to match the face colour.
 - .8 Refer to Drawings and Architectural Detail Sheets for location, details, number of units required and location of fittings.
 - .9 Interior fitments shall be complete in every respect with special fittings required and hardware.
 - .10 Provide exposed end grain of solid members and edges of exposed plywood with matching solid hardwood edging at least 1/4" (6.4 mm) thick and thicker where specified. At melamine faced particle board provide 3 mm P.V.C. edging complete with 3 mm radius on all exposed edges and corners as per millwok sections. Edging to melamine faced particle board shall be applied with an Edge-Bander using hot melt adhesive.
 - .11 Make all necessary cut-outs in the furniture for sinks, gas cocks, appliances, and electrical switch and outlet boxes and pre-drill all mounting holes for faucets, fittings and outlet boxes. Refer to electrical and mechanical drawings and specifications.

- .12 Provide and install pipe covers, scribing pieces, top, bottom and/or closures and filler panels where necessary, including wherever units require furring out or blocking to existing conduits, pipes, etc.
- .13 Service cover panels to be provided at all kneehole drawer units, kneehole front rails and knee drawer table assemblies. End closing panels to be provided at all exposed ends of service strips and island/peninsula assemblies. Front filler panels to be provided where called for on Drawings and as required by field conditions.
- .14 Telephone and electrical receptacles and wiring are specified under Electrical Division. Co-ordinate work of this trade, make provision to accommodate this work and cut tops for and provide wood bearers for support.
- .15 Cooperate with others engaged in work on the building to the end that proper unity of action will assure the orderly progress of the work. Do necessary boxing and protecting of sills, jambs, and the like. Construct scaffold, ramps, and other temporary staging necessary.
- .16 Provide 3/4" (19 mm) plywood adjustable or fixed shelving where detailed. Maximum unsupported span for shelving shall be 3'-0" (900 mm). Fixed shelves shall be dowelled into gables and divisions. Where shelves are set on clips only, gables shall be drilled 32 mm o.c. for total height of gables.
- .17 The plywood used in interior fitments throughout regardless of whether for paint or stain finish, shall have exposed edges edged with solid strips 1/4" (6 mm) wide, unless noted otherwise by full thickness of plywood. No exposed edges of plywood will be permitted. Strips shall be glued and accurately fixed to edges. Adjustable shelves shall have strips applied to front edge.
- .18 Exposed framing members and trim shall be solid hard maple or birch.
- .19 Plastic laminate coverings to fitments, cupboards and counters shall be in colours selected by Consultant, and applied in accordance with manufacturer's directions. Where plastic laminate occurs, exposed edges and edges around cut-outs such as sinks shall be edged in the same material. Seal remaining exposed edges of surfaces with heavy Kraft paper prior to shipment. Paper shall not be removed until final cleaning. When cutting holes in plastic laminate work, corners shall be rounded and filed smooth.
- .20 When cutting holes in plastic laminate work, corners shall be rounded and filed smooth.
- .21 Protection erected by this trade shall be removed, damage to this work and adjoining work due to the lack or failure of such protection, made good and debris, surplus materials, plant and equipment removed and premises and the whole left clean and tidy to Consultant's satisfaction.
- .22 Melamine on all surfaces unless noted otherwise.
- .23 Fabricate all plywood and melamine faced particle board backs, gables and bottoms of millwork units together by means of 8 mm x 25 mm hardwood dowels or with hardwood biscuits. All backs to be 1/2" (13 mm) stock. Dowel all panel cabinet components using 5 mm x 25 mm hardwood dowels or biscuits at maximum 4" (100 mm) o.c. All drawer bottoms and backs are 1/2" stock or

greater. All exposed edges on all melamine faced particle board units to be edged with solid 3 mm PVC C/W 3 mm radius edges and corners including drawer parts and with 1/4" (6 mm) matching hardwood edge banding at Maple and Birch units. Kick material for normal application shall be 3/4" (19 mm) waterproof spruce/fir plywood to be used.

- .2 Cupboard Doors
 - .1 Doors shall be 3/4" (19 mm) thick particle core veneer plywood. Doors shall be flush, slab type, accurately fitted, free of warp and twist. Care must be taken in sawing and assembling so that there is no splintering of finish face. Splintered doors that mar the appearance will be rejected by the Consultant.
 - .2 Where melamine is specified; construct doors of 3/4" (19 mm) particle core with melamine good - 2 sides.
 - .3 Provide two door silencers/bumpers per panel mechanically fastened to the cabinet frames.
- .3 Drawers
 - .1 Fabricate Blum Metabox drawer bottom and backs with 16mm melamine composite panel.
 - .2 Where melamine is specified: drawer fronts to be 3/4" (19 mm) particle core with melamine, good 2 sides.
 - .3 Extend all backs in file drawers for use with hanging file hardware. Metabox units used should also allow for legal width hanging folders to run front to back and letter width side to side where space permits.
 - .4 Fronts to match cupboard doors finish.
 - .5 Provide two drawer silencers/bumpers per drawer panel mechanically fastened to the cabinet frame.
- .4 Counters, Cupboards, Shelving, Circulation Desk etc.
 - .1 Adjustable shelves c/w clips and drilled holes at 32mm centers. Base cabinet's c/w 1 shelf, wall cabinet's c/w 2 shelves, and tall cabinet's c/w 5 shelves, the center shelf is fixed unless drawings show otherwise.
 - .2 Factory installs all hardware firmly into position for long life under hard use. Install 2 hinges on doors up to 1 meter in height, 3 hinges to 1.5 meter in height and 4 hinges for doors greater than 1.5 meters in height or shown otherwise.
 - .3 Frame as detailed with 3/4" (19 mm) thick, or as noted otherwise, plywood gables, tops and bottoms. House intermediate dividers and plywood backs, into gables and top and bottom shelves, for all fitments. Plywood shall be birch or oak as called for in this Section unless otherwise indicated. Cabinet backs to be 1/2" (13 mm) plywood.
 - .4 Where melamine specified: horizontal and vertical gables; and shelving to be 3/4" (19 mm) particle core with melamine, good 2 sides. Cabinet backs to be 1/2" (13 mm) particle core with melamine, good 1 side.
 - .5 Fabricate cabinet carcass, The 32-millimeter system from 19mm thick melamine composite panel using flush frameless construction and exposed edges, to

- AWMAC Standard " Custom grade" c/w 3mm thick PVC edge banding on exposed edges. All exposed edge banding c/w 3mm radiused edges and corners.
- .6 Do not exceed 800mm a maximum width of cabinet without a divider or specified otherwise.
 - .7 Carcass construction- Backs 16mm, bottoms, rails, doors, drawer fronts 19mm of melamine composite panels, assembled with glued hardwood dowels 8x30mm or wafers.
 - .8 Cut countertops for sinks and provide bearers. Provide splashback at back of sink for entire length of the unit and at return ends where walls or other vertical surface occur within 600mm of sink or other wet location.
 - .9 Countertop and splashback will be plastic laminate unless noted otherwise.
 - .10 Provide removable plywood access panels, screwed in place, where necessary for access to concealed wiring.
 - .11 Fit trim and scribe moulds to fitments as shown and as required to hide voids at walls, partitions and ceilings.
 - .12 Provide cut-outs for inserts, outlets, grilles, appliances, etc. occurring in fitments.
 - .13 Bottom of units blocked up to form a 4" (100 mm) high x 3" (75 mm) deep toe space and fabricated from 19mm waterproof veneer core plywood of fir or spruce
 - .14 Fit fillers between fitments, of same material as fitments, where necessary to fill voids between fitments and walls.
 - .15 Lighting fixtures and outlets to be supplied and installed under Division 26.
 - .16 Provide cutouts and access panels where required for Division 15 and covers over ductwork (stove exhaust fans) or piping that run exposed above counters and upper shelves.
 - .17 Provide extended top, bottom, and exposed gables where furring out of upper cupboards is required due to pipes, conduits, and the like behind to provide a flush face at walls.
- .5 Plastic Laminate Work:
- .1 Comply with CAN3-A172-M79, Appendix "A".
 - .2 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. Provide cores of not less than 3/4" (19 mm) nominal thickness solid face Douglas Fir.
 - .3 Form shaped profiles and bends as indicated, using postforming grade laminate to laminate manufacturer's instructions.
 - .4 Use straight self-edging laminate strip .062" (1.6 mm) thick for flatwork to cover exposed edge of core material. Chamfer exposed edges uniformly at approximately 20 deg. Do not mitre laminate edges. Curved self edging shall be postformed material or bending grade.

- .5 Apply laminate backing sheet to reverse side of core of plastic laminate work where specified. Provide backing sheet of sufficient thickness to compensate for stresses caused by the facing sheet.
 - .6 Locate joints where indicated, where not indicated at approximately 8'-0" (2440 mm) or 12'-0" (3660 mm) centres also include joints at corners, and changes in superficial area.
 - .7 Accurately fit decorative laminate together to provide tight, flush, butt joints. Joints in cored panels shall be made with 1/4" (6 mm) blind splines and draw bolts, one draw bolt for widths up to 6" (150 mm), two or more draw bolts at maximum 18" (450 mm) o.c. for widths exceeding 6" (150 mm).
 - .8 Keep joints min. 2'-0" (300 mm) from sink cutouts.
 - .9 Seal the core at joints and exposed edges with sealer.
 - .10 Counter tops apply Tremco Tremsil 200 silicone sealant at junction of plastic laminate or phenolic tops when tops are joined. All joints to be over a gable or supported other wise.
 - .11 Use draw bolts in counter top joints.
 - .12 Apply a small bead of mildew-resistant paintable silicone sealant at junction of plastic laminate counter back and adjacent wall finish.
- .6 Phenolic Laboratory Tops
- .1 Use draw bolts and splines in countertop joints. Maximum spacing 450mm o.c., 76mm from edges.
 - .2 Keep joints 305mm from sink cutouts. Obtain Consultant's approval for locations of all joints in counter tops prior to fabrication.
 - .3 Make joints where approved to hairline width. Offset joints in tops from joints in substrate.
 - .4 Provide cutouts as required for inserts, grilles, outlet boxes and other fixtures. Radius internal corners, chamfer edges.
 - .5 Backsplash: square edge, 102mm high.

3. EXECUTION

3.1 PREPARATION AND PROTECTION.

- .1 Protect work of other trades from damage.
- .2 Make good any resulting damage, to the satisfaction of the Consultant, at no additional cost to the owner.

3.2 WORKMANSHIP

- .1 Fabricate and install work in accordance with the best practice. Finished work shall be free from drag, feathers, slivers or roughness of any kind. Remove machine marks by sanding. Give finished work smooth surfaces, ready for painting or varnish application.

- .2 Mortise and tenon joints shall be glued and pinned. All panels shall be secured together with specified glued and dowelled method. Glue blind screw all fabricated component work unless otherwise specified. Set surface nails and plug countersunk screws with matching wood plugs. Use screws with cap washers where units with doors are secured to walls behind.
- .3 Finished woodwork shall be free from bruises, blemishes, mineral marks, knots, shakes and other defects.
- .4 All metal items such as grilles, tracks, supports, legs, brackets, etc. supplied by other trades shall be built into fitments, panelling, wood doors, etc., in strict accordance with directions of trades supplying such.
- .5 Furnish rough hardware, nails, expansion shields, screws, brackets and incidentals required to assemble and install the fitments in their proper locations.
- .6 Fit small scribe moulds or fillers of same materials as fitment to hide or fill voids at walls, partitions ceilings, furrings, exposed tops of millwork units, at base locations where rubber base occurs.
- .7 Plywood Edging: all exposed 3/4" (19 mm) plywood edges shall be covered with glued on 1/4" (6 mm) thick hardwood strips.
- .8 Fitments shall have joints dowelled and all joints shall be glued and nailed or screwed. All cabinet bases shall be of 3/4" plywood, blocked 3'-0" O.C. maximum and at corners.
- .9 Counter tops shall have splash backs where sinks occur.
- .10 Shelving shall be 3/4" (19 mm) plywood, adjustable or fixed as detailed. Maximum unsupported span for shelving shall be 3'-0" (900 mm). Adjustable shelves shall be set on angle clips or metal pilaster strips. Loose shelves shall have PVC edges on front edge.
- .11 Laminates shall be pressure bonded to back-up board. Counter tops shall be self edged and have plastic laminate covered back splash. Back-up material for counter tops shall be particle core unless otherwise noted.
- .12 Plastic laminate surface shall be level, without bubbles and core ghosting. Core edges in counter cut outs shall be sealed with asphalt compound. All exposed plastic edges shall be matched and sanded.

3.3 INSTALLATION

- .1 Welded bench brackets to be supplied and installed by others. Installation of wood work to the bench brackets to be completed by this section.
- .2 Commencement of work implies total acceptance of surface and site conditions.
- .3 Set and secure all materials and components in place, rigid plumb and square.
- .4 Provide all furring strips and strapping required fixing millwork and casework to walls, etc. Provide all filler strips to seal any openings or joints at adjacent surfaces.
- .5 After installation, fit and adjust operating hardware to align all doors and drawers.

- .6 Clean up as the work proceeds and upon completion remove all rubbish and surplus materials resulting from the foregoing work.
 - .7 Plumbing
 - .1 Sink installation.
 - .1 Cut hole, clean the counter top with alcohol.
 - .2 Use Tremco, Tremsil #200 a silicone sealant that gives protection against fungi and bacteria.
 - .3 Install Tremsil around the cuts, and then place a bead of Tremsil on the top before installing the sink.
 - .8 Installation and assembly work on the job shall be executed by skilled forces under supervision of a competent joinery foreman.
 - .9 Furnish rough hardware, nails, expansion shields, screws, brackets and incidentals required to assemble and install fitments in proper locations. Units shall be adequately fastened and secured in place with concealed fixings wherever possible. Include grounds and furring where required.
 - .10 Fitments shall be installed level, plumb and true and complete in all respects.
 - .11 Provide smooth surfaces with fastenings sunk and filled over to receive stain and sealer.
 - .12 Use draw bolts in countertop joints.
 - .13 At junction of counter, back splash and adjacent wall finish, apply small bead of silicone sealant as per Section 07 92 00 in colour as selected by Consultant.
 - .14 Apply water resistant building paper over wood framing members in contact with masonry or cementitious construction.
- 3.4 **HARDWARE INSTALLATION**
- .1 Locate concealed European style hinges in accordance with manufacturer of hinge and with best standard practice. Set knobs, locks, and cylinders square with doors and escutcheons plumb. Apply accurately and neatly, to operate quietly and smoothly. Knobs shall turn easily, bolts slide freely and smoothly.
 - .2 All cupboard doors and drawer locks except as noted below, shall be keyed alike in each room unless otherwise stated. All such keys shall be labelled as to their lock location and shall be turned over to the Owner. All locks, slide bolts, etc. shall be supplied with the appropriate strikes and screws. Provide slide bolts at all locked pair of doors on interior side of door leaf without lock.
 - .1 No locks on doors below sink units.
 - .3 All pilaster strips, where specified, shall be recess mounted and installed with the numbers on the pilaster at equal heights.
 - .4 At completion of the work, moving parts shall be gone over, made to work easily, smoothly and efficiently. Work carefully cleaned down and left in complete and finished condition satisfactory to Consultant.

End of Section

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide batt and blanket insulation.

1.3 REFERENCES

- .1 CSA-B111; Wire Nails, Spikes and Staples.
- .2 CAN/ULC-S102; Surface Burning Characteristics of Building Materials and Assemblies.
- .3 CAN/ULC-S114; Determination of Non-Combustibility in Building Materials.
- .4 CAN/ULC-S702; Standard for Mineral Fibre Thermal Insulation for Buildings.

2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- .1 Owens Corning Canada
- .2 Rockwool LLC.
- .3 Johns-Manville Canada Inc.
- .4 CertainTeed Insulation Canada Inc.

2.2 INSULATION

- .1 Thermal Insulation: mineral fibre processed from rock, slag, or glass, to CAN/ULC-S702, Type 1; thicknesses as shown on the drawings;
 - .1 Thermal Resistance: (R13) RSI 2.6 for 92mm thickness.
 - .2 Acceptable Products
 - .1 Unfaced Thermal Fiber Glass Insulation, by Johns-Manville.
 - .2 Thermal Batt Fiberglas® Insulation, by Owens Corning Canada Inc.
 - .3 Rockwool ComfortBatt™, by Rockwool LLC.
 - .4 Sustainable Insulation, by CertainTeed Insulation Canada Inc.
- .2 Fire Blanket Insulation: mineral fibre processed from rock, slag, or glass, to CAN/ULC-S702 Type 1, non-combustible to CAN/ULC-S114, thickness as shown on the drawings;
 - .1 Fire Hazard Classification: flame spread 25 or less, smoke developed 50 or less, to CAN/ULC-S102.
 - .2 Thermal Resistance: (R13) RSI 2.6 for 92mm thickness.
 - .3 Acceptable Products
 - .1 Unfaced Thermal Fiber Glass Insulation, by Johns-Manville.
 - .2 Thermafire SAFB, by Owens Corning Canada Inc.

- .3 Rockwool AFB, by Rockwool LLC.
- .3 Sound Attenuation Insulation: mineral fibre processed from rock, slag, or glass, to CAN/ULC-S702, Type 1, thickness as shown on the drawings;
 - .1 Sound Attenuation Batt Insulation, by Owens Corning Canada Inc.
 - .2 Rockwool AFB, by Rockwool LLC.
 - .3 Sound-SHIELD® Insulation Batts by Johns-Manville.
 - .4 NoiseReducer Sound Attenuation Batts, by CertainTeed Insulation Canada Inc.
- 2.3 ACCESSORIES
 - .1 Insulation clips: impale type, perforated 50 x 50mm cold-rolled carbon steel 0.8mm thick, self-adhesive back, spindle of 2.5mm diameter annealed steel, length to suit insulation, 25mm diameter self-locking washers.
 - .2 Tape: CCMC approved, Tuck 20502 Contractor's Sheathing Tape, by Canadian Technical Tape Ltd., Montreal PQ.

3 EXECUTION

3.1 INSULATION INSTALLATION

- .1 Install insulation to maintain continuity of thermal protection to building elements and spaces.
- .2 Where no means of securing is present, retain insulation in position with insulation clips, installed as recommended by manufacturer. Insulation clips shall be spaced 400mm vertically.
- .3 Fit insulation closely around electrical boxes, pipes, ducts, frames, and other objects in or passing through insulation.
- .4 Do not compress insulation to fit into spaces.
- .5 Keep insulation minimum 75mm away from heat emitting devices such as recessed light fixtures.
- .6 Do not enclose or build over insulation until it has been inspected and approved by Consultant.
- .7 Install Sound Attenuation insulation in non fire-rated acoustic wall assemblies, as shown on the drawings.
- .8 Install Fire Blanket Attenuation insulation in all fire-rated wall and ceiling assemblies, where indicated as having fire resistance ratings on the drawings.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide firestop products and systems intended to act as a firestop and smoke seal within fire resistive wall and floor assemblies.
- .2 Firestop systems shall be used in locations including, but not limited to, the following:
 - .1 Penetrations through fire resistance rated floor and roof assemblies including both empty openings and openings containing penetrants.
 - .2 Penetrations through fire resistance rated wall assemblies including both empty openings and openings containing penetrants.
 - .3 Membrane penetrations in fire resistance rated wall assemblies where items penetrate on side of the barrier.
 - .4 Joints between fire resistance rated assemblies.
 - .5 Perimeter gaps between rated floors/roofs and an exterior wall assembly.
- .3 Firestops and smoke seals within mechanical and electrical assemblies (i.e. inside ducts, dampers and bus ducts) shall be provided as part of the work of those trades.
- .4 Firestops and smoke seals around the outside of such mechanical and electrical assemblies, where they penetrate fire separations, shall form part of the work of this section.
- .5 Firestop systems provide for the Work must be from one manufacturer only.

1.3 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in

accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.

- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.
- .4 Pre-application Meeting
 - .1 Convene a pre-application meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
 - .1 Contractor (Site Superintendent & Project Manager)
 - .2 Application Subcontractor (Site Foreman & Project Manager)
 - .3 Product Manufacturer and/or Distributor (Technical Representatives)
 - .4 Related Subcontractors whose work is affected by that of this Section.

1.4 REFERENCE STANDARDS

- .1 ASTM E84-01; Standard Test Method For Surface Burning Characteristics of Building Materials.
- .2 ASTM E119; Methods of Fire Tests of Building Construction and Materials.
- .3 ASTM E814-00; Standard Test Method for Fire Tests of Through-Penetration Fire Stops.
- .4 ASTM E1399-97 (2000); Test Method for Cyclic Movement and Measuring Minimum and Maximum Joint Width.
- .5 ASTM E1966-00; Test Method For Resistance of Building Joint Systems.
- .6 UL 263; Fire Tests of Building Construction and Materials.
- .7 UL 723; Surface Burning Characteristics of Building Materials.
- .8 UL 1479; Fire Tests of Through-Penetration Fire Stops.
- .9 UL 2079; Tests for Fire Resistance of Building Joint Systems.
- .10 ULC-S115-1995 (R2001); Fire Tests of Firestop Systems.
- .11 CAN/ULC-S102-1988 (R2000); Surface Burning Characteristics of Building Materials and Assemblies.
- .12 Underwriters Laboratories of Canada; List of Equipment and Materials - Fire Resistance.
- .13 Underwriters Laboratories Inc.; Fire Resistance Directory – Volume 2.
- .14 Intertek Testing Services; Directory of Listed Building Products.
- .15 Factory Mutual Research (FM); FM Approval Standard of Firestop Contractors – Class 4991.
- .16 Omega Point Laboratories (OPL); Building Products, Materials & Assemblies – Volume II.

1.5 DEFINITIONS

- .1 Firestop: The use of a material or combination of materials in a fire-rated structure (wall or floor) where it has been breached, so as to restore the integrity of the fire rating on that wall or floor.
- .2 System: The use of a specific firestop material or combination of materials in conjunction with a specific wall or floor construction type and specific penetrant(s).
- .3 Barrier: Any bearing or non-bearing wall or floor that has an hourly fire and smoke rating.
- .4 Through-Penetration: Any penetration of a fire-rated wall or floor that completely breaches the barrier.
- .5 Membrane-Penetration: Any penetration in a fire-rated wall that breaches only one side of the barrier.

- .6 Fire Resistive Joint: Any gap, joint, or opening, whether static or dynamic, between two fire rated barriers including where the top of a wall meets a floor; wall edge to wall edge applications; floor edge to floor edge configurations; floor edge to wall.
- .7 Perimeter Barrier: Any gap, joint, or opening, whether static or dynamic, between a fire-rated floor assembly and a non-rated wall assembly.

1.6 PERFORMANCE REQUIREMENTS

- .1 Penetrations: Provide through-penetration firestop systems that are produced and installed to resist the spread of fire, passage of smoke and other hot gases according to requirements indicated, to restore the original fire-resistance rating of assembly penetrated.
- .2 Provide and install complete penetration firestop systems that have been tested and approved by nationally accepted testing agencies per ASTM E814, UL 1479, or ULC-S115 fire tests in a configuration that is representative of field conditions.
- .3 F-Rated Systems: Provide through-penetration firestop systems with F-ratings indicated, to ASTM E814, UL 1479, or ULC-S115 but not less than one (1) hour or the fire resistance rating of the assembly being penetrated.
- .4 FT-Rated Systems: Provide through-penetration firestop systems with T-ratings indicated, as well as F-ratings, to ASTM E814, UL 1479, or ULC-S115, where required by the Building Code.
- .5 FH-Rated Systems: Provide through-penetration firestop systems with H-ratings indicated, as well as F-ratings, to ASTM E814, UL 1479, or ULC-S115, where required by the Building Code.
- .6 FTH-Rated Systems: Provide through-penetration firestop systems with H-ratings indicated, as well as F-ratings and T-ratings, to ASTM E814, UL 1479, or ULC-S115, where required by the Building Code.
- .7 For piping penetrations for plumbing and wet-pipe sprinkler systems, provide moisture-resistant through-penetration firestop systems.
- .8 For penetrations involving insulated piping, provide through-penetration firestop systems not requiring removal of insulation.
- .9 Fire Resistive Joints: Provide joint systems with fire resistance assembly ratings indicated, as determined by UL 2079 (ASTM E1399 and E1966), but not less than the fire resistance assembly rating of the construction in which the joint occurs. Firestop assemblies must be capable of withstanding anticipated movements for the installed field conditions.
- .10 For firestop assemblies exposed to view, traffic, moisture, and physical damage, provide products that after curing do not deteriorate when exposed to these conditions both during and after construction.
- .11 For floor penetrations exposed to possible loading and traffic, provide firestop systems capable of supporting floor loads involved either by installing floor plates or by other means.

- .12 Firestop products shall have flames spread ratings less than 25 and smoke-developed ratings less than 450, to ASTM E 84 or CAN/ULC-S102.
 - .13 Where there is no specific third party tested and classified firestop system available for an installed condition, the firestop contractor shall obtain from the firestop material manufacturer an Engineering Judgment (EJ) to be submitted to the Consultant and authorities having jurisdiction for approval prior to installation. The EJ shall follow International Firestop Council (IFC) guidelines.
- 1.7 **MOCK-UP**
- .1 Prepare sample joints for approval by the Consultant, representative of each type of firestop condition in accordance with Section 01 30 00.
 - .2 Where not approved by the Consultant, remove and replace sample joints to the satisfaction of the Consultant.
 - .3 Approved installations may become part of the finished work.
- 1.8 **SUBMITTALS**
- .1 Consolidated List: Provide a consolidated list of all firestopping Products to be used for the Project, and their applications, including all those provided by Mechanical and Electrical Subcontractors.
 - .2 Product Data: For each type of firestop product selected. Certify that firestop materials are asbestos free and contain volatile organic compounds (VOC's) within limits of the local jurisdiction.
 - .3 Design Listings: Submit system design listings, including illustrations, from a qualified testing and inspecting agency that is applicable to each firestop configuration.
 - .4 Where there is no specific third party tested and classified firestop system available for a particular configuration, the firestop contractor shall obtain from the firestop material manufacturer an Engineering Judgment (EJ) for submittal.
 - .5 Qualification Data: For firms and persons specified under Quality Assurance to demonstrate their capabilities and experience. Submit document from manufacturer wherein manufacturer recognizes the installer as qualified.
- 1.9 **ENVIRONMENTAL CONDITIONS**
- .1 Install firestops when ambient or substrate temperatures are within limits permitted by the manufacturer's written instructions. Do not install firestops when substrates are wet due to rain, frost, condensation, or other causes.
 - .2 Ventilate per the manufacturers written instructions on the product's Material Safety Data Sheet.
- 1.10 **COORDINATION**
- .1 Coordinate construction of openings and penetrating items to ensure that firestop assemblies are installed according to specified requirements.
 - .2 Coordinate sizing of sleeves, openings, core-drilled holes, or cut openings to accommodate through-penetration firestop systems.

- .3 Do not conceal firestop installations until the Owner's inspection agency or Authorities Having Jurisdiction have examined each installation.
- .4 Schedule firestop work after installation of penetrants but prior to concealing the openings.

1.11 EXTENDED WARRANTY

- .1 Submit a warranty of the firestop installation specified in this Section covering a period of an additional two years beyond the expiration of the warranty period specified in the General Conditions of the Contract, including materials and application. Replacement of firestop shall include removal of defective materials, preparation for and application of new material, and the repair and making good of damaged adjacent materials.
- .2 "Defective" firestop installation shall include; joint leakage, hardening, cracking, crumbling, melting, bubbling, shrinkage, running, sagging, loss of adhesion, loss of cohesion, and staining of adjacent finished materials or surfaces.

2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- .1 3M Fire Protection Products
- .2 A/D Fire Protection
- .3 Hilti Firestop Systems
- .4 Grace Construction Products
- .5 TREMstop Firestopping Systems

2.2 MATERIALS

- .1 Firestop And Smoke Seal Systems: in accordance with ASTM E814, UL 1479, or ULC-S115, asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke, and gases to ASTM E814, UL 1479, or ULC-S115, and not to exceed opening sizes for which they are intended.
- .2 Service Penetration Assemblies: certified in accordance with ASTM E814, UL 1479, or ULC-S115 and listed in testing laboratory directory.
- .3 Service Penetration Firestop Components: certified in accordance with ASTM E814, UL 1479, or ULC-S115 and listed in testing laboratory directory.
- .4 Fire resistance rating of installed firestop assemblies shall be in accordance with design requirements, and requirements of Ontario and National Building Codes.
- .5 Primers: to Firestop manufacturer's recommendation for specific material, substrate, and end use.
- .6 Intumescent Firestop Sealants and Caulks
 - .1 Grace FlameSafe FS1900.
 - .2 Hilti FS-One.
 - .3 A/D FIREBARRIER Intumescent Caulk.
 - .4 3M Fire Barrier CP 25WB+ Caulk.
 - .5 TREMstop IA by, TREMstop Firestopping Systems.
- .7 Elastomeric Sealant
 - .1 Grace FlameSafe FS1900, FS900+.
 - .2 Hilti CP601S.

- .3 A/D FIREBARRIER Seal/Seal NS.
- .4 3M Fire Barrier Sealant 2000 and 2000N/S.
- .5 Fyre-Sil/Fyre-Sil S/L by, TREMstop Firestopping Systems.

- .8 Joint Spray
 - .1 Grace FlameSafe FS3000.
 - .2 Hilti CP672.
 - .3 A/D FIREBARRIER SprayMastic.
 - .4 3M FireDam Spray 100.
 - .5 TREMstop Acrylic SP by, TREMstop Firestopping Systems.

- .9 Firestop Putty
 - .1 Grace FlameSafe FSP1000 Putty & FSP1077 Putty Pads.
 - .2 Hilti CP617/617L Putty Pads, & CP618 Putty Stick.
 - .3 A/D FIREBARRIER Putty.
 - .4 3M Fire Barrier Moldable Putty+.
 - .5 TREMstop MP by, TREMstop Firestopping Systems.

- .10 Firestop Devices
 - .1 Grace FlameSafe FSWSD Collar, FSIS Intumescent Sleeve.
 - .2 Hilti CP642/643 Collar.
 - .3 A/D FIREBARRIER Collar/Sleeve.
 - .4 3M Fire Barrier RC-1 Restricting Collar.
 - .5 Fyre-Can/Fyre-Can Sleeve by, TREMstop Firestopping Systems.

- .11 Wrap Strips
 - .1 Grace FlameSafe FSWS 100/150.
 - .2 Hilti CP645.
 - .3 AD FIREBARRIER Wrap Strip.
 - .4 3M FS-195+.
 - .5 TREMstop WS by, TREMstop Firestopping Systems.

- .12 Firestop Mortars
 - .1 Grace FlameSafe FSM Mortar.
 - .2 Hilti FS635 Trowelable Compound.
 - .3 A/D FIREBARRIER Mortar.
 - .4 3M Fire Barrier Mortar.
 - .5 TREMstop Fire Mortar by, TREMstop Firestopping Systems.

- .13 Firestop Bags/Pillows/Blocks
 - .1 Grace FlameSafe Bags, FlameSafe Pillows.
 - .2 Hilti FS657 Fire Block.
 - .3 AD FIREBARRIER Pillows.
 - .4 3M Fire Barrier Pillows.
 - .5 TREMstop PS by, TREMstop Firestopping Systems.

- .14 Slab Edge Firestop
 - .1 Hilti CFS-EOS QS Edge Of Slab Quickseal.

- .15 Forming/Damming Materials: Mineral Wool or other type as per manufacturer's recommendations.

- .16 Accessories: Provide components for each firestop system that are needed to install fill materials and to comply with Performance Requirements. Use only approved components specified by the firestop manufacturer for the firestop systems indicated. Accessories include, but are not limited to the following items:
 - .1 Permanent forming/damming/backing materials, including the following:
 - .2 Mineral wool fiber insulation.
 - .3 Foams or sealants used to prevent leakage of fill materials in liquid state.
 - .4 Fire-rated form board.
 - .5 Polyethylene/polyurethane backer rod.
 - .6 Rigid polystyrene board, and other temporary forming materials.
 - .7 Substrate primers.
 - .8 Steel sleeves.
- .17 All firestop products and systems shall be designed and installed so that the basic sealing system will allow the full restoration of the thermal and fire resistance properties of the barrier being penetrated with minimal repair if penetrants are subsequently removed.

2.3 MIXING

- .1 For those products requiring mixing before application, comply with firestop manufacturer's written instructions for accurate proportioning of materials, water (if required), type of mixing equipment, selection of mixer speeds, mixing containers, mixing time, and other items or procedures needed to produce products of uniform quality with optimum performance characteristics for application indicated.

3 EXECUTION

3.1 EXAMINATION

- .1 Examine substrates and conditions for compliance with requirements for opening configurations, penetrating items, substrates, and other conditions affecting performance.
- .2 Proceed with installation only after unsatisfactory conditions have been corrected.
- .3 Verify that all pipes, conduits, cables, and/or other items which penetrate fire-rated construction have been permanently installed prior to installation of firestops.

3.2 PREPARATION

- .1 Surface Cleaning: Clean out openings immediately before installing firestop systems to comply with written recommendations of firestop manufacturer and the following requirements:
 - .1 Remove from surfaces of opening substrates and from penetrating items foreign materials that could interfere with adhesion of firestop systems.
 - .2 Clean opening substrates and penetrating items to produce clean, sound surfaces capable of developing optimum bond with firestop systems. Remove loose particles remaining from cleaning operation.
 - .3 Remove laitance and form-release agents from concrete.
- .2 Firestop shall be installed before fireproofing where bonding of firestop to metal deck is required.
- .3 Firestop must precede installation of insulation around pipes and ducts penetrating fire separation.
- .4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces.

3.3 INSTALLATION

.1 General

- .1 Install firestop and smoke seal material and components in accordance with certification and manufacturer's instruction.
- .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 separations.
- .3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength to maintain their integrity.
- .4 Tool or trowel exposed surfaces to a neat smooth finish.
- .5 Remove excess compound promptly as work progresses and upon completion.

.2 Penetration Firestop Systems

- .1 Install through-penetration firestop systems to comply with Performance Requirements in Part 1 and firestop manufacturer's written installation instructions and published drawings for products and applications indicated.
- .2 Apply firestops in accordance with listed system designs or manufacturer's EJ per the manufacturer's installation instructions.
- .3 Install forming/damming/backing materials and other accessories required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths required to achieve fire resistance ratings required.
- .4 Install fill materials for firestop systems by proven techniques to produce the following results:
 - .1 Fill voids and cavities formed by openings, forming materials, accessories, and penetrating items as required to achieve fire-resistance ratings indicated.
 - .2 Apply materials so they fully contact and adhere to substrates formed by openings and penetrating items.
 - .3 For fill materials that will remain exposed after completing Work, finish to produce smooth, uniform surfaces that are flush with adjoining finishes.

.3 Joint Firestop Systems

- .1 Install fire resistive joint firestop systems to comply with Performance Requirements in Part 1 and firestop manufacturer's written installation instructions and published drawings for products and applications indicated.
- .2 Apply firestops in accordance with listed system designs or manufacturer's EJ per the manufacturer's installation instructions.
- .3 Install joint forming/damming materials and other accessories required to support fill materials during their application and in the position needed to produce cross-sectional shapes and depths of installed firestop material relative to joint widths that allow optimum movement capability and achieve fire resistance ratings required.

- .4 Install fill materials for firestop systems by proven techniques to produce the following results:
 - .1 Fill joint as required to achieve fire-resistance ratings indicated.
 - .2 Apply materials so they fully contact and adhere to substrates forming the openings.
 - .3 Completely fill recesses provided for each joint configuration.
 - .4 Tool non-sag firestop materials after their application and prior to the time skinning begins. Use tooling agents approved by the firestop manufacturer.

- .4 Perimeter Barrier Firestop Systems
 - .1 Install perimeter barrier firestop systems to comply with Performance Requirements in Part 1 and firestop manufacturer's written installation instructions and published drawings for products and applications indicated.

 - .2 Apply firestops in accordance with listed system designs or manufacturer's EJ per the manufacturer's installation instructions.

 - .3 Install metal framing, curtain wall insulation, mechanical attachments, safing materials and firestop materials as applicable within the system design.

- 3.4 INSPECTION
 - .1 Notify Consultant when installation is complete and ready for inspection, and prior to concealing or enclosing firestop materials and service penetration assemblies.

- 3.5 TOLERANCES
 - .1 The following shall regulate sizing of service penetrations:
 - .1 Mechanical and Electrical shall sleeve single, circular penetrants, except in fire resistance rated gypsum board.

 - .2 Multiple penetrations of circular penetrants shall be considered such if the penetrants are not further than 102mm apart.

 - .3 Forming of multiple penetrations and single penetrants in fire resistance rated gypsum board assemblies shall be created by respective trades by forming a square or rectangular opening around the penetrants. The edges of the opening shall be covered in gypsum board

 - .4 Perimeter clearance shall be 13mm to 25mm for single penetrants, or 13mm to 25mm around outer penetrants in multiple penetrations.

 - .5 Penetrations of square or rectangular configuration shall be constructed as specified above. Perimeter clearance shall be 40 to 50mm.

- 3.6 SCHEDULE
 - .1 Non-Service Penetrations Through Vertical Fire Separations Consisting Of Masonry, Concrete, Or Gypsum Board/Stud Construction;
 - .1 Elastomeric seal and backup/forming material.
 - .2 Firestop system rating: **F**.

 - .2 Edge Of Floor Slabs At Curtain Wall Or Precast Concrete Panel Assemblies;
 - .1 Self-leveling elastomeric seal and backup/forming material.
 - .2 Firestop system rating: **F**.

- .3 Voids At Perimeter Edges Of Vertical Fire Separations Consisting Of Masonry, Concrete, Or Gypsum Board/Steel Stud Construction;
 - .1 Elastomeric seal and backup/forming material.
 - .2 Firestop system rating: **F**.
 - .4 Intersection Of Masonry And Gypsum Board/Steel Stud Fire Separations;
 - .1 Elastomeric seal and backup/forming material.
 - .2 Firestop system rating: **F**.
 - .5 Control And Deflection Joints In Fire Separations;
 - .1 Elastomeric seal and backup/forming material.
 - .2 Firestop system rating: **F**.
 - .6 Non-Service Penetrations Through Horizontal Fire Separations And Fire-Resistance Rated Floor Slabs, Ceilings, And Roofs;
 - .1 Self-leveling elastomeric seal and backup/forming material.
 - .2 Firestop system rating: **F**.
 - .7 Openings And Sleeves Installed For Future Use In Fire Separations;
 - .1 Elastomeric seal and backup/forming material.
 - .2 Firestop system rating: **FH**.
 - .8 Service Penetrations Around Mechanical Ductwork And Noncombustible Piping, Rigid Electrical Conduit And Other Assemblies Penetrating Fire Separations;
 - .1 Elastomeric seal and backup/forming material.
 - .2 Firestop system rating: **F**.
 - .9 Service Penetrations Around Mechanical Ductwork And Noncombustible Piping, Rigid Electrical Conduit And Other Assemblies Penetrating Firewalls;
 - .1 Elastomeric seal and backup/forming material.
 - .2 Firestop system rating: **FT**.
 - .10 Service Penetrations Around Combustible Piping Penetrating Fire Separations;
 - .1 Intumescent mastic collar.
 - .2 Firestop system rating: **F**.
 - .11 Service Penetrations Around Multiple Flexible Cables Penetrating Fire Separations;
 - .1 Removable intumescent bags/pillows, or intumescent cable sleeve systems.
 - .2 Firestop system rating: **FT**.
- 3.7 **CLEANUP**
- .1 Remove excess materials and debris from site, and clean adjacent surfaces immediately after application.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide caulking and sealing of joints between building components, including joint preparation.
 - .1 Interior Joints
 - .1 Perimeter of opening frames in interior walls,
 - .2 Base of metal frames at floor,
 - .3 Joints between dissimilar materials,
 - .4 Full length of door thresholds,
 - .5 Control and expansion joints,
 - .6 Perimeter of plumbing fixtures,
 - .7 Perimeter of fixed equipment.

1.3 REFERENCE STANDARDS

- .1 ASTM C920; Standard Specification for Elastomeric Joint Sealants.
- .2 CAN/CGSB-19-GP-5M; Sealing Compound, One Component, Acrylic Base, Solvent Curing.
- .3 CAN/CGSB-19-GP-14M; Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.
- .4 CAN/CGSB-19.17; Sealing Compound, One Component, Acrylic Emulsion Base.
- .5 CAN/CGSB-19.13; Sealing Compound, One Component, Elastomeric, Chemical Curing.
- .6 CAN/CGSB-19.24; Sealing Compound, Multi-Component, Chemical Curing.

1.4 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in

accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.

- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.
- 1.5 **MOCK-UP**
 - .1 Test sealant in contact with samples of materials to be caulked to ensure that proper adhesion will be obtained and no staining of the material will result. Prepare sample joints at the site of each type of sealant for each joint condition to provide mock-up as specified in Section 01 30 00.
- 1.6 **SUBMITTALS**
 - .1 Submit product list with manufacturer's product name for each sealant to be used for this project, along with recommendations for use of the sealant, before commencing joint sealing.
 - .2 Submit Product Data and MSDS sheets for all Products.
- 1.7 **ENVIRONMENTAL CONDITIONS**
 - .1 Apply sealants only to completely dry surfaces, and at air and material temperatures above minimum established by manufacturer's specifications.
- 1.8 **EXTENDED WARRANTY**
 - .1 Submit a warranty for the work of this Section for a period of three(3) years from the Date of Substantial Performance, including materials and application.
 - .2 Replacement of joint sealants shall include removal of defective materials, preparation for and application of new material, and the repair and making good of damaged adjacent materials.
 - .3 Defective joint sealant installation shall include, but not be restricted to, joint leakage, hardening, cracking, crumbling, melting, bubbling, shrinkage, running, sagging, change of colour, loss of adhesion, loss of cohesion, and staining of adjoining of adjacent materials or surfaces.
- 2 PRODUCTS**
 - 2.1 **MATERIALS**
 - .1 All materials utilized in a sealant system shall be compatible and non-staining.
 - .2 Specified proprietary products are minimum acceptable quality. Products of other manufacturers of equal or superior quality will be acceptable where specifically approved by Consultant.
 - .3 Provide sealant formulation recommended by manufacturer for type of joint, substrate and service conditions applicable.
 - 2.2 **SEALANTS**
 - .1 Refer to Caulking Schedule for utilization of the following sealants:

- .1 **Sealant Type 1:** Multi-component, chemical-cure polyepoxide polyurethane sealant, to ASTM C920, Type M, Grade NS, Class 25, Use T, NT, M, G, A, and O; colours as selected by the Consultant;
 - .1 "DYMERIC 240" by Tremco (Canada) Ltd.
 - .2 "PRC Rubber Calk 270", by PRC Canada Inc.
 - .3 "SikaFlex 2c NS", by Sika Canada Inc.
 - .4 "Sonnenborn Sonnelastic® NP 2™", by BASF Building Materials.
 - .5 "Dynatrol® II", by Pecora Corporation.

 - .2 **Sealant Type 2:** One-part, moisture-cure (fast cure) polyurethane sealant, to CAN/CGSB-19.13, Classification MC-2-25-B-N; colours as selected by the Consultant;
 - .1 DYMONIC FC or Vulkem 116, by Tremco (Canada) Ltd.
 - .2 "Dynatrol® I-XL", by Pecora Corporation.
 - .3 "Sonnenborn Sonnelastic® NP 1™", by BASF Building Materials.

 - .3 **Sealant Type 3:** One-part, acrylic latex sealant, to CAN/CGSB-19-GP-5M;
 - .1 "TREM-FLEX® 834", by Tremco (Canada) Ltd.
 - .2 "RCS20 Acrylic Urethane", by GE Advanced Materials.
 - .3 "AC20™", by Pecora Corporation.

 - .4 **Sealant Type 4:** to ASTM C920, Type S, Grade NS, Class 25, Use NT, G, A, and O, one component acetoxysilicone containing non-toxic fungicidal agents; colours as selected by the Consultant. Acceptable products are:
 - .1 "Dow Corning® 786", by Dow Corning Canada Limited.
 - .2 "Sanitary SCS1700", by GE Advanced Materials.
 - .3 "Tremsil® 200", by Tremco (Canada) Ltd.
 - .4 "Sonnenborn OmniPlus™", by BASF Building Materials.

 - .5 **Sealant Type 5:** One-part, medium modulus, neutral cure silicone sealant, to CAN/CGSB-19.13, Classification MCG-2-25-A-L;
 - .1 SPECTREM® 2, by Tremco (Canada) Ltd.
 - .2 "Dow Corning® 795", by Dow Corning Canada Limited.

 - .6 **Sealant Type 6:** One-part, non-skinning, non-hardening, synthetic rubber acoustical sealant, to CGSB 19-GP-14M;
 - .1 "Tremco Acoustical Sealant", by Tremco (Canada) Ltd.
 - .2 "BC-158", by Pecora Corporation.

 - .2 Colours of sealants will be selected by the Consultant from manufacturers full available ranges of colour.
- 2.3 ACCESSORIES
- .1 Primer: Type recommended by sealant manufacturer.

 - .2 Backer Rods: 30% greater diameter than joint width, with Shore-A hardness of 20, and 830-900Kpa tensile strength;
 - .1 Vertical Surfaces: extruded polyolefin rod; SofRod by Tremco Canada (div. of RPM Canada).
 - .2 Horizontal Surfaces: closed cell polyethylene rod; Standard Backer Rod by Tremco Canada (div. of RPM Canada).

- .3 Bond Breaker: pressure sensitive plastic tape, for installation where minimum specified depth of joint is unobtainable; 3M #266/#481, or Valley Industries #40.

3 EXECUTION

3.1 EXAMINATION

- .1 Before commencing joint sealing, verify at the site that joint configuration and surfaces have been provided as specified in other Sections to meet intent of sealant specification.
- .2 Verify that joint conditions will not adversely affect execution, performance or quality of completed sealed joints, and that they can be put into acceptable condition by means of preparation specified in this Section. If in doubt, verify site conditions together with manufacturer's representative of the sealant to be applied.
- .3 Verify that sealers and coatings applied to sealant substrates are compatible with the sealant used and that full bond between sealant and substrate is attained. Request samples of the sealed or coated substrate from their fabricators for testing of compatibility and bond if necessary.
- .4 Verify that specified environmental conditions are ensured before commencing joint sealing.
- .5 Defective sealed joints resulting from application to unsatisfactory joint conditions will be considered the responsibility of this Section.
- .6 Examine joint sizes for anticipated movement, and for proper width/depth ratio per manufacturer's recommendations for specified sealant.

3.2 PREPARATION

- .1 Remove loose mortar, dust, oil, grease, oxidation, mill scale, coatings and all other materials affecting bond of compounds from surfaces to which sealant compounds must adhere, except for painted surfaces, by brushing, scrubbing, scraping or grinding.
- .2 Clean down caulked metal surfaces with clean cellulose sponges or rags soaked in solvent recommended by sealant manufacturer, and wipe dry with clean cloths. Ensure that solvent is not injurious to painted surfaces.
- .3 Use methods of preparation suitable for substrate as recommended by sealant manufacturer, and that does not damage adjacent surfaces.
- .4 Ensure that releasing agents, coatings or other treatments have either not been applied to joint surfaces, or that they are entirely removed.
- .5 Where necessary to protect adjacent surfaces, mask adjacent surfaces with tape prior to priming and/or caulking.

3.3 APPLICATION

- .1 Except where specified in other Sections, seal open joints in surfaces exposed to view, and to make the building weather-tight and airtight as applicable; as indicated typically on the Drawings, and as otherwise specified and instructed by Consultant. Refer to Caulking Schedule at the end of this section.

- .2 Prime surfaces to receive sealants as required by substrate and manufacturer's specifications to ensure positive and permanent adhesion, and to prevent staining.
- .3 Pack joints tightly with backer rod set at depth specified for sealant. Fill other voids with filler.
- .4 Install joint backing material or apply bond breaker tape to achieve correct joint depth and prevent three-sided adhesion. Install bond breaker tape in bottom of joints in lieu of sealant backing where proper depth cannot be obtained when backing is installed.
- .5 Maintain depth of sealant as follows:

JOINT WIDTH	JOINT DEPTH
6mm (minimum)	6mm
6 to 13mm	depth = joint width
13 to 20mm	depth = ½ joint width

- .6 Maximum widths of joints are as follows:
 - .1 Exterior: 20mm.
 - .2 Interior: 10mm.
- .7 Perform joint sealing in accordance with compound manufacturer's specifications, under manufacturer's supervision, and using pressure guns and other equipment as approved by the manufacturer.
- .8 Finish joints with a full bead so that they are smooth; and free from ridges, wrinkles, air pockets and embedded foreign materials. Tool surface of joints to a slight concave profile.
- .9 Caulk joints in site-painted materials after surfaces have been prime painted.
- .10 Do not allow sealants to cover or spot surfaces outside of joints. Use masking tape protection to prevent coating of adjacent surfaces if necessary.
- .11 All work shall be performed in accordance with manufacturer's specifications for sealants specified.

3.4 CLEANING

- .1 Remove sealant smears and droppings, and masking tape immediately on completion of joint sealing.
- .2 Do not use chemicals, scrapers, or other tools, which would damage surfaces from which excess compounds, or droppings are removed. Make good materials damaged by cleaning by the installer of the damaged material and at the expense of this Section.

3.5 CAULKING SCHEDULE

Sealant Type 1 or 2	<ul style="list-style-type: none"> • Interior joints between dissimilar materials. • Interior joints at perimeter of all built-in equipment. • Interior joints at perimeter of metal door and window frames.
Sealant Type 3	<ul style="list-style-type: none"> • Interior non-movement joints 6mm or less for painting (painter's caulk).

Sealant Type 4	<ul style="list-style-type: none">• Interior joints where mildew resistance is required.• Interior joints at perimeter of all plumbing fixtures• Interior joints between counter backsplash and wall surfaces.
Sealant Type 5	<ul style="list-style-type: none">• Glass to glass joints.• Glass to metal joints.• Metal to metal curtain wall joints.
Sealant Type 6	<ul style="list-style-type: none">• Perimeter of all gypsum board partitions where sound insulation is indicated.• All vapour barrier seams and seals.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to supply all steel (hollow metal) doors, frames, and screens.
- .2 This section shall provide all factory fabrication, hardware preparation, and accessories specified herein.

1.3 REFERENCE STANDARDS

- .1 ASTM A1008/A1008M; Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability.
- .2 ASTM A653/A653M; Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .3 ASTM A924/A924M; Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
- .4 ANSI/BHMA A156 Series; Hardware.
- .5 CSA-G40.20/G40.21; General Requirements for Rolled or Welded Structural Quality Steel/Structural Quality Steel.
- .6 CSA W59; Welded Steel Construction (Metal Arc Welding).
- .7 CAN4-S104; Fire Tests of Door Assemblies.
- .8 CAN4-S105; Fire Door Frames.
- .9 CAN/ULC-S102; Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .10 CAN/ULC-S702; Standard for Mineral Fibre Thermal Insulation for Buildings.
- .11 CAN/ULC-S704; Standard for Thermal Insulation, Polyurethane and Polyisocyanurate, Boards, Faced.
- .12 CAN/ULC-S770; Standard for Determination of Long-Term Thermal Resistance of Closed-Cell Thermal Insulation Foams.
- .13 Canadian Steel Door and Frame Manufacturers' Association, (CSDFMA) Canadian Manufacturing Specifications for Steel Door and Frames, 1990.
- .14 CAN/CGSB-1.181; Ready Mixed Organic Zinc-Rich Coating.
- .15 CGSB 41-GP-19Ma; Rigid Vinyl Extrusions for Windows and Doors.
- .16 NFPA-80; Fire Doors and Fire Windows.
- .17 UL Building Materials Directory.
- .18 ULC List of Equipment and Materials, Volume 2.

- .19 ITS/WH Certification Listings.

1.4 REQUIREMENTS OF REGULATORY AGENCIES

- .1 Steel fire rated doors and frames shall be labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 and CAN4-S105 for ratings specified or indicated.
- .2 Install labelled, fire resistance rated, steel doors and frames in accordance with NFPA-80 except where specified otherwise.

1.5 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 30 00.
- .2 Indicate each type of door, material, steel core thicknesses, mortises, reinforcements, location of exposed fasteners, glazed and louvred openings, arrangement of hardware and fire ratings.
- .3 Indicate each type frame material, core thickness, reinforcements, glazing stops, location of anchors and exposed fastenings and finishes.

2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- .1 Fleming Steel Doors & Frames.
- .2 Baron Metal Industries Inc.
- .3 Artek Door Limited.
- .4 Trillium Doors and Frames Ltd.
- .5 Daybar Industries Ltd.
- .6 Metal Door Limited.

2.2 MATERIALS

- .1 Steel Sheet: Cold-rolled, commercial grade steel sheet, Type A, to ASTM A1008/A1008M 1.519mm base metal thickness;
 - .1 Hot-dip Galvanized/Galvannealed: zinc-coated to ASTM A653/A653M, coating designation Z275, for all exterior doors and frames, and all doors and frames in Spas, Tub Rooms, Shower/Change Rooms, Kitchen, Laundry.
 - .2 Wipe-Coat Galvanized: to ASTM A653/A653M, coating designation ZF001, for all other doors and frames.
- .2 Insulation
 - .1 Polyisocyanurate: to CAN/ULC-S704, Type 1, Class 1 closed-cell polyisocyanurate foam manufactured using HCFC-free blowing agents, and as follows;
 - .1 Compressive strength: 140kPa minimum.
 - .2 Flame Spread: 500 to CAN/ULC-S102.
 - .3 Vapour Permeance: 1.5ng/Pa s m² maximum.
 - .4 Dimensional stability: 1.5% maximum linear change at 70°C and 97% relative humidity for 7 days.
 - .5 Curing Time: minimum 24 hours, plus 24 hours per 25mm of thickness before shipment from manufacturer.
 - .6 Long Term Thermal Resistance (LTTR)
 - .1 RSI 1.04 for 25mm board thickness.
 - .2 RSI 2.09 for 50mm board thickness.

- .3 RSI 3.18 for 75mm board thickness.
 - .2 Semi-Rigid Mineral Fibre: processed from rock, slag, or glass, to CAN/ULC-S702 Type 1, minimum density 24 kg/m³;
 - .3 Primer: Zinc-rich rust inhibitive type to CAN/CGSB-1.181.
- 2.3 ACCESSORIES
- .1 Door Bumpers: Single stud rubber/neoprene type.
 - .2 Exterior Top Caps: Rigid PVC extrusion conforming to CGSB 41-GP-19Ma.
 - .3 Frame Thermal Breaks: Rigid PVC extrusion conforming to CGSB 41-GP-19Ma.
- 2.4 FABRICATION
- .1 General
 - .1 Fabricate doors and frames as detailed, to CSDFMA Specifications for Commercial Steel Doors and Frames, except where specified otherwise.
 - .2 Blank, reinforce, drill and tap doors and frames for all hardware. Mortised cutouts shall be protected with steel guard boxes.
 - .3 Reinforce doors and frames for surface mounted hardware.
 - .4 Formed edges shall be true and straight with a minimum radius for the thickness of steel used.
 - .5 Provide for appropriate anchorage to floor and wall construction. Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb.
 - .6 For rebate opening heights up to and including 1525mm, provide two anchors, and an additional anchor for each additional 760mm or fraction thereof.
 - .7 Frames in existing concrete, masonry or steel shall be provided with anchors located not more than 152mm from top and bottom of each jamb, and intermediate anchors at 660mm o.c. max.
 - .8 Each door opening shall be prepared for rubber stud door silencers, three (3) for single doors, two (2) for double doors.
 - .9 Factory-apply touch up primer to galvanized steel doors and frames where coating has been removed during fabrication.
 - .10 Fire labelled doors and frames shall be provided for those openings requiring fire protection ratings. Doors and frames shall be tested in accordance with CAN4-S104.
 - .11 Provide all required internal steel frame reinforcement to ensure structural rigidity and integrity, including connections to nearest building structure elements.
 - .12 Door faces of all steel doors shall be fabricated without visible seams, free of scale, pitting, coil brakes, buckles and waves.

- .13 Construct stile and rail doors in same manner as flush doors.
 - .14 Construct matching transom panels or inactive leaves in same manner as doors.
 - .15 Longitudinal edges of interior doors shall be:
 - .1 Mechanically interlocked, adhesive assisted with edge seams tack welded, filled and sanded flush with no visible seam.
 - .16 Lock and hinge edges shall be beveled 3mm in 50mm unless hardware or door swing dictates otherwise.
 - .17 Top and bottom of doors shall be provided with inverted, recessed, 1.519mm steel end channels, welded to each face sheet at 152mm on center maximum.
 - .18 Exterior doors shall be provided with factory installed flush PVC top caps. Fire labeled exterior doors shall be provided with factory-installed flush steel top caps.
 - .19 Provide 1.519mm closer reinforcement channels at top of all doors (interior and exterior).
 - .20 Fire labelled doors shall be provided for those openings requiring fire protection ratings, as indicated. Such frames shall be tested in conformance with CAN4-S104.
- .2 Doors
- .1 Exterior Doors
 - .1 Face Sheets: 1.519mm base metal thickness.
 - .2 Door Cores
 - .1 Steel Stiffened: vertically stiffened with 0.912mm steel ribs at 152mm o.c. maximum, with all voids filled completely with semi-rigid mineral fibre insulation as specified above.
 - .2 Bonded (Insulated) Core: Polyisocyanurate insulation as specified above, in slab form, thermally bonded to door skins.
 - .2 Interior Doors
 - .1 Face Sheets: 1.214mm base metal thickness.
 - .2 Door Cores
 - .1 Steel Stiffened: vertically stiffened with 0.912mm steel ribs at 152mm o.c. maximum, with all voids filled completely with semi-rigid mineral fibre insulation as specified above.
 - .2 Temperature Rise Rated (TRR): Core composition to limit temperature rise on the unexposed side of door to 121°C, 232°C, or 343°C temperature rise at 30 minutes, or 250°C at either 30 or 60 minutes, as determined by Ontario Building Code requirements. Core shall be tested as part of a complete door assembly, in accordance with CAN4-S104.

- .3 Use Steel Stiffened for all fire rated doors, and heavy use doors, where temperature rise rating is not required.
 - .4 Use Temperature Rise Rated for doors indicated in schedules.
 - .5 Use Steel Stiffened core for all others.
- .3 Hardware Preparation
- .1 Doors shall be factory blanked, reinforced, drilled and tapped for fully templated mortised hardware only, in accordance with the final approved schedule and templates provided by the hardware supplier.
 - .2 Doors shall be factory blanked and reinforced only for mortised hardware that is not fully templated.
 - .3 Doors shall be factory reinforced only for surface mounted hardware.
 - .4 Templated holes 13mm diameter and larger shall be factory prepared, except mounting and through bolt holes, which shall be by the contractor responsible for installation on site, at the time of application. Templated holes less than 13mm diameter shall be factory prepared only when required for the function of the device (for knobs, levers, cylinders, thumb or turn pieces) or when these holes over-lap function holes.
 - .5 Drilling and tapping for surface mounted hardware or mortised hardware that is not fully templated shall be by the contractor responsible for installation on site, at the time of application.
 - .6 Hinge and pivot reinforcements shall be 3.416 mm steel minimum high frequency type reinforcing.
 - .7 Doors in excess of 2450mm rabbet height shall be prepared for 114.3mm heavy weight 4.6mm hinges minimum.
 - .8 Lock, strike and flush bolt reinforcements shall be 1.519mm steel minimum.
 - .9 Reinforcements for concealed closers and holders shall be 2.657mm steel minimum.
 - .10 For surface mounted hardware, reinforcements shall be 1.519mm steel minimum.
 - .11 Where electrically or electronically operated hardware is specified on the schedules or details or the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes, where indicated on the templates, shall be provided and inter-connected with CSA-approved 13mm diameter conduit and connectors.

- .4 Glazing
 - .1 Make provision for glazing as indicated and provide necessary glazing stops in accordance with tested and labelled assemblies.
 - .2 All glazing rebates and bevelled stops for frames located in fire separations shall be minimum 20mm in height.
 - .3 Where glazing materials up to and including 8mm thick are specified, doors shall be provided with 0.912mm steel glazing trim and bevelled snap-in glazing stops.
 - .4 Where glazing materials greater than 8mm thick are specified, doors shall receive 0.912mm steel trim and screw-fixed bevelled glazing stops. Screws shall be #6 x 31mm oval head, self-drilling type at 300mm on center maximum.
 - .5 Glazing trim and stops shall be accurately fitted, butted at corners, with removable glazing stops located on the 'push' side of the door.
- .5 Louvers
 - .1 Where specified on the schedules or details, doors shall be prepared for door louver inserts.
- .6 Finishing
 - .1 Remove weld slag and splatter from exposed surfaces.
 - .2 All tool marks, abrasions and surface blemishes shall be filled and sanded to present smooth uniform surfaces.
 - .3 On exposed surfaces where zinc coating has been removed during fabrication, doors shall receive a factory applied touch-up primer.
 - .4 Primer shall be fully cured prior to shipment.
- .3 Frames
 - .1 General
 - .1 Fabricate frames from tension leveled steel to ASTM A924, galvanized to ASTM A653/653M, Commercial Steel (CS), Type B.
 - .2 Exterior frames
 - .1 Fabricate from 1.519mm base metal thickness.
 - .2 Exterior frame product shall be supplied set-up and welded.
 - .3 Thermally Broken Frames
 - .1 Fabricate thermally broken frames for exterior doors using 1.2mm steel, separating exterior portion of frame from interior portion with polyvinylchloride thermal breaks.
 - .2 Thermally broken sections shall not be assembled by means of screws, grommets or other fasteners.

- .3 Where thermally broken welded frame product is specified, welds shall not cause thermal transfers between interior and exterior surfaces of the frame sections.
- .4 Closed sections (mullions and center rails) of thermally broken frames shall be factory insulated with semi-rigid mineral fibre insulation as specified above.
- .5 Insulation of open sections (jamb, heads and sills) shall be provided on site.
- .4 Interior frames
 - .1 Fabricate from 1.519mm base metal thickness.
 - .2 Interior frame product shall be supplied set-up and welded.
- .5 Corner joints shall be accurately mitered and tightly fitted with integral door stops mitered or butted when assembled.
- .6 Corner joints shall be:
 - .1 Welded on the inside of the profiles' returns and faces for set-up and welded frames.
- .7 Joints at mullions, transom bars, sills or center rails shall be coped accurately, butted and tightly fitted, with faces securely welded, matching corner joint faces.
- .8 Frame product shall be fabricated with integral door stops having a minimum height of 16mm.
- .9 Glazing stops shall be bevelled, formed 0.912mm steel, 16mm minimum bevelled height channel, accurately fitted, butted at corners and fastened to frame sections with #6 x 31mm oval head scrulox (self-drilling) type screws at 300mm on center maximum. Stops shall be 20mm high at all labelled frames.
- .10 Where required due to site access, as indicated on schedules, when advised by the contractor responsible for co-ordination or installation, or when shipping limitations so dictate, frame product shall be fabricated in sections for splicing in the field.
- .11 Field spliced jamb, heads and sills shall be provided with 1.519mm steel splice plates securely welded into one section, extending 100mm minimum each side of splice joint.
- .12 Field splices at closed sections (mullions or center rails) shall be 1.519mm steel splice angles securely welded to the abutting member. Face of splice angle shall extend 100mm minimum into closed sections when assembled.
- .13 Field splice joints shall be welded, filled and ground to present a smooth uniform surface.
- .14 On factory-assembled frame product, each door opening shall be provided with two (2) temporary steel jamb spreaders welded to the base of the jamb or mullions to maintain proper alignment during shipping and handling. Spreaders shall be removed prior to anchoring of frame to floor.

- .15 Each door opening shall be prepared for single stud door silencers, three (3) for single door openings, two (2) for double door openings. Silencers shall be shipped loose for installation after finish painting.
- .16 Hardware Preparation
 - .1 Frame product shall be blanked, reinforced, drilled and tapped for fully templated mortised hardware only, in accordance with the final approved schedule and templates provided by the hardware supplier.
 - .2 Frame product shall be factory blanked and reinforced only for mortised hardware that is not fully templated.
 - .3 Frame product shall be reinforced only for surface mounted hardware.
 - .4 Drilling and tapping for surface mounted hardware or mortised hardware not templated shall be done at the time of installation.
 - .5 Frames shall be prepared for 114mm standard weight hinges (minimum).
 - .6 Hinge and pivot reinforcements shall be 3.416mm steel minimum reinforcing, high frequency type shall be provided.
 - .7 Strike reinforcements shall be 1.519mm steel minimum.
 - .8 Reinforcements for surface mounted hardware, concealed closers and holders and flush bolts shall be 2.657mm steel minimum.
 - .9 Mortised cutouts shall be protected with 0.759mm steel minimum guard boxes.
 - .10 Where electrically or electronically operated hardware is specified on schedules or details, or the final approved schedule and templates provided by the hardware supplier, hardware enclosures and/or junction boxes where indicated on templates shall be provided and inter-connected with CSA-approved 13mm diameter conduit and connectors.
- .17 Anchorage
 - .1 Frame product shall be provided with anchorage appropriate to floor, wall and frame construction.
 - .2 Each wall anchor shall be located immediately above or below each hinge reinforcement on the hinge jamb and directly opposite on the strike jamb, except as indicated below.
 - .3 Frame product installed in unit masonry partitions shall be provided with 4.0mm diameter steel wire anchors, 1.214mm steel adjustable stirrup and strap or "T" type anchors as conditions dictate.

- .4 Where frame product is installed prior to construction of the adjacent wall, each jamb shall be provided with 1.519mm steel floor anchors. Each anchor shall be provided with two (2) holes for mounting to the floor and shall be securely welded to the inside of the jamb profile designed so as not to permit thermal transfers from exterior to interior surfaces of the frame sections.
- .5 Frame product installed in steel stud and drywall partitions shall be provided with 0.912mm steel snap-in or "Z" type stud type anchors.
- .6 Jambs of frames in previously placed concrete, masonry or structural steel shall be punched and dimpled to accept machine bolt anchors, 6.4mm diameter, located not more than 152mm from the top and bottom of each jamb. Anchor preparations and guides shall also be located immediately above or below the intermediate hinge reinforcements and directly opposite on the strike jamb. Each preparation shall be provided with 1.519mm anchor bolt guides.
- .7 After sufficient tightening of the anchor bolt, the head shall be welded so as to provide a non-removable application. Welded bolt and dimple shall be filled and ground to present a smooth uniform surface, prior to finish painting.
- .8 Where indicated on schedules or details, channel extensions shall be provided from the top of the frame assembly to the underside of the structure above. Extensions shall be fabricated from 2.657mm steel formed channels, mounting angles and adjusting brackets, with mounting angles welded to the inside of frame head. Formed channels, adjusting brackets and fasteners shall be shipped loose. Channels shall be mechanically connected to mounting angles and adjusting brackets with supplied fasteners on site.
- .9 For fire labeled frames, each strike jamb shall be provided with an additional snap-in anchor in each face, to be installed above or below the strike reinforcement. Each head for fire labeled pairs shall be provided with two (2) snap-in anchors, to be installed in the head faces at the center of the rabbet opening width.
- .18 Finishing
 - .1 Remove weld slag and spatter from exposed surfaces.
 - .2 All tool marks, abrasions and surface blemishes shall be filled and sanded to present smooth and uniform surfaces.
 - .3 On exposed surfaces where zinc has been removed during fabrication, frame product shall receive a factory applied touch-up primer.

2.5 SIZES AND TOLERANCES

- .1 Widths of door openings shall be measured from inside of frame jamb rabbet with a tolerance of +1.6mm - 0.8mm.

- .2 Heights of door openings shall be measured from the finished floor (exclusive of floor coverings) to the head rabbet of the frame with a tolerance of $\pm 1.2\text{mm}$.
- .3 Unless builders' hardware dictates otherwise, doors shall be sized so as to fit the above openings and allow a 3mm clearance at jambs and head. A clearance of 19mm between the bottom of the door and the finished floor (exclusive of floor coverings) shall be provided. Tolerances on door sizes shall be $\pm 1.2\text{mm}$.
- .4 Manufacturing tolerances on formed frame profiles shall be $\pm 0.8\text{mm}$ for faces, door stop heights and jamb depths. Tolerances for throat openings and door rabbets shall be $\pm 1.6\text{mm}$ and $\pm 0.4\text{mm}$ respectively. Hardware cutout dimensions shall be as per template dimensions, +0.4mm, - 0.

2.6 HARDWARE LOCATIONS

- .1 Hardware preparations in frame product shall be as noted below and locations on doors shall be adjusted for clearances specified above.
- .2 Top of upper hinge preparation for 114.3mm hinges shall be located 180mm down from head, transom mullion or panel as appropriate. The top of the bottom hinge preparation for 114.3mm hinges shall be located 310mm from finished floor as defined above. Intermediate hinge preparations shall be spaced equally between top and bottom cutouts. For dutch door frames, top and bottom hinge locations shall be as above, with the tops of intermediate hinges located at 930mm and 1403mm from finished floor.
- .3 Strike preparations for unit, integral, cylindrical and mortise locks and roller latches shall be centered 1033mm from finished floor. Strikes for deadlocks shall be centered at 1220mm from finished floor. Strikes for panic or fire exit hardware shall be located as per device manufacturer's templates.
- .4 Push and/or pulls on doors shall be centered 1070mm from finished floor.
- .5 Preparations not noted above shall be as per hardware manufacturer's templates.
- .6 Hardware preparation tolerances shall comply with ANSI A156 Series standards.

3 EXECUTION

3.1 INSTALLATION

- .1 General
 - .1 Install all doors and frames in accordance with NFPA-80.
- .2 Doors
 - .1 Install doors in accordance with manufacturer's instructions and templates.
 - .2 Install hardware in accordance with hardware templates, manufacturer's instructions and Section 08 71 00.
 - .3 Provide maximum clearances at edges of doors as follows:
 - .1 Between door and frame at head and jambs: 3mm.
 - .2 At meeting edges pairs of doors and at mullions: 3mm.
 - .3 At transom panels, without transom bars: 3mm.
 - .4 At sills without thresholds: 16mm maximum above finish floor.

- .5 At sills with thresholds: 3mm above threshold.
- .4 Adjust operable parts for correct function.
- .5 Install louvres securely in doors.
- .3 Frames
 - .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 1220mm 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 Install all frame reinforcing where indicated or required for structural rigidity.
- 3.2 FINISH REPAIRS
 - .1 Touch up with primer galvanized finish damaged during installation.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide all wood doors, including:
 - .1 Factory fabrication.
 - .2 Factory prep for finish hardware.
 - .3 Factory finishing (stain/transparent Finish).
 - .4 Shipment to the site.

1.3 REFERENCE STANDARDS

- .1 AWI / AWMAC Quality Standards for Architectural Woodwork.
- .2 CAN3-A172; High Pressure, Paper Base, Decorative Laminates.
- .3 CAN4-S104; Fire Tests of Door Assemblies.
- .4 CAN4-S105; Fire Door Frames.
- .5 CAN/CSA-O132.2 SERIES; CSA Standards for Wood Flush Doors.
- .6 CSA O112.6/O112.7; Resorcinol Resin Adhesive.
- .7 CAN/CGSB-71.19; Adhesive, Contact, Sprayable.
- .8 CAN/CGSB-71.20; Adhesive, Contact, Brushable.
- .9 NFPA 80 – Fire Doors and Windows; National Fire Protection Association
- .10 WDMA IS 1A; Wood Door Manufacturers Association Installation Standard.

1.4 SUBMITTALS

- .1 Product Data
 - .1 Manufacturer's specifications and technical data including the following :
 - .1 Detailed specification of construction and fabrication.
 - .2 Facing, core design and material, glue type, rails, and blocking for screwattached hardware.
 - .3 Details of construction, light and louver opening details, and glazing thickness.
 - .4 Indicate blocking for hardware attachment as applicable to each door type.
 - .5 Indicate lead thickness for lead lined doors.
 - .2 Manufacturer's installation instructions.
 - .3 Manufacturer's finishing instructions for field finished doors.
 - .4 Manufacturer's recommendations for care and maintenance of doors.

- .2 Shop Drawings: Provide the following information:
 - .1 Door type,
 - .2 Door size,
 - .3 Fire Rating,
 - .4 Hardware types and locations,
 - .5 Hardware blocking requirements and location,
 - .6 Glazing stop details,
 - .7 Vision panel or louver cutout size and location, and
 - .8 Factory finish system/approved colour(s).

- .3 Samples:
 - .1 Colour Samples Of Factory Finishing: submit full range of laminate samples not less than 102x152mm size labeled with sample production date, of representative finish indicating range of colour and variation that can be expected.

 - .2 Construction Samples. Corner sections with door faces, edges, and core representative of the specified door type(s). Corner samples to be not less than 152x228mm.

1.5 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.

- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.

- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.

- .4 Material Qualifications
 - .1 Comply with requirements of AWMAC/AWI Quality Standards for material, fabrication, finishing, and installation except where otherwise indicated.

 - .2 Supply doors from one manufacturer for entire project.

- .5 Regulatory Requirements For Fire Rated Doors
 - .1 Fire Rating & Labeling: Fire rated doors shall be labelled and listed by an organization accredited by Standards Council of Canada in conformance with CAN4-S104 for ratings specified or indicated.

 - .2 Provide fire doors for stairwell enclosures that will limit maximum transmitted temperature to door surface on opposite fire side of door to less than 232°C above ambient temperature after 30 minutes of fire exposure.

- .6 Field Quality Control
 - .1 Consultant will randomly select one door from most common type of door construction specified for destructive verification., or as listed below:
- 1.2 DELIVERY, STORAGE, AND HANDLING
 - .1 Store and protect doors in accordance with manufacturer's recommendations.
 - .2 Store doors flat and off the floor on a level surface in a dry, well-ventilated building. Do not store on edge. Protect doors from dirt, water and abuse.
 - .3 Certain wood species are light sensitive. Protect doors from exposure to light (artificial or natural) after delivery.
 - .4 Do not subject interior doors to extremes in either heat or humidity. HVAC systems should be operational and balanced, providing a temperature range of 10-32°C and 30% to 50% relative humidity.
 - .5 When handling doors, always lift and carry. Do not drag across other doors or surfaces. Handle all doors (finished or unfinished) with clean hands or gloves.
- 1.3 EXTENDED WARRANTY
 - .1 Provide a Warranty certificate from the door manufacturer which binds the manufacturer to replace all doors found to have defects in factory workmanship or materials, or which warp more than 6mm out of plane, under normal use, for a minimum of five (5) years from the Date of Substantial Performance. Replacement doors shall bear same warranty from date of replacement.
 - .2 "Replace" as used herein, does not include hanging, installation or field finishing. This work shall be performed by the Contractor for the warranty period stipulated in the General Conditions of the Contract. If doors were originally supplied factory finished, manufacturer must supply replacement doors with same finish.
- 2 PRODUCTS**
- 2.1 ACCEPTABLE MANUFACTURERS
 - .1 Lambton Doors, Lambton PQ (distr. by Stegweit & Company Inc., Oakville ON).
 - .2 Door-Lam Manufacturing of Ottawa, Canada.
 - .3 Les Portes Baillergeon (Masonite), St.-Ephrem, Beauce, PQ.
- 2.2 FLUSH DOORS
 - .1 Grade: Premium (Architectural).
 - .2 Cores
 - .1 Solid Particleboard Core (Typical Interior Doors): to CAN/CSA-O132.2; 5 ply bonded and sanded core construction with no voids; minimum 115mm wide hardwood stile and rail frame bonded to particleboard core and veneer crossbands; solid or engineered wood closer blocks, lock blocks, panic hardware blocks, and face veneer matchedstiles.
 - .1 Fire Rating: 20 minutes.
 - .2 Sound Rating: STC 45 where noted as acoustic door.

- .2 Solid Mineral Core (Fire Rated Doors): to CAN/CSA-O132.2; 5 ply bonded and sanded core construction with no voids; minimum 115mm wide hardwood stile and rail frame bonded to incombustible mineral core and veneer crossbands with listed fire retardant panic hardware blocks, and face veneer matched stiles.
 - .1 Fire Rating: 30 / 45 / 60 / 90 minutes.
 - .3 Face Panels
 - .1 Exterior Doors: Stain-Grade Hardwood Veneer
 - .1 Veneer Grade: 40% AA, 40% A, and 20% between A and AA.
 - .2 Veneer Species: White Oak.
 - .3 Veneer Cut: Rift Cut (straight grain).
 - .4 Veneer Match: Slip Match.
 - .4 Adhesives
 - .1 Hot press Type I - Waterproof.
 - .5 Vision Frames
 - .1 Interior - Fire Rated
 - .1 Hardwood Veneer Doors: 2-piece, 45 minute labelled, steel vision frames, by Air Louvers Inc. Frames shall be factory veneered with hardwood to match wood doors (Woodlite).
 - .2 Interior - Non-Fire Rated
 - .1 Hardwood glazing stops, with mitred corners; wood species to match door face veneers.
- 2.3 FABRICATION
- .1 Fabricate fire-rated doors in compliance with the requirements of the testing authority providing the fire label.
 - .2 Laminate 5-ply door facing, cross banding, and assembled core in a hot press.
 - .3 Fit veneer door edges to door stiles and rails prior to application of face veneers.
 - .4 Reinforcing
 - .1 Top Rail: 127mm wide Solid Lumber or LSL.
 - .2 Bottom Rail: 127mm wide Solid Lumber or LSL.
 - .3 Centre Rail (Exit Hardware): 254mm wide Solid Lumber or LSL centre reinforcement for full width of door.
 - .4 Centre Rail (No Exit Hardware): 127mm wide x 254mm high Solid Lumber or LSL lock blocks.
 - .5 Through-bolting of hardware or accessories is not permitted.
 - .5 Fire-Rated Door Stiles: provide manufacturer's tested reinforced stiles at doors with fire ratings more than 20 minutes. Bond stiles and rails to core, and sand for uniform thickness.
 - .6 Fire Rated Pairs of Doors (greater than 20 minutes): Provide door manufacturer's standard full length tested steel astragal.
 - .1 Shop apply astragals.
 - .2 Shop apply matching veneer wrap to conceal astragal at wood faced doors.
 - .7 Fire Rated Pairs of Doors (20 minutes): Door manufacturer's standard tested edge type.

- .8 Metal astragals and channels to be provided where fire-ratings will not allow metal-free edge(s).
- .9 Non Rated Pairs of Doors: Fabricate meeting edge type between pairs of non-fire rated doors with no bevel.
- .10 Factory-prefit and bevel doors (3°) to suit frame sizes indicated, with 4.76mm prefit in width, +0mm/ -0.79mm, tolerances. Prefit top of door 3mm +1.6mm/ -0mm, and undercut as designated by floor condition. For fire-rated doors comply with NFPA-80 for prefits and undercuts.
- .11 Factory pre-machine doors for hardware that is not surface applied. Locations and hole patterns to comply with specified hardware requirements as per NFPA-80 standards for doors specified; and to maintain door manufacturer's warranty.
- .12 Specific locations for hardware will be coordinated between frame and door manufacturers.
- .13 Hardware preparations as per hardware schedule(s) provided by Section 08710. Hardware preparations to be neatly and cleanly squared as required per hardware templates.
- .14 Factory Preparation for Light Openings and Louvers: Cut and trim openings through doors to comply with NFPA-80 requirements where indicated; and to maintain door manufacturer's warranty.
- .15 Prepare doors for louvres, opening frames and glass and where specified, provide matching hardwood glazing stops with mitred corners.

2.4 FACTORY FINISHING

- .1 All transparent finish doors to be fully finished at the factory. Factory pre-finished doors to be individually protected with either transparent or opaque poly-wrap at the factory. Final colour, build, and sheen to be approved by Consultant based on actual review samples.
- .2 Finish Types
 - .1 Interior Doors
 - .1 Stained/Transparent Finish
 - .1 Base Stain: semi-transparent stain. Colour as selected by the Consultant.
 - .2 Finish Coat: clear, UV cured system with performance properties equivalent to TR-6 or OP-6 Catalyzed Polyurethane per AWI Section 1500, Premium Grade.
 - .3 Apply one coat of uncut shellac to exposed edges of all cutouts on doors.

3 EXECUTION

3.1 EXAMINATION

- .1 Examine areas and conditions under which work is to be performed and identify conditions detrimental to proper or timely completion.

- .2 Verify door frames are of type required and are installed as required for proper installation of doors.
- .3 Do not proceed until unsatisfactory conditions have been corrected.

3.2 INSTALLATION

- .1 Comply with door manufacturer's recommendations, AWI Quality Standards, and WDMA IS-1.
- .2 Install doors using hardware, including fasteners, and in strict conformance with hardware manufacturer's instructions as specified under Section 08 71 00.
- .3 Install fire rated doors and transoms in compliance with requirements of labeling agency, and NFPA No. 80.
- .4 Coordinate installation of doors with installation of metal frames specified under Sections 08 11 13 and 08 11 16.
- .5 Coordinate installation of glass and glazing specified under Section 08 80 00.
- .6 Field Trimming
 - .1 Comply with door manufacturer's instructions.
 - .2 Trim door height by cutting bottom edge to not more than 19mm. Trim fire-rated door height at bottom edge only, in compliance with fire-rating requirements.
 - .3 Trim non-rated door width by cutting equally between both jamb edges.
 - .4 Pilot drill screw and bolt holes.

3.3 TOLERANCES

- .1 Maximum Diagonal Distortion: 6mm measured with straight edge or taut string, corner to corner, over not more than 1066 x 2134mm surface area.
- .2 Maximum Vertical Distortion: 6mm measured with straight edge or taut string, top to bottom, over not more than 1066 x 2134mm surface area.
- .3 Maximum Width Distortion: 6mm measured with straight edge or taut string, edge to edge, over not more than 1066 x 2134mm surface area.

3.4 FIELD QUALITY CONTROL

- .1 Manufacturer's Field Services
 - .1 Manufacturer's representative to visit the site at the beginning of installation and at completion of installation. Review initial installation and provide written comments as necessary.

3.5 ADJUSTING

- .1 Remove and rehang doors, which do not swing or operate freely. If door cannot be made to operate properly, remove and install new door.
- .2 Remove doors damaged during installation and install new doors.
- .3 If field fitting of prefinished doors is required, refinish affected surfaces to match original factory finish as directed by the door manufacturer.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to supply finish hardware, including the following:
 - .1 Supply and delivery to the project all items of architectural finishing hardware specified herein,
 - .2 Supply and installation of low-energy door operators and hardware,
 - .3 Supply and installation of all electrical hardware items including, but not limited to; low voltage wire (FT6 plenum-rated when not in conduit), maglocks, electric strikes, electric exit devices, current transfer devices, wall switches, jamb switches, keypads, controllers, power supplies, and
 - .4 Completion of all low voltage terminations by the hardware supplier.

1.3 REFERENCE STANDARDS

- .1 Canadian Metric Guide for Steel Doors and Frames; Canadian Steel Door and Frame Manufacturers' Association.
- .2 ANSI/DHI A115.1G-94; Installation Guide for Doors and Hardware.
- .3 CAN/CGSB 69.18-M90/ANSI/BHMA-A156.1-2000; Butts & Hinges.
- .4 ANSI/BHMA-A156.2-1996; Bored & Preassembled Locks & Latches.
- .5 CAN/CGSB CAN/CGSSB-69.19-93/ ANSI/BHMA-A156.3-2001; Exit Devices.
- .6 CAN/CGSB 69.20-M90/ANSI/BHMA-A156.4-2000; Door Controls – Closers.
- .7 CAN/CGSB 69.21-M90/ANSI/BHMA-A156.5-2001; Auxiliary Locks.
- .8 CAN/CGSB 69.22-M90/ ANSI/BHMA-A156.6-2001; Architectural Door Trim.
- .9 CAN/CGSB 69.23-M90/ ANSI/BHMA-A156.7-2003; Hinge Templates.
- .10 CAN/CGSB 69.24-M90/ ANSI/BHMA-A156.8-2000; Door Controls - Overhead Holders and Holders.
- .11 CAN/CGSB 69.26-96/ ANSI/BHMA-A156.10-1999; Power Operated Pedestrian Doors.
- .12 CAN/CGSB 69.28-M90/ ANSI/BHMA-A156.12-1999; Interconnected Locks & Latches.
- .13 CAN/CGSB 69.29-93/ ANSI/BHMA-A156.13-2002; Mortise Locks & Latches.
- .14 CAN/CGSB 69.30-93/ ANSI/BHMA-A156.14-2002; Sliding and Folding Door Hardware.
- .15 CAN/CGSB 69.31-M89/ ANSI/BHMA-A156.15-2001; Closer Holder Release Devices.
- .16 CAN/CGSB 69.32-M90/ ANSI/BHMA-A156.16-2002; Auxiliary Hardware.
- .17 CAN/CGSB 69.33-M90/ ANSI/BHMA-A156.17-1999; Self Closing Hinges & Pivots.
- .18 CAN/CGSB 69.34-93/ ANSI/BHMA-A156.18-2000; Materials & Finishes.

- .19 CAN/CGSB 69.35-M89/ ANSI/BHMA-A156.19-2002; Power Assist and Low-Energy Power-Operated Doors.
- .20 CAN/CGSB 69.37-93/ ANSI/BHMA-A156.21-2001; Thresholds.
- .21 ANSI/BHMA-A156.22-2003; Gasketing and Edge Seal Systems.
- .22 ANSI/BHMA-A156.26-2000; Continuous Hinges.
- .23 ANSI/BHMA-A156.28-2000; Keying Systems.
- .24 ANSI/BHMA-A156.29-2001; Exit Lock and Alarms.
- .25 ANSI/BHMA-A156.30-2002; Mortise Locks.
- .26 ANSI/BHMA-A156.31-2001; Electric Strikes.

1.4 DEFINITIONS

- .1 Architectural Hardware Consultant (AHC): person or persons skilled in selecting, coordinating and specifying architectural hardware, and certified by the Door and Hardware Institute.
- .2 Hardware Supplier: company or group of companies whose purpose is the manufacture and supply of architectural finish hardware.
- .3 Hardware Distributor: company whose purpose is the distribution of architectural finish hardware.

1.5 QUALITY ASSURANCE

- .1 Products
 - .1 Hardware for doors in fire separations and exit doors must be certified by a Canadian Certification Organization accredited by Standards Council of Canada. Supply only ULC and/or CSA listed electrical components.
- .2 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .3 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .4 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.

1.6 SUBMITTALS

- .1 Updated Finish Hardware Schedule
 - .1 Prepare and submit six (6) complete detailed hardware schedules prepared in 216mmx279mm DHI format.
- .2 Product Data
 - .1 Provide in a three ring binder six (6) copies of product data sheets with the finish hardware schedule showing all items of hardware to be used on the project.

- .3 Samples
 - .1 When requested in writing, provide one sample of each hardware item requested complete with fasteners to the office of the Consultant. Samples to be clearly labeled with their hardware schedule designation and manufacturers' name and model number. Samples may be incorporated into the Work.
- .4 Templates
 - .1 Provide other sections with two (2) complete sets of hardware templates for related fabricating and installation.
- .5 Keying Schedule
 - .1 Provide three (3) copies of keying schedule for review. Include all special keying notes and stamping instructions. Locks and cylinders are not to be ordered until the key schedule has been approved by the Owner.
- .6 Wiring Diagrams
 - .1 Provide a written description of the functional use of all electrical hardware. Include door and frame elevations showing the location of each item of electrical hardware to be installed, including a diagram showing number and size of all conductors. Include drawings showing all terminal connections. Where electrical hardware is to be supplied and installed provide the Contractor with riser diagrams listing the correct wire runs and back box sizes as well as 115V AC requirements.
- .7 Operations and Maintenance Data
 - .1 Prior to Substantial Performance, provide two (2) copies of the following information for inclusion in Operation And Maintenance Manuals in accordance with Section 01 78 00:
 - .1 Maintenance instructions for each hardware item,
 - .2 Catalogue cut sheets and Product Specifications or each product,
 - .3 Parts list for each product,
 - .4 Copy of final "as-built" finish hardware schedule, and
 - .5 Copy of final keying schedule.
- .8 Maintenance Materials
 - .1 Provide the following maintenance materials in accordance with Section 01 78 00:
 - .1 Five (5) of each installation tool used for locks/passage/privacy, all type of door closers, and all exit devices.
- 1.7 DELIVERY, STORAGE, AND HANDLING
 - .1 Deliver each hardware item in its original package complete with all fasteners, keys, templates, and installation instructions required for installation.
 - .2 Package hardware separately for each door or unit and state clearly on each package the number and description of the door or unit for which the hardware therein is intended. Group items accordingly.
 - .3 Clearly mark each container with the door opening number and the hardware schedule item or heading number.

- .4 Store hardware in a locked room or other secure area, accessible by only the Contractor. Storage area must contain adequate storage provision to hold all hardware off the floor (temporary shelving or wood pallets). Ensure area is kept dry and clean.
- .5 When requested, package items of hardware separately for delivery to other fabricators for their installation.
- .6 Deliver and assist in unloading and sorting of hardware. All hardware must be checked in on site by the Contractor's Site Supervisor.

1.8 COORDINATION WITH OTHER TRADES

- .1 Supply finish hardware to those who are to install it, complete with templates and other complete installation instructions in sufficient time to avoid delaying the progress of the work.
- .2 Supply complete templates and instructions to all door and frame manufacturers for factory machining of products to receive Hardware.

1.9 INSPECTION

- .1 Hardware Distributor must perform the following inspections:
 - .1 Check all hardware when it has been installed and notify the Consultant of improper installation, defective materials, or products installed that were not specified. Replace defective hardware promptly.
 - .2 Check all door closers after they have been installed to make sure that all adjustments such as back-checking degree have been properly made. Notify the Consultant of any closers which have not been properly adjusted.

1.10 MAINTENANCE

Maintenance Service

Following occupancy of the building by the Owner, arrange with the Owner's maintenance staff for instruction of proper use, servicing, adjusting and lubrication of all finish hardware. Submit to the Consultant a list of attendees and meeting date.

1.11 EXTENDED WARRANTIES

- .1 Provide the following manufacturer's warranties beyond the date of expiration of the Contract warranty:
 - .1 Mortise Hinges Lifetime
 - .2 Pivot Sets 2 yrs.
 - .3 Locks (ND Series) 7 yrs.
 - .4 Keypad Locks 1 yr.
 - .5 Exit Devices 3 yrs.
 - .6 Door closers -mechanical 10 yrs.
 - .7 Overhead stops/holders 1 yr.
 - .8 Floor/Wall stops 1 yr.
 - .9 Electric Strikes/Key Switches/Power Supplies 1 yr.
 - .10 All other hardware items 1 yr.

2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- .1 Products listed below are acceptable for use in finishing hardware groups specified in this section:

HARDWARE ITEM	ACCEPTABLE MANUFACTURERS
Full Mortise Hinges	Ives, Stanley, Hagar
Locksets, Latchsets/Deadbolts	Schlage, Yale, Corbin-Russwin
Exit Devices	Von Duprin, Yale, Corbin-Russwin, Sargent
Keypad Locks	Schlage,
Pivots	Ives, Rixson
Surface/Flush Bolts	Ives, Yale
Door Closers	LCN, Norton, Corbin-Russwin
Overhead Door Holders/Stops	Glynn-Johnson, Rixson, Dorma
Door Pulls/Flatware	Canadian Builders Hardware, Gallery
Wall/Floor Stops	Canadian Builders Hardware, Ives, Gallery
Weather/Smoke/Sound Seals	KN Crowder, National Guard, Pemko
Door Sweeps/Thresholds	KN Crowder, National Guard, Pemko
Keyswitch/Magnetic Locks	Locknetics, Folger-Adam,
Electric Strikes	Von Duprin, Folger-Adam,
Power Supplies	Locknetics, Von Duprin, Folger-Adam,

2.2 MATERIALS

- .1 Fabricate all hardware to template. Provide templates and template hardware together with the instructions necessary for door and frame preparation.
- .2 Supply all hardware with necessary screws, bolts or other fastening devices to anchor hardware in position neatly and properly in accordance with best practices.
- .3 Only products listed in the hardware schedule or the approved alternates noted in the following list are to be used on this project.
- .4 Use one manufacturer's products only for all similar items.
- .5 All exterior doors shall be fitted with complete perimeter weatherstripping and threshold where not provided by door or frame manufacturer.
- .6 All exterior aluminum doors shall be fitted with recessed retractable, bottom sweeps.
- .7 No substitutions are allowed for the following products, due to integration with existing hardware:
 - .1 Locksets, Latchsets, and Privacy Sets.
 - .2 Panic Sets
 - .3 Door Closers.

2.3 FASTENINGS

- .1 Supply all required bolts, screws, expansion shields, anchors, and other related accessories for satisfactory attaching or installing of all finish hardware.
- .2 Exposed fasteners shall match finish of, and be of compatible material with hardware.
- .3 Where push/pull hardware is scheduled, door pull must be through-fastened and have fasteners concealed by push plate on opposite side.

2.4 HINGES

- .1 Butt Hinges: ANSI/BHMA-A156.1, Grade 1.

- .1 Supply hinges with non-removable pin (NRP) option on all doors where the hinge barrel is exposed on the secured exterior side of the door.
 - .2 Use two hinges on doors up to 1525mm and an additional hinge for each additional 760mm or fraction thereof.
 - .3 Doors 900mm wide and less; 114mm high hinges; doors greater than 914mm wide; 127mm high hinges, all heavy standard weight.
 - .4 Supply standard weight and heavy weight concealed bearing hinges on all doors equipped with door closers; ferrous (steel) material for all interior and/or fire-rated doors and stainless steel for exterior doors as listed in the hardware groups.
- .2 Continuous Hinges: ANSI/BHMA-A156.26, Grade 1.
- .1 Stainless Steel: edge mount continuous barrel-type hinges, fabricated from heavy duty 1.9mm thick Type 304 stainless steel, with ¼" diameter teflon-coated stainless steel pin and long-life split bearings, length to suit door height. Cycle testing 1,500,000 repetitions exceeds ANSI/BHMA-A156.1.
 - .2 Supply installation video to hardware installers for all series of continuous hinges.
- 2.5 **BOLTS**
- .1 Surface/Flush Bolts: ANSI/BHMA-A156.16, Grade 1.
 - .1 Surface Bolts
 - .1 Surface bolts to have 25mm throw with vandal-resistant concealed mounting. Units to be constructed of heavy duty steel and be cUL listed up to three (3) hours when used on the inactive door of a pair up to 2440mm in height.
 - .2 Manual Flush Bolts-Metal Doors
 - .1 Manual flush bolt for metal doors to be cUL listed for 3-hour fire doors with 13mm diameter bolt tip, 19mm throw. Rod length to be 305mm. Supply dustproof strikes with all flushbolts.
 - .3 Manual Flush Bolt-Wood Doors
 - .1 Manual flush bolt for wood doors to be cUL listed for 90min fire doors with 19mm throw with a 22mm vertical adjustment. Supply dustproof strikes with all flushbolts.
- 2.6 **LOCKSETS, LATCHSETS, DEADLOCKS**
- .1 Grade 2 Cylindrical
 - .1 ANSI/BHMA-A156.2, Grade 2 heavy duty residential, light and medium duty commercial cUL listed for all functions up to 3-hour doors. Precision solid brass 6-pin cylinder with nickel silver keys.
 - .2 Cylindrical housing internal cold rolled steel mechanism corrosion treated for normal atmospheric conditions. Key removable outside knob for easy cylinder replacement. Snap-on inside rose conceals mounting plate and screws with long spindle bearing surfaces.
 - .2 Grade 2 Cylindrical-Lever
 - .1 ANSI/BHMA-A156.2, Grade 2 standard duty commercial exterior and interior cUL listed for all functions up to 3-hour doors. Levers to be solid pressure cast zinc

with no plastic inserts. Precision solid brass 6-pin cylinder with nickel silver keys. Grade 2 lever sets to have through bolts to prevent chassis rotation with internal components and chassis constructed of cold rolled steel with zinc dichromate plating to resist corrosion. Lever sets to have independent heavy duty compression springs as well as precision laser cut stainless steel spindles with interlocking on keyed side.

.3 Grade 2 Deadbolt

.1 ANSI/BHMA-A156.5, Grade 2 deadbolt, cUL listed for 3 hour rated door, with fire cup and labeling. Deadbolt to be supplied with 76mm steel screws provide the added strength to prevent against break-in attacks as well as 25mm metal bolt with hardened steel roller pin to prevent kick-in attacks and sawing.

.4 Grade 1 Deadbolt

.1 ANSI/BHMA-A156.5, Grade 1 deadbolt supplied with solid brass or bronze trim rings and 25mm throw high-strength, steel alloy deadbolt with hardened steel roller resistant to sawing and kick-in attacks. Metal shield protects bolt from attack through the door as well as hardened steel balls that protect mounting screws from drill attack. Exclusive wood frame reinforcer protects wood jamb against kick-in attacks.

.5 Grade 1 Cylindrical

.1 ANSI/BHMA-A156.2, Grade 1 extra heavy duty residential, commercial, institutional and industrial applications. Latch bolts to be steel with minimum 13mm throw deadlocking on keyed and exterior functions. 19mm throw anti-friction latchbolt on pairs of fire doors. Provide manufacturer's standard wrought box strike for each latch or lock, with curved lip extended to protect frame. Lock case to be steel. Locks to incorporate one piece spring cage and spindle. Precision solid brass 6-pin cylinder with nickel silver keys. All levers to be solid with no plastic inserts. Locks and latchsets tested to exceed 3,000,000 cycles.

2.7 EXIT DEVICES

.1 Medium Duty: ANSI/BHMA-A156.3, Grade 1 cUL listed for panic hardware and fire exit hardware. Supply exit devices and fire exit hardware featuring coil compression springs on all device mechanism subassemblies and dead latching mechanisms for all active latchbolts.

.2 Narrow Style: ANSI/BHMA-A156.3, Grade 1 cUL listed for panic hardware and fire exit hardware. Supply exit devices with smooth mechanism case and "the quiet one" fluid dampener to eliminate noise associated with exit device operations. Non-handed device with touchpad assemblies with no exposed fasteners and cast end caps, reinforced aluminum with stainless steel touchpad and raised edge to minimize pinching. Fits door stiles as narrow as 45mm.

.3 Heavy Duty: ANSI/BHMA-A156.3, Grade 1 cUL listed for panic hardware and fire exit hardware. Supply exit devices and fire exit devices featuring coil compression springs on all device mechanism subassemblies and dead latching mechanisms for all active latchbolts. Supply exit devices with smooth mechanism case and "the quiet one" fluid dampener to eliminate noise associated with exit device operations. Non-handed device with touchpad assemblies with no exposed fasteners and cast end caps, reinforced aluminum with stainless steel touchpad and raised edge to minimize pinching. Roller strikes to be standard on all rim and surface vertical rod devices. Doors greater than

914mm wide supply long bar exit devices, doors 2134mm high and greater supply extension rods. 1,000,000 cycle testing independently certified by ETL.

- .4 Device Trim
 - .1 Supply device trim featuring recessed cylinder mounting and coil compression spring design with shear pin protection for all lever designs. Similar lever designs for exits as specified for locksets.
- .5 Mullions Non-Rated
 - .1 Aluminum mullions complete with mullion stabilizers prepared with strikes for use with all rim devices to provide single door performance and security on double door applications.
 - .2 Steel mullion prepared for two strikes for use with all rim devices and key removable kit to provide quick removal to provide single door performance and security on double door applications.
- .6 Mullions Rated
 - .1 Fire rated cUL approved mullion for up to three hour openings up to 2.4m x 2.4m using rim devices prepared for strikes. Supply with key removable kit to provide quick removal to provide single door performance and security on double door applications.
- .7 Exit devices installed on exterior doors must have dead latching bolts to ensure tamper proof security.

2.8 DOOR CLOSERS

- .1 Door closers to be Grade 1 ANSI/BMHA A156, and have the following features (see separate closer sections below for further information):
 - .1 fully hydraulic, rack and pinion action with high strength cast iron cylinders and one piece forged steel pistons.
 - .2 hydraulic fluid of a type requires no seasonal adjustments, and has constant temperature control from 49°C to -35°C.
 - .3 hydraulic regulation controlled by tamper-proof, non-critical screw valves, adjustable with a hex wrench.
 - .4 separate adjustments for backcheck, general speed and latch speed.
 - .5 include high efficiency, low friction pinion bearings.
 - .6 size 1 manual door closers to provide less than 22N opening force on a 914mm door leaf.
 - .7 closers with painted finishes shall exceed a minimum 100-hour salt spray test, as described in ANSI/BHMA-A156 and ASTM B117.
 - .8 closers detailed with plated finishes shall include plated covers (or finish plates) , arms and visible fasteners.
 - .9 provided with all mounting plates required to mount on any special door and frame conditions.
- .2 Medium Duty Mechanical (Interior/Exterior)
 - .1 ANSI/BHMA-A156.4, non-sized (1-6) and non-handed cylinder body to have 32mm piston diameter with 16mm single heat-treated shaft. Track closer cylinder body non-sized (2-4) or (1-2). Closers to have stamped main arm and forearm (forged steel main arm and forearm EDA and CUSH type arms). Optional arms to be interchangeable within the series of closers, except track arm type closers.

Track arm type closers to have single lever arm with low friction track and roller assembly and provisions for an optional bumper to assist backcheck.

- .3 Medium Duty Mechanical (Interior)
 - .1 ANSI/BHMA-A156.4, non-sized (1-4) and non-handed cylinder body. Track closer cylinder body non-sized (1-3). Closers to have stamped main arm and forearm (forged steel main arm and forearm EDA and CUSH type arms). Optional arms to be interchangeable within the series of closers, except track arm type closers. Track arm type closers to have single lever arm with low friction track and roller assembly and provisions for an optional bumper to assist backcheck. Closer to have standard metal cover not to exceed 45mm from face of the door.
- .4 Medium Duty Mechanical (Interior-Pull Side Mount)
 - .1 ANSI/BHMA-A156.4, sized (1,2,3 or 4) and handed cylinder body to have 32mm piston diameter with 16mm single heat-treated shaft. Closers to have forged steel main arms. Optional arms to be interchangeable within the series of closers. Standard plastic cover not to exceed 41mm from face of door.
- .5 Medium Duty Mechanical (Interior-Push Side Mount)
 - .1 ANSI/BHMA-A156.4, sized (1,2,3 or 4) and handed cylinder body to have 32mm piston diameter with 16mm single heat-treated shaft. Closers to have forged steel main arm and forearms. Optional arms to be interchangeable within the series of closers. Standard plastic cover not to exceed 41mm from face of door.

2.9 DOOR OPERATORS

- .1 Heavy Duty Electric Operator (Push Side Mount)
 - .1 ANSI/BHMA-A156.19, non-sized (2-5) and non-handed cylinder body to have 38mm piston diameter with 17.5mm double heat-treated shaft. With forged steel main arm. Power operator to include:
 - .1 Provisions for separate conduits to carry high and low voltage wiring in compliance with the National Electrical code.
 - .2 Second Chance Function: program within the on-board computer monitoring resistance during opening cycle. If resistance is present operator pauses for a few seconds, then attempts to open door again. If resistance does not exist door will open normally. However if resistance still exists, door will pause and the unit will time out and door will close.
 - .3 Breakaway Drive System: System within the motor/clutch assembly. If the door is forced closed while in the opening cycle, the clutch slips preventing damage to the operator, door and frame.
 - .4 Soft Start Motor Control: required for controlled start once actuator is depressed to extend the service life of all drives components.
 - .5 Built in Power Supply to deliver 12V and 24V outputs up to a maximum of 1.0 amp.
 - .6 Certified by cUL for use on labeled doors.
 - .7 Independent adjustments for all electrically controlled functions within controller module.
- .2 Actuators
 - .1 Wall Type
 - .1 Wall plate switch to be hard-wired either 12V DC or 24V DC actuator with round, stainless steel touch plate in either 114mm or 152mm diameters. Engraved blue filled handicap symbol conforms to most accessibility

codes. Units to include heavy grade components for vandal resistant mounting and weather resistant switch standard.

.2 Jamb Type

.1 Jamb switch to be hard-wired either 12VDC or 24VDC actuator with rectangular stainless steel touch plate, 38mm wide x 114mm high. Engraved blue filled handicap symbol conforms to most accessibility codes. Designed to mount in a frame cutout projecting approximately 13mm from the frame. Units to include heavy grade components for vandal resistant mounting and weather resistant switch standard.

.3 Low energy door operators will be supplied and installed by factory trained installers. Hardware supplier will coordinate the installation of the door operators and include the cost of labour for this work.

2.10 OVERHEAD DOOR STOPS/HOLDERS

.1 Medium-Duty Concealed Mounting:

.1 ANSI/BHMA-A156.8, Grade 1. Concealed overhead stops/holders shall be non-handed for single/double-acting doors with a channel/slide-arm design and offset jamb bracket to allow for simple field modifications of functions. Unit to be fully concealed when door is in the closed position.

.2 Medium-Duty Surface Mounting

.1 ANSI/BHMA-A156.8, Grade 1. Surface overhead stops/holders shall be non-handed for single-acting doors with a channel/slide-arm design and offset jamb bracket to allow for simple field modifications of functions. Channel to be surface mounted to the door with thru bolts and the jamb bracket is surface mounted to the jamb.

2.11 PULLS AND PLATES

.1 Supply door trim as listed in hardware schedule. Supply pulls with back to back (BTB) or through bolt mounting as required. When push plates are listed with door pulls, install the push plate to conceal the through bolt.

.2 All kickplates, push plates, and bumper plates must have all sides beveled and corners rounded to ensure no sharp edges. Supply plates with counter sunk screw holes. Supply double-sided tape for adhesive-mount.

.3 Kick plates will be minimum 0.127mm thick unless listed otherwise; size to be door width less 35mm for single door, and less 25mm for pairs of doors. Heights as scheduled.

2.12 DOOR STOPS AND HOLDERS

.1 Floor Stops (Doors without Threshold)

.1 ANSI/BHMA-A156.6. Floor stops to be 25mm overall height with 4.8mm base height for use on doors without thresholds. Heavy-duty cast dome stop constructed of brass/bronze with gray, non-marring rubber bumper.

.2 Floor Stops (Doors with threshold or undercut doors)

.1 ANSI/BHMA-A156.6. Floor stops to be 25mm overall height with 14.3mm base height for use on doors with thresholds or undercut doors. Heavy-duty cast dome stop constructed of brass/bronze with gray, non-marring rubber bumper.

.3 Wall Stops (No Button on Locking Hardware)

- .1 ANSI/BHMA-A156.6. Wall stops to be constructed of heavy-duty brass base with special retainer cup that makes the rubber stop tamper resistant. Convex design of rubber bumper.
 - .4 Wall Stops (Projecting Button on Locking Hardware)
 - .1 ANSI/BHMA-A156.6. Wall stops to be constructed of heavy-duty brass base with special retainer cup that makes the rubber stop tamper resistant. Concave rubber bumper to avoid damage to locks with projecting buttons.
 - .5 Supply wall stops where wall conditions are sufficient to support impact loads, such as stud partitions with wood blocking, masonry, or concrete. Supply floor stops with sufficient height to suite the floor condition or undercut of doors.
 - .6 Overhead stops and mechanical holders shall be surface mounted unless a conflict exists with door closers or other hardware. Provide door stays with friction action in locations that do not have door closers. Install all overhead stops and holders for 90° stop unless otherwise specified.
 - .7 Electronic door holders will be supplied tri-voltage and be connected to the fire alarm system by Division 16 to release the door when signaled.
- 2.13 DOOR SEALS
- .1 Supply perimeter seals to fully cover all gaps between door, frame, and floor condition to seal against weather, sound, or smoke as required and scheduled.
 - .2 Frame gaskets shall be closed cell neoprene. Extruded housing must have a rib to prevent distortion during installation. Aluminum frames will be provided with weather stripping inserts by the frame supplier.
 - .3 Door bottoms will be heavy-duty and have an adjustment screw to ensure proper contact with flooring. Supply correct drop insert for carpet where required.
- 2.14 THRESHOLDS
- .1 Supply extruded aluminum thresholds to ensure the sweep or door bottom makes full contact. Supply thermally broken thresholds for all exterior door openings.
 - .2 Threshold height shall not exceed 13mm for barrier-free path of travel.
- 2.15 SLIDING DOOR HARDWARE
- .1 Crown Industrial #43H - Flat Track.
- 2.16 ELECTRONIC HARDWARE
- .1 Keyswitch
 - .1 Keyswitch housing to be cast zinc to protect against vandalism, housing to provide a concealed rear mounting attachment which cannot be compromised when the cylinder is attached with a set screw. Standard stainless steel cover plate.
 - .2 Electric Strikes
 - .1 ANSI/BHMA-A156.31, Grade 1. Electric strikes to be cUL listed burglary-resistant and electric strike for fire doors and frames; "A" label for single doors and "B" label for double doors. Electric strikes to be stainless steel construction, non-handed available in 12V or 24V AC or DC with continuous duty solenoid and

accept 19mm throw latchbolts. Strike box to be adjustable to compensate for any misalignment of the door or frame with two piece plug connector for ease of installation.

.3 Magnetic Locks

.1 ANSI/BHMA-A156.23, Grade 1. Electromagnetic locks to be field selectable dual voltage 12/24VDC with a minimum holding force of 7,339N, residual magnetism within one second of 17.8N maximum and inductive kickback not to exceed 53 volts peak. Electromagnetic locks to be powered by filtered and regulated power supply. Electromagnetic locks used on labeled fire door assemblies shall be cUL listed as auxiliary locks, rated for A-label openings. Housings shall not project more than 45mm into the door opening. Electromagnetic locks to be furnished with an adjustable mounting bracket for accurate installation and furnished with an integral circuit board with terminal strip for accurate wiring.

.4 Power Supplies

.1 Power supplies to be Underwriter Laboratories (UL) listed for general-purpose use tested to meet UL1012 specifications. Power supplies to have 12/24V DC field selectable output voltage with output current of 3 amps at 12V DC and 2 amps at 24V DC with supply output voltage filtered and regulated. The power supply to be inherently modular by design for ease of installation and to provide flexibility for future system modifications when necessary.

.5 Include power supplies that are compatible with magnetic lock and have a NFPA-101 fire alarm release. Reset key switch will be centrally located and will re-arm all the magnetic locks in the building.

.6 Request to exit switches at all required fire exits will be frame-mounted, located on the push side for staff use and will include an adjustable time delay module.

.7 Access control will be frame-mounted stand-alone keypad complete with adjustable time delay. Units will have all functions keypad programmable, 12 or 24 volt AC/DC with a code length of 3-6 digits.

.8 Electronic hardware will be supplied and installed by this section, including all low voltage device wiring.

2.17 FINISHES

.1 Finishes are specified as follows:

Item	BHMA#	Finish Description	Base Material(s)
Hinges	630	satin stainless steel.....	stainless steel
Hinges	626	satin chrome plated	brass/bronze
Hinges	652	satin chrome plated	steel
Pivots.....	689	powder coat aluminum.....	steel
Lock Trim.....	626	satin chrome plated	brass/bronze
Exit Devices.....	626	satin chrome plated	brass/bronze
Dr Closer	689	powder coat aluminum.....	steel
Dr Pulls	630	satin stainless steel.....	stainless steel
Protective Plate	630	satin stainless steel.....	stainless steel
Door Stops/holders			
Overhead.....	630	satin stainless steel.....	stainless steel
Wall/Floor	626	satin chrome plated	brass/bronze

Thresholds	628	anodized aluminum.....	aluminum
Weatherstrip	628	anodized aluminum.....	aluminum
Miscellaneous			
Coat hooks	626	satin chrome plated	brass/bronze
Mullions	628	anodized aluminum.....	steel
Key Switches	630	satin stainless steel.....	stainless steel
Electric Strikes.....	630	satin stainless steel.....	stainless steel
Magnetic Locks.....	628	anodized aluminum.....	steel

2.18 KEYING

- .1 General
 - .1 Architectural Hardware Consultant (AHC) will meet with the Owner to obtain and finalize all keying requirements, and will subsequently issue copies of the keying schedule for review.
 - .2 Provide temporary construction keying system during construction period. Permanent keys will be furnished to the Owner prior to occupancy. The Owner or Owner's Agent will void the operation of the construction keys.
 - .3 Key Material: Provide manufacturer's standard embossed keys of nickel silver to ensure durability.
 - .4 Key Quantity: Furnish keys in the following quantities:
 - .1 Temporary construction keys: 10 each .
 - .2 Grand Master keys per grand master group: 6 each.
 - .3 Master keys per master group: 6 each.
 - .4 Change keys per cylinder or keyed alike group: 4 each.
 - .5 5 Extractor tools each.
 - .5 Deliver all permanent key blanks and security keys direct to Owner from factory by secure courier, return receipt requested. Failure to properly comply with these requirements may be cause to require replacement of all or any part of the cylinders and keys involved as deemed necessary at no additional cost to the Owner.
 - .6 Furnish one key control system complete with indexed door numbers, key codes, bittings, building numbers, room numbers, lock function, design, and finish. In addition, include model numbers, handing, design, and functions of exit devices and door closers. Transmit to the Owner by secure carrier, return receipt requested.
 - .7 Provide complete cross-index system, place keys on markers and hooks in the cabinet as determined by the final key schedule. Provide one each key cabinet and hinged panel type cabinet for wall mounting as noted in detailed hardware schedule.
- .2 Standard Keying With Exterior High-Security Cylinders
 - .1 Interior locks and cylinders shall be furnished in a new masterkey system.
 - .2 Exterior locks and cylinders to be high-security removable core cylinders with level-three side-bit milling to allow integration with existing standard key systems.

- .3 Permanent cylinders to be factory-keyed, combined in sets or subsets, master keyed or great grand master keyed, as directed by Owner. Permanent keys and cylinders shall be marked with the keyset symbol on all keyblanks for identification. Visual key control marks or codes will not include the actual key cuts.

3 EXECUTION

3.1 EXAMINATION

- .1 Ensure that doors and frames are properly prepared and reinforced to receive finish hardware prior to installation.
- .2 Ensure that door frames and finished floor are sufficiently plumb and level to permit proper engagement and operation of hardware.
- .3 Submit to Consultant in writing a list of deficiencies determined as part of inspection required in 3.3.1 and 3.3.2, prior to installation of finished hardware.

3.2 INSTALLATION

- .1 Install hardware to ANSI/DHI-A115.1G.
- .2 Install hardware at mounting heights as specified in the manufacturers templates or specific references in approved hardware schedule or approved elevation drawings. Where mounting height is not otherwise specified herein, install hardware at the following mounting heights:
 - .1 Locksets: 1015mm.
 - .2 Exit device: 1015mm.
 - .3 Push/Pull: 1065mm.
 - .4 Deadlock: 1200mm.
- .3 Install hardware using only manufacturer supplied and approved fasteners in strict adherence with manufacturers published installation instructions.
- .4 Ensure that all locksets / latchsets / deadlocks are of the correct hand before installation to ensure that the cylinder is in the correct position. Handing is part of installation procedure.
- .5 Ensure that all exit devices are of the correct hand and adjust device cam for proper outside trim function prior to installation. Handing is part of installation procedure.
- .6 Follow all manufactures installation instructions. Adjustment is inclusive of spring power, closing speed, latching speed and back-check at the time of installation.
- .7 Delayed action door closers are to be adjusted to forty (40) second delay for handicapped accessibility and movement of materials. Time period to be approved by Owner.
- .8 Install head seal prior to installation of parallel arm mounted door closers and push side mounted door stops/holders.
- .9 Counter sink through bolt of door pull under push plate during installation.
- .10 Mount all closers, automatic operators and hold-open devices with through bolts, as indicated in the finish hardware schedule.

- .11 Where door stop contacts door pulls, mount stop to strike bottom of pull.
- .12 Remove construction locks when directed by Consultant; install permanent cores and check operation of all locks.
- .13 Other trades installing hardware must follow all manufacturers instructions including door closer adjustment, handing of locksets as required, and degree of door swing.
- .14 Hardware Distributor will include all labour to terminate secondary low voltage wire runs at all door control devices supplied by this section, including but not limited to; door operators, magnetic locks, push button code entry units (keypads), request to exit switches, electric strikes and any associated electrical equipment. Ensure system is tested and complete for Owner's use. Provide staff training for push button code system (keypads) including all programming function and maintenance.
- .15 Hardware Distributor will instruct the installer as to how various newer or unusual items that are required to be installed for proper performance.

3.3 FIELD QUALITY CONTROL

- .1 Perform bi-monthly on-site inspections during hardware installation and provide inspection reports listing progress of work, unacceptable work and corrective measures. Repair or replace as directed by the Consultant.
- .2 Upon completion of hardware installation, arrange with the Owner to instruct the Owner's personnel in the proper operation, adjustment, and maintenance of all finish hardware supplied under this Contract.
- .3 Before completion of the Work but after finish hardware installation has been completed, submit a certificate to the Consultant stating that final inspection has been made and that all hardware has been checked for installation and operation by representatives of both the Hardware Supplier and the Hardware Distributor, and that operation and maintenance of all hardware have been fully demonstrated to the satisfaction of the Owner's personnel.

3.4 ADJUSTING AND CLEANING

- .1 Check and make final adjustments to each operating item of hardware on each door to ensure proper operation and function.
- .2 All hardware to be left clean and free of disfigurements.
- .3 Check all locked doors against approved keying schedule.

3.5 PROTECTION

- .1 Protect hardware from damage during construction period by removing and reinstalling or where necessary, using temporary hardware to maintain finish in new condition and maintain manufacturers warranty.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide automatic power door operator systems including the following:
 - .1 Operator equipment
 - .2 Control system
 - .3 Activation devices

1.3 REFERENCE STANDARDS

- .1 Aluminum Association (AA); DAF-45, Designation System for Aluminum Finishes.
- .2 American Architectural Manufacturers Association (AAMA); Aluminum Curtain Wall Design Guide Manual.
- .3 ASTM B209; Specification for Aluminum and Aluminum-Alloy Sheet and Plate.
- .4 CSA-G40.21; Structural Quality Steels
- .5 CAN/CSA G164; Hot Dip Galvanizing of Irregularly Shaped Articles.
- .6 CAN3-S157; Strength Design in Aluminum.
- .7 CSA W59.2; Welded Aluminum Construction.
- .8 CAN/CGSB-69.26-96/ANSI/BHMA A156.10; Power-Operated Pedestrian Doors.
- .9 CAN/CGSB-69.35-M89/ANSI/BHMA A156.19; Power Assist and Low Energy Power-Operated Doors.
- .10 CAN/ULC-S533; Egress Door Securing and Releasing Devices.

1.4 SYSTEM DESCRIPTION

- .1 Designed for low energy applications, surface mounted, automatic swing door operator consists of aluminum operator housing, A.C. electro-hydraulic motor, operator assembly, wiring harnesses, swing arm and electronic control.
- .2 Power Open: Automatic door operator powers the door open by forces transmitted hydraulically to the drive shaft and maintains a constant engagement throughout the opening cycle. Both opening and closing speed are field adjusted per current ANSI 156.19. Automatic door system is self-contained, requiring no remote pumps, exterior piping or compressors. The operator shall be equipped with a hydraulic bypass (relief valve), to divert fluid back to a reservoir to prevent motor overload if the door is restricted during opening cycle. Automatic door system functions as a manual door closer in the event of a power failure. Manual opening force is unaffected by opening speed adjustment. Manual force to open the door will not exceed 15 pounds, measured 25mm in from latch edge of door.

- .3 Spring Close: The automatic door operator is spring closed. The spring is non-handed and returns the door to full close.

1.5 SUBMITTALS

.1 Shop Drawings

- .1 Submit shop drawings in accordance with Section 01 30 00.
- .2 Indicate on shop drawings, layout, dimensions, elevations, detail sections of members, materials, finishes, hardware including mounting heights, anchors and reinforcement, provisions for expansion, and other pertinent information.

.2 Maintenance Data

- .1 Provide complete operation and maintenance data for inclusion in Operations and Maintenance Manual. Include spare parts list.
- .2 Include manufacturer's parts lists, servicing frequencies, instructions for adjustment and operation applicable to each component.
- .3 Include name, address and telephone number of nearest authorized service representative.

1.6 QUALITY ASSURANCE

.1 Manufacturer/Fabricator

- .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.

.2 Installation/Application

- .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.

.3 Documentation

- .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.

.4 Pre-installation Meeting

- .1 Convene a pre-installation meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
 - .1 Contractor,
 - .2 Installation Subcontractor (Site Foreman & Project Manager),
 - .3 Product Manufacturer and/or Distributor (Technical Representatives),
 - .4 Related Subcontractors (ie. Electrical)

1.7 DELIVERY, STORAGE, AND HANDLING

- .1 Deliver materials to site protected from damage.
- .2 Store materials in clean, dry area indoors in accordance with manufacturer's instructions.
- .3 Protect materials and finish from damage during handling and installation.

1.8 MAINTENANCE SERVICE

- .1 Manufacturer shall provide central-dispatch maintenance service available 24 hours per day, 365 days per year for maintenance service during the Contract Warranty period.
- .2 Toll free phone number shall be prominently displayed on header of each operator.

2 PRODUCTS

2.1 MANUFACTURERS

- .1 Besam, by ASSA ABLOY Entrance Systems Canada.

2.2 MATERIALS

- .1 Aluminum: Extrusions of minimum 3mm thick, Alcan 6061-T6 alloy for structural members, 6063-T5 for non-structural members.
- .2 Screws, bolts and fasteners: where used with aluminum shall be of 300 series stainless steel or 400 series stainless steel cadmium plated.
- .3 Steel Reinforcement: to CAN/CSA-G40.21, grade 300W.

2.3 AUTOMATIC SWING DOOR OPERATOR

- .1 Door Operator: Electro-mechanical, non-handed low-energy door operator. The operator housing provides a seal against dust, dirt and moisture.
 - .1 Besam PowerSwing, by ASSA ABLOY Entrance Systems Canada.
- .2 Configuration: Operator to control single swinging doors and pairs of swinging doors as indicated on the drawings and specified below:
 - .1 Traffic Pattern: One way.
 - .2 Pairs of Doors: Simultaneous swing.
- .3 Door Operator: Electro-hydraulic, non-handed operator, powered by 1/6 hp motor. Spring shall be adjustable to compensate for different manual push forces required on varying door widths.
 - .1 Automatic operator shall be capable of operating and controlling the following size doors:
 - .1 Pull Type Arm: Up to a 220 pound (100 kg) door, 55 inches (1400 mm) in width.
 - .2 Push Type Arm: Up to a 550 pound (100 kg) door, 63 inches (1600 mm) in width.
 - .2 Operator Housing: Operator is contained in a 5-1/8" (130.2 mm) deep x 4-5/16" (110 mm) high extruded aluminum housing.
 - .3 Surface Mounted Header: Continuous for full width of door.
 - .4 Connecting Hardware: Steel arm from the operator, secured to the top face of the swing door.
 - .5 UL Listed R-9469 Fire Door Operator with Automatic Closer.
- .4 Electrical Characteristics: Nominal current draw 222 watts (1.85 amps at 120 VAC), built-in thermal overload protection.
- .5 Battery Convenience Mode: Operator can maintain continuous operation by battery power during power failure. Battery is continuously monitored and will provide a notification if the battery is not working properly.

- .6 Door Operation:
 - .1 Opening Cycle: The adjustable speed operator hydraulically powers the drive shaft which maintains constant engagement throughout the opening cycle. Operator shall allow manual door operation with operational forces of 15 lbf maximum to fully open the door applied at 1" (25 mm) from the latch edge of the door.
 - .2 Hold Open: The operator shall stop and hold the door open at the selected door opening angle for an adjustable period of time.
 - .3 Closing Cycle: Closing shall be provided by means of spring.
 - .4 Hydraulic Bypass: Operator to include standard hydraulic bypass (relief valve) which automatically prevents motor overload if the door is restricted during the opening cycle.
 - .5 Stack Pressure Compensation: Operator is designed to counteract most wind and/or interior stack pressures without an additional power assist mechanism.
 - .6 Electronic Controls: 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. The controls include time delay (5 to 30 seconds) for normal cycle.
 - .7 Control Switch: Automatic door operators shall be equipped with the following type of multi-position function switch:
 - .1 3 position rocker switch mounted on frame at 1500mm AFF (On-Auto-Hold).

- 2.4 ACTIVATION AND SAFETY DEVICES
 - .1 General: Provide activation and safety devices in accordance with ANSI/BHMA standards, for condition of exposure and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated. Coordinate activation and safety devices with door operation and door operator mechanisms.

 - .2 Knowing Act Activation Device:
 - .1 Push Plate: Hard wired, 6 inch round stainless steel push plate switches engraved with "Push to Open" with a blue handicap logo.
 - .2 Push Plate: Jamb mounted, hard wired, 1-1/2 inch x 4-3/4 inch, stainless steel push plate switches engraved with "Push to Open" with a blue handicap logo.

 - .3 Manual Operation:
 - .1 Operator shall be programmable to provide a "push and go" feature allowing door to open automatically if pulled or pushed open manually.

 - .4 Safety Devices:
 - .1 Door Mounted Presence Detector (DMPS): Shall be the Besam door mounted infrared presence safety device (mounted at top of each door); adjustable to provide detection field sizes and functions required by ANSI/BHMA A156.10.
 - .1 Unit to provide detection during the travel of the door.
 - .2 Upon detection the sensor shall provide a signal to stop or reverse the door action.

 - .5 Provide activation devices as specified herein and as indicated on the drawings, and in the door and frame schedule.

- 2.5 FINISHES
 - .1 Permanodic Hardcolour: Class 1 anodic colour coating AA-M12C22A42/44; #40 Medium Bronze.

2.6 FABRICATION

- .1 Fabricate units square and true with maximum tolerance of plus or minus 1.5mm for units with a diagonal measurement of 1800mm or less and plus or minus 3mm for units with a diagonal measurement over 1800mm.
- .2 Provide all internal reinforcing as required for the proper structural design and support of the framing system.
- .3 All joints shall be accurately machined, and assembled to provide neat joints.

3 EXECUTION

3.1 INSTALLATION

- .1 Install power door operators in accordance with reviewed shop drawings and manufacturer's printed instructions, including controls, wiring, and all activation devices.
- .2 Coordinate installation of components with related and adjacent work.
- .3 Set work plumb, square, level, free from warp, twist and superimposed loads.
- .4 Securely anchor work in required position.
- .5 Apply isolation coating to separate aluminum and primed or galvanized steel surfaces at points of contact with cementitious materials.
- .6 Operators: Install door operators plumb and true in alignment with established lines and grades without warp or rack of framing members and doors. Anchor securely in place.
 - .1 Install surface mounted hardware using concealed fasteners to greatest extent possible.
 - .2 Set headers, carrier assemblies, tracks, operating brackets and guides level and true to location with anchorage for permanent support.
- .7 Sealants
 - .1 Comply with requirements of Section 07 92 00 for sealants, fillers and gaskets to be installed during installation of doors and frames.
 - .2 Conceal sealant within aluminum work except where exposed use is permitted by Consultant.
 - .3 Set sill members in bed of sealant.
- .8 Signage: Apply signage on both sides of each door and sidelite as required by ANSI/BHMA A156.19 and applicable legislation for low energy operators, and manufacturer's installation instructions.

3.2 ADJUSTING

- .1 After repeated operation of completed installation equivalent to three days of use by normal traffic (100 to 300 cycles), readjust door operators and controls for optimum, smooth operating condition and safety and for weather tight closure. Lubricate hardware, operating equipment and other moving parts.
- .2 Adjust doors to provide tight fit at contact points with enclosure.

3.3 PROTECTION OF FINISHED WORK

- .1 Protect finished installation until time of final cleaning and inspection.

- .2 Leave all factory installed protective films in place until time of final cleaning.

3.4 FINAL CLEANING

- .1 Clean aluminum surfaces promptly after installation. Exercise care to avoid damage to coatings.
- .2 Remove protective material from prefinished aluminum surfaces.
- .3 Wash exposed surfaces with mild solution of detergent and warm water, using soft, clean wiping cloths. Remove dirt from corners. Wipe surfaces clean.
- .4 Remove excess sealant by moderate use of solvent, of type acceptable to sealant manufacturer.

3.5 DEMONSTRATION

- .1 Demonstrate operation, operating components, adjustment features, and lubrication requirements to Owner's representative.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide glass and glazing for:
 - .1 Interior doors and screens,
- .2 Section includes but is not limited to the provision of:
 - .1 Glass
 - .2 Glazing sealants, gaskets, tapes, and backing materials
 - .3 Miscellaneous glazing materials necessary to complete the work of this section

1.3 REFERENCE STANDARDS

- .1 ASTM C864; Specification for Dense Elastomeric Compression Seal Gaskets, Setting Blocks, and Spacers.
- .2 ASTM C920; Specification for Elastomeric Joint Sealants.
- .3 ASTM D2240; Test Method for Rubber Property - Durometer Hardness.
- .4 ASTM E84; Test Method for Surface Burning Characteristics of Building Materials.
- .5 ASTM F1233; Test Method for Security Glazing Materials and Systems.
- .6 CAN/CGSB-12.1; Tempered or Laminated Safety Glass.
- .7 CAN/CGSB-12.20; Structural Design of Glass for Buildings.
- .8 Flat Glass Manufacturers Association (FGMA) Glazing Manual.

1.4 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in

accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.

- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.
- 1.5 ENVIRONMENTAL REQUIREMENTS
 - .1 Maintain minimum ambient temperature before, during and 24 hours after installation of glazing compounds.
- 1.6 MAINTENANCE DATA
 - .1 Provide maintenance data including cleaning instructions for incorporation into Operations and Maintenance manual.
- 2 PRODUCTS**
- 2.1 FLAT GLASS
 - .1 Safety Glass
 - .1 Tempered: to CAN/CGSB-12.1, 6mm thick, tong free, roller marks free, with visible after installation factory-applied permanent impression in one corner identifying each pane as tempered.
- 2.2 GLAZING MATERIALS
 - .1 Setting Blocks: EPDM or Neoprene, 80 – 90 (Shore A) durometer hardness to ASTM D2240, to suit glazing method, glass weight, and area.
 - .2 Spacer Shims: EPDM or Neoprene, 50 – 60 (Shore A) durometer hardness to ASTM D2240, 75mm long x one half height of glazing stop x thickness to suit application. Self adhesive on one face.
 - .3 Glazing Tapes
 - .1 Non-compression: 100% solids, preformed butyl rubber to ASTM C1281, 66 (Shore 00) durometer hardness to ASTM D2240; coiled on release paper; size as required for frame stop heights; Tremco 440 tape.
 - .4 Glazing Sealants
 - .1 Cap Beads
 - .1 Commercial Glazing: single or multi-component, non-acid curing silicone sealant to ASTM C920;
 - .1 One part neutral cure silicone; equivalent to Spectrem 2, by Tremco.
 - .2 Heel and Toe Beads
 - .1 Commercial Glazing: single or multi-component, non-acid curing silicone sealant to ASTM C920;
 - .1 One part medium modulus silicone sealant; equivalent to Tremsil 600, by Tremco.
 - .3 Perimeter Seals
 - .1 Single or multi-component, elastomeric sealant to ASTM C920;

- .1 One part neutral cure silicone; equivalent to Spectrem 2, by Tremco.
- .2 One part low modulus neutral cure silicone; equivalent to Spectrem 3, by Tremco.

2.3 GLAZING ACCESSORIES

- .1 Glazing Clips: manufacturer's standard type.

3 EXECUTION

3.1 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.

3.2 PREPARATION

- .1 Clean contact surfaces with solvent recommended for use by the sealant manufacturer, and wipe dry thoroughly.
- .2 Seal porous glazing channels or recesses with substrate compatible primer or sealer.
- .3 Prime surfaces scheduled to receive sealant.

3.3 INTERIOR GLAZING

- .1 Wet Method - Sealant / Sealant
 - .1 Install glazing resting on setting blocks. Install applied stop and centre light by use of spacer shims at 600mm centres, 6mm below sight line.
 - .2 Locate and secure glazing light using spring wire clips or glazers' clips.
 - .3 Fill gaps between glazing and stops with glazing sealant until flush with sight line. Tool surface to straight line.
- .2 Steel Frames - Tape / Sealant
 - .1 Cut glazing tape to length and set against permanent stops, 3mm below sight line. Seal corners by butting tape and dabbing with sealant.
 - .2 Place setting blocks at 1/4 points, with edge block maximum 150mm from corners.
 - .3 Rest glazing on setting blocks and push against tape and heel bead of sealant with sufficient pressure to attain full contact at perimeter of light or glass unit.
 - .4 Install removable stops with spacer strips inserted between glazing and applied stops below sight line. Place glazing tape on glazing light or unit with tape 6mm below sight line.
 - .5 Fill gap between glazing and stop with sealant to depth equal to bite of frame on glazing, maximum 6mm below sight line.

- .6 Apply cap bead of sealant along void between stop and glazing, to uniform line, flush with sight line. Tool or wipe sealant surface smooth.

3.4 **CLEANING & PROTECTION**

- .1 During installation, remove all corrosive or foreign materials or droppings resulting from work of this trade.
- .2 Perform initial cleaning operation of all glass and mirrors upon completion of installation. Do not remove labels or protective films until time of final cleaning.
- .3 After initial cleaning, mark large lites with an "X" by using removable plastic tape. Do not use masking tape. Do not mark heat absorbing or reflective glass units.
- .4 Provide instructions for the proper method and materials to be used in the cleaning and maintenance of finished surfaces. Remove all remaining labels and protective films at time of final cleaning.

3.5 **GLAZING TYPES**

- .1 TG1: Clear tempered safety glass, 6mm thickness.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to prepare existing substrates for new applied finishes, including the following:
 - .1 Removal and disposal of all existing flooring, mastics adhesives, mortars and setting materials, base and accessories.
 - .2 Repair of all existing surfaces to provide a sound, uniform substrate for new materials.
 - .3 Provide a Moisture Barrier/Primer.

1.3 SUBMITTALS

- .1 Make submittals in accordance with Section 01 30 00.
- .2 Product Data Sheets:
 - .1 Submit Product Data Sheets indicating physical properties of Products specified, acceptability of substrates, application limitations and testing results.
- .3 Manufacturers Installation Instructions:
 - .1 Submit latest printed manufacturer's Installation Instructions detailing preparation requirements, tools required, acceptable applications methods and standard details for various situations/locations.
- .4 Quality Assurance Submittals:
 - .1 Submit Installer Qualification statements confirming installer meets requirements as specified in this Section prior to commencement of the Work of this Section.

1.4 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application

- .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.
- .4 Pre-installation Meeting
 - .1 Convene a pre-installation meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
 - .1 Contractor (Site Superintendent & Project Manager),
 - .2 Installation Subcontractor (Site Foreman & Project Manager),
 - .3 Product Manufacturer and/or Distributor (Technical Representatives),
 - .4 Related Subcontractors (ie. Mechanical and/or Electrical), and
 - .5 Consultant.
- 1.5 ENVIRONMENTAL REQUIREMENTS
 - .1 Maintain air temperature and substrate temperature between 10°C and 30°C (50°F and 86°F) for 48 hours before, during and 48 hours after installation.
- 2 PRODUCTS**
- 2.1 MATERIALS
 - .1 Substrate Filler and Leveler: Polymer-modified portland cement based latex filler requiring water only to produce cementitious paste, as recommended by flooring manufacturer for use with their Product;
 - .1 ARDEX SD-F Feather Finish® by Ardex Engineered Cements.
 - .2 Laticrete® 816 Latipatch Rapid Underlayment by Laticrete International Inc.
 - .3 Planipatch® by Mapei.Inc.
 - .4 VersaPatch by Tec Specialty Products Inc.
 - .5 Henry® 445 by W.W. Henry Company.
 - .2 Moisture Barrier/Primer: two-part 100% solids, epoxy moisture barrier coating, designed to reduce moisture to 3 lbs. per 1,000 ft² (1,36 kg per 92,9 m²); Planiseal MB, by Mapei Inc.
- 3 EXECUTION**
- 3.1 DEMOLITION AND REMOVAL
 - .1 Remove all existing flooring in the areas designated to receive new applied flooring finishes.
 - .2 Remove all remaining mastics, adhesives, mortars and setting materials. Grind floors where necessary to remove any remaining material.
 - .3 Remove all remaining base materials and accessories.
 - .4 Dispose of all demolition material in strict accordance with Federal and Provincial codes and regulations. Audit, separate and dispose of construction waste generated by new construction or by demolition of existing structures in whole or in part, in accordance with Ontario Regulations 102/94 and 103/94 made under the Environmental Protection Act.

3.2 EXAMINATION

- .1 Prior to commencing the Work of this Section, carefully inspect installed Work of other trades and verify that such Work is complete to the point where Work of this Section may properly commence. Provide Notice in Writing to the Consultant and Contractor of conditions detrimental to the proper and timely completion of the Work of this Section.
- .2 Ensure concrete floors are dry by using test methods recommended by flooring manufacturer, and exhibit negative alkalinity, carbonization or dusting.
- .3 Moisture test results should exceed the flooring manufacturer's recommendations for specified adhesive and shall exceed 2.27kg/92.9m²/24 hours (5lbs/1000ft²/24 hours) or 85% relative humidity.
- .4 Do not begin installation until all unsatisfactory conditions are resolved. Beginning Work of this Section constitutes acceptance of site conditions and responsibility for defective installation caused by prior observable conditions.

3.3 SUBSTRATE FILLER AND LEVELER

- .1 Preparation:
 - .1 All substrates must be structurally sound, dry, solid and stable.
 - .2 Substrate should be clean and free of dust, dirt, oil, grease, paint, curing agents, concrete sealers, loosely bonded toppings, loose particles, epoxy adhesives, urethane adhesives, and any other substance or condition that may prevent or reduce adhesion.
 - .3 Ensure substrates are sound, level, free of cracks greater than 3mm (1/8") in width, and changes in elevation that may adversely affect installation.
 - .4 Apply leveling or patch material recommended by mortar and grout manufacturer or flooring adhesive manufacturer to substrate and allow to set thoroughly. Sand where necessary.
 - .5 Concrete must free of any negative hydrostatic pressure and/or excessive moisture.
- .2 Mixing:
 - .1 In a clean mixing container, pour 1 part liquid and gradually add 2-1/2 to 3 parts Substrate Filler and Leveler powder by volume while slowly mixing. (Note: Water temperature should not exceed 73°F (23°C). Higher water temperature will shorten pot life.)
 - .2 Do not overwater.
 - .3 Use a low-speed mixer (at about 300 rpm) to mix for 2 minutes at maximum. Mix thoroughly to a smooth, lump-free consistency.
 - .4 Do not mix more material than can be applied within 8 to 10 minutes.
 - .5 Avoid air entrapment and prolonged mixing, which will shorten pot life.
- .3 Application:
 - .1 Select an appropriate flat-edge steel trowel.
 - .2 Immediately apply mixed Substrate Filler and Leveler to the substrate, according to the desired thickness. Do not exceed manufacturer's maximum single-coat thickness.
 - .3 Blend into the surrounding area and finish to the required smoothness.
 - .4 Allow at least 60 minutes to dry.

3.4 MOISTURE BARRIER/PRIMER

- .1 Ensure surfaces are clean and free of deleterious materials.

- .2 Apply moisture barrier/primer to concrete floor surfaces in accordance with manufacturer's printed instructions.

3.5 PROTECTION OF FINISHED WORK

- .1 Protect from traffic dirt or dust from other trades until the final installation of the floor covering.
- .2 Allow for extended periods of cure and protection when temperatures drop below 16°C (60°F) and/or when the relative humidity is higher than 70%.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide gypsum board systems including the following:
 - .1 Non-load bearing steel stud systems
 - .2 Steel ceiling & soffit suspension systems
 - .3 Gypsum board
 - .4 Tile Backer board
 - .5 Taping, jointing & finishes
 - .6 Accessories

1.3 REFERENCES

- .1 ASTM C473; Test Methods for Physical Testing of Gypsum Panel Products.
- .2 ASTM C475; Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
- .3 ASTM C630/C630M; Specification for Water-Resistant Gypsum Backing Board.
- .4 ASTM C645; Specification for Non-Load (Axial) Bearing Steel Studs, Runners (Track), and Rigid Furring Channels for Screw Application of Gypsum Board.
- .5 ASTM C840; Specification for Application and Finishing of Gypsum Board.
- .6 ASTM C954; Specification for Steel Drill Screws for the Application of Gypsum Board.
- .7 ASTM C1002; Specification for Steel Drill Screws for the Application of Gypsum Panel Products or Metal Plaster Bases.
- .8 ASTM C1047; Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
- .9 ASTM C1395/C1395M; Specification for Gypsum Ceiling Board.
- .10 ASTM C1396/C1396M; Specification for Gypsum Board.
- .11 ASTM D3273; Test Method for Resistance to Mold Growth on the Surface of Interior Coatings in an Environmental Chamber.
- .12 ASTM-E90; Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions.
- .13 ASTM-E119; Test Methods for Fire Tests of Building Construction and Materials.
- .14 CAN/CGSB-51.34; Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .15 CAN/CGSB-71.25; Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.

- .16 CAN/ULC-S102; Building Materials and Assemblies, Standard Method of Test for Surface Burning Characteristics of.
 - .17 CAN/ULC-S114; Determination of Non-combustibility of Building Materials.
 - .18 CAN/CSA-S136; Cold Formed Steel Structural Members.
- 1.4 QUALITY ASSURANCE
- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
 - .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
 - .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.
 - .4 Pre-application Meeting
 - .1 Convene a pre-application meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
 - .1 Contractor (Site Superintendent & Project Manager)
 - .2 Application Subcontractor (Site Foreman & Project Manager)
 - .3 Product Manufacturer and/or Distributor (Technical Representatives)
 - .4 Related Subcontractors whose work is affected by that of this Section.
- 1.5 SYSTEM REQUIREMENTS
- .1 Performance Requirements: Fabricate and install systems as indicated but not less than that required to comply with ASTM C754 under the following conditions:
 - .1 Standard systems: Maximum deflection of $l/240$ of partition height.
 - .2 Systems to receive water resistant gypsum board or backer board: Maximum deflection of $l/360$ of partition height.
 - .3 Interior suspended ceilings: Maximum deflection of $l/360$ of distance between supports.
 - .4 Exterior soffits and interior vestibule ceilings: Withstand minimum positive and negative pressure of 0.95kPa with maximum deflection of $l/360$ of distance between supports.
 - .2 Tall Walls
 - .1 Partitions exceeding 9m in height are considered tall walls. Use double structural studs back-to-back 610mm on center. Attach studs back to back with screws approximately 1220mm on center.

- .2 For 0.24kPa wind load, use 0.91mm runner track. Fasteners shall have a capacity of 136kg in single shear and bearing. For 0.48kPa wind load, use 1.22mm runner track attached with fasteners with 182kg single shear and bearing.
 - .3 Fire Resistance Ratings: Where fire resistance classifications are indicated, provide materials and application procedures identical to those listed by UL/ULC or tested according to ASTM-E119 for type of construction shown.
 - .4 Acoustical Ratings: Where sound ratings are indicated, provide materials and application procedures identical to those tested by manufacturer to achieve Sound Transmission Class (STC) scheduled or indicated in accordance with ASTM-E90.
- 1.6 DELIVERY, STORAGE AND HANDLING
- .1 Deliver material to site promptly without undue exposure to weather.
 - .2 Deliver in manufacturer's unopened containers or bundles, fully identified with name, brand, type and grade.
 - .3 Store above ground in dry, ventilated space.
 - .4 Protect materials from soiling, rusting, or damage.
 - .5 Store board to be directly applied to masonry walls at 21°C for 24 hours prior to installation.
- 1.7 ENVIRONMENTAL REQUIREMENTS
- .1 Maintain temperature minimum 10°C, maximum 21°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.
- 1.8 SEQUENCING
- .1 Co-ordinate installation of ceiling suspension systems with work of mechanical and electrical trades. Allow for completion of major items of work by mechanical and electrical trades prior to installation of ceiling grid systems.
- 2 PRODUCTS**
- 2.1 STEEL MATERIALS
- .1 Sheet Steel: Cold-rolled, commercial grade structural quality sheet steel (SS), to ASTM A924/A924M; Zinc-Coated (Hot Dip Galvanized) to ASTM A653/A653M; coating designation Z275.
- 2.2 PARTITION FRAMING
- .1 Partition Stud Framing: to ASTM C645, stud sizes as indicated, roll-formed from 0.53mm thick, hot-dip galvanized sheet steel. Knock-out service holes at 460mm centres.

- .2 Partition Floor & Ceiling Tracks: to ASTM C645, 0.91mm thickness hot-dip galvanized sheet steel, widths to suit stud sizes, 32mm flange height for standard applications; 50mm flange height for deflection applications.
 - .3 Stiffener Channels: 38mm or 64mm width, 1.3mm thick hot-dip galvanized sheet steel, cold rolled channels.
- 2.3 FURRING SYSTEMS
- .1 Metal furring runners, hangers, tie wires, inserts, anchors: to ASTM C645.
 - .2 Drywall Furring Channels: 0.53mm core thickness hot-dip galvanized, steel channels for screw attachment of gypsum board.
- 2.4 FLAT CEILING SUSPENSION SYSTEM
- .1 Suspension System: tested in accordance with ASTM C635, roll formed from hot-dip galvanized, sheet steel; USG Drywall Suspension System by CGC Inc., or an approved alternative, and as follows:
 - .1 Main Tees: 38mm x 38mm, single web construction.
 - .2 Cross Tees: 38mm x 38mm, single web construction.
 - .3 Cross Channels: 73x22mm, with 37mm face width.
 - .4 Wall Channels: 40x25mm, "C" channel.
 - .5 Wall Molds: 38 x 25mm "L" profile.
 - .2 Splice and Transition clips: purpose-made, roll formed from hot-dip galvanized steel sheet by USG, or an approved alternative.
 - .3 Suspension wire: 2.75mm galvanized wire.
- 2.5 BOARD MATERIAL
- .1 Standard Board: to ASTM C36, regular 13mm and 16mm thick, 1220mm wide x maximum practical length, ends square cut, edges tapered.
 - .1 Standard Gypsum Board, by CertainTeed Gypsum Canada Inc.
 - .2 Sheetrock® Gypsum Board, by CGC Inc.
 - .3 Gold Bond Gypsum Board, by National Gypsum.
 - .4 ToughRock®, by G-P Gypsum (Georgia-Pacific)
 - .2 Fire Rated Board (Type C): to ASTM C36, (5/8") 16mm thick, (48") 1220mm wide x maximum practical length, ends square cut, edges tapered.
 - .1 Type C Gypsum Board, by CertainTeed Gypsum Canada Inc.
 - .2 Sheetrock® Firecode Type C, by CGC Inc.
 - .3 Gold Bond Fire-Shield C Gypsum Board, by National Gypsum.
 - .4 ToughRock™ Fireguard C Gypsum Board, by Georgia Pacific.
 - .3 Fire Rated Board (Type X): to ASTM C36, Type X to ASTM E119, (5/8") 16mm thick, (48") 1220mm wide x maximum practical length, ends square cut, edges tapered.
 - .1 Type X Gypsum Board, by CertainTeed Gypsum Canada Inc.
 - .2 Sheetrock® Firecode Type X, by CGC Inc.
 - .3 Gold Bond Fire-Shield Gypsum Board, by National Gypsum.
 - .4 ToughRock™ Fireguard Gypsum Board, by Georgia Pacific.
 - .4 Moisture Resistant Gypsum Board: to ASTM C36, with water resistant facing, Type X to ASTM E119, 16mm thick, 1220mm wide x maximum practical length;

- .1 M2Tech® Moisture and Mold Resistant Type X Gypsum Board, by CertainTeed Gypsum Canada Inc.
- .2 Sheetrock Mold-Tough Panels, by CGC Inc.
- .3 Gold Bond XP Gypsum Board, by National Gypsum.
- .4 ToughRock® Mold-Guard, by G-P Gypsum (Georgia-Pacific)
- .5 Abuse-Resistant Gypsum Board: to ASTM-C36, Type X to ASTM E119, 16mm thick, ends square cut, edges tapered;
 - .1 Sheetrock Mold-Tough Abuse-Resistant, by CGC Inc.
 - .2 ToughRock® Fireguard X™ Abuse-Resistant, by G-P Gypsum (Georgia-Pacific)
 - .3 Extreme Abuse Resistant Type X Gypsum Board with M2Tech, by CertainTeed Gypsum Canada Inc.
- .6 Interior Ceiling Panels: to ASTM C1395, Type X to ASTM E119, 16mm thick, 1220mm wide x 2440mm long;
 - .1 Sheetrock® Interior Ceiling Board, by CGC Inc.
 - .2 Easi-Lite Lightweight Interior Ceiling Board, by CertainTeed Gypsum Canada Inc.
 - .3 Gold Bond Interior High-Strength LITE, by National Gypsum.
 - .4 ToughRock™ Span 24, by G-P Gypsum (Georgia-Pacific)
- .7 Tile Backer Board: to ASTM C1178, standard 13mm Type X to ASTM E119, 16mm thick, 1220mm wide x 2440mm long;
 - .1 DensShield® Tile Backer, by G-P Gypsum (Georgia-Pacific).
 - .2 Diamondback Tile Backer Type X, by CertainTeed Gypsum Canada Inc.
 - .3 Gold Bond e²XP® Tile Backer, by National Gypsum.

2.6 ACCESSORIES

- .1 Hanger Wire: 4.8mm galvanized pencil rod.
- .2 Screws
 - .1 For interior board: #6 or #8 bugle head, to ASTM C954, hardened and phosphate plated, drywall screws. Use self-drilling type for heavier thickness framing material.
- .3 Laminating compound: as recommended by gypsum board manufacturer for laminating multiple layers of gypsum board, or for laminating gypsum board to masonry or concrete.
- .4 Corner beads and trim: (25ga.)0.53mm commercial grade hot-dip galvanized sheet steel to ASTM C645, perforated flanges, one piece length per location, by Bailey Metal Products, and as follows:
 - .1 Corner bead: D-100 series.
 - .2 Casing bead: #4411 or D-200.
- .5 Polyethylene: to CAN/CGSB-51.34.
- .6 Acoustical sealant: to Section 07 92 00.
- .7 Firestop and Smoke sealant: to Section 07 84 00.
- .8 Insulating strip: rubberized moisture resistant, 3mm thick, closed cell neoprene strip, 12mm wide, with self sticking permanent adhesive on one face; lengths as required.

- .9 Joint Tape: Paper tape, nominal 50mm wide.
- .10 Joint Compounds: to ASTM C475, dry powder for mixing with water, or ready-mix compounds;
 - .1 Standard Interior Use Joint Compound
 - .1 DensArmor™ Sandable Joint Compound, by Georgia-Pacific.
 - .2 All-Purpose Joint Compound, by CertainTeed Gypsum Canada Inc.
 - .3 Sheetrock Setting-Type Joint Compound, by CGC Canada Inc.
 - .2 Abuse-Resistant Joint Compound (AR gypsum board applications)
 - .1 ToughRock™ Sandable Joint Compound, by Georgia-Pacific.
 - .2 High Density 90 Joint Compound, by CertainTeed Gypsum Canada Inc.
 - .3 Durabond Setting-Type Joint Compound, by CGC Canada Inc.
- .11 Water: potable.

3 EXECUTION

3.1 GENERAL

- .1 Perform work in accordance with ASTM C840 except where specified otherwise.

3.2 PARTITION CONSTRUCTION

- .1 Align top and bottom partition tracks at floor and ceiling and secure at 610mm o.c. maximum.
- .2 Secure partitions under acoustic ceiling grids with partition clips at 1220mm o.c. maximum and additionally at ends of return walls, and above each door jamb.
- .3 Install polyethylene dampproof course under stud shoe tracks of partitions on slabs on grade.
- .4 Place studs vertically at 406mm o.c. and not more than 50mm 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.
- .5 Erect metal studding to tolerance of 1:1200.
- .6 Attach studs to bottom and ceiling track using screws.
- .7 Coordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.
- .8 Coordinate erection of studs with installation of door/window frames and special supports or anchorage for work specified in other Sections.
- .9 Provide two studs extending from floor to ceiling at each side of openings wider than stud centres specified. Secure studs together, 50mm apart using column clips or other approved means of fastening placed alongside frame anchor clips.

- .10 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.
 - .11 Frame openings and around built-in equipment, cabinets, access panels, on four sides. Extend framing into reveals. Check clearances with equipment suppliers.
 - .12 Install steel studs or furring channels between studs as required for attaching electrical and other boxes.
 - .13 Extend framing above suspended ceilings for fire and sound separations and to form plenum areas as indicated.
 - .14 Extend partitions to underside of floor/roof deck above except where noted otherwise on drawings. Provide cross-bracing above ceilings, where recommended by manufacturer.
 - .15 Where partitions are fire, smoke, or sound separations, and occur parallel to, and under structural members, offset and continue partitions to underside of floor/roof deck above to maintain continuity of partition.
 - .16 Maintain clearance under beams, joists, and structural slabs to avoid transmission of structural loads to studs. Use 50mm leg ceiling tracks or double track slip joint as indicated.
 - .17 Install continuous insulating strips to isolate studs from uninsulated surfaces, or dissimilar metals.
 - .18 Install two continuous beads of acoustical sealant or insulating strip under studs and tracks around perimeter of sound control partitions.
- 3.3 FURRING INSTALLATION
- .1 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles.
 - .2 Furr for gypsum board faced vertical bulkheads within or at termination of ceilings.
 - .3 Install wall furring for gypsum board wall finishes where indicated.
 - .4 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
 - .5 Furr, beams, columns, pipes and exposed services where indicated.
 - .6 Install sound isolation clips and channels to assemblies indicated where scheduled on the drawings.
- 3.4 CEILING SYSTEM INSTALLATION
- .1 Erect metal framing to tolerance of 1:1200.

- .2 Install perimeter wall molds or channels level and straight, above elevation equal to thickness of board ceiling finish.
- .3 Install main channels/tees in parallel rows 1220mm o.c., supported on hanger wire at maximum 1220mm o.c. Align cross channel slots from one main runner to the next. End splices must be fully interlocked.
- .4 Install cross channels perpendicular to hanger channels at 405mm o.c. for moisture resistant board, soffit panels, and cement board; 610mm o.c. for all other. Screw fasten ends of furring channels to wall angles.
- .5 Provide wind support posts at 1220mm o.c. each way at exterior soffit applications.
- .6 Install additional cross channels within 200mm of parallel running walls where wall moulds or angles are not present.
- .7 Install cross channels parallel to, and at exact locations of steel stud partition header track.
- .8 Install standard cross tees at long edges of all rectangular light fixtures.
- .9 Frame openings and around built-in equipment, cabinets, access panels, on four sides with cross tees. Extend framing into reveals. Check clearances with equipment suppliers.
- .10 Ceiling suspension system shall not be used as primary support for mechanical/electrical equipment, other than those items penetrating the ceiling membrane or, to be installed on the underside of the ceiling. Other equipment must have its own support system.
- .11 Fire Rated System
 - .1 Install additional cross channels 200mm each side of ceiling board butt joints for full length of joint.
 - .2 Install additional cross channels 200mm from long edges of light fixture openings for additional board support.
 - .3 Install additional wire hangers at all corners of light fixtures and at centre points of supporting cross tees.
 - .4 Install ceiling edge fascias where indicated on the drawings.
 - .5 Construct ceiling suspension systems to the following minimum fire rated designs:
 - .1 Up to 1 1/2 hours: UL Design G-528.
 - .2 Up to 2 hours: ULC Design I-517.
 - .3 Up to 3 hours: UL Design G-529.

3.5 BOARD APPLICATION

- .1 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.

- .2 Apply single layer gypsum board to wood or metal furring or framing using screw fasteners. Maximum spacing of screws 305mm o.c.
- .3 Apply double layer gypsum board to wood or metal furring or framing using screw fasteners for first layer, and laminating adhesive for second layer. Maximum spacing of screws 305mm o.c.
- .4 Apply single layer gypsum board to concrete or concrete block surfaces, where indicated, using laminating adhesive.
- .5 Apply moisture resistant gypsum board to walls and ceilings in washrooms, janitor's rooms, change rooms, serveries, and garbage rooms. Apply silicone sealant to edges, ends, cut-outs which expose gypsum core and to fastener heads.
- .6 Apply abuse-resistant gypsum board to interior surfaces where noted and scheduled. Finish with abuse-resistant compound as specified.
- .7 Apply tile backer board to all wall surfaces to receive ceramic tile finish. Apply using screw fasteners, at 305mm o.c maximum spacing.
- .8 Apply 13mm diameter bead of acoustic sealant continuously around periphery of each face of partitioning to seal gypsum board/structure junction where partitions abut fixed building components. Seal full perimeter of cut-outs around electrical boxes, ducts, in partitions where perimeter sealed with acoustical sealant.

3.6 INSTALLATION OF ACCESSORIES

- .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 with screws at 152mm o.c., or using contact adhesive for full length.
- .2 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
- .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 Construct control joints of back to back casing beads, set in gypsum board facing and supported independently on both sides of joint.
- .5 Provide continuous polyethylene dust barrier behind and across control joints.
- .6 Locate control joints at changes in substrate construction, at approximately 10000mm spacing on long corridor runs, at approximately 15200mm on ceilings.
- .7 Construct expansion joints as detailed, at building expansion and construction joints. Provide continuous dust barrier.
- .8 Install access doors to electrical and mechanical equipment where specified in Section 08 31 13 and by Mechanical and Electrical subtrades. Rigidly secure frames to furring or framing systems.

3.7 TAPING AND JOINTING

- .1 Provide levels of gypsum board finish for locations as follows, in accordance with Gypsum Association GA 214, Recommended Specification: Levels of Gypsum Board Finish.
 - .1 **Level 1:** Ceiling plenum and concealed areas, except provide higher level of finish as required to comply with fire resistance ratings and acoustical ratings.
 - .2 **Level 2:** Gypsum board substrate at tile, except remove tool marks and ridges.
 - .3 **Level 3:** Gypsum substrate under textured or applied coatings such as plaster.
 - .4 **Level 4:** Gypsum board surfaces to receive paint finish.

- .2 Interior Gypsum Board
 - .1 Pre-fill
 - .1 Use setting-type joint compound. Mix joint compound according to manufacturer's directions.
 - .2 Fill joints between boards flush to top of eased or beveled edge.
 - .3 Fill joints of gypsum board above suspended ceilings in fire-rated partitions.
 - .4 Wipe off excess compound and allow compound to harden.

 - .2 Taping (Level 1)
 - .1 Butter taping compound into inside corners and joints.
 - .2 Center tape over joints and press down into fresh compound.
 - .3 Remove excess compound.
 - .4 Tape joints of gypsum board above suspended ceilings.

 - .3 First coat (Level 2)
 - .1 Use taping or all-purpose drying-type compound.
 - .2 Immediately after bedding tape, apply skim coat of compound and allow to dry completely in accordance with manufacturer's instructions.
 - .3 Apply first coat of compound over flanges of trim and accessories, and over exposed fastener heads and finish level with board surface.

 - .4 Second coat (Level 3)
 - .1 After first coat treatment is dried, apply second coat of compound over tape and trim, feathering compound 2 inches beyond edge of first coat.

 - .5 Third coat (Level 4)
 - .1 After second coat has dried, sand surface lightly and apply thin finish coat to joints, fasteners and trim, feathering compound 2 inches beyond edge of second coat.
 - .2 Allow third coat to dry. Apply additional compound, and touch-up and sand, to provide surface free of visual defects, tool marks, and ridges, and ready for application of finish.

- .3 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.

- .4 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.

- .5 Completed installation to be smooth, level or plumb, free from waves and other defects and ready for surface finish.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide tiling.

1.3 REFERENCE STANDARDS

- .1 ANSI A108 Series; Specifications for Installation of Ceramic Tile.
- .2 ANSI A118 Series; Specifications for Mortars and Grouts for Ceramic Tile Installation.
- .3 ANSI A136.1; Standard for Organic Adhesives for Installation of Ceramic Tile.
- .4 ANSI A137.1; Recommended Standard Specifications for Ceramic Tile.
- .5 ASTM C1027; Determining visible abrasion resistance of glazed ceramic tile.
- .6 ASTM C1028; Determining the static coefficient of ceramic tile.
- .7 ASTM C920; Elastomeric joint sealants.
- .8 CAN/CGSB-75.1; Ceramic tile.
- .9 Ceramic Tile Installation Manual 200; Terrazzo Tile and Marble Association of Canada (TTMAC).
- .10 Handbook for Ceramic Tile Installation; Tile Council of America.

1.4 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.

- .4 Pre-application Meeting
 - .1 Convene a pre-application meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
 - .1 Contractor (Site Superintendent & Project Manager)
 - .2 Application Subcontractor (Site Foreman & Project Manager)
 - .3 Product Manufacturer and/or Distributor (Technical Representatives)
 - .4 Related Subcontractors whose work is affected by that of this Section.

1.5 SUBMITTALS

- .1 Submit sample panels of each tile type specified, in accordance with Section 01 30 00.
- .2 Sample panels shall be minimum 600mm x 600mm in size, and shall consist of tiles bonded to 13mm G1S plywood, with grouted joints to represent project installation. Where cut tile patterns are indicated, include one sample of cut condition.
- .3 Submit samples of preformed bases, trim and other specialty shapes.

1.6 MAINTENANCE MATERIAL

- .1 Provide minimum 2% of each type and colour of tile required for project for maintenance use in accordance with Section 01 78 00.
- .2 Maintenance material to be of same production run as installed material.
- .3 Provide instructions for the care and maintenance of all tile for this project, for inclusion in Operations and Maintenance Manual.

1.7 ENVIRONMENTAL CONDITIONS

- .1 Maintain air temperature and structural base temperature at ceramic tile installation area above 10°C for 48 hours before, during, and 48 hours after installation.
- .2 Exclude construction traffic from areas to receive tile during installation and curing period.
- .3 Protect tile flooring subjected to construction traffic with non-staining covers.

1.8 EXTENDED WARRANTY

- .1 Provide Mortar and Grout manufacturer's system warranty guaranteeing that the listed products, installed as per the manufacturer's approved methods and practices, will not fail due to material or manufacturing defects for a period of five (5) years from the Date of Substantial Performance.
- .2 Warranty shall cover the total replacement cost (all labour and materials) of the defective area.

2 PRODUCTS

2.1 TILE MATERIALS

- .1 CER-1 (Backsplash)
 - .1 Supplier: Olympia Tile
 - .2 Series: Colour & Dimension
 - .3 Colour: Arctic White
 - .4 Finish: Bright (glossy)
 - .5 Size: 76mm x 152mm

- .6 Installation: 1/2" ashlar
 - .7 Grout: Mapei, 93 Warm Gray
 - .8 *Add Schluter JOLLY trim (ATGB – brushed nickel finish) required on all exposed edges.
- .2 PORT-1 (Washroom Floor Tile)
- .1 Supplier: Olympia Tile
 - .2 Series: regal collection
 - .3 Colour: dark grey, matte
 - .4 Size: 300 x 600mm (nominal)
 - .5 Grout: Mapei, 107 Iron (seal grout)
 - .6 Base: no base
 - .7 *Add Schluter (ATGB – brushed nickel finish) flooring transition strips required where floor material changes. Refer to floor finishes plan for locations.
- .3 PORT-2 (Washroom Wall Tile)
- .1 Supplier: Olympia Tile
 - .2 Series: regal collection
 - .3 Colour: grey, polished
 - .4 Size: 300 x 600mm (nominal)
 - .5 Grout: Mapei, 107 Iron (seal grout)
 - .6 Base: no base
 - .7 Installation: stacked. wall tile to be stacked and installed from finished floor to 84" a.f.f.
 - .8 *Add Schluter JOLLY trim (ATGB – brushed nickel finish) required on all exposed edges.

2.2 MORTAR AND ADHESIVE MATERIALS

- .1 Thin Set Floor Mortar: latex-modified Portland cement, thin-set mortar, to ANSI 118.4. Acceptable Products are:
- .1 Kerabond/Keralastic by Mapei Inc.
 - .2 Laticrete® 4237/211, by Laticrete International Inc.
 - .3 Full Flex™, by Tec Specialty Products Inc.
 - .4 Premium-Blend™/Acrylic Mortar Admix, by Custom Building Products.
 - .5 ARDEX X4™ Thin Set Mortar, by Ardex Engineered Cements.
- .2 Large Format Tile Mortar: latex-modified Portland cement mortar, to ANSI 118.4. Acceptable products are:
- .1 Ultraflex LFT by Mapei Inc.
 - .2 Laticrete® 220/333, by Laticrete International Inc.
 - .3 TEC 3N1 Performance Mortar™, by HB Fuller Construction Products.
 - .4 ProLite™ Tile and Stone Mortar, by Custom Building Products.
 - .5 ARDEX X77™ MICROTEC® Fibre-Reinforced Thin Set Mortar, by Ardex Engineered Cements.

2.2 GROUT

- .1 Sanded Grout: sanded, latex-modified Portland cement grout, to ANSI 118.6. Colours as selected by Consultant. Acceptable Products are:
- .1 Ker 200 Series, by Mapei Inc.
 - .2 Laticrete® 500/1776, by Laticrete International Inc.
 - .3 TEC™ AccuColor™ TA-650/869, by H.B Fuller Construction Products Inc.
 - .4 Polyblend® Sanded, by Custom Building Products.
 - .5 ARDEX FL™ Rapid-Set Flexible Sanded Grout, by Ardex Engineered Cements.

- .2 Unsanded Grout: unsanded, dry, latex-modified Portland cement grout, to ANSI 118.6. Colours as selected by Consultant. Acceptable Products are:
 - .1 Ker 800 Series, by Mapei Inc.
 - .2 Laticrete® 1600 Series TriPoly Grout/1776 Admix Plus, by Laticrete International Inc.
 - .3 TEC™ AccuColor TA-620/869, by H.B Fuller Construction Products Inc.
 - .4 Polyblend® Unsanded, by Custom Building Products.
 - .5 ARDEX FG-C™ MICROTEC® Unsanded Grout, by Ardex Engineered Cements.

2.2 ACCESSORIES

- .1 Floor Patch & Leveller: latex-modified cement floor patch and leveller. Acceptable products are;
 - .1 Planipatch, by Mapei Inc.
 - .2 VersaPatch, by Tec Specialty Products Inc., or
 - .3 Laticrete® 816 Latipatch Rapid Underlayment, by Laticrete International Inc.
- .2 Joint Sealer: polymerized silicone grout sealer. Acceptable products are:
 - .1 Grout Sealer, by Miracle Sealants Company, or
 - .2 TA-256, by Tec Specialty Products Inc.
- .3 Sealant: in accordance with Section 07 92 00, colour to match grout.
- .9 Transitions
 - .1 Floor Tile to Resilient Flooring: Schluter®-RENO-U-AEU, by Schluter Systems (Canada) Inc.
 - .2 Wall Corners: Schluter®-ECK-K-ATGB, by Schluter Systems (Canada) Inc.
 - .3 Base Cap: Schluter®-JOLLY-ATGB, by Schluter Systems (Canada) Inc.

2.3 MORTAR MIXES

- .1 Mix as per manufacturer's instructions.
- .2 Measure mortar ingredients by volume. Mix thoroughly to smooth, homogeneous consistency.
- .3 Use low speed mixer (150 rpm). Avoid air entrapment and prolonged mixing.
- .4 Let slake 10 to 15 minutes. Re-stir without adding liquid.

3 EXECUTION

3.1 SURFACE PREPARATION

- .1 Ensure substrates are dry, clean, and free of all oil, grease and other materials detrimental to the installation of setting bed materials.
- .2 Ensure substrates are sound, level, free of cracks greater than 3mm in width, and changes in elevation that may adversely affect installation.
- .3 Apply levelling or patch material to concrete substrate as recommended by mortar and grout manufacturer and allow to set thoroughly. Sand where necessary.

3.2 QUALITY OF WORK

- .1 Fit tile around corners, fitments, fixtures, drains and other built-in objects. Maintain uniform joint appearance. Cut edges smooth and even.
- .2 Maximum surface tolerance (1:800).
- .3 Lay out tiles so perimeter tiles are minimum 1/2 size.
- .4 Sound tiles after setting and replace hollow-sounding units to obtain full bond.
- .5 Make joints between tile uniform and approximately 3mm wide, plumb, straight, true, even and flush with adjacent tile. Ensure sheet layout not visible after installation. Align patterns.
- .6 Make inside corners square butt joints, and outside corners bullnosed.
- .7 Use return edged (bullnosed) tiles at termination of wall tile panels, except where panel butts projecting surface or differing plane.
- .8 Clean installed tile surfaces after installation and grouting cured.

3.3 TILE INSTALLATION

- .1 Apply setting bed material with a clean, round or square-notched trowel of type recommended for that material. Do not apply more material than can be covered with tiles in 10 minutes (approx. 1m²).
- .2 Place tiles firmly into setting bed using a slight twisting motion to ensure full contact. Immediately beat-in tile to flatten all ridges or notches.
- .3 Clean out joints of excess mortar, and wipe smudges from tile face.
- .4 Allow minimum 24 hours after installation of tiles, before grouting.

3.4 CONTROL JOINTS

- .1 Provide control joints around perimeter of large areas, around columns, in locations where area changes direction and where tile abuts other hard material. Place control joints directly over subfloor expansion/control joints.
- .2 Provide control joints for all exterior areas where indicated. Minimum width of control joints 10mm.
- .3 Fill joints with sealants in accordance with Section 07 92 00.
- .4 Keep building expansion and control joints free of mortar or grout.
- .5 Provide caulked joints at all internal wall corners and between wall and floor tile.

3.5 GROUTING

- .1 Prior to commencing floor tile grouting, apply grout release to tiles to protect from grout stain, and allow sufficient time to dry.
- .2 Dampen surface of tile with a damp towel. Do not flood or overly wet tiles.

- .3 Using a purpose-made rubber float, apply grout evenly by moving across tiles diagonally first in one direction and then in the opposite direction, to ensure joints are filled with material. Promptly remove excess grout as the work progresses, using rubber float.
- .4 Remove remaining grout using dampened towel and clean water, by repeatedly dragging towel across the surface of the tiles, rinsing the towel and changing the water frequently.
- .5 Allow grout to cure minimum 3 to 4 hours before cleaning off remaining grout "haze".

3.6 **SEALING**

- .1 Ensure all grout has cured, and all residual grout has been removed from tile.
- .2 Apply grout joint sealer with fine brush or narrow foam pad, to all grout joints in floor and wall tile. Remove all excess sealer from joints, and tile surfaces.
- .3 Prohibit foot traffic on tile surfaces until after complete curing of sealer.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide acoustic tile ceiling systems including the following:
 - .1 Acoustic ceiling tiles
 - .2 Suspension grid systems
 - .3 Hangers and inserts
 - .4 Accessories

1.3 REFERENCES

- .1 ASTM-C635; Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
- .2 ASTM-C636; Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels.
- .3 CAN/CGSB-51.34; Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.
- .4 CAN/CGSB-92.1; Sound Absorptive Prefabricated Acoustical Units.
- .5 CSA-B111; Wire Nails, Spikes and Staples.
- .6 CAN/ULC-S102; Surface Burning Characteristics of Building Materials.

1.4 REGULATORY REQUIREMENTS

- .1 Fire-resistance rated floor/ceiling and roof/ceiling assembly: certified by a Canadian Certification Organization accredited by Standards Council of Canada.

1.5 DESIGN REQUIREMENTS

- .1 Maximum deflection: 1/360th of span to ASTM-C635 deflection test.

1.6 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application

- .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.
- .4 Pre-application Meeting
 - .1 Convene a pre-application meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
 - .1 Contractor (Site Superintendent & Project Manager)
 - .2 Application Subcontractor (Site Foreman & Project Manager)
 - .3 Product Manufacturer and/or Distributor (Technical Representatives)
 - .4 Related Subcontractors whose work is affected by that of this Section.
- 1.7 SUBMITTALS
 - .1 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 30 00.
 - .2 Submit reflected ceiling plans for special grid patterns as indicated.
 - .3 Indicate lay-out, insert and hanger spacing and fastening details, splicing method for main and cross runners, location of access splines, change in level details, access door dimensions, and locations, acoustical unit support at ceiling fixture, lateral bracing and accessories.
 - .2 Samples
 - .1 Submit samples in accordance with Section 01 30 00.
 - .2 Submit one representative model of each type ceiling suspension system.
 - .3 Ceiling system to show basic construction and assembly, treatment at walls, recessed fixtures, splicing, interlocking, finishes, acoustical unit installation.
 - .4 Submit duplicate full size samples of each type acoustical units.
 - .3 Closeout Submittals
 - .1 Maintenance Materials
 - .1 Provide acoustical ceiling tiles amounting to $\pm 2\%$ of gross ceiling area for each pattern and type required for project, in accordance with Section 01 78 00.
 - .2 Extra materials shall be from same production run as installed materials, in unopened packages clearly identified as to its contents.
 - .3 Store where directed by Consultant.
- 1.8 ENVIRONMENTAL REQUIREMENTS
 - .1 Permit wet work to dry before commencement of installation.
 - .2 Maintain uniform minimum temperature of 15°C and humidity of 20 - 40% before and during installation.

- .3 Store materials in work area 48 hours prior to installation.

2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- .1 Suspension Grid
 - .1 CGC Inc.
 - .2 Armstrong World Industries
 - .3 Chicago Metallic
- .2 Acoustic Panels
 - .1 CGC Inc.
 - .2 Armstrong World Industries.
 - .3 CertainTeed Corporation.

2.2 STEEL MATERIALS

- .1 Sheet Steel: Cold-rolled, commercial grade structural quality sheet steel, to ASTM A635/A635M; Zinc-Coated (Hot Dip Galvanized) to ASTM A653/A653M; coating designation Z275.

2.3 SUSPENSION GRID SYSTEMS

- .1 General: Intermediate duty suspension grid systems, all components to be sheet steel to ASTM-C635, galvanized to ASTM A653/A653M. Die cut components; double web main tees with rectangular bulb and rolled cap on exposed face; shop painted baked enamel finish. Cross tees with rectangular bulb and web extended to form positive interlock with main tee webs, lower flange extended and offset to provide flush intersection.
- .2 Standard Grid: 23mm wide exposed T-grid, colour white;
 - .1 Prelude XL, by Armstrong.
 - .2 Donn DX, by CGC Inc.
 - .3 15/16" EZ Stab Aluminum Classic System, by CertainTeed.
- .3 Wall Molds: profile and colour to match main grid.

2.4 ACOUSTIC CEILING TILES

- .1 Acoustic tiles for suspended ceiling system; to CAN/CGSB-92.1.
- .2 **ACT-1:** lay-in panel, to ASTM E1264, Type III Form 2, Pattern C D, square-cut for standard grid;
 - .1 Size: (24") 610mm x (48") 1220mm x (5/8") 16mm thick
 - .2 Pattern: medium texture panel.
 - .3 Finish: factory-applied latex paint.
 - .4 Colour: white.
 - .5 Fire Resistance: FR.
 - .6 NRC: 0.55.
 - .7 Acceptable Products
 - .1 Cortega #823, by Armstrong.
 - .2 Radar #2315, by CGC Inc.
 - .3 Directional Fissured PFH-197, by CertainTeed.

2.5 ACCESSORIES

- .1 Hold-Down Clips: purpose made clips to secure tile to suspension system, approved for use in vestibules.

- .2 Hanger Wire: galvanized soft annealed steel wire, 3.6mm diameter for access tile ceilings to ULC/UL tested design requirements for fire rated assemblies, 2.6mm diameter for other ceilings.
- .3 Hanger Inserts: purpose made.
- .4 Carrying Channels: 38 & 64mm, hot-dip galvanized steel.

3 EXECUTION

3.1 EXAMINATION

- .1 Do not install ceiling suspension system or acoustical panels and tiles until work above ceiling has been inspected by Consultant.

3.2 SUSPENSION SYSTEM INSTALLATION

- .1 Install suspension system in accordance with ASTM-C636, to manufacturer's instructions, ULC/UL requirements, and this specification.
- .2 Secure hangers to overhead structure using attachment methods acceptable to Consultant.
- .3 Install hangers spaced at maximum 1220mm centres and within 150mm from ends of main tees.
- .4 Where mechanical or electrical equipment prohibit installation of hangers, provide carrying channels as required to span under equipment.
- .5 Lay out system according to reflected ceiling plan.
- .6 Ensure suspension system is coordinated with location of related components.
- .7 Install wall mold level to provide correct ceiling height.
- .8 Provide factory-made radiussed grid corner pieces where bullnose block corners occur.
- .9 Completed suspension system to support superimposed loads, such as [lighting fixtures, diffusers, grilles, and speakers.
- .10 Support light fixtures with additional ceiling suspension hangers at each corner and at maximum 600mm around perimeter of fixture.
- .11 Supplementary support hangers for all tile-mounted mechanical and electrical fixtures shall be provided by those trades.
- .12 Interlock cross members to main runner to provide rigid assembly.
- .13 Frame at openings for light fixtures, air diffusers, speakers and at changes in ceiling heights.
- .14 Finished ceiling system to be square with adjoining walls and level within 1:1000.

3.3 ACOUSTIC TILE INSTALLATION

- .1 Install acoustical panels and tiles in correct seated position in ceiling suspension system.

3.4 COORDINATION

- .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.

3.5 INSPECTION AND CLEANING

- .1 Thoroughly inspect all ceiling tiles and remove any chipped, marked, scratched, stained, discoloured or otherwise damaged units, and replace with new units. Do not take replacement units from maintenance materials.
- .2 Thoroughly inspect all ceiling grid and remove any marked, scratched, dented or otherwise damaged pieces, and replace with new.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide resilient base, and floor transitions.

1.3 REFERENCE STANDARDS

- .1 ASTM F1861; Specification for Resilient Wall Base.

1.4 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.
- .4 Pre-application Meeting
 - .1 Convene a pre-application meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
 - .1 Contractor (Site Superintendent & Project Manager)
 - .2 Application Subcontractor (Site Foreman & Project Manager)
 - .3 Product Manufacturer and/or Distributor (Technical Representatives)
 - .4 Related Subcontractors whose work is affected by that of this Section.

1.5 SUBMITTALS

- .1 Samples: Submit duplicate 300mm long sample pieces of all items specified herein in accordance with Section 01 30 00.

1.6 CLOSEOUT SUBMITTALS

- .1 Maintenance Materials: Deliver the following material required for maintenance use, in accordance with Section 01 78 00;
 - .1 one carton of each colour and type resilient base
 - .2 2 pieces of each colour and type resilient transition strips
- .2 Maintenance Data: Provide maintenance data (cleaning requirements) for resilient base and accessories for incorporation into Operations and Maintenance manual.

1.7 SEQUENCING AND SCHEDULING

- .1 Installation of resilient base and accessories shall not commence until all overhead mechanical, electrical, and dust-generating work is completed.
- .2 Schedule resilient base installation for completion after installation of millwork.

1.8 ENVIRONMENTAL REQUIREMENTS

- .1 Maintain air and substrate temperature in area of installation above 20°C for 48 hours before, during, and 48 hours after installation.

2 PRODUCTS

2.1 WALL BASE

- .1 Base: to ASTM F1861 Type TP, Group I (solid), 100% thermoset vulcanized rubber, 100mm high, resilient wall base, by Tarkett (Johnsonite) Inc.; Provide pre-moulded external corners.
 - .1 Colours:
 - .1 BASE-1: TA4 Gateway WG.

2.2 ACCESSORIES

- .1 Transition Strips
 - .1 Carpet to resilient flooring: Johnsonite CTA-H.
 - .2 Carpet to wood floor: Johnsonite CE-C/CDB-A.
- .2 Reducers
 - .1 Carpet reducer: Johnsonite CRS-A.
 - .2 Resilient reducer: Johnsonite RRS-C.

2.1 ADHESIVES AND CLEANERS

- .1 Primer: latex floor primer for concrete and wood substrates; equivalent to Henry #336 Floor Primer.
- .2 Adhesives
 - .1 Wall Base: water-based, solvent-free, acrylic adhesive, equivalent to Johnsonite #960 Wall Base Adhesive.
 - .2 Accessories: two-part, solvent-free, polyurethane adhesive, equivalent to Johnsonite #975 Two-Part Urethane Adhesive.
- .3 Surface Cleaner: neutral detergent solution.

3 EXECUTION

3.1 BASE APPLICATION

- .1 Supply and install wall base to minimize joints. Use minimum length materials specified, cut to wall lengths. Double cut all joints to ensure tight fit.
- .2 Adhesive must cover 90% of back of base, leaving 6mm at top for excess adhesive during rolling process.
- .3 Set base in adhesive tightly by using a 3kg hand roller, against wall and floor surfaces.
- .4 Install base straight and level to variation of 1:1000.
- .5 Scribe and fit to door frames and other obstructions.
- .6 Base shall be cut around all millwork.
- .7 Cut and cope all inside corners. Cope back of base material using purpose-made coping tool and fold base around corner for all right angle outside corners. Use formed straight base material for outside corners of other angles.

3.2 ACCESSORIES APPLICATIONS

- .1 Install transition strips between flooring materials centered under doors where not indicated.
- .2 Install reducer strips at unprotected edges of all carpet and resilient flooring materials.

3.3 CLEANING AND PROTECTION OF FINISHED WORK

- .1 Remove excess adhesive from floor, base and wall surfaces without damage to such surfaces.
- .2 Clean all surfaces installed under this section with neutral detergent solution specified (85 to 113g/4.5L), to manufacturer's instructions.
- .3 Protect new base and accessories from time of installation until final waxing. Prohibit traffic on floor for 48 hours after installation.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide resilient sheet flooring, including seaming, adhesives, and accessories.

1.3 REFERENCE STANDARDS

- .1 ASTM D2047; Test Method for Static Coefficient of Friction of Polish-Coated Floor Surfaces as Measured by the James Machine.
- .2 ASTM E648; Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source.
- .3 ASTM E662; Test Method for Specific Optical Density of Smoke Generated by Solid Materials.
- .4 ASTM F970; Test Method for Static Load Limit.

1.4 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.

1.5 SUBMITTALS

- .1 Shop Drawings
 - .1 Submit shop drawings in accordance with Section 01 30 00.

- .2 Indicate on shop drawings a complete seaming layout for all resilient sheet products, colour and pattern layouts, types of adhesives and/or heat welding materials.
- .2 Samples
 - .1 Submit duplicate 200mm x 250mm samples of all resilient sheet flooring materials, in specified colours and patterns, in accordance with Section 01 30 00.
- 1.6 CLOSEOUT SUBMITTALS
 - .1 Maintenance Materials
 - .1 Deliver 2% of total area in one single piece, of each colour, pattern, and type flooring material required for project for maintenance use, in accordance with Section 01 78 00. Minimum maintenance materials shall be 9.3m² of any one colour and/or floor type.
 - .2 Maintenance Data
 - .1 Provide care and maintenance data for resilient flooring for incorporation into Operations and Maintenance manual.
- 1.7 DELIVERY, STORAGE AND HANDLING
 - .1 Deliver sheet flooring products in rolls, wrapped in polyethylene. Store according to the manufacturer's recommendations.
 - .2 Store materials flat on clean, dry floor area, away from construction activities so as to prevent damage.
 - .3 Remove packaging prior to installation and allow materials to acclimatize according to the manufacturer's recommendations.
- 1.8 SEQUENCING AND SCHEDULING
 - .1 Installation of resilient sheet flooring shall not commence until all overhead mechanical, electrical, and dust generating work is completed.
 - .2 Schedule resilient sheet flooring installation for completion prior to installation of millwork.
 - .3 Coordinate installation of prefabricated flashcove bases with resilient sheet flooring installation.
- 1.9 SITE CONDITIONS
 - .1 Maintain air temperature and structural base temperature at flooring installation area above 20°C for 72 hours before, during and 72 hours after installation. Temporary heat is not acceptable.
- 1.10 GUARANTEE
 - .1 Guarantee in writing, the installation of the Products specified herein to be free from defects in workmanship for a period of two (2) years from Date of Substantial Performance.
 - .2 This Guarantee shall cover instances of rippling, bubbling, seam failure, adhesive failure, and other installation defects which become apparent during the guarantee period, and are found to be due to faulty installation. The guarantee shall provide for repair of identified defects, including removal and replacement of any affected Products.

1.11 EXTENDED WARRANTY

- .1 Provide a warranty certificate in the name of the Owner, warranting that the Products specified herein shall be free from defects in material and manufacture for a period of five (5) years from Date of Substantial Performance.
- .2 This warranty shall provide for replacement of any defective Products at no cost to the Owner, including the cost of removal and disposal of defective materials, and installation of new Products to match the original installation.

2 PRODUCTS

2.1 MATERIALS

- .1 Resilient Sheet Flooring (VSF-1): homogeneous sheet vinyl to ASTM F1913 Type 2, 2mm thick, 1.98m width;
 - .1 Critical Radiant Flux: 0.45 watts/cm² – Class 1, to ASTM E648.
 - .2 Smoke: 450 or less to ASTM E662.
 - .3 Static Load Limit: (750 psi)52.73kg/cm² to ASTM F970.
 - .4 Colours:
 - .1 VSF-1: 0203 Optima Infused Ash.
 - .5 Acceptable Products
 - .1 Tarkett Optima iQ, by Tarkett (Johnsonite) Inc.

2.1 ADHESIVES AND ACCESSORIES

- .1 Substrate filler and leveler: Portland cement based latex filler requiring water only to produce cementitious paste, as recommended by flooring manufacturer for use with their product; equivalent to Henry #445 Fast-Setting Flooring Underlayment.
- .2 Primer: latex floor primer for concrete and wood substrates; equivalent to Henry #336 Floor Primer.
- .3 Adhesive: two-part, solvent-free, polyurethane adhesive, equivalent to Forbo-660 by Forbo.
- .4 Welding Rods: colour and pattern matched welding rods, compatible with sheet flooring material, as supplied by individual flooring manufacturers.
- .5 Surface Cleaner: neutral detergent solution.
- .6 Surface Polish: matte finish commercial floor polish; Carefree Matte by Johnson Wax.

3 EXECUTION

3.1 INSPECTION

- .1 Ensure concrete floors are dry by using test methods recommended by flooring manufacturer, and exhibit negative alkalinity, carbonization or dusting.
- .2 Moisture test results should meet the flooring manufacturer's recommendations but shall not exceed 0.5kg/100m²/24 hours. Alkali readings shall be 5 to 9.

3.2 SUBFLOOR TREATMENT

- .1 Remove subfloor ridges and bumps. Fill low spots, cracks, joints, holes and other defects with subfloor filler.
- .2 Clean floor and apply filler; trowel and float to leave smooth, flat hard surface. Prohibit traffic until filler cured and dry.

- .3 Prime entire substrate to receive tile flooring with specified primer, to primer manufacturer's recommendations.

3.3 FLOORING APPLICATION

- .1 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
- .2 Lay flooring with seams parallel to building lines and parallel to each other, to produce a minimum number of seams. "Piecing-in" with scrap or leftover material will not be accepted.
- .3 Double cut sheet joints and continuously heat weld according to manufacturer's printed instructions. Seams shall be in accordance with reviewed seaming layout. In the absence of a seaming layout, seam locations shall be as approved by Consultant on site prior to commencement of installation.
- .4 Run patterned sheets parallel to corridor traffic, and parallel to long dimension of rooms. Border widths minimum 1/3 width of full material width.
- .5 As installation progresses, and after installation, roll flooring with 45kg roller to ensure full adhesion.
- .6 Cut flooring neatly around fixed objects. flooring shall run continuously under all millwork without interrupting floor pattern.
- .7 Install flooring in pan type floor access covers. Maintain floor pattern and direction.
- .8 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.

3.2 CLEANING AND POLISHING

- .1 Once cleaning and polishing operations commence, prohibit all traffic on floor surface during, and for a minimum 8 hours after cleaning and application of sealer and polish.
- .2 Cleaning
 - .1 Remove excess adhesive from floor, base and wall surfaces without damage to such surfaces. Remove all dust, dirt, and debris.
 - .2 Clean floors with neutral detergent solution specified (85 to 113g/4.5L), to flooring manufacturer's instructions.
- .3 Final Surface Protection
 - .1 Apply final surface protection immediately prior to final inspection.
 - .2 Clean floors with neutral detergent solution specified (113 to 170g/4.5L), to flooring manufacturer's instructions.
 - .3 Apply three coats of commercial floor polish specified.

3.3 PROTECTION OF FINISHED WORK

- .1 Protect new floors from scratches, gouges, scuff marks and other damage from time initial surface protection application, until final inspection. Prohibit all traffic on tile floor surfaces after application of final surface protection.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this Section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide repairs to existing terrazzo floors and bases.

1.3 REFERENCES

- .1 Terrazzo, Tile and Marble Association (TTMAC) / Construction Specifications Canada (CSC); 09 40 00 Portland Cement Terrazzo Architectural Specification Study.
- .2 CAN/CSA-A5/A8/A362; Portland Cement/ Masonry Cement/Blended Hydraulic Cement.
- .3 CAN/CSA-A23.1/A23.2; Concrete Materials and Methods of Concrete Construction/Methods of Test for Concrete.
- .4 CSA G30.5; Welded Steel Wire Fabric for Concrete Reinforcement.
- .5 CAN/CGSB-51.34; Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
- .6 ASTM D2370; Test Method for Tensile Properties of Organic Coatings.

1.4 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.

1.5 SUBMITTALS

- .1 Samples

- .1 Submit duplicate (12" x 12" x 3/4") 300 x 300 x 19mm samples of each colour terrazzo.
 - .2 Closeout Submittals
 - .1 Provide one copy of the TTMAC Maintenance Guide publication for incorporation into Operations and Maintenance Manual.
- 1.6 ENVIRONMENTAL REQUIREMENTS
- .1 Maintain air temperature and structural base temperature at terrazzo installation area above (70°F) 12°C for 24 hours prior to, during and 24 hours after installation.
- 2 PRODUCTS**
- 2.1 MATERIALS
- .1 Cement: Portland cement, to CAN/CSA-A5, Type 10, Grey for under bed and white for topping.
 - .2 Sand, fine and coarse aggregates to CAN/CSA A23.1.
 - .3 Water: potable.
 - .4 Marble chips: soundness and abrasion resistance. Grade chips in accordance with TTMAC standard.
 - .5 Pigments: non-fading mineral pigments in selected colours.
 - .6 Divider strips: (1/8") 3mm thick, zinc or stainless steel.
 - .7 Accessories: separator strips, purpose made and of same material to match divider strips.
 - .8 Curing compound: to manufacturer's standard.
 - .9 Cleaning compound: to TTMAC standard 1000.
 - .10 Sealing compound: to TTMAC standard 2000.
 - .11 Finishing compound: to TTMAC standard 3001.
- 2.2 MIXES
- .1 Slurry coat: cement and water mixed to creamy paste.
 - .2 Underbed: 1 part cement to 4 parts sand by volume.
 - .3 Terrazzo topping: (220 lb) 100 kg chips to (88 lb) 40 kg cement, mixed dry, using 25% No. 1 and 75% No. 2 chips, 2 colour plates as selected by Consultant.
- 3 EXECUTION**
- 3.1 QUALITY OF WORK
- .1 Perform terrazzo work in accordance with CSC Architectural Specification Study on Terrazzo (Portland Cement), Terrazzo, Tile and Marble Association of Canada (TTMAC) and as specified.

3.2 INSTALLATION

- .1 Apply terrazzo after concrete slabs have cured 28 days.
- .2 Install divider strips true and level to detailed pattern.

3.3 FLOORS

- .1 Monolithic terrazzo: provide (5/8") 16mm minimum terrazzo topping bonded to concrete base slab.

3.4 SEALING

- .1 Clean, seal and finish terrazzo surfaces to TTMAC recommendations.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to cover with paint the interior surfaces of the building or structure, and the building services and accessories not otherwise protected or covered, to the full intent of the drawings and specifications.
- .2 Surface preparation of substrates to receive painting and finishing is included in this section of work.
- .3 This section of work shall include the painting and finishing of all exposed surfaces of the following substrates:
 - .1 Wood
 - .2 Steel (Prime painted & Galvanized)
 - .3 Concrete
 - .4 Masonry
 - .5 Gypsum board

1.3 REFERENCE STANDARDS

- .1 CAN2-85.100, National Standards of Canada, Painting.
- .2 Master Painters Institute (MPI) Architectural Painting Specification Manual.

1.4 MATERIALS AND EQUIPMENT NOT TO BE PAINTED

- .1 Surfaces not to be painted shall be left completely free of droppings, over-spray, or accidentally applied materials resulting from the work of this Section.
- .2 Items not to be painted include concealed structural elements, and equipment furnished with complete factory-applied, coloured paints and finish systems.

1.5 COOPERATION WITH OTHER TRADES

- .1 Schedule and coordinate this work with other trades and do not proceed until other work and/or job conditions are as required to achieve satisfactory results.
- .2 Examine all specification sections for materials and products, and become thoroughly familiar with all provisions regarding painting.

1.6 QUALITY ASSURANCE

- .1 Material Manufacturers
 - .1 All paint and finish products shall be those listed in the MPI manual, latest edition unless otherwise specified or listed herein.
 - .2 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.
- .4 Pre-application Meeting
 - .1 Convene a pre-application meeting for the Products specified in this section. Attendees must include, as a minimum, representatives of the following:
 - .1 Contractor (Site Superintendent & Project Manager)
 - .2 Application Subcontractor (Site Foreman & Project Manager)
 - .3 Product Manufacturer and/or Distributor (Technical Representatives)
 - .4 Related Subcontractors whose work is affected by that of this Section.
- .5 Mock-up
 - .1 Where requested by the Consultant, finish one complete room in colour scheme required showing selected materials, colours and textures. If approved, the mock-up shall serve as a standard for similar work throughout the building.

1.3 COMPLETION SCHEDULE

- .1 Furnish the Consultant with a schedule showing expected completion of the respective coats of paint for the various areas and surfaces. Keep this schedule current as the job progresses.

1.4 COLOUR SCHEDULE

- .1 The Consultant will prepare a final colour schedule as the job progresses. The final selection of colours and surface textures of all finishes throughout shall rest solely with the Consultant.

1.5 SUBMITTALS

- .1 Product Codes
 - .1 Submit a complete list of product codes from the manufacturer(s) proposed for use on this project, for all products listed in finish systems specified herein, in accordance with Section 01 30 00.
- .2 Samples
 - .1 Submit samples of all finishes specified herein, in accordance with Section 01 30 00.

- .2 Submit duplicate 200 x 300mm sample panels of each type of paint and finish application for approval by the Consultant.
- .3 Where manufacturer of paint differs from that listed in the colour schedule, employ spectrograph technology to ensure accurate colour match. Selection of the "next nearest colour" by another manufacturer will not be acceptable.
- .4 Use birch plywood for wood finishes, gypsum board for paint finishes over smooth surfaces, and 100mm concrete block for concrete masonry.
- .5 Finished work to match approved samples.

1.6 DELIVERY, STORAGE AND HANDLING

- .1 Paint and finish materials shall be delivered to the site in sealed original labelled containers bearing manufacturer's name, type of paint, brand name, colour designation and instructions for mixing and/or reducing.
- .2 Store materials in a heated, dry, well-ventilated, indoor place having a minimum ambient temperature of 7°C.
- .3 Keep waste rags in metal drums and remove all rags, waste and trash from the building at the end of each working shift.
- .4 Provide CO₂ fire extinguisher of minimum 9kg capacity in storage area.
- .5 Ensure that health and fire regulations are complied with in storage area.

1.7 GENERAL COLOUR REQUIREMENTS

- .1 Refer to the Room Finish Schedule for type and extent of finishes, and to the Colour Schedule for individual colour and sheen selections.
- .2 Where manufacturer of paint differs from that listed in the colour schedule, employ spectrograph technology to ensure accurate colour match. Selection of the "next nearest colour" by another manufacturer will not be acceptable.
- .3 The following, generally, will be painted colour, and sheen to match adjacent surfaces
 - .1 Access doors
 - .2 Radiators and covers
 - .3 Exposed piping, conduit and ductwork
- .4 The following major items, generally, will be painted the same colour throughout the Work, but different colours from each other:
 - .1 Doors and door frames
 - .2 Ceilings
 - .3 Walls
 - .4 Railings and balustrades
 - .5 Exposed structural members and deck

1.8 ENVIRONMENTAL CONDITIONS

- .1 Temperatures: No painting shall be performed when substrate or ambient air temperatures are below 5°C. Minimum allowable temperature for application of Latex paints is 7°C.

- .2 Relative humidity: shall not exceed 85%.
- .3 Moisture content of substrates: Masonry and concrete materials shall be allowed to cure for a minimum of 28 days before application of paints. Substrates shall be measured by electronic moisture meter, to the following maximums:
 - .1 Plaster and Gypsum board: 12%.
 - .2 Masonry, concrete/concrete block: 12% for solvent based paints.
 - .3 Wood: 15%.
- .4 Lighting: Painting shall not proceed unless a minimum of 1.3 lx lighting is provided on the surfaces to be painted.
- .5 Ventilation: All areas where painting is proceeding require adequate continuous ventilation and sufficient heating facilities to maintain temperatures above 7°C for 24 hours before during and after paint application.

1.9 MAINTENANCE MATERIALS

- .1 Supply Owner with one clearly identified, new and unopened gallon of each colour and type of paint, stain and varnish used for this work, in accordance with Section 01 78 00.
- .2 All colour mixing codes must be clearly labeled, and colour numbers (P1, P2, etc.) must be marked on the container.

1.10 EXTENDED WARRANTY

- .1 Provide upon completion of the work, a Warranty Certificate, in the name of the Owner, stating that the work of this section was performed in accordance with these specifications and the MPI manual (latest edition), and is warranted against defects in material or installation, for a period of two (2) years from Date of Substantial Performance.

2 PRODUCTS

2.1 MATERIALS

- .1 Paint, varnish, stain, enamel, lacquer and fillers shall be of a type and brand herein specified and/or listed under Chapter 5 (Approved Products List) of the MPI manual.
- .2 Paint materials such as linseed oil, shellac, turpentine, and any materials not specified herein but required for first class work with the finish specified shall be the highest quality product of an approved manufacturer. All materials shall be compatible with finish paint or coating materials.

2.2 MIXING

- .1 Paints shall be ready-mixed unless otherwise specified, except that any coating in paste or powder form, or to field-catalyzed shall be field-mixed in accordance with the directions of its manufacturer. Pigments shall be fully ground and shall maintain a soft paste consistency in the vehicle during storage that can and shall be dispersed readily and uniformly by paddle to a complete homogeneous mixture.
- .2 The paint shall have good flow and brush properties and shall dry or cure free of sags or runs to yield the desired finish specified.

2.3 GLOSS LEVELS

		<u>Gloss @60°</u>	<u>Sheen @85°</u>
.1	MPI Gloss and Sheen Levels;		
	Level G1 – (Flat):	max. 5	max. 10.
	Level G2 – (Velvet):	max. 10	10-35.
	Level G3 – (Eggshell):	10-25	10-35.
	Level G4 – (Satin):	20-35	min.35.
	Level G5 – (Semi-Gloss):	35-70.	
	Level G6 – (Gloss):	70-85.	
	Level G7 – (High Gloss):	>85.	

3 EXECUTION

3.1 INSPECTION OF SURFACES

- .1 Examine surfaces to receive paint finishes for defects which cannot be corrected by procedures specified herein, and which may result in unsatisfactory paint finishes. Report items to the Consultant and the Contractor in writing, prior to commencement of work of this section, or after initial prime coat shows defects in substrate.
- .2 The application of subsequent prime and finish coats shall be construed as acceptance of the surfaces, and thereafter this subcontractor shall be fully responsible for satisfactory work as required herein.

3.2 PREPARATION OF SURFACES

- .1 Refer to the MPI manual Chapter 3 for surface preparations not specified in this section.

3.3 PROTECTION

- .1 Protect all adjacent surfaces from paint and damage resulting from the work of this section, and make good any damage caused by failure to provide such protection.
- .2 Mask all adjacent finishes and surfaces with masking tape as required. Remove tape promptly after final finish coat has been applied and allowed to dry.
- .3 Furnish sufficient drop cloths, shields and protective equipment to prevent spray or dropping from fouling surfaces not being painted or where painting has been completed.
- .4 Cotton waste, cloths and material, which may constitute a fire hazard, shall be placed in closed metal containers and removed daily from the site.
- .5 Remove and protect, prior to painting operations, all hardware, accessories, device plates, lighting fixtures, factory finished work, and similar items, or provide ample in-place protection such as masking tape. If removed, these items shall be labelled, stored, cleaned if necessary and re-installed following successful completion of the work in each area. Solvents detrimental to lacquer finishes are not to be used for cleaning these items.

3.4 APPLICATION

- .1 Apply paints and coatings by currently accepted trade methods.
- .2 Painting coats specified are intended to cover surfaces satisfactorily when applied in strict accordance with manufacturer's recommendations. Where proper coverage has not been attained, the Consultant may ask for additional coats as required, at no additional cost.
- .3 Apply each coat at the proper consistency. Sand lightly between coats.

- .4 Tint primers to same colour range as finish coats.
 - .5 Do not apply finishes on surfaces that are not sufficiently dry. Each coat of finish should be dry and hard before a following coat is applied unless specified otherwise by the manufacturer.
 - .6 Tint filler to match wood for clear finishes. Work filler well into wood grain and remove excess prior to setting.
 - .7 Interior woodwork to receive paint or enamel finish shall be back-primed upon arrival on site with enamel undercoater.
 - .8 All edges of wood doors shall be primed with undercoater, stain, or varnish, as required by specified finish.
 - .9 Spraying of paint will not be allowed, unless specified herein, or approved by the Consultant.
 - .10 Where spray painting is specified, finish 10m² by spraying a sample of the finish upon the request of the Consultant, using materials specified.
 - .11 Provide complete coverage and hide. When colour, stain, dirt or undercoats show through final coat of paint, provide additional coats until the paint film is of uniform finish, colour, appearance and coverage, at no additional cost to the Owner.
 - .12 Allow all coats to dry to manufacturer's recommendations before applying succeeding coats.
 - .13 Touch up all suction spots or "hot spots" in concrete after the application of the first coat, before applying the second coat.
 - .14 Surfaces to be stained shall appear uniform in shading with colour variations caused only by the natural wood grain.
 - .15 Barricade areas where finishing is in progress to prevent traffic or other activities, and otherwise protect work until dry. Post "Wet Paint" signs and remove when no longer required.
 - .16 Replace at the expense of this section, materials soiled or damaged by finishing materials which cannot be removed.
- 3.5 PAINTING AND FINISHING OF EXISTING MATERIALS AND SURFACES
- .1 Remove, label and store, prior to painting of existing materials and surfaces the following items:
 - .1 Door hardware signage and accessories,
 - .2 Device plates,
 - .3 Lighting fixtures,
 - .4 Factory finished work,
 - .5 Signage where removable.
 - .2 Where such items are not removable, provide proper masking and protection prior to commencement of painting.

- .3 Clean such items if deemed necessary by the Consultant, before being re-installed following successful completion of the work in each area. Solvents detrimental to lacquer finishes are not to be used for cleaning these items.
- .4 All surface contaminants such as wax, oils, grease, dirt, tire marks (horizontal surfaces), etc., must be removed from the surface. Oil and grease can be removed by detergent cleaning, followed by a rinse with clean water; solvent cleaning can be used as an alternative on areas with a concentration of oil or grease. All loose and flaking paint must be removed by hand cleaning, power tool cleaning, or pressure washing.
- .5 All blisters must be removed from the surface and the edges feathered. Areas showing mildew growth must be treated. Glossy finishes must be 'dulled' by sanding, by a TSP treatment, or by sweep blasting to create an anchor pattern to promote adhesion of the new coating.
- .6 Rust stains can be removed with an oxalic acid treatment. If large amounts of efflorescence are present, mechanical removal (e.g. abrasive sweep blasting or power tool grinding) may be required, after which acid etching shall be performed.
- .7 After any application of muriatic acid, the surface must be flushed with large amounts of clean water to remove any residue, and then allowed to dry thoroughly. The pH of the surface shall be tested, as specified in 1.2 pH Testing before the application of paint. All bare areas must be spot primed.

3.6 CLEAN-UP

- .1 Upon completion of the work, remove all paint and varnish spots from floors, glass and other surfaces. Remove from the premises all rubbish and accumulated materials of whatever nature, not caused by others, and leave this work in clean, orderly and acceptable conditions.

3.7 PAINTING AND FINISHING SCHEDULE

- .1 The following titles and code numbers refer to Chapter 4 of the MPI Manual, unless otherwise indicated for type of coating, grade, named products and their manufacturers.
 - .1 **Concrete Finishing Systems**
 - .1 Concrete Horizontal Surfaces; Budget Grade Finish.
 - .1 INT. 3.2A; Latex Floor Enamel, Gloss/Sheen – G4.
 - .2 **Masonry Finishing Systems**
 - .1 Concrete Masonry Units; Premium Grade Finish.
 - .1 INT. 4.2A; Latex (over latex block filler)
 - .1 Walls: Gloss/Sheen - G3.
 - .2 INT. 4.2J; Epoxy-Modified Latex (over latex block filler).
 - .1 Walls: Gloss/Sheen - G3.
 - .3 **Metal Finishing Systems**
 - .1 Structural Steel & Metal Fabrications; Premium Grade Finish.
 - .1 INT. 5.1E; Alkyd (over Q.D. metal primer), Gloss/Sheen – G4.
 - .2 Galvanized Metals (not chromate passivated) – High Contact (Doors frames, railings balustrades, etc.) Premium Grade Finish.
 - .1 INT. 5.3C; Alkyd (over cementitious primer), Gloss/Sheen – G4.

- .4 **Wood Finishing Systems**
 - .1 Clear Finish Wood (miscellaneous wood items); Premium Grade Finish.
 - .1 INT. 6.3K; Polyurethane Varnish, Gloss/Sheen – G4.
 - .2 Stained Finish Wood (miscellaneous wood items); Premium Grade Finish.
 - .1 INT. 6.3Y; Polyurethane, Clear, Moisture Cured (over semi-transparent stain), Gloss/Sheen – G4.
 - .3 Paint Finish Wood (miscellaneous wood items); Premium Grade Finish.
 - .1 INT. 6.3A; High Performance Architectural Latex (over latex primer), Gloss/Sheen – G4.
- .4 **Plaster & Gypsum Board Finishing Systems**
 - .1 Gypsum Board; Premium Grade Finish.
 - .1 INT. 9.2F; Epoxy-Modified Latex (over latex primer sealer).
 - .1 Walls Gloss/Sheen – G3.
 - .2 INT. 9.2A; Latex (over latex primer sealer)
 - .1 Ceilings Gloss/Sheen – G1.
- .2 Colour Schedule
 - .1 PT-1 (General Wall Colour)
 - .1 Benjamin-Moore
 - .2 HC-172, Revere Pewter
 - .3 (Gloss Level G3)
 - .2 PT-2 (Accent Wall Colour)
 - .1 Benjamin Moore
 - .2 2084-10, Brick Red
 - .3 (Gloss Level G3)
 - .3 PT-3 (General Ceiling Colour)
 - .1 Benjamin-Moore
 - .2 CC-20, Decorator's White
 - .3 (Gloss Level G1)
 - .4 PT-4 (Doors & Trim)
 - .1 Dulux
 - .2 OONN 07/000, Deep Onyx
 - .3 (Gloss Level G4)

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide markerboards and accessories.

1.3 REFERENCE STANDARDS

- .1 ASTM A653/653M; Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM B221; Specification for Aluminum-Alloy Extruded Bars, Rods Wire, Profiles and Tubes.
- .3 ASTM D1037; Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.
- .4 ASTM E84; Test Method for Surface Burning Characteristics of Building Materials and Assemblies.
- .5 Aluminum Association Designation System for Aluminum Finishes.
- .6 PEI 501; Properties of Porcelain Enamel, Porcelain Enamel Institute.

1.4 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.

1.5 SUBMITTALS

- .1 Shop Drawings
 - .1 Submit shop drawings indicating location, type, size, panel arrangement, backing, hardware, anchor or mounting details, frame or trim and accessories in accordance with Section 01 30 00.
- .2 Maintenance Data
 - .1 Provide maintenance data for markerboards for incorporation into Operations and Maintenance manual.
 - .2 Affix removable maintenance instruction labels to all markerboards.

1.6 EXTENDED WARRANTY

- .1 Provide a manufacturer's warranty stating that under normal conditions the markerboards surface is guaranteed against chipping, crazing, peeling, pitting, or becoming unsuitable for use for a period of 10 years from Date of Substantial Performance.
- .2 Warranty shall cover complete replacement costs, including all labour and materials, shipping, handling and delivery, and all removal/installation costs.

2 PRODUCTS

2.1 MANUFACTURERS

- .1 Acceptable Manufacturers
 - .1 Architectural School Products Ltd.
 - .2 Global School Products Inc.
 - .3 Martack Specialties Ltd.
- .2 Systems specified are by Architectural School Products Ltd. Equivalent products by Global or Martack are acceptable.

2.2 MATERIALS

- .1 Galvanized steel sheet: Commercial grade to ASTM A653/A653M with Z275 zinc coating.
- .2 Porcelain Enamel Steel: to Porcelain Enamel Institute standards.
- .3 Fibreboard: to ASTM D1037, Class A fire rating to ASTM E84.
- .4 Laminating adhesive: to manufacturer's standard.
- .5 Extruded aluminum: Aluminum Association alloy 6063-T5. Minimum 1.5mm thickness.
- .6 Joint reinforcement: concealed mechanical jointing system to provide straight, rigid, continuously supported, tight butt, flush joints at surface.
- .7 Anchor clips, brackets and fasteners: concealed type recommended by chalkboard manufacturer for fixed mounting.

2.3 MARKERBOARDS

- .1 Markerboards: magnetic, white porcelain enamel writing surface, "Vit-Rite" by Architectural School Products Ltd., or equivalent by Global or Martack. Sizes as indicated on architectural drawings.

- .2 Facings: 0.55mm white porcelain enameled steel.
- .3 Core: 11mm fibreboard to ASTM D1037.
- .4 Backing Sheet: 0.5mm zinc-coated steel sheet.

2.4 TRIM AND FRAMING

- .1 Extruded aluminum: Aluminum Association alloy AA6063-T5.
- .2 ASP Series 200: manufacturer's standard sections appropriate for installation conditions
 - .1 Perimeter Trim # 205 perimeter trim or frame, #206 maprail with cork insert
 - .2 Bottom Rails/Marker Trays:
 - .1 Standard Wall-Mounted: bottom trim/rail with integral sloped bottom marker tray.
 - .2 Recessed at Gymnasium: bottom trim/rail with integral recessed marker tray.
 - .3 Counter-Mounted (on top of shelving and other millwork): flat bottom rail/marker tray.
- .3 Finish: Anodized, Class II to AA-M12C22A31, #17 Clear.

2.5 ACCESSORIES

- .1 Markers & Marker Brush: provide one set dry-wipe markers and one marker brush for each marker board.

3 EXECUTION

3.1 INSTALLATION

- .1 Install markerboards in accordance with manufacturer's instructions, plumb and level, in locations shown on the drawings.

3.2 CLEANING

- .1 Clean all surfaces after installation, using manufacturer's recommended cleaning procedures.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide tackboards and accessories.

1.3 REFERENCE STANDARDS

- .1 ASTM A653/653M; Specification for Sheet Steel, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
- .2 ASTM B221; Specification for Aluminum-Alloy Extruded Bars, Rods Wire, Profiles and Tubes.
- .3 ASTM D1037; Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.
- .4 ASTM E84; Test Method for Surface Burning Characteristics of Building Materials and Assemblies.
- .5 Aluminum Association Designation System for Aluminum Finishes.

1.4 QUALITY ASSURANCE

- .1 Manufacturer/Fabricator
 - .1 Manufacturers or fabricators providing Products under this Section shall have sufficient plant, equipment and competent personnel to provide the Products, in accordance with the Contract Documents. Firm(s) shall have past experience in the manufacture or fabrication of the Products specified herein, and shall have successfully completed Projects of similar scope and type.
- .2 Installation/Application
 - .1 Installers or applicators of the Products specified herein, shall be competent in the skills required to perform such tasks. Installation/ shall be performed in accordance with industry standards specified herein, warranty requirements, and in accordance with generally accepted, industry best practices.
- .3 Documentation
 - .1 If requested by the Consultant, submit documentation to support the competency of firms and personnel.

1.5 SUBMITTALS

- .1 Shop Drawings

- .1 Submit shop drawings indicating location, type, size, panel arrangement, backing, hardware, anchor or mounting details, frame or trim and accessories in accordance with Section 01 30 00.

1.6 SUBMITTALS

- .1 Shop Drawings
 - .1 Submit shop drawings indicating location, type, size, panel arrangement, backing, hardware, anchor or mounting details, frame or trim and accessories in accordance with Section 01 30 00.
 - .2 Maintenance Data
 - .1 Provide maintenance data for tackboards for incorporation into Operations and Maintenance manual.
 - .2 Affix removable maintenance instruction labels to all tackboards.

2 PRODUCTS

2.1 MANUFACTURERS

- .1 Acceptable Manufacturers
 - .1 Architectural School Products Ltd.
 - .2 Global School Products Inc.
 - .3 Martack Specialties Ltd.
- .2 Systems specified are by Architectural School Products Ltd. Equivalent products by Global or Martack are acceptable.

2.1 MATERIALS

- .1 Core: particleboard to ASTM-D1037, Grade R, 6mm thick.
- .2 Face Sheet: fine grain, natural cork, ASP Natural Cork, by Architectural School Products Ltd., or equivalent product by other listed manufacturer.
- .3 Laminating adhesive: manufacturer's standard.
- .4 Extruded aluminum: to Aluminum Association alloy 6063-T5.

2.2 TACK BOARD TYPES

- .1 Typical: natural cork tackboards; sizes as indicated on architectural drawings.

2.2 TRIM AND FRAMING

- .1 ASP Series 200: #205 perimeter trim of manufacturer's standard sections appropriate for installation conditions.
- .2 Finish: Anodized, Class II to AA-M12C22A31, #17 Clear.

3 EXECUTION

3.1 INSTALLATION

- .1 Install tackboards in accordance with manufacturer's instructions, to provide rigid, secure installation.
- .2 Install trim and framing around tackboard panels where not installed as part of millwork items.

3.2 CLEANING

- .1 Clean surfaces after installation using manufacturer's recommended cleaning procedures.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, Products, equipment and incidental services necessary to Provide all washroom accessories specified herein and as shown on the drawings.
- .2 The following washroom accessories will be supplied by the Owner and installed by the Contractor. The Contractor shall be responsible to provide any and all concealed blocking and supports necessary to properly support Owner-supplied washroom accessories.
 - .1 Toilet tissue dispensers (TTD).
 - .2 Paper towel dispensers (PTD).
 - .3 Soap dispensers (S).

1.3 REFERENCE STANDARDS

- .1 ASTM A167; Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet and Strip.
- .2 ASTM A525M; Specification for General Requirements for Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process.
- .3 ASTM A526M; Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot Dip Process, Commercial Quality.
- .4 ASTM B456; Specification for Electro-deposited Coating of Copper + Nickel + Chromium and Nickel + Chromium.
- .5 ASTM C1503; Specification for Silvered Flat Glass Mirror.
- .6 CAN/CGSB-12.5; Mirrors, Silvered.
- .7 CAN/CSA-B651; Barrier-Free Design.
- .8 CAN/CSA-G164; Hot Dip Galvanizing of Irregularly Shaped Articles.

1.4 SHOP DRAWINGS

- .1 Make submittals in accordance with Section 01 30 00.
- .2 Product Data
 - .1 Submit manufacturer's Product data for all items specified herein.
 - .2 Indicate size and description of components, base material, surface finish inside and out, hardware and locks.
- .3 Shop Drawings

- .1 Submit shop drawings of all items specified herein.
- .2 Indicate attachment devices, description of rough-in frame, and building-in details of anchors for grab bars.

1.5 MAINTENANCE MATERIALS AND DATA

- .1 Provide operation and maintenance data for washroom accessories for incorporation into Maintenance Manual in accordance with Section 01 78 00.
- .2 Provide two (2) complete sets of special tools required for accessing, assembly/disassembly or removal of washroom accessories.

1.6 EXTENDED WARRANTIES

- .1 Submit warranty certificates from Product manufacturer(s) as follows:
 - .1 Silver coating on mirrors – 15 years.

2 PRODUCTS

2.1 MATERIALS

- .1 Sheet Steel: commercial quality, to ASTM A526 with ZF001 zinc coating.
- .2 Stainless Steel Sheet Metal: to ASTM A167, Type 304, minimum (22 gauge) 0.80mm thick.
- .3 Stainless Steel Tubing: Type 304, commercial grade, seamless welded, (18 gauge) 1.27mm wall thickness.
- .4 Glass for Mirrors: to CAN/CGSB-12.5 and ASTM C1503; (1/4") 6mm, tempered glass.
- .5 Fasteners: concealed screws and bolts shall be hot-dip galvanized or stainless steel; all exposed fasteners stainless steel to match face of unit. Use plastic or lead expansion shields as recommended by fixture manufacturer for component, and its intended use.

2.2 FINISHES

- .1 Chrome and Nickel Plating: to ASTM B456, polished finish.
- .2 Stainless Steel: AISI No. 4 finish, (satin).

2.3 COMPONENTS

- .1 Framed Mirrors (**M**): stainless steel channel frame, vandal-proof concealed fastenings, one unit per lavatory, One-piece, (1/2" x 1/2" x 3/8") 13 x 13 x 10mm channel-frame. Type 304 stainless steel with satin finish and mitered corners. (1/4") 6mm tempered mirror glass to ASTM C1503. Galvanized steel back. Secured to concealed wall hanger with theft-resistant (18 gauge) 1.214mm steel mounting brackets;
 - .1 **M.1:** (18" x 30") 452mm x 762mm, fixed angled frame for barrier-free application.
 - .1 Acceptable Products:
 - .1 B-293x1830, by Bobrick.
 - .2 Model 740-01830-2 by Bradley.
 - .3 Model 941-1830FT by Frost
 - .4 Model 0535-1830 by ASI.
 - .2 **M.2:** (18" x 36") 452mm x 914mm, fixed frame.
 - .1 Acceptable Products:
 - .1 B-165x1836, by Bobrick.

- .2 Model 781-01836 by Bradley.
 - .3 Model 941-1836 by Frost
 - .4 Model 0600-1836 by ASI.
- .2 Grab Bars **(GB)**: (1¼") 32mm diameter, Type 304, (18 gauge) 1.27mm satin finish stainless steel tubing grab bars, with peened grip. Concealed mounting flange (1/8") 3mm thick, Type 304 stainless steel plate, (2") 50mm W x (3 1/8") 80mm H, with screw holes for concealed anchors. Cover of (3¼") 85mm diameter (12 gauge) 2.78mm stainless steel wall flanges. Grab bars to withstand downward force of 2.2N;
- .1 **GB.1**: (30" x 30") 762 x 762mm L-shaped; mounted beside WC and ACS;
 - .1 Acceptable Products:
 - .1 B-716722.99-L30x30 by Bobrick.
 - .2 837-057 Series by Bradley.
 - .3 Model 1003-30x30 by Frost.
 - .4 Model 3104-M3030P by ASI.
 - .2 **GB.2**: (24") 610mm long, mounted horizontally behind WC;
 - .1 Acceptable Products:
 - .1 B-5806.99x24 by Bobrick.
 - .2 812 Series by Bradley.
 - .3 Model 1001-24 by Frost.
 - .4 Model 3101-24P by ASI.
 - .3 Coat Hooks **(CH)**: Satin finish stainless steel.
 - .1 Magnetic safety release coat hooks; colours as selected by Consultant. Release Weight of (26 lbs. +/- 2 lbs.) 11.8 kg. +/- 0.9 kg.
 - .1 Acceptable Products:
 - .1 "HenkelHook" by Henkel Diversified Inc.
 - .2 Model 1150 by Frost.
 - .4 Universal Washroom Shelf **(UWS)**: (18") 460mm long x (4") 100mm wide, surface mounted Type 304 stainless steel, AISI No. 4 brushed finish with (¾") 19mm return edge;
 - .1 Acceptable Products:
 - .1 MS-18, by Gamco Commercial Restroom Accessories (Div. of Bobrick).
 - .2 Model 950-4-18 by Frost.
 - .3 Model 754-18 by Bradley.
 - .4 Model 0692-418 by ASI.
 - .5 Electric Hand/Hair Air Dryers **(AD)**: surface-mounted, with infrared sensor operation, HEPA Filter, minimum 2000Watts (120V/20A/60Hz), colour as selected by Consultant from manufacturer's full colour range;
 - .1 Dyson AirBlade V, by Dyson Canada.
- 2.4 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 1.5mm radius bends.
 - .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 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.

3 EXECUTION

3.1 INSTALLATION

- .1 Install and secure fixtures rigidly in place as follows:
 - .1 Stud walls: install steel back-plate or 2x10 solid wood blocking to stud prior to plaster or drywall finish. Provide plate with threaded studs or plugs.
 - .2 Hollow masonry units: use toggle bolts drilled into cell/wall cavity.
 - .3 Solid masonry: use bolt with lead expansion sleeve set into drilled hole.
 - .4 Toilet/shower compartments: use male/female through bolts.
- .2 Install grab bars on built-in anchors provided by bar manufacturer. Supply templates, details and instructions for building in anchors in toilet compartments. Provide through bolt fastening of grab bars in toilet compartments.
- .3 Use tamperproof screws/bolts for fasteners.
- .4 Install framed mirrors using concealed fasteners in locations indicated.
- .5 Locate accessories where indicated on the drawings and/or as directed by the Consultant.

END OF SECTION

1 GENERAL

1.1 GENERAL REQUIREMENTS

- .1 The General Conditions of the Contract, Supplementary Conditions, and the General Requirements of Division 1, form part of this section, and must be read in conjunction with the requirements of this section. The work of this section shall comply with all requirements of Division 1 – General Requirements.
- .2 The Contractor shall, together with any and all Subcontractors involved in the work of this section, examine all surfaces or conditions relating to the Work, in order to determine the acceptability of such surfaces or conditions for the work of this section to commence.
- .3 Subcontractors shall report in writing, any observed defects or deficiencies in any surfaces or conditions that would adversely affect the work of this section, to the Contractor for correction prior to commencing the work of this section.
- .4 Commencement of the work of this section shall imply acceptance of all surfaces and conditions.

1.2 SECTION INCLUDES

- .1 Provision of all labour, materials, equipment and incidental services necessary to provide window shades as follows:
 - .1 Manual rolling sun screen shades.

1.3 REFERENCES

- .1 ASTM E84; Surface Burning Characteristics of Building Materials.
- .2 ASTM E162; Test Method for Surface Flammability of Materials Using a Radiant Heat Energy Source.
- .3 CAN/ULC-S109; Flame-Resistant Flame Tests of Fabrics And Films.
- .4 NFPA 701; Standard Methods Of Fire Tests For Flame Propagation Of Textiles And Films.

1.4 DESIGN CRITERIA

- .1 Fabric for blinds to have flame-spread ratings and degree of flame resistance required by the National Fire Code of Canada.
 - .1 Flame Spread Rating: less than 25.

1.5 SAMPLES

- .1 Submit one representative working sample of each type blind in accordance with Section 01 30 00.
- .2 Submit duplicate sample sets of manufacturer's standard fabrics for selection by Consultant.

1.6 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with Section 01 30 00.
- .2 Indicate dimensions in relation to window jambs, operator details, head and sill conditions between adjacent blinds corner conditions anchorage details, hardware and accessories details.

1.7 CLOSEOUT SUBMITTALS

- .1 Operations and Maintenance Data

- .1 Submit data for inclusion into Operations and Maintenance manuals in accordance with Section 01 78 00.
- .2 Include methods for maintaining installed products, methods of cleaning fabrics, and methods of adjustment.

1.8 EXTENDED WARRANTY

- .1 Submit a manufacturer's warranty certificate in the name of the Owner, warranting the Products specified under this section against defects in material or manufacture for a period of Two (2) years from Date of Substantial Performance.

2 PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- .1 Solarfective Products Ltd., Toronto ON.
- .2 Altex SunProject Inc., Vaughan ON.
- .3 HunterDouglas, Brampton ON.
- .4 Louvolite Roller Shades Systems, Niagara Falls, ON.

2.2 ROLLER SHADES

- .1 Manual Sunscreen Roller Shades: chain-drive, manual sun screen roller shades, soffit-mounted, 65mm tube size. Factory finished aluminum fascias, mounting brackets, bottom bar, and end covers;
 - .1 Design: 1 blind/window.
 - .2 Sunscreen Fabric: medium weight, flame-retardent sunscreen fabric, colour/pattern as selected by Consultant from manufacturer's standard ranges.
 - .3 Shading Fabric:
 - .1 All exposures (1% open weave).
 - .4 Locations: as indicated on the drawings.
 - .5 Acceptable Products
 - .1 Z-300/400 Series by Elite Window Fashions.
 - .2 Moduline 105 Lite-Lift by Altex SunProject.
 - .3 Teleshade by Solarfective.
 - .4 RB-500 by Hunter Douglas.
 - .5 System 32/40 by Louvolite.

2.3 FABRICS

- .1 Construction of shadeband includes fabric, external bottom bar, and attachment of the shadeband to the roller tube:
- .2 Fabric shade cloths shall be woven of 100% polyester.
- .3 Flame Retardence: Fabric shall be certified by independent laboratory to pass the small scale vertical burn requirements test; CAN/ULC-S109 and NFPA 701.
- .4 Sunscreen Shadecloth Selections: colour as selected by the Consultant from manufacturers full range of colour.
- .5 Mounting Type:
 - .1 Surface Mounted: as detailed on the drawings.
- .6 Shade Orientation:
 - .1 Regular-roll, shadecloth to roll at window side of roller.

- 2.4 SHADE ROLLER TUBE
- .1 Rigid roller tubes shall be extruded aluminum with reinforced internal ribs to provide maximum span without tube deflection. Tube sizes will depend on shade size, as recommended by manufacturer.
- 2.5 TUBE END PLUG
- .1 Internal tension idler limiter automatically adjusts and controls the amount of torque being generated for constant smooth operation of the shade system. The limiter must automatically release during down-travel, and automatically engage during up-travel of the shade system.
- 2.6 DRIVE
- .1 Shall consist of a heavy duty commercial grade sprocket. Drive sprocket must contain a planetary gear system for increased performance, speed ratio, smoothness, and balance to the shade system. Must provide for infinite positioning of shade system.
- 2.7 OPERATING CHAIN (MANUAL SHADES)
- .1 Shall be No. 10 qualified heavy duty stainless steel bead chain 90 lb load test formed in a continuous loop. With stops at highest and lowest positions to prevent overwinding and unrolling. Provide cable guides for all ground floor shades.
- 2.8 EXTERIOR HEMBAR
- .1 Shall be extruded aluminum with recess to secure fabric without visible seams. End plugs shall be screwed securely on ends showing no exposed aluminum. Design allowing shade to be pulled on the hembar. Finish/colour shall match fascia.
- 2.9 MOUNTING BRACKETS
- .1 Shall be 0.60" galvanized steel snap on brackets for ceiling, wall, or recessed mount in ceiling.
- 2.10 FASCIAS
- .1 One piece 1.7mm thick aluminum fascias.
- 2.11 FINISHES
- .1 Aluminum Finish
 - .1 Acrylic Paint: Factory-applied thermosetting acrylic coating, to AAMA 603.8; colour (PT-1) to be selected by Consultant.
 - .1 *Duracron* by PPG Canada Inc.
 - .2 *Fluorocryl*, by The Valspar Corporation.
- 2.12 OPERATION
- .1 General
 - .1 An internal tension idler limiter automatically adjusts and controls the amount of torque being generated for constant smooth operation of the shade system. The limiter automatically releases during down-travel, and automatically engages during up-travel of the shade system.
 - .2 Lifting mechanism must accommodate tension modules for maximum shade performance when necessary. The tension modules must also contain a memory lock for torque retention.
 - .3 Noise reduction seals must be used for sound isolation and absorption of the mechanism.

- .4 Drive sprocket must contain a planetary gear system for increased operational performance, speed ratio control, smoothness of lift, and balance to the chain and shade system.
- .2 Manual Drive
 - .1 Shade to be able to move freely when pulled on chain. The unit shall consist of a tension activated lifting mechanism. The lifting mechanism must contain a memory lock which shall maintain pre-tensioning when the shade is removed from the cassette bracket, and shall not require re-tensioning when shade is re-inserted into the bracket. The roller mechanism must be reversible for future alterations and maintenance on site.

3 EXECUTION

3.1 INSTALLATION

- .1 Install bracket mounted blinds in accordance with manufacturer's instructions.
- .2 Install blinds square, plumb, true to line with operable parts adjusted for correct function.
- .3 Secure head rails with stainless steel screws. Use non corrosive metal fasteners for installation, concealed in final assembly. Install all bottom panels, fascias, and end panels to provide concealed installation.

END OF SECTION

Part 1 General

1.1 GENERAL PROVISIONS

- .1 This section covers items common to all sections of Mechanical Division.
- .2 Conform to Division 1 General Conditions.
- .3 Furnish labour, materials, and equipment necessary for completion of work as described in contract documents.
- .4 Unless specifically indicated, all materials and equipment provided under this contract shall be new and shall be manufactured in the project year.

1.2 INTENT

- .1 Mention herein or indication on Drawings of articles, materials, operations or methods requires: supply of each item mentioned or indicated, of quality, or subject to qualifications noted; installation according to conditions stated: and, performance of each operation prescribed with furnishing of necessary labour, equipment, and incidentals for mechanical work.
- .2 Where used, words "Section" and "Division" shall also include other Subcontractors engaged on site to perform work to make building and site complete in all respects.
- .3 Where used, word "supply" shall mean furnishing to site in location required or directed complete with accessory parts.
- .4 Where used, word "install" shall mean secured in place and connected up for operation as noted or directed.
- .5 Where used, word "provide" shall mean supply and install as each is described above.

1.3 REGULATIONS, PERMITS AND FEES

- .1 All materials and quality of work shall meet all current and latest Provincial, Municipal and Fire Marshall requirements, regulations, codes and by-laws in force in the area of the project.
- .2 Each contractor shall give all necessary notices, obtain all necessary permits, and pay all fees in order that the work shown or specified may be carried out. Each contractor shall furnish any certificates necessary as evidence that the work installed conforms with the laws and regulations of all authorities having jurisdiction.
- .3 In the event that changes or alterations are required on completed work by authorized inspectors, these changes shall be made at the contractor's expense.
- .4 Special equipment which does not have a standard CSA label shall be inspected by the local electrical authority having jurisdiction and the Approval Certificate shall be submitted to the Consultant as soon as possible. All costs and fees for inspections shall be borne by this contractor.
- .5 Submit a copy of all final certificates in the maintenance manuals.

1.4 DRAWINGS

- .1 Mechanical Drawings do not show structural and related details. Take information involving accurate measurement of building from building drawings, or at building. Make, without additional charge, any necessary changes or additions to runs of piping, conduits and ducts to accommodate structural conditions. Location of pipes, ducts, conduits and other equipment may be altered by Consultant without extra charge provided change is made before installation and does not necessitate major additional material.
- .2 As work progresses and before installing piping, ductwork, heating units, registers, diffusers, fixtures and any other fittings and equipment which may interfere with interior treatment and use of building, provide detail drawings or obtain directions for exact location of such equipment and fittings.
- .3 Mechanical Drawings indicate general location and route of pipes, ducts and conduits which are to be installed. Where required work is not shown or only shown diagrammatically, install same at maximum height in space to conserve head room and interfere as little as possible with free use of space through which they can pass. Follow building lines, conceal piping, conduits and ducts in furred spaces, ceilings and walls unless specifically shown otherwise. Install work close to structure so furring will be small as practical.
- .4 Install piping and ductwork to clear structural members and any fireproofing. Locate mechanical work to permit installation of specified insulation. Do not remove or damage structural fireproofing. Leave space to permit fireproofing and insulation to be inspected and repaired.
- .5 Before commencing work, check and verify all sizes, locations, grade and invert elevations, levels and dimensions to ensure proper and correct installation. Verify existing/municipal services.
- .6 Locate all mechanical and electrical equipment in such a manner as to facilitate easy and safe access to and maintenance and replacement of any part.
- .7 In every place where there is indicated space reserved for future or other equipment, leave such space clear, and install piping and other work so that necessary installation and connections can be made for any such apparatus. Obtain instructions whenever necessary for this purpose.
- .8 Relocate equipment and/or material installed but not co-ordinated with work of other Sections and/or installed incorrectly as directed, without extra charge.
- .9 Where drawings are done in metric and product not available in metric, the corresponding imperial trade size shall be utilized.

1.5 INTERFERENCE AND CO-ORDINATION DRAWINGS

- .1 Prepare interference and equipment placing drawings to ensure that all components will be properly accommodated within the constructed spaces provided.
- .2 Prepare drawings to indicate co-ordination and methods of installation of a system with other systems where their relationship is critical. Ensure that all details of equipment apparatus, and connections are co-ordinated.

- .3 Ensure that clearances required by jurisdictional authorities and clearances for proper maintenance are indicated on drawings.
- .4 Upon consultant's request submit copies of interference drawings to consultant.
- .5 Due to the nature of the building and the complexity of the building systems provide the following:
 - .1 Interference drawings, showing coordination of architectural, structural, mechanical and electrical systems for the consultant's review prior to fabrication.
 - .2 Detailed layout drawings, clearly showing fasteners and hangers.
- .6 Provide CAD drawings (minimum release AutoCAD 2007) in addition to hard copies.

1.6 QUALITY ASSURANCE

- .1 Perform work in accordance with applicable provisions of local Plumbing Code, Gas Ordinances, and adoptions thereof for all mechanical systems. Provide materials and labor necessary to comply with rules, regulations, and ordinances.
- .2 In case of differences between building codes, provincial laws, local ordinances, utility company regulations, and Contract Documents, the most stringent shall govern. Promptly notify Consultant in writing of such differences.

1.7 ALTERNATES AND SUBSTITUTIONS

- .1 Throughout Mechanical Division are lists of "Alternate and equal Equipment" manufacturers acceptable to Consultant if their product meets characteristics of specified described equipment.
- .2 Each bidder may elect to use "Alternate or equal Equipment" manufacturers from lists of Alternates where listed. Include for any additional costs including all costs for revisions to electrical contract to suit Alternate used. Prices are not required in Tender for Alternates listed except where specifically noted as "Separate Price" in which case contractor will complete the Supplementary Tender Form.
- .3 It is responsibility of this Division to ensure "Alternate Equipment" fits space allocated and gives performance specified. If an "Alternate Equipment" nor "equal" specified product unit is proposed and does not fit space allotted in Consultant's opinion, supply of specified described equipment will be required without change in Contract amount. Should electrical characteristics for "alternate" or "equal" equipment differ from equipment specified it shall be the responsibility of the equipment manufacturer to pay all costs associated with the revisions to the electrical contract. Only manufacturers listed will be accepted for their product listing. All other manufacturers shall be quoted as substitution stating conditions and credit amount.
- .4 If pipe or item, of size or weight indicated, is unobtainable, supply next larger size or heavier weight without additional charge.

1.8 EXAMINATION

- .1 Site Inspection
 - .1 Examine premises to understand conditions, which may affect performance of work of this Division before submitting proposals for this work.
 - .2 No subsequent allowance for time or money will be considered for any consequence related to failure to examine site conditions.
- .2 Drawings:
 - .1 Mechanical Drawings show general arrangement of piping, ductwork, equipment, etc. Follow as closely as actual building construction and work of other trades will permit.
 - .2 Consider Architectural and Structural Drawings part of this work insofar as these drawings furnish information relating to design and construction of building. These drawings take precedence over Plumbing, Mechanical, and Fire Protection Drawings.
 - .3 Because of small scale of Drawings, it is not possible to indicate all offsets, fittings, and accessories, which may be required. Investigate structural and finish conditions affecting this work and arrange work accordingly, providing such fittings, valves, and accessories required to meet conditions.
- .3 Ensure that items to be furnished fit space available. Make necessary field measurements to ascertain space requirements including those for connections and furnish and install equipment of size and shape so final installation shall suit true intent and meaning of Contract Documents. If approval is received by Addendum or Change Order to use other than originally specified items, be responsible for specified capacities and for ensuring that items to be furnished will fit space available.

1.9 SEQUENCING SCHEDULING AND COORDINATION

- .1 It is understood that while Drawings are to be followed as closely as circumstances permit, this Division will be held responsible for installation of systems according to the true intent and meaning of Contract Documents. Anything not clear or in conflict will be explained by making application to Consultant. Should conditions arise where certain changes would be advisable, secure Consultant's approval of these changes before proceeding with work.
- .2 Coordinate work of various trades in installing interrelated work. Before installation of mechanical items, make proper provision to avoid interferences in a manner approved by Consultant. Each Contractor shall refer to all sections of the specification for their responsibilities with other trades. Changes required in work specified in Mechanical Division caused by neglect to do so shall be made at no cost to Owner.
- .3 Arrange pipes, ducts, and equipment to permit ready access to valves, unions, traps, starters, motors, control components, and to clear openings of doors and access panels.
- .4 Furnish and install inserts and supports required by Mechanical Division unless otherwise noted. Furnish sleeves, inserts, supports, and equipment that are an integral part of other Divisions of the Work to Sections involved in sufficient time to be built into construction as the Work proceeds. Locate these items and see that they are properly installed. Expense resulting from improper location or installation of items above shall be borne by Mechanical Division.

- .5 Be responsible for required excavation, backfilling, cutting, and patching incident to work of this Division and make required repairs afterwards to satisfaction of Consultant. Cut carefully to minimize necessity for repairs to existing work. Do not cut beams, columns, or trusses.
 - .1 Patch and repair walls, floors, ceilings, and roofs with materials of same quality and appearance as adjacent surfaces unless otherwise shown. Surface finishes shall exactly match existing finishes of same materials.
 - .2 Each Section of this Division shall bear expense of cutting, patching, repairing, and replacing of work of other Sections required because of its fault, error, tardiness, or because of damage done by it.
 - .3 Cutting, patching, repairing, and replacing pavements, sidewalks, roads, and curbs to permit installation of work of this Division is responsibility of Section installing work.
- .6 Adjust locations of pipes, ducts, equipment, fixtures, etc, to accommodate work from interferences anticipated and encountered. Determine exact route and location of each pipe and duct prior to fabrication.
 - .1 Make offsets, transitions, and changes in direction of pipes, ducts, and electrical raceways as required to maintain proper head room and pitch of sloping lines whether or not indicated on Drawings.
 - .2 Furnish and install traps, air vents, sanitary vents, pull boxes, etc, as required to effect these offsets, transitions, and changes in direction.
- .7 Slots and openings through floors, walls, ceilings, and roofs shall be provided by this contractor but performed by a trade specializing in this type of work. This Division shall see that they are properly located and do any cutting and patching caused by its neglect to do so.

1.10 CONTRACT BREAKDOWN

- .1 Provide breakdown of contract exclusive of HST to acceptance of consultants prior to first draw submission.
- .2 Provide labour and material cost for each item.
- .3 Breakdown shall indicate total contract amount.
- .4 Contract breakdown shall be as follows as a minimum.

Mobilization and shop drawings (max. \$2000.00)

Demolition

Inside buried plumbing and drainage

Above grade rough-in plumbing and drainage

Plumbing Fixtures

Sprinkler system and heads

Heating Cabinet

Piping Insulation

Ductwork

Duct Insulation

Grilles & Diffusers
Fire Stopping
Building Automation Systems
Testing Adjusting and Balancing
Mechanical contractor closeout requirements (min. of 3% but not less than \$5,000.00)

- .5 Progress claims, when submitted are to be itemized against each item of the contract breakdown, this shall be done in table form showing contract amount, work complete to date, previous draw, amount this draw and balance.

1.11 SHOP DRAWINGS AND PRODUCT DATA

- .1 Furnish complete catalog data for manufactured items of equipment to be used in the Work to Consultant for review within 30 days after award of Contract.
- .2 Provide a complete list of shop drawings to be submitted prior to first submission.
- .3 Before submitting to the Consultant, review all shop drawings to verify that the products illustrated therein conform to the Contract Documents. By this review, the Contractor agrees that it has determined and verified all field dimensions, field construction criteria, materials, catalogue numbers, and similar data and that it has checked and coordinated each shop drawing with the requirements of the work and of the Contract Documents. The Contractor's review of each shop drawings shall be indicated by stamp, date and signature of a qualified and responsible person possessing by the appropriate authorization.
- .4 If material or equipment is not as specified or submittal is not complete, it will be rejected by Consultant.
- .5 Additional shop drawings required by the contractor for maintenance manuals, site copies etc., shall be photocopies of the "reviewed" shop drawings. All costs to provide additional copies of shop drawings shall be borne by the contractor.
- .6 Submit all shop drawings for the project as a package. Partial submittals will not be accepted.**
- .7 Catalog data or shop drawings for equipment, which are noted as being reviewed by Consultant or his Engineer shall not supersede Contract Documents.
- .8 Review comments of Consultant shall not relieve this Division from responsibility for deviations from Contract Documents unless Consultant's attention has been called to such deviations in writing at time of submission, nor shall they relieve this Division from responsibility for errors in items submitted.
- .9 Check work described by catalog data with Contract Documents for deviations and errors.
- .10 Shop drawings and product data shall show:
- .1 Mounting arrangements.
 - .2 Operating and maintenance clearances. e.g. access door swing spaces.
- .11 Shop drawings and product data shall be accompanied by:
- .1 Detailed drawings of bases, supports, and anchor bolts.
 - .2 Acoustical sound power data, where applicable.

- .3 Points of operation on performance curves.
- .4 Manufacturer to certify as to current model production.
- .5 Certification of compliance to applicable codes.
- .12 State sizes, capacities, brand names, motor HP, accessories, materials, gauges, dimensions, and other pertinent information. List on catalog covers page numbers of submitted items. Underline applicable data.
- .13 Shop drawings shall be submitted electronically as per the following directions:
 - .1 Electronic Submissions:
 - .1 Electronically submitted shop drawings shall be prepared as follows:
 - .1 Use latest software to generate PDF files of submission sheets.
 - .2 Scanned legible PDF sheets are acceptable. Image files are not acceptable.
 - .3 PDF format shall be of sufficient resolution to clearly show the finest detail.
 - .4 PDF page size shall be standardized for printing to letter size (8.5"x11"), portrait with no additional formatting required by the consultant. Submissions requiring larger detail sheets shall not exceed 11"x17".
 - .5 Submissions shall contain multiple files according to section names as they appear in Specification.
 - .6 File names shall include consultant project number and description of shop drawing section submitted.
 - .7 Each submission shall contain an index sheet listing the products submitted, indexed in the same order as they appear in the Specification. Include associated PDF file name for each section.
 - .8 On the shop drawing use an "electronic mark" to indicate what is being provided.
 - .9 **Each file shall bear an electronic representation of the "company stamp" of the contractor. If not stamped the file submission will not be reviewed.**
 - .2 Email submissions shall include subject line to clearly identify the consultants project number and the description of the shop drawings submitted.
 - .3 Electronic attachments via email shall not exceed 10MB. For submissions larger than 10MB, multiple email messages shall be used. Denote related email messages by indicating "1 of 2" and "2 of 2" in email subject line for the case of two messages.

- .4 Electronic attachments via web links (URL) shall directly reference PDF files. Provide necessary access credentials within link or as username/password clearly identified within body of email message.
- .5 On site provide one copy of the “reviewed” shop drawings in a binder as noted above.
- .6 Contractor to print copies of “reviewed” shop drawings and compile into maintenance manuals in accordance with requirements detailed in this section.

1.12 OPERATION AND MAINTENANCE MANUAL

- .1 Provide operation and maintenance data for incorporation into manual as in submittals' requirements.
- .2 Operation and maintenance manual to be approved by, and final copies deposited with, Consultant before final inspection.
- .3 Operation data to include:
 - .1 Control schematics for each system including environmental controls.
 - .2 Description of each system and its controls.
 - .3 Description of operation of each system at various loads together with reset schedules and seasonal variances.
 - .4 Operation instruction for each system and each component.
 - .5 Description of actions to be taken in event of equipment failure.
 - .6 Valves schedule and flow diagram.
 - .7 Colour coding chart.
 - .8 Spare parts equipment list.
 - .9 Manufacturers standard or extended warranty information.
- .4 Maintenance data shall include:
 - .1 Servicing, maintenance, operation and trouble-shooting instructions for each item of equipment.
 - .2 Data to include schedules of tasks, frequency, tools required and task time.
- .5 Performance data to include:
 - .1 Equipment manufacturer's performance data sheets with point of operation as left after commissioning is complete.
 - .2 Equipment performance verification test results.
 - .3 Special performance data as specified elsewhere.
 - .4 Testing, adjusting and balancing reports as specified in Testing, Adjusting and Balancing Section.
- .6 Miscellaneous data to include:
 - .1 Letter of contractors warranty and guarantee.
 - .2 Index sheet.
 - .3 Tabbed format for each section.
 - .4 Manufacturers approved shop drawings.

- .5 Spare parts list and source.
- .6 List of Manufacturers and suppliers address for each piece of equipment.
- .7 Approvals:
 - .1 Submit 1 copy of Operation and Maintenance Manual to Consultant for approval. Submission of individual data will not be accepted unless so directed by Consultant.
 - .2 Make changes as required and re-submit as directed by Consultant.
 - .3 Provide two (2) copies of final operation maintenance manuals, as well as a PDF file of the entire approved manual on a USB stick. Only one USB stick is to be provided containing both the approved manual and Record drawings.
- .8 Additional data:
 - .1 Prepare and insert into operation and maintenance manual when need for same becomes apparent during demonstrations and instructions specified above.

1.13 AS-BUILT DRAWINGS

- .1 Site records:
 - .1 Contractor shall provide 2 sets of reproducible mechanical drawings. Provide sets of white prints as required for each phase of the work. Mark thereon all changes as work progresses and as changes occur. This shall include changes to existing mechanical systems, control systems and low voltage control wiring.
 - .2 On a weekly basis, transfer information to reproducibles, revising reproducibles to show all work as actually installed.
 - .3 Use different colour waterproof ink for each service.
 - .4 Make available for reference purposes and inspection at all times.
- .2 As-built drawings:
 - .1 Prior to start of Testing, Adjusting and Balancing (TAB), finalize production of record drawings.
 - .2 Identify each drawing in lower right hand corner in letters at least 3 mm (1/8") high as follows: - "RECORD DRAWINGS: THIS DRAWING HAS BEEN REVISED TO SHOW MECHANICAL SYSTEMS AS INSTALLED" (Signature of Contractor) (date).
 - .3 TAB to be performed using record drawings.
 - .1 Submit hard copy to Consultant for approval. When returned, make corrections as directed.
 - .2 Once approved, submit completed reproducible paper record drawings as well as a scanned pdf file copy on USB stick with Operating and Maintenance Manuals. **Writer to Select:** UGDSB: Submit approved completed reproducible paper record drawings as well as a scan pdf of **each** drawing file on USB stick (note pdf's cannot be combined).

1.14 WARRANTIES

- .1 In addition to guarantee specified in General Conditions, guarantee heating, cooling, and plumbing systems to be free from noise in operation that may develop from failure to construct system in accordance with Contract Documents.

- .2 Provide certificates of warranty for each piece of equipment made out in favor of Owner. Clearly record "start-up" date of each piece of equipment on certificate. Include certificates as part of Operation & Maintenance Manual.
- .3 The 2-year warranty period shall start from date of substantial completion and shall include parts and labour.

1.15 SUBSTANTIAL PERFORMANCE

- .1 Complete the following to the satisfaction of the consultant prior to request for submission of substantial performance.
 - .1 As-Built Drawings.
 - .2 Maintenance Manuals
 - .3 System Start up
 - .4 TAB Reports
 - .5 HVAC System Commissioning
 - .6 Instructions to Owners
 - .7 Final Certificates (required prior to consultant's release of conformance letter).
 - .1 NFPA-13 Contractors Material and Test Certificate (sprinkler)
 - .2 Potable Water Test (Refer to domestic water piping – Copper section – Part 3)

1.16 OCCUPANCY REQUIREMENTS

- .1 The contractor shall provide the following documentation to the consultant prior to receiving occupancy. Failure to provide the proper documentation will result in the occupancy not being granted. List of required documentation:
 - .1 Final Certificates (required prior to consultant's release of conformance letter).
 - .1 NFPA-13 Contractors Material and Test Certificate (sprinkler).
 - .2 Potable Water Test (Refer to domestic water piping – Copper section – Part 3).

1.17 REVISION TO CONTRACT

- .1 Provide the following:
 - .1 Itemized list of material with associated costs.
 - .2 Labour rate and itemized list of labour for each item.
 - .3 Copy of manufacturers/suppliers invoice if requested.

1.18 DELIVERY STORAGE & HANDLING

- .1 Follow Manufacturer's directions in delivery, storage, and protection, of equipment and materials.
- .2 Deliver equipment and material to site and tightly cover and protect against dirt, water, and chemical or mechanical injury but have readily accessible for inspection. Store items subject to moisture damage (such as controls) in dry, heated space.

1.19 ASBESTOS

- .1 If asbestos is suspected or identified cease all work in the immediate area in accordance with OHSA and notify consultant.**
- .2 Each contractor and on site employee of the contractor shall have “asbestos awareness training”.**
- .3 The Contractor shall ensure that employees who may come into contact with asbestos due to the nature of the work that they perform, have received training that enables them to recognize asbestos and that enables them to react in accordance with the Occupational Health and Safety Act and regulations thereto should contact with asbestos occur during the course of their work.
- .4 It is the responsibility of the contractor to review the asbestos book in the building prior to starting any work.**
- .5 Existing occupied buildings (depending upon their age) may contain asbestos in thermal insulating materials and some manufactured products, such as vinyl asbestos floor tile. Any insulating materials, on pipes, fittings, boilers, tanks, ductwork, etc. may contain asbestos and shall not be disturbed.**
- .6 A survey of each building documenting the location and condition of asbestos-containing materials is available for your mandatory review prior to commencing any work on premises.**

1.20 CONFINED SPACES

- .1 Certain areas of the building may be defined as a “Confined Space”. Any personnel working in these areas must have confined space training, appropriate equipment and undertake all work in conformance with appropriate codes and standards.
- .2 Refer to building documentation for any spaces deemed “Confined Space”.

1.21 ENERGY EFFICIENCY

- .1 The mechanical systems of this building must achieve the energy efficiency levels by conforming to ANSI/ASHRAE/IESNA 90.1 “Energy Standard for Buildings Except Low-Rise Residential Buildings” and Chapter 2 of Division 3 of SB-10 prescriptive method from the Ontario Building Code.
- .2 All equipment, products, and installations must conform to the Codes and Standards.

END OF SECTION

Part 1 General

1.1 TESTS

- .1 Give 48 hours written notice of date for tests.
- .2 Insulate or conceal work only after testing and approval by Consultant.
- .3 Conduct tests in presence of Consultant.
- .4 Bear costs including retesting and making good.
- .5 Piping:
 - .1 General: maintain test pressure without loss for 4 h unless otherwise specified.
 - .2 Test drainage, waste and vent piping to Ontario Building Code and authorities having jurisdiction.
 - .3 Test domestic hot, cold and recirculation water piping at 1-1/2 times system operating pressure or minimum 860 kPa (124.8 psi), whichever is greater.
 - .4 Test fire systems in accordance with authorities having jurisdiction and as specified elsewhere.
- .6 Equipment: test as specified in relevant sections.
- .7 Prior to tests, isolate all equipment or other parts which are not designed to withstand test pressures or test medium.

1.2 SYSTEM START UP

- .1 Provide adjusting testing and start up of all equipment prior to testing and balancing (TAB) specified elsewhere.
- .2 Provide consultant with written notice verifying all equipment operation and installation is complete.
- .3 Start up shall be in presence of the following: owner or representative, contractor, building automation systems (BAS) contractor, and manufacturer's representative. Each person shall witness and sign off each piece of equipment. Consultant's attendance will be determined by consultant.
- .4 Simulate system start up and shut down and verify operation of each piece of equipment.
- .5 Arrange with all parties and provide 72 hours notice for start up procedure.
- .6 Arrange with building automation systems contractor to sequence all components and ensure system operation.

1.3 DEMONSTRATION AND OPERATING AND MAINTENANCE INSTRUCTION

- .1 Supply tools, equipment and personnel to demonstrate and instruct operating and maintenance personnel in operating, controlling, adjusting, trouble-shooting and servicing of all systems and equipment during regular work hours, prior to acceptance.
- .2 Mechanical contractor to schedule and coordinate the demonstration all on the same day, starting at a pre-approved time and continuing consequently until complete.

- .3 Where specified elsewhere in Mechanical Division, qualified manufacturers' representatives who are knowledgeable about the project to provide demonstrations and instructions.
- .4 Use operation and maintenance manual, record drawings, audio visual aids, etc. as part of instruction materials.
- .5 Instruction duration time requirements as specified in appropriate sections.
- .6 Where deemed necessary, Consultants may record these demonstrations on video tape for future reference.

1.4 TRIAL USAGE

- .1 Consultant or owner may use equipment and systems for test purposes prior to acceptance. Supply labour, material, and instruments required for testing.
- .2 Trial usage to apply to following equipment and systems:
 - .1 HVAC
 - .2 Exhaust air
 - .3 Domestic water
 - .4 Plumbing, and drainage.

1.5 DEFICIENCIES

- .1 During the course of construction, the consultants will monitor construction and provide written reports of work progress, discussions, and instruction to correct work.
- .2 Instruction to correct work shall be done within the work period before the next review.
- .3 The contractor shall not conceal any work until inspected.
- .4 The contractor shall expedite 100% complete rough-in work and have inspected prior to concealing services and equipment especially above ceiling.
- .5 Upon completion of the project the consultant will do a final review. Upon receiving the final inspection report, the contractor must correct and sign back the inspection report indicating the deficiencies are completed. A re-inspection will only be done once consultant receives this in writing.

1.6 EQUIPMENT INSTALLATIONS

- .1 Unions or flanges: provide for ease of maintenance and disassembly.
- .2 Space for servicing, disassembly and removal of equipment and components: provide as recommended by manufacturer or as indicated.
- .3 Equipment drains: pipe to floor drains.
- .4 Install equipment, rectangular cleanouts and similar items parallel to or perpendicular to building lines.

1.7 MOUNTING HEIGHTS

- .1 Mounting height of equipment is from finished floor to equipment unless specified or indicated otherwise. Coordinate with block coursing (if applicable).

- .2 If mounting height of equipment is not specified or indicated, verify before proceeding with installation.
- .3 Install mechanical equipment at following heights unless indicated otherwise.
 - .1 Standard water closets 350 (14") to top of bowl
 - .2 Barrier-free water closets 400 (16") to top of bowl
 - .3 Barrier-free water closets 450 (18") to top of seat lid
 - .4 Wall hung lavatory 787 (31") to rim
 - .5 Barrier-free wall hung lavatory 840 (33") max to top of rim
737 (29") min underside of rim front
685 (27") clear at 400 (8") from basin front
350 (14") min clear under waste trap
 - .6 Thermostats: Barrier Free (operable) 1200 mm (47.25")
Non Barrier Free 1500 mm (59")

Also follow direction of architectural drawings and where discrepancies occur clarify prior to rough-in.

1.8 PROTECTION OF OPENINGS

- .1 Protect equipment and systems openings from dirt, dust, and other foreign materials with materials appropriate to system.

1.9 ELECTRICAL

- .1 Electrical work to conform to Electrical Division including the following:
 - .1 Supplier and installer responsibility and related mechanical responsibility is indicated in Equipment Schedule on mechanical and/or electrical drawings
 - .2 Power wiring and conduit is specified in Electrical Division except for conduit, wiring and connections below 50 V which are related to control systems specified in Mechanical Division. Follow Electrical Division for quality of materials and workmanship.
 - .3 Electrically operated equipment shall be C.S.A. approved label. Special Inspection Label of Provincial Authority having jurisdiction will be accepted in lieu of C.S.A. approval. Each motor shall have an approved starter. Starter will be supplied and installed by Electrical Division unless otherwise indicated.

1.10 CONTROL WIRING

- .1 Furnish and install all components, devices, and control wiring for all plumbing, fire protection, HVAC equipment, HVAC systems, lighting, and other electrical loads to make all equipment operable to satisfaction of owner and consultant and to manufacturer's requirements and recommendations.
- .2 All electrical wiring, mechanical wiring and installations shall comply with local and national electrical and mechanical codes.

- .3 Supply and install wiring as required for all devices and systems. Install wiring in EMT conduit and otherwise comply with all requirements of the Electrical Division. Approved plenum wire may be used for sensor and network communication wiring where it complies with appropriate building codes and regulatory authorities.
- .4 All wiring concealed in walls and chases, and all exposed wiring shall be run in conduit.
- .5 Provide recessed conduit and backer boxes where controls are wall mounted. Surface mounted boxes and conduit are acceptable in mechanical or service rooms.
- .6 Free-run plenum rated cable shall be run in cable hangers where provided by electrical division or tied neatly to pipe and duct hangers in the ceiling. Avoid wiring that droops. Follow building lines and do not run wiring "as the crow flies".

1.11 PIPING AND EQUIPMENT SUPPORTS

- .1 Equipment supports supplied by equipment manufacturer: specified elsewhere in Mechanical Division.
- .2 Piping and equipment supports not supplied by equipment manufacturer: fabricate from structural grade steel meeting requirements of - Structural Steel Section. Submit structural calculations with shop drawings.

1.12 SLEEVES

- .1 Pipe sleeves: at points where pipes pass through masonry, concrete or fire rated assemblies and as indicated. Grout sleeves in place.
- .2 Schedule 40 steel pipe.
- .3 Sleeves with annular fin continuously welded at midpoint:
 - .1 Where sleeve extends above finished floor.
 - .2 Through fire rated walls and floors.
- .4 Sizes: minimum 6 mm (1/4") clearance all around, between sleeve and uninsulated pipe or between sleeve and insulation.
- .5 Terminate sleeves flush with surface of concrete and masonry walls, concrete floors on grade and 25 mm (1") above other floors.
- .6 Fill voids around pipes:
 - .1 Caulk between sleeve and pipe in foundation walls and below grade floors with waterproof fire retardant non-hardening mastic.
 - .2 Where sleeves pass through walls or floors, provide space for firestopping. Where pipes/ducts pass through fire rated walls, floors and partitions, maintain fire rating integrity.
 - .3 Ensure no contact between copper tube or pipe and ferrous sleeve.
 - .4 Fill future-use sleeves with lime plaster or other easily removable filler.
 - .5 Coat exposed exterior surfaces of ferrous sleeves with heavy application of zinc rich paint to CGSB 1-GP-181M+Amdt-Mar-78.
- .7 Provide minimum 20 gauge duct sleeves where ducts pass through masonry concrete or fire rated assemblies. Maintain minimum 25 mm clearance all around or to the requirements of the authority having jurisdiction. Seal at wall as indicated.

1.13 FIRE STOPPING

- .1 This contractor shall work with all other contractors on the project in providing one common method of fire stopping all penetrations made in fire rated assemblies.
- .2 Approved fire stopping and smoke seal material in all fire separations and fire ratings within annular space between pipes, ducts, insulation and adjacent fire separation and/or fire rating.
- .3 Do not use cementious or rigid seals around penetrations for pipe, ductwork, or other mechanical items.
- .4 Insulated pipes and ducts: ensure integrity of insulation and vapour barrier at fire separation.
- .5 Provide materials and systems capable of maintaining effective barrier against flame, smoke and gases. Ensure continuity and integrity of fire separation.
- .6 Comply with the requirements of CAN4-S115-M35, and do not exceed opening sized for which they have been tested.
- .7 Systems to have an F or FT rating (as applicable) not less than the fire protection rating required for closures in a fire separation. Provide "fire wrap" blanket around services penetrating fire walls. Extent of blanket must correspond to ULC recommendations.
- .8 The fire stopping materials are not to shrink, slump or sag and to be free of asbestos, halogens and volatile solvents.
- .9 Firestopping materials are to consist of a component sealant applied with a conventional caulking gun and trowel.
- .10 Fire stop materials are to be capable of receiving finish materials in those areas which are exposed and scheduled to receive finishes. Exposed surfaces are to be acceptable to consultant prior to application of finish.
- .11 Firestopping shall be inspected and approved by local authority prior to concealment or enclosure.
- .12 Install material and components in accordance with ULC certification, manufacturers instructions and local authority.
- .13 Submit product literature and installation material on fire stopping in shop drawing and product data manual. Maintain copies of these on site for viewing by installers and consultant.
- .14 Manufacturer of product shall provide certification of installation. Submit letter to the consultant.
- .15 Acceptable Manufacturer:
Minnesota Mining and Manufacturing

- .16 Acceptable Alternate Manufacturers to approval of local authority:
 - Fryesleeve Industries Inc.
 - General Electric Pensil Firestop Systems
 - International Protective Coatings Corp.
 - Rectorseal Corporation (Metacaulk)
 - Proset Systems
 - 3M
 - AD Systems
 - Hilti
- .17 Ensure firestop manufacturer representative performs on site inspections and certifies installation. Submit inspection reports/certification at time of substantial completion.

1.14 ESCUTCHEONS

- .1 On pipes and ductwork passing through walls, partitions, floors and ceilings in exposed finished areas and on water and drain pipes inside millwork and cabinets.
- .2 Chrome or nickel plated brass or Type 302 stainless steel, one piece type with set screws.
- .3 Outside diameter to cover opening or sleeve.
- .4 Inside diameter to fit around finished pipe.

1.15 PAINTING

- .1 Refer to Section Interior Painting and specified elsewhere.
- .2 Apply at least one coat of corrosion resistant primer paint to ferrous supports and site fabricated work.
- .3 Apply two coats of paint to exposed piping service in mechanical room, base colour as specified in Mechanical Identification Section.
- .4 Prime and touch up marred finished paintwork to match original.
- .5 Restore to new condition, or replace equipment at discretion of consultant, finishes which have been damaged too extensively to be merely primed and touched up.

1.16 ACCESS DOORS

- .1 Provide access doors to concealed mechanical equipment for operating, inspecting, adjusting and servicing.
- .2 Flush mounted 600 x 600 mm (24" x 24") for body entry and 300 x 300 mm (12" x 12") for hand entry unless otherwise noted. Doors to open 180°, have rounded safety corners, concealed hinges, screwdriver latches and anchor straps.
- .3 Material:
 - .1 Special areas such as tiled or marble surfaces: use stainless steel with brushed satin or polished finish as directed by Consultant.
 - .2 Remaining areas: use prime coated steel.
 - .3 Fire rated areas: provide ULC listed access doors

- .4 Installation:
 - .1 Locate so that concealed items are accessible.
 - .2 Locate so that hand or body entry (as applicable) is achieved.
- .5 Acceptable materials:
 - Le Hage
 - Zurn
 - Acudor
 - Nailor Industries Inc.

1.17 DIELECTRIC COUPLINGS

- .1 General:
 - .1 To be compatible with and to suit pressure rating of piping system.
 - .2 Where pipes of dissimilar metals are joined.
- .2 Pipes NPS 50 mm (2") and under: isolating unions.
- .3 Pipes NPS 65 mm (2 1/2") and over: isolating flanges.

1.18 DRAIN VALVES

- .1 Locate at low points and at section isolating valves unless otherwise specified.
- .2 Minimum NPS 20 mm (3/4") unless otherwise specified: bronze, with hose end male thread and complete with cap and chain.
- .3 Drain valves on potable water systems shall be complete with vacuum breaker.

1.19 REPAIRS, CUTTING, AND RESTORATION

- .1 Patch and repair walls, floors, ceilings, and roofs with materials of same quality and appearance as adjacent surfaces unless otherwise shown. Surface finishes shall exactly match existing finishes of same materials.
- .2 Each Section of this Division shall bear expense of cutting, patching, and repairing to install their work and/or replacing of work of other Sections required because of its fault, error, tardiness, or because of damage done by it.
- .3 Cutting, patching, repairing, and replacing pavements, sidewalks, roads, and curbs to permit installation of work of this Division is responsibility of Section installing work.
- .4 All patching, painting and making good of the existing walls, floors, ceilings, partitions and roof will be at the expense of this Contractor, but performed by the Contractor specializing in the type of work involved unless otherwise noted.

1.20 EXISTING SYSTEMS

- .1 Connections into existing systems to be made at time approved by Consultant. Request written approval of time when connections can be made.
- .2 Be responsible for damage to existing plant by this work.

1.21 CLEANING

- .1 Clean interior and exterior of all systems including strainers. Vacuum interior of ductwork and air handling units prior to turn over to owner.
- .2 In preparation for final acceptance, clean and refurbish all equipment and leave in operating condition including replacement of all filters in all air and piping systems.

1.22 DISCONNECTION AND REMOVAL

- .1 Disconnect and/or remove equipment, piping, ductwork, etc. as indicated.
- .2 Cap and conceal all redundant and obsolete connections.
- .3 Provide a list of equipment to be removed to the owner, for his acceptance of same. Remove all equipment from site, which the owner does not retain.
- .4 Store equipment to be retained by owner on site where directed by consultant.

1.23 OWNER SUPPLIED EQUIPMENT

- .1 Connect to equipment supplied by the owner and make operable.

1.24 DEMOLITION

- .1 The general requirements are indicated on the drawings and on the outline specification in Division 1.
- .2 The general execution of the demolition is to be carried out in a clean and efficient manner.
- .3 Demolition of existing ceiling, walls etc., to facilitate removal of existing services or equipment or installation of new to be kept to a minimum and then restored to match existing.
- .4 All openings or holes created by removal of existing mechanical systems which are not being reused are to be patched with the same material surrounding surfaces.
- .5 All new holes and openings to facilitate mechanical systems are to be patched to match surrounding surfaces.
- .6 Protect all existing furnishings materials and equipment. Any damage occurring as a result of the work of this Division shall be repaired or replaced at the expense of this Division.
- .7 Where work involves breaking into or connecting to existing services, carry out work at times directed by the Owners in an expedient manner with minimum disruption to the facility and systems downtime.
- .8 Where unknown services are encountered, immediately advise Consultant and confirm findings in writing.
- .9 Where the location of any services has been shown on the plans, such information is not guaranteed. It is this Division's responsibility to verify locations, invert elevations, etc., immediately after moving on site. Should for any reason the information obtained necessitates changes in procedure or design, advise the Consultant at once. If verification of existing conditions is not done at the outset and any problems arise, the responsibility for same is entirely this Division's.

1.25 LOCATION OF EXISTING UNDERGROUND SERVICES

- .1 This contractor shall locate existing services prior to starting any work in the affected area.
- .2 This contractor shall use a video camera for the existing storm and/or sanitary drainage at the indicated connection point to confirm location, size and invert of the existing piping.

1.26 EXISTING CONCRETE SLAB X-RAY/SCANNING

- .1 This contractor shall retain the services of a qualified company to provide and X-Ray and/or scan of the existing buried services in wall and/or floors prior to starting any work in the affected area.
- .2 Failure to locate existing piping, conduit rebar etc., shall not relieve this contractor of repair of same prior to installing his service.
- .3 This contractor shall be responsible for all repairs and/or replacement of existing services caused by cutting the existing concrete slabs and/or walls.

1.27 EXCAVATING AND BACKFILLING

- .1 Provide all excavating and backfilling inside and outside the building for plumbing pipes, drains and equipment. All backfilling shall be new clean granular 'A' fill brought in specifically for the purpose of backfilling to the underside of floor slab. All backfilling shall be compacted at intervals not more than 150 mm (6") layer to the satisfaction of the Consultant.
- .2 Provide excavating and backfilling outside the building with granular A brought in specifically for backfilling to a minimum of 450 mm (18") over the pipe. Backfilling outside building over and above the 450 mm (18") backfill as previously specified herein shall be by the Mechanical Contractor as specified under Division 2. Where backfilling outside the building is not specified under Division 2 the mechanical contractor shall provide new clean granular 'A' fill to grade level.
- .3 Bottoms of trenches shall be excavated so that the pipe will be supported on a 150 mm (6") compacted bed of clean granular 'A' fill. Provide all necessary pumping to maintain excavation free of water.
- .4 Should water be encountered during excavation, the mechanical contractor shall provide all labour and material, including all equipment required for dewatering the excavation. After the water has been removed, this Contractor shall install a 300 mm (12") base of compacted 50 mm (2") clear stone covered with filter cloth before installing backfill as detailed and/or as specified.
- .5 Be responsible for all weather protection required to install piping and/or equipment to the satisfaction of the Consultant.
- .6 Be responsible for providing all clear stone or granular 'A' material suitable for application to replace existing soil not suitable for backfilling above the 450 mm (18") bedding material.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 American National Standards Institute/ American Society of Mechanical Engineers (ANSI/ASME)
 - .1 ANSI/ASME B31.1, Power Piping, (SI Edition).
- .3 American Society for Testing and Materials (ASTM)
 - .1 ASTM A 125, Specification for Steel Springs, Helical, Heat-Treated.
 - .2 ASTM A 307, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
 - .3 ASTM A 563, Specification for Carbon and Alloy Steel Nuts.
- .4 Manufacturer's Standardization Society of the Valves and Fittings Industry (MSS)
 - .1 MSS SP-58, Pipe Hangers and Supports - Materials, Design, Manufacture Selection, Application, and Installation.

1.2 DESIGN REQUIREMENTS

- .1 Construct pipe hanger and support to manufacturer's recommendations utilizing manufacturer's regular production components, parts and assemblies.
- .2 Base maximum load ratings on allowable stresses prescribed by ASME B31.1 or MSS SP-58.
- .3 Ensure that supports, guides, anchors do not transmit excessive quantities of heat to building structure.
- .4 Design hangers and supports to support systems under all conditions of operation, allow free expansion and contraction, prevent excessive stresses from being introduced into pipework or connected equipment.
- .5 Provide for vertical adjustments after erection and during commissioning. Amount of adjustment to be in accordance with MSS SP-58.

Part 2 Products

2.1 GENERAL

- .1 Fabricate hangers, supports and sway braces in accordance with ANSI B31.1 and MSS-SP-58.
- .2 Use components for intended design purpose only. Do not use for rigging or erection purposes.

2.2 PIPE HANGERS

- .1 Finishes:
 - .1 Pipe hangers and supports: to ANSI & ULC requirements
 - .2 Ensure steel hangers in contact with copper piping are copper plated.
- .2 Upper attachment structural: Suspension from upper flange of I-Beam or joist.
 - .1 Cold piping NPS 50 mm (2") maximum: Ductile iron C-clamp with hardened steel cup point setscrew, locknut and carbon steel retaining clip.
 - .1 Rod: 10 mm (3/8") UL listed
 - .2 Cold piping NPS 65 mm (2 1/2") or greater, all hot piping: Malleable iron beam clamp, eye rod, jaws and extension with carbon steel retaining clip, tie rod, nuts and washers, UL listed & FM approved.
- .3 Upper attachment structural: Suspension from upper flange of I-Beam.
 - .1 Cold piping NPS 50 mm (2") maximum: Ductile iron top-of-beam C-clamp with hardened steel cup point setscrew, locknut and carbon steel retaining clip, UL listed.
 - .2 Cold piping NPS 65 mm (2 1/2") or greater, all hot piping: Malleable iron top-of-beam jaw-clamp with hooked rod, spring washer, plain washer and nuts.
- .4 Upper attachment to concrete.
 - .1 Ceiling: Carbon steel welded eye rod, clevis plate, clevis pin and cotters with weldless forged steel eye nut. Ensure eye 6 mm (1/4") minimum greater than rod diameter.
 - .2 Concrete inserts: wedge shaped body with knockout protector plate ULC listed.
Note: Rapidex and Siporex are not considered concrete. Should one of these systems be encountered, piping/ductwork and/or equipment shall be supported from adjacent walls or from supplemental steel provided by this contractor attached to the adjacent walls/structure.
- .5 Shop and field-fabricated assemblies.
 - .1 Trapeze hanger assemblies: ASME B31.1.
 - .2 Steel brackets: ASME B31.1.
- .6 Hanger rods: threaded rod material to MSS SP-58.
 - .1 Ensure that hanger rods are subject to tensile loading only.
 - .2 Provide linkages where lateral or axial movement of pipework is anticipated.
- .7 Pipe attachments: material to MSS SP-58.
 - .1 Attachments for steel piping: carbon steel.
 - .2 Attachments for copper piping: copper plated black steel.
 - .3 Use insulation shields for all piping.
 - .4 Oversize pipe hangers and supports to accommodate thermal insulation. Provide 1.5 mm (16 gauge) saddles.

- .8 Adjustable clevis: material to MSS SP-58 UL listed, clevis bolt with nipple spacer and vertical adjustment nuts above and below clevis.

- .1 Ensure "U" has hole in bottom for rivetting to insulation shields.

2.3 RISER CLAMPS

- .1 Steel or cast iron pipe: black carbon steel to MSS-SP-58, type 42, UL listed.

- .2 Copper pipe: carbon steel copper plated to MSS-SP-58, type 42.

- .3 Bolts: to ASTM A 307.

- .4 Nuts: to ASTM A 563.

2.4 INSULATION PROTECTION SHIELDS

- .1 Insulated cold piping:

- .1 64 kg/m² (13.12 lbs/ft²) density insulation plus insulation protection shield to: MSS SP-69, galvanized sheet carbon steel. Length designed for maximum 3 m (10') span.

- .2 Insulated hot piping:

- .1 Curved plate 300 mm (12") long, with edges turned up, welded-in centre plate for pipe sizes NPS 300 mm (12") and over, carbon steel to comply with MSS SP-58.

2.5 EQUIPMENT SUPPORTS

- .1 Fabricate equipment supports not provided by equipment manufacturer from structural grade steel meeting requirements of miscellaneous metals, specified herein. Submit calculations with shop drawings.

2.6 EQUIPMENT ANCHOR BOLTS AND TEMPLATES

- .1 Provide templates to ensure accurate location of anchor bolts.

2.7 OTHER EQUIPMENT SUPPORTS

- .1 From structural grade steel meeting requirements of structural steel section specified herein.

- .2 Submit structural calculations with shop drawings.

2.8 MANUFACTURER

- .1 Acceptable materials:

- .1 Grinnell

- .2 Anvil

- .3 Myatt

- .4 Taylor

Part 3 Execution

3.1 INSTALLATION

- .1 Install in accordance with:
 - .1 Manufacturer's instructions and recommendations.
- .2 Vibration Control Devices:
 - .1 Install on piping systems at pumps, boilers, chillers, cooling towers, elsewhere as indicated.
- .3 Clamps on riser piping:
 - .1 Support independent of connected horizontal pipework using riser clamps and riser clamp lugs welded to riser.
 - .2 Bolt-tightening torques to be to industry standards.
 - .3 Steel pipes: Install below coupling or shear lugs welded to pipe.
 - .4 Cast iron pipes: Install below joint.
- .4 Clevis plates:
 - .1 Attach to concrete with 4 minimum concrete inserts at each corner.
- .5 Provide supplementary structural steelwork where structural bearings do not exist or where concrete inserts are not in correct locations.

3.2 HANGER SPACING

- .1 Plumbing piping: most stringent requirements of Canadian Plumbing Code, Provincial Code, or authority having jurisdiction.
- .2 Fire protection: to applicable fire code.
- .3 Gas and fuel oil piping: up to NPS 15 mm (1/2"): every 1.8 m (6').
- .4 Copper piping: up to NPS 15 mm (1/2"): every 1.5 m (5').
- .5 Within 300 mm (12") of each elbow and:

Maximum Pipe Size: NPS	Spacing Steel	Maximum Spacing Copper
up to 32 mm (1 1/4")	2.1 m (7')	1.8 m (6')
40 mm (1 1/2")	2.7 m (9')	2.4 m (8')
50 mm (2")	3.0 m (10')	2.7 m (9')
65 mm (2 1/2")	3.6 m (12')	3.0 m (10')
80 mm (3")	3.6 m (12')	3.0 m (10')
90 mm (3 1/2")	3.9 m (13')	3.3 m (11')
100 mm (4")	4.2 m (14')	3.6 m (12')
125 mm (5")	4.8 m (16')	
150 mm (6")	5.1 m (17')	
200 mm (8")	5.7 m (19')	
250 mm (10")	6.6 m (22')	
300 mm (12")	6.9 m (23')	

- .6 Pipework greater than NPS 300 mm (12"): to MSS SP-69.

3.3 HANGER INSTALLATION

- .1 Install hanger so that rod is vertical under operating conditions.
- .2 Adjust hangers to equalize load.
- .3 Support from structural members. Where structural bearing does not exist or inserts are not in suitable locations, provide supplementary structural steel members.
- .4 Do "NOT" support piping, ductwork and equipment from roof deck, on bottom chord of floor and/or roof joist and/or from OWSJ bridging. Provide structural member between joist.

3.4 HORIZONTAL MOVEMENT

- .1 Angularity of rod hanger resulting from horizontal movement of pipework from cold to hot position not to exceed 4mm (5/32") from vertical.
- .2 Where horizontal pipe movement is less than 15 mm (1/2"), offset pipe hanger and support so that rod hanger is vertical in the hot position.

3.5 FINAL ADJUSTMENT

- .1 Adjust hangers and supports:
 - .1 Ensure that rod is vertical under operating conditions.
 - .2 Equalize loads.
- .2 Adjustable clevis:
 - .1 Tighten hanger load nut securely to ensure proper hanger performance.
 - .2 Tighten upper nut after adjustment.
- .3 C-clamps:
 - .1 Follow manufacturer's recommended written instructions and torque values when tightening C-clamps to bottom flange of beam.
- .4 Beam clamps:
 - .1 Hammer jaw firmly against underside of beam.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 Canadian General Standards Board (CGSB).
 - .1 CAN/CGSB-1.60, Interior Alkyd Gloss Enamel.
 - .2 CAN/CGSB-24.3, Identification of Piping Systems.
- .3 National Fire Protection Association
 - .1 NFPA 13, Installation of Sprinkler Systems.

Part 2 Products

2.1 MANUFACTURER'S EQUIPMENT NAMEPLATES

- .1 Metal or plastic lamicaid nameplate mechanically fastened to each piece of equipment by manufacturer.
- .2 Lettering and numbers to be raised or recessed.
- .3 Information to include, as appropriate:
 - .1 Equipment: Manufacturer's name, model, size, serial number, capacity.
 - .2 Motor: voltage, Hz, phase, power factor, duty, frame size.

2.2 SYSTEM NAMEPLATES

- .1 Colours:
 - .1 Hazardous: red letters, white background.
 - .2 Elsewhere: black letters, white background (except where required otherwise by applicable codes).
- .2 Construction:
 - .1 3 mm (1/8") thick laminated plastic, matte finish, with square corners, letters accurately aligned and machine engraved into core.

.3 Sizes:

.1 Conform to following table:

Size	No. of Sizes mm (")	Height of Line mm (")	Letters mm (")
1	10 x 50 (3/8" x 2")	1 (3/64")	3 (1/8")
2	15 x 75 (1/2" x 3")	1 (3/64")	6 (1/4")
3	15 x 75 (1/2" x 3")	2 (5/64")	3 (1/8")
4	20 x 100 (3/4" x 4")	1 (3/64")	10 (3/8")
5	20 x 100 (3/4" x 4")	2 (6/64")	6 (1/4")
6	20 x 200 (3/4" x 8")	1 (3/64")	10 (3/8")
7	25 x 125 (1" x 5")	1 (3/64")	15 (1/2")
8	25 x 125 (1" x 5")	2 (5/64")	10 (3/8")
9	32 x 200 (1¼" x 8")	1 (3/64")	20 (3/4")

.2 Use maximum of 25 letters/numbers per line.

.4 Locations:

.1 Terminal cabinets, control panels: Use size #5.

.2 Equipment in Mechanical Rooms: Use size #9.

.3 Roof top equipment: use size #9.

.4 Equipment above ceiling: use size #1 riveted to ceiling suspension system.

2.3 FIRE DAMPER/FIRE STOP FLAP NAMEPLATES

.1 Colours:

.1 Black letters, yellow background.

.2 Construction:

.1 Self adhesive 50 mm x 25 mm, matte finish, with round corners.

.3 Locations:

.1 Install on adjacent ceiling grid. Where fire stop flap is installed in gypsum ceiling install on diffuser/grille frame. Where fire damper is installed above gypsum ceiling install on adjacent wall.

2.4 EXISTING IDENTIFICATION SYSTEMS

.1 Apply existing identification system to new work.

.2 Where existing identification system does not cover for new work, use identification system specified this section.

.3 Before starting work, obtain written approval of identification system from Consultant.

.4 Upon completion of this project all references to room names and numbering shall be to the Owner's requirements which may or may 'NOT' be the numbering system used on the drawings. Each contractor shall verify the proper numbering scheme to be used prior to project completion.

.5 All equipment shall be identified in sequence from the existing equipment and "NOT" duplicate numbering of equipment.

2.5 PIPING SYSTEMS GOVERNED BY CODE

- .1 Identification:
 - .1 Sprinklers: To NFPA 13.

2.6 IDENTIFICATION OF PIPING SYSTEMS

- .1 Identify contents by background colour marking, pictogram (as necessary), legend; direction of flow by arrows. To CAN/CGSB 24.3 except where specified otherwise.
- .2 Legend:
 - .1 Block capitals to sizes and colours listed in CAN/CGSB-24.3.
- .3 Arrows showing direction of flow:
 - .1 Outside diameter of pipe or insulation less than 75 mm (3"): 100 mm (4") long x 50 mm (2") high.
 - .2 Outside diameter of pipe or insulation 75 mm (3") and greater: 150 mm (6") long x 50 mm (2") high.
 - .3 Use double-headed arrows where flow is reversible.
- .4 Extent of background colour marking:
 - .1 To full circumference of pipe or insulation.
 - .2 Length to accommodate pictogram, full length of legend and arrows.
- .5 Materials for background colour marking, legend, arrows:
 - .1 Pipes and tubing 20 mm (3/4") and smaller: Waterproof and heat-resistant pressure sensitive plastic marker tags.
 - .2 All other pipes: Pressure sensitive vinyl with protective overcoating, waterproof contact adhesive undercoating, suitable for ambient of 100% RH and continuous operating temperature of 150°C (300°F) and intermittent temperature of 200°C (395°F).
- .6 Colours and Legends:
 - .1 Where not listed, obtain direction from Consultant.
 - .2 Colours for legends, arrows: To following table:

Background colour:	Legend:	Arrows:
Yellow	White	Black
Green	White	Black
Red	White	Black

- .7 Background colour marking and legends for piping systems:

CONTENTS	BACKGROUND COLOUR	
	MARKING	LEGEND
Domestic hot water supply	Green	DOM. HW SUPPLY
Dom. HW recirculation	Green	DOM. HW CIRC
Domestic cold water supply	Green	DOM. CWS
Sanitary	Green	SAN
Plumbing vent	Green	SAN. VENT
Sprinklers	Red	SPRINKLERS

2.7 IDENTIFICATION DUCTWORK SYSTEMS

- .1 50 mm (2") high stencilled letters and directional arrows 150 mm (6") long x 50 mm (2") high.
- .2 Colours: Black, or co-ordinated with base colour to ensure strong contrast.

2.8 VALVES, CONTROLLERS

- .1 Brass tags with 15 mm (1/2") stamped identification data filled with black paint.
- .2 Include flow diagrams for each system, of approved size, showing charts and schedules with identification of each tagged item, valve type, service, function, normal position, location of tagged item.
- .3 Provide adhesive coloured tab (max. size 15 mm) indication on ceiling to locate valves/equipment above. Same applies to grid. Colour to be approved by consultant.

2.9 CONTROLS COMPONENTS IDENTIFICATION

- .1 Identify all systems, equipment, components, controls, sensors with system nameplates specified in this section.
- .2 Inscriptions to include function and (where appropriate) fail-safe position.
- .3 Provide equipment identification and/or indication on ceiling to locate devices/equipment above ceiling. Install identification on grid. Colours to be approved by contractor.

2.10 LANGUAGE

- .1 Identification to be in English.

Part 3 Execution

3.1 TIMING

- .1 Provide identification only after all painting specified has been completed.

3.2 INSTALLATION

- .1 Perform work in accordance with CAN/CGSB-24.3 except as specified otherwise.
- .2 Provide ULC and/or CSA registration plates as required by respective agency.

3.3 NAMEPLATES

- .1 Locations:
 - .1 In conspicuous location to facilitate easy reading and identification from operating floor.
- .2 Standoffs:
 - .1 Provide for nameplates on hot and/or insulated surfaces.
- .3 Protection
 - .1 Do not paint, insulate or cover in any way.

3.4 LOCATION OF IDENTIFICATION ON PIPING AND DUCTWORK SYSTEMS

- .1 On long straight runs in open areas in boiler rooms, equipment rooms, galleries, tunnels not more than 1.7 m (5'-8") intervals and more frequently if required to ensure that at least one is visible from any one viewpoint in operating areas and walking aisles.
- .2 Adjacent to each change in direction.
- .3 At least once in each small room through which piping or ductwork passes.
- .4 On both sides of visual obstruction or where run is difficult to follow.
- .5 On both sides of separations such as walls, floors, partitions.
- .6 Where system is installed in pipe chases, ceiling spaces, galleries, other confined spaces, at entry and exit points, and at each access opening.
- .7 At beginning and end points of each run and at each piece of equipment in run.
- .8 At point immediately upstream of major manually operated or automatically controlled valves, dampers, etc. Where this is not possible, place identification as close as possible, preferably on upstream side.
- .9 Identification to be easily and accurately readable from usual operating areas and from access points.
 - .1 Position of identification to be approximately at right angles to most convenient line of sight, considering operating positions, lighting conditions, risk of physical damage or injury and reduced visibility over time due to dust and dirt.

3.5 VALVES, CONTROLLERS

- .1 Valves and operating controllers, except at plumbing fixtures, radiation, or where in plain sight of equipment they serve: Secure tags with non-ferrous chains or closed "S" hooks.

- .2 Install one copy of flow diagrams, valve schedules mounted in frame behind non-glare glass where directed by Consultant. Provide one copy (reduced in size if required) in each operating and maintenance manual.
- .3 Number valves in each system consecutively. Where existing numbering system is installed start new numbering system at 100.

END OF SECTION

Part 1 General

1.1 GENERAL

- .1 TAB means to test, adjust and balance to perform in accordance with requirements of Contract Documents and to do all other work as specified in this section including all air handling systems and equipment, all plumbing systems and equipment and all temperature controls system, building automation systems and equipment.
- .2 This contractor must co-ordinate their work with that of the TAB contractor.

1.2 QUALIFICATIONS OF TAB AGENCIES

- .1 Names of all personnel it is proposed to perform TAB to be submitted to and approved by Consultant within 30 days of start of work.
- .2 Provide documentation confirming qualifications, successful experience.
- .3 Only the following NEBB (National Environmental Balancing Bureau) TAB contractors may quote:
 - .1 Air Audit Inc.
110 Turnbull Court, Unit 11
Cambridge, Ontario
N1T 1K6
(519) 740-0871
 - .2 Air Velocities Control Ltd.
100 Premium Way
Mississauga, Ontario
L5B 1A2
(905) 279-4433
 - .3 Flowset Balancing Ltd.
431 Willis Dr.
Oakville, Ontario
L6L 4V6
(416) 410-9793
 - .4 Dynamic Flow Balancing Ltd.
1200 Speers Road, Unit 36
Oakville, Ontario
L6L 4V6
(905) 338-0808
 - .5 Air Adjustments & Balancing Inc.
P.O. Box 176,
Schomberg, Ontario
L0G 1T0
(416) 254-3004

1.3 PURPOSE OF TAB

- .1 Test to verify proper and safe operation, determine actual point of performance, evaluate qualitative and quantitative performance of equipment, systems and controls at design, average (95% design) and low (75% of design) loads using actual or simulated loads. TAB contractor to perform equipment evaluation upon start up and once during each season in the first year of operation.
- .2 Adjust and regulate equipment and systems so as to meet specified performance requirements and to achieve specified interaction with all other related systems under all normal and emergency loads and operating conditions. Confirm all equipment interlocks and functions of associated systems.
- .3 Balance systems and equipment to regulate flow rates to match load requirements over full operating ranges and temperatures. Refer to BAS for system operating functions.

1.4 EXCEPTIONS

- .1 TAB of systems and equipment regulated by codes, standards to be to satisfaction of authority having jurisdiction.

1.5 CO-ORDINATION

- .1 Schedule time required for TAB (including repairs, re-testing) into project construction and completion schedule so as to ensure completion before acceptance of project.
- .2 Do TAB of each system independently and subsequently, where interlocked with other systems, in unison with those systems. Co-ordinate with other trades to ensure all systems are interlocked as indicated elsewhere prior to TAB.

1.6 PRE-TAB REVIEW

- .1 Review contract documents before project construction is started and confirm in writing to Consultant adequacy of provisions for TAB and all other aspects of design and installation pertinent to success of TAB.
- .2 Review specified standards and report to Consultant in writing all proposed procedures which vary from standard.
- .3 During construction, co-ordinate location and installation of all TAB devices, equipment, accessories, measurement ports and fittings.
- .4 During construction indicate all tolerances of piping, ductwork etc conforms to specifications.

1.7 START-UP

- .1 Follow start-up procedures as recommended by equipment manufacturer unless specified otherwise.
- .2 Follow special start-up procedures specified elsewhere in the Mechanical Division.

1.8 OPERATION OF SYSTEMS DURING TAB

- .1 Operate systems for length of time required for TAB and as required by Consultant for verification of TAB reports.

1.9 START OF TAB

- .1 Notify Consultant in writing 3 days prior to start of TAB.
- .2 Start TAB only when building is essentially completed, including:
 - .1 Installation of ceilings, doors, windows, other construction affecting TAB.
 - .2 Application of weather-stripping, sealing, caulking.
 - .3 All pressure, leakage, other tests specified elsewhere in the Mechanical Division.
 - .4 All provisions for TAB installed and operational.
 - .5 Start-up, verification for proper, normal and safe operation of all mechanical and associated electrical and control systems affecting TAB including but not limited to:
 - .1 Proper thermal overload protection in place for electrical equipment.
 - .2 Air systems:
 - .1 Filters in place, clean.
 - .2 Duct systems clean.
 - .3 Ducts, air shafts, ceiling plenums are airtight to within specified tolerances.
 - .4 Correct fan rotation.
 - .5 Fire, smoke, volume control dampers installed and open.
 - .6 Coil fins combed, clean.
 - .7 Access doors, installed, closed.
 - .8 All outlets installed, volume control dampers open.

1.10 APPLICATION TOLERANCES

- .1 Do TAB to following tolerances of design values:
 - .1 HVAC systems: plus 10%, minus 5%.

1.11 ACCURACY TOLERANCES

- .1 Measured values to be accurate to within plus or minus 2% of actual values.

1.12 INSTRUMENTS

- .1 Prior to TAB, submit to Consultant list of instruments to be used together with serial numbers.
- .2 Calibrate in accordance with requirements of most stringent of referenced standard for either applicable system or HVAC system.
- .3 Calibrate within 3 months of TAB. Provide certificate of calibration to Consultant.

1.13 SUBMITTALS

- .1 Submit, prior to commencement of TAB:
 - .1 Proposed methodology and procedures for performing TAB if different from referenced standard.

1.14 PRELIMINARY TAB REPORT

- .1 Submit for checking and approval of Consultant, prior to submission of formal TAB report, sample of rough TAB sheets. Include:
 - .1 Details of instruments used.
 - .2 Details of TAB procedures employed.
 - .3 Calculations procedures.
 - .4 Summaries.

1.15 TAB REPORT

- .1 Format to be in accordance with NEBB AABC, or SMACNA.
- .2 TAB report to show all results in SI or imperial units as indicated on plans and to include:
 - .1 Project record drawings.
 - .2 System schematics.

1.16 VERIFICATION

- .1 All reported results subject to verification by Consultant.
- .2 Provide manpower and instrumentation to verify up to 30% of all reported results.
- .3 Number and location of verified results to be at discretion of Consultant.
- .4 Bear costs to repeat TAB as required to satisfaction of Consultant.

1.17 SETTINGS

- .1 After TAB is completed to satisfaction of Consultant, replace drive guards, close all access doors, lock all devices in set positions, ensure sensors are at required settings. Replace all ceiling tile etc.
- .2 Permanently mark all settings to allow restoration at any time during life of facility. Markings not to be eradicated or covered in any way.

1.18 COMPLETION OF TAB

- .1 TAB to be considered complete only when final TAB Report received and approved by Consultant.

1.19 AIR SYSTEMS

- .1 Standard: TAB to be to most stringent of TAB standards of NEBB, AABC, SMACNA, ASHRAE.
- .2 Do TAB of all systems, equipment, components, controls specified in the Mechanical Division including but not limited to following:
 - .1 Air handling systems and equipment
 - .2 Duct testing to SMACNA standards.
- .3 Qualifications: personnel performing TAB to be current member in good standing of NEBB.

- .4 Quality assurance: Perform TAB under direction of qualified supervisor.
- .5 Measurements: to include, but not limited to, following as appropriate for systems, equipment, components, controls: air velocity, static pressure, flow rate, pressure drop (or loss), temperatures (dry bulb, wet bulb, dewpoint), duct cross-sectional area, RPM, electrical power, voltage, noise, vibration.
- .6 Locations of equipment measurements: To include, but not be limited to, following as appropriate:
 - .1 Inlet and outlet of each damper, filter, coil, humidifier, fan, and other equipment causing changes in conditions.
 - .2 At each controller, controlled device.
- .7 Locations of systems measurements to include, but not be limited to, following as appropriate: Each main duct, main branch, sub-branch, grille, register or diffuser.
- .8 Provide new air handling equipment shieve and belts as required for specified air flow. Shieves and belts supplied by unit manufacturer. Retest equipment after shieve change.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 NFPA 13, Installation of Sprinkler Systems.
- .3 Ontario Fire Code.
- .4 Ontario Building Code.
- .5 Factory Mutual guidelines.

1.2 ENGINEERING DESIGN CRITERIA

- .1 Design system in accordance with Ontario Fire Marshall, local authority having jurisdiction, owner's underwriters as required, and NFPA 13 using following parameters:
 - .1 To suit occupancy as indicated.
 - .2 Pipe size and layout: Hydraulic design.
 - .3 System zoning as indicated in accordance with NFPA 13.
 - .4 Provide complete drawings and calculations stamped by a qualified professional engineer registered in the Province of Ontario.
 - .5 Professional Engineer shall provide on site review and certification for local building code review.
- .2 System shall be approved by Ontario Fire Marshall, local authority, and owner's underwriter prior to shop drawing submission.

1.3 DOCUMENTATION

- .1 Prepare documentation as indicated.
- .2 Provide documentation based on tender documents. Coordinate sprinkler drawings with all trades.
- .3 Provide one hard copy and one electronic copy of As Built drawings acceptable to consultant prior to final payment.

1.4 QUALIFICATIONS

- .1 Contractor to be specialist in performing work of this section, and have successful experience in this size and type of project.

1.5 EQUIPMENT

- .1 ULC listed and labeled.

1.6 INSURANCE

- .1 Confirm with owner prior to submitting shop drawings.

Part 2 Products

2.1 PIPE, FITTINGS, AND VALVES

- .1 Pipe and Fittings:
 - .1 25 mm (1"): Schedule 40 steel pipe with screwed fittings.
 - .2 32 mm (1¼") to 50 mm (2"):
 - .1 Schedule 40 steel pipe with screwed fittings or,
 - .2 Schedule 10 steel pipe with role grooved fittings.
 - .3 65 mm (2½") and larger: Schedule 10 steel pipe with role grooved fittings.
- .2 Pipe hangers:
 - .1 ULC listed for fire protection services.

2.2 SPRINKLER HEADS

- .1 General: to NFPA 13 and ULC listed for fire services.
- .2 Indicate type and location of sprinkler heads on drawings. Co-ordinate sprinkler heads location with other trades.
- .3 Provide sprinkler heads as indicated.

Part 3 Execution

3.1 INSTALLATION

- .1 Install, inspect and test to acceptance in accordance with NFPA 13 and FC 403.
- .2 Testing to be witnessed by authority having jurisdiction.
- .3 Space hangers and support of sprinkler piping in accordance with N.F.P.A. regulations.
- .4 Hydrostatically test systems at 350kPa in excess of normal working pressure, but not less than 1.4 MPA for two hours without loss under supervision of authority having jurisdiction and NFPA requirements.
- .5 Provide hydraulic pump, temporary connections and labour required for tests.
- .6 Protect exposed work, in accordance with 'Painting' section.
- .7 Do not cover or conceal piping accessories or work prior to inspection and approval by authorities having jurisdiction.
- .8 Adjust equipment to satisfaction of authority having jurisdiction and consultant.
- .9 Protect equipment during painting. Replace damaged and painted components.

- .10 Co-ordinate the sprinkler piping and equipment with that of other trades on the job. Mains and branches shall be run so as not to interfere with building's structure, mechanical, or electrical installations. Branch piping above ceilings is to run in joist space or minimum 300 mm above ceiling. Provide drops at head locations only. All exposed piping to run in joist space.
- .11 Guarantee that the systems and equipment be installed in accordance with all Local and Provincial by-laws and the rules and regulations of the Insurance Underwriters and the Building Code of Ontario.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 Canadian General Standards Board (CGSB)
 - .1 ASTM C553, Mineral Fiber Blanket Thermal Insulation for Commercial and Industrial Applications.
 - .2 CGSB 51-GP-52Ma, Vapour Barrier Jacket and Facing Material for Pipe, Duct and Equipment Thermal Insulation.
 - .3 CAN/CGSB-51.53, Poly (Vinyl Chloride) Jacketing Sheet, for Insulating Pipes, Vessels and Round Ducts.
- .3 Underwriters Laboratories of Canada (ULC)
 - .1 CAN/ULC-S102, Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
- .4 American Society for Testing and Materials (ASTM)
 - .1 ASTM C 335, Test Method for Steady State Heat Transfer Properties of Pipe Insulation.
 - .2 ASTM C 921, Practice for Determining the Properties Jacketing Materials for Thermal Insulation.
 - .3 ASTM B 209M, Specification for Aluminum and Aluminum Alloy Sheet and Plate.
- .5 American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE).
 - .1 ASHRAE Standard 90.1.
- .6 Manufacturer's Trade Associations
 - .1 Thermal Insulation Association of Canada (TIAC): National Insulation Standards.

1.2 DEFINITIONS

- .1 For purposes of this section:
 - .1 "CONCEALED" - insulated mechanical services in suspended ceilings and non-accessible chases and furred-in spaces.
 - .2 "EXPOSED" - will mean "not concealed" as defined herein.

Part 2 Products

2.1 FIRE AND SMOKE RATING

- .1 In accordance with CAN/ULC-S102:
 - .1 Maximum flame spread rating: 25.
 - .2 Maximum smoke developed rating: 50.

2.2 PIPING INSULATION

- .1 Mineral fibre as specified herein includes glass fibre, rock wool, slag wool.
- .2 Thermal conductivity ("k" factor) not to exceed specified values at 24°C (75°F) mean temperature when tested in accordance with ASTM C 335.
- .3 Type A-1: Rigid moulded mineral fibre with factory applied vapour retarder jacket.
 - .1 Mineral fibre: to ASTM C553.
 - .2 Jacket: to CGSB 51-GP-52 Ma.
 - .3 Maximum "k" factor: to ASTM C553.
- .4 Materials:
 - .1 All materials must be supplied by the same manufacturer.
 - .2 Acceptable Materials:
 - Fibreglass Canada
 - Knauf
 - Manson
 - Pittsburg Corning

2.3 INSULATION SECUREMENT

- .1 Tape: Self-adhesive, aluminum, reinforced, 50 mm (2") wide minimum.
- .2 Contact adhesive: Quick setting.
- .3 Canvas adhesive: Washable.

2.4 CEMENT

- .1 Thermal insulating and finishing cement:
 - .1 To ASTM C553.
 - .2 Hydraulic setting or Air drying on mineral wool, to ASTM C 449M.

2.5 VAPOUR RETARDER LAP ADHESIVE

- .1 Water based, fire retardant type, compatible with insulation.

2.6 INDOOR VAPOUR RETARDER FINISH

- .1 Vinyl emulsion type acrylic, compatible with insulation.

2.7 JACKETS

- .1 Polyvinyl Chloride (PVC):
 - .1 One-piece moulded type [and sheet] to CAN/CGSB-51.53 with pre-formed shapes as required.
 - .2 Colours: white.
 - .3 Minimum service temperatures: -20°C (-4°F).
 - .4 Maximum service temperature: 65°C (150°F).
 - .5 Moisture vapour transmission: 0.02 perm.

- .6 Fastenings:
 - .1 Use solvent weld adhesive compatible with insulation to seal laps and joints.
 - .2 Tacks.
 - .3 Pressure sensitive vinyl tape of matching colour.

2.8 CAULKING FOR JACKETS

- .1 Caulking: Silicone clear caulking.

Part 3 Execution

3.1 PRE-INSTALLATION REQUIREMENT

- .1 Pressure testing of piping systems and adjacent equipment to be complete, witnessed and certified.
- .2 Surfaces to be clean, dry, free from foreign material.

3.2 INSTALLATION

- .1 Install in accordance with TIAC National Standards.
- .2 Apply materials in accordance with manufacturers' instructions and this specification.
- .3 Maintain uninterrupted continuity and integrity of vapour retarder jacket and finishes.
 - .1 Hangers, supports to be outside vapour retarder jacket.
- .4 Supports, Hangers:
 - .1 Apply high compressive strength insulation, suitable for service, at oversized saddles and shoes where insulation saddles have not been provided.

3.3 REMOVABLE, PRE-FABRICATED, INSULATION AND ENCLOSURES

- .1 Application: At expansion joints, valves, primary flow measuring elements, flanges, and unions at equipment.
- .2 Design: To permit movement of expansion joint and to permit periodic removal and replacement without damage to adjacent insulation.
- .3 Insulation:
 - .1 Insulation, fastenings and finishes: same as system.
 - .2 Jacket: As per adjacent insulation.

3.4 PIPING INSULATION SCHEDULES

- .1 Includes valves, valve bonnets, strainers, flanges and fittings unless otherwise specified.
- .2 Install insulator and jackets to applicable TIAC codes.
- .3 Insulate ends of capped piping with type and thickness indicated for capped service.

- .4 Thickness of insulation to be as listed in following table.
- .1 Do not insulate exposed runouts to plumbing fixtures, chrome plated piping, valves, fittings.
- .2 All storm piping including all vertical and horizontal piping shall be insulated.

Application	Type	Pipe sizes through (NPS) and insulation thickness mm (")				
		to 25 (1")	32 (1¼") 40 (1½")	50 (2") 80 (3")	105 (4") 150 (6")	200 (8") & over
Domestic Water Piping	A-1	25 (1")	25 (1")	40 (1½")	40 (1½")	40 (1½")
Horizontal Cast Iron	A-1	N/A	N/A	25 (1")	25 (1")	25 (1")
Sanitary Piping						
Trap Primer Piping	A-1	15 (½")	15 (½")	25 (1")		

- .5 Finishes: Conform to the following table:

<u>Application</u>	<u>Piping</u>	<u>Valves & Fittings</u>
Exposed indoors	PVC	PVC
Exposed in mech. rooms	PVC	PVC
Concealed indoors	N/A	PVC

- .6 Connection: To appropriate TIAC code.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 ANSI/ASME B16.15, Cast Copper Alloy Threaded Fittings, Classes 125 and 250.
- .3 ANSI B16.18, Cast Copper Alloy Solder Joint Pressure Fittings.
- .4 ANSI/ASME B16.22, Wrought Copper and Copper Alloy Solder-Joint Pressure Fittings.
- .5 ANSI B16.24, Cast Copper Alloy, Pipe Flanges and Flanged Fittings: Classes 150, 300, 600, 900, 1500, and 2500.
- .6 ASTM B88M, Specification for Seamless Copper Water Tube (Metric).
- .7 MSS-SP-70, Cast Iron Gate Valves, Flanged and Threaded Ends.
- .8 MSS-SP-71, Cast Iron Swing Check Valves, Flanged and Threaded Ends.
- .9 MSS-SP-80, Bronze Gate, Globe, Angle and Check Valves.

Part 2 Products

2.1 COPPER PIPING

- .1 PIPING
 - .1 Domestic hot, cold and recirculation systems, within building.
 - .1 Above ground: copper tube, hard drawn, type L: to ASTM B88M.
- .2 FITTINGS
 - .1 Bronze pipe flanges and flanged fittings, Class 150 and 300: to ANSI B16.24.
 - .2 Cast bronze threaded fittings, Class 125 and 250: to ANSI/ASME B16.15.
 - .3 Cast copper, solder type: to ANSI B16.18.
 - .4 Wrought copper and copper alloy, solder type: to ANSI/ASME B16.22.
 - .5 Tee drill NPS 25 mm (1") and larger.
- .3 JOINTS
 - .1 Solder: 95/5.
 - .2 Teflon tape: for threaded joints.
 - .3 Dielectric connections between dissimilar metals: dielectric fitting to ASTM F1545, complete with thermoplastic liner.
 - .4 Tee drill fittings shall be brazed with silver solder, 45% Ag - 15% Cu or copper phosphorous, 95% Cu, 5% P and non-corrosive flux.

.4 VALVES

.1 All valves shall be of commercial grade and of same manufacturer.

.2 Acceptable materials:

Milwaukee

Crane

Neuman Hattersley

Kitz

.5 BALL VALVES

.1 All valves shall be of commercial grade and of same manufacturer.

.2 NPS 80 mm (3") and under, soldered:

.1 To ANSI B16.18, Class 150.

.2 Bronze body, full port stainless steel ball, PTFE Teflon adjustable packing, brass gland and PTFE Teflon seat, steel lever handle, with NPT to copper adaptors.

Part 3 Execution

3.1 INSTALLATION

- .1 Install in accordance with Provincial Plumbing Code and local authority having jurisdiction.
- .2 Cut square, ream and clean tubing and tube ends, clean recesses of fittings and assemble without binding.
- .3 Assemble all piping using fittings manufactured to ANSI standards.
- .4 Install tubing close to building structure to minimize furring, conserve headroom and space. Group exposed piping and run parallel to walls.
- .5 Install CWS piping below and away from HWS and HWC and all other hot piping so as to maintain temperature of cold water as low as possible.
- .6 Connect to fixtures and equipment in accordance with manufacturers instructions unless otherwise indicated.
- .7 Bent tubing is not acceptable.

3.2 VALVES

- .1 Isolate equipment, fixtures and branches with ball valves.
- .2 Balance recirculation system using lockshield globe valves. Mark settings and record on record drawings on completion.

3.3 PRESSURE TESTS

- .1 Conform to requirements of general requirements.
- .2 Test pressure: greater of 1½ times maximum system operating pressure or 860 kPa (125 psi).

3.4 FLUSHING AND DISINFECTING

- .1 Maintain testable RP backflow preventor between municipal water and new plumbing system.
- .2 Ensure a minimum of 90% of plumbing fixtures are installed.
- .3 Flush water mains through available outlets with a sufficient flow of potable water to produce a velocity of 1.5 m/s, within pipe for 10 min, or until foreign materials have been removed and flushed water is clear with backflow protection.
- .4 Provide connections and pumps for flushing as required.
- .5 Open and close valves, and operate fixtures to ensure thorough flushing.
- .6 When flushing has been complete to satisfaction of Consultant introduce a strong solution of Chlorine into water system and ensure that it is distributed throughout entire system.
- .7 Rate of chlorine application to be proportional to rate of water entering pipe.
- .8 Chlorine injection to be close to point of filling water main or at building water service and to occur simultaneously.
- .9 Confirm adequate chlorine residual not less than 50 ppm has been obtained, leave system charged with chlorine solution for 24 h. After 24 h, further samples shall be taken to ensure that there is still not less than 10 ppm of chlorine residual remaining throughout system.
- .10 Upon 10 ppm confirmation and 24 hr elapsed time flush line to remove chlorine solution.
- .11 Measure chlorine residuals at extreme end of pipe-line being tested.
- .12 Perform bacteriological tests on water main, after chlorine solution has been flushed out. Take samples daily for minimum of two days. Should contamination remain or reoccur during this period, repeat disinfecting procedure. Specialist contractor shall submit certified copy of test results.
- .13 Take water samples at remote fixtures and service connections.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 ASTM A126, Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
- .3 ASTM B62, Specification for Composition Bronze or Ounce Metal Castings.
- .4 PDI-WH201, Water Hammer Arresters.
- .5 CAN/CSA-B64 Series, Backflow Preventers and Vacuum Breakers.

Part 2 Products

2.1 WATER HAMMER ARRESTORS

- .1 Copper construction, bellows type: to PDI-WH 201.
- .2 Acceptable material:
Zurn Z-1700
Mifab MWH-100
Ancon No. 15

2.2 HOSE BIBBS AND SEDIMENT FAUCETS

- .1 Bronze construction complete with integral back flow preventer, hose thread spout, replaceable composition disc, and chrome plated in finished areas.
 - .1 Acceptable materials:
Watts BD series
Emco
Chicago
Zurn

2.3 OWNER SUPPLIED EQUIPMENT

- .1 The mechanical contractor shall supply and install all water, gas, condensate and sanitary piping to the owner supplied equipment. Connection to equipment shall be by this contractor.
- .2 Provide flexible riser stops to all sinks and ball valves to all other equipment.
- .3 Provide backflow preventors on equipment required by the local plumbing inspector.
- .4 Provide flexible gas piping to all gas equipment.
- .5 All equipment in store equipment schedule will be supplied and set in place by Mechanical Contractor unless otherwise noted.
- .6 Coordinate all rough-ins and connection with the supplier on site.
- .7 Owner supplied equipment includes existing relocated equipment.

Part 3 Execution

3.1 INSTALLATION

- .1 Install in accordance with provincial codes, and local authority having jurisdiction.
- .2 Install in accordance with manufacturer's instructions and as specified.

3.2 WATER HAMMER ARRESTORS

- .1 Install on branch supplies to each fixture or group of fixtures and where indicated.

3.3 HOSE BIBBS AND SEDIMENT FAUCETS

- .1 Install at bottom of all risers, at low points to drain systems, and as indicated.

3.4 COMMISSIONING

- .1 In context of this paragraph, "verify" to include "demonstrate" to Consultant.
- .2 Timing: commission only after start-up deficiencies rectified.
- .3 Access doors: verify size and location relative to items to be services.
- .4 Adjust to suit site conditions, including, but not necessarily limited to, following:
 - .1 Water hammer arrestors:
 - .1 Verify accessibility.
 - .2 Hose bibbs, sediment faucets:
 - .1 Verify operation.
- .5 Commissioning reports:
 - .1 Record all results on approved report forms.
 - .2 Include signature of tester and supervisor.
 - .3 To be countersigned by Consultant.
- .6 Verification:
 - .1 Notify Consultant 48 h before commencing tests.
 - .2 All tests and procedures to be witnessed by Consultant.
 - .3 All reported results subject to verification by consultant.
- .7 Training:
 - .1 Train O&M personnel in start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
- .8 Demonstrations:
 - .1 Demonstrate full compliance with Design Criteria.
 - .2 Demonstrations also to show completeness of O&M personnel training.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 ASTM A126, Specification for Gray Iron Castings for Valves, Flanges and Pipe Fittings.
- .3 ASTM B62, Specification for Composition Bronze or Ounce Metal Castings.
- .4 CAN/CSA-B79, Commercial and Residential Drains and Cleanouts.

Part 2 Products

2.1 FLOOR DRAINS

- .1 Floor drains: to CAN/CSA-B79.
- .2 Refer to schedule.
- .3 Acceptable materials:
 - Zurn
 - Mifab
 - Watts Drainage
 - Enpoco
 - Contour
 - Smith

2.2 CLEANOUTS

- .1 Cleanout plugs: heavy cast iron male ferrule with brass screws and threaded brass or bronze plug. Sealing-caulked lead seat or neoprene gasket.
- .2 Wall access: face or wall type, stainless steel round cover with flush head securing screws, bevelled edge frame complete with anchoring lugs.
 - .1 Acceptable material:
 - Zurn ZSS-1469
 - Mifab C1400-RD
 - Ancon CO-480-RD-3
 - Contour C3700RAC
- .3 Floor access: rectangular, round, as indicated, cast iron body and frame with adjustable secured 15 mm (½") thick flush mounted heavy duty nickel bronze top and:
Plugs: bolted bronze with neoprene gasket.
 - .1 Cover for unfinished concrete floors: nickel bronze round, gasket, vandal-proof screws.
 - .1 Acceptable material:
 - Zurn ZN-1400 – HD or Zurn ZXN-1612
 - Mifab C1100-XR-6
 - Ancon CO-200-RX-1-6
 - Contour C3000RXNB

- .2 Cover for terrazzo finish: round polished nickel bronze with recessed cover for filling with terrazzo, vandal-proof locking screws.
 - .1 Acceptable materials:
 - Zurn ZN-1400-Z
 - Mifab C1100-UR-6
 - Ancon CO-200-U-1-6
 - Contour C3000RZNB
- .3 Cover for VCT tile and linoleum floors: square polished nickel bronze with 15 mm (1/2") thick flush mounted heavy duty nickel bronze cover, complete with vandal-proof locking screws.
 - .1 Acceptable materials:
 - Zurn ZN-1400-T – HD
 - Mifab C1100-TS-6
 - Ancon CO-200-TS-1-6
 - Contour C3000SYNB
- .4 Cover for ceramic tile floors: 15 mm (½") thick heavy duty nickel bronze square, cover complete with gasket, vandal-proof screws, for flush finish.
 - .1 Acceptable material:
 - Zurn ZN-1400 – T-HD or Zurn ZNX-1612
 - Mifab C1100-S-6
 - Ancon CO-200-S-1-6
 - Contour C3000SNB
- .5 Cover for carpeted floors: round polished nickel bronze with flush cover, complete with stainless steel carpet marker, vandal-proof locking screws.
 - .1 Acceptable materials:
 - Zurn ZN-1400-HD-CM or ZN-1612-CM
 - Mifab C1100C-S-1-6
 - Ancon CO-200-RC-1-6
 - Smith
 - Contour C3000RMNB

2.3 TRAP SEAL PRIMERS (individual, stand-alone)

- .1 All brass, with integral vacuum breaker, NPS 15 mm (1/2") solder ends, NPS 15 mm (1/2") drip line connection.
- .2 Acceptable materials:
 - Zurn Z-1022
 - Mifab
 - Ancon MS-810
 - Smith

2.4 TRAP SEAL PRIMER STATIONS

- .1 Provide trap primer stations where indicated complete with solenoid valve, backflow preventor, solenoid valve, vacuum breaker, NPS 15 mm (1/2") solder ends, NPS 15 mm (1/2") drip line connections.
- .2 Solenoid valve electric characteristics shall be suitable for controlling function.

- .3 Co-ordinate location and number of trap primer stations with Building Automation System (BAS) contractor.

2.5 SOLENOID VALVES (HEADER TRAP SEAL PRIMER)

- .1 Two (2) way normal closed all bronze construction.
- .2 With integral adjustable cycle time clock control. Timer control to have two dial functions, time between cycles and time held in "open position".
- .3 Suitable for 120V.
- .4 Acceptable material:
Asco

Part 3 Execution

3.1 INSTALLATION

- .1 Install in accordance with provincial codes, and local authority having jurisdiction.
- .2 Install in accordance with manufacturer's instructions and as specified.

3.2 CLEANOUTS

- .1 In addition to those required by code, and as indicated, install at base of all soil and waste stacks.
- .2 Bring cleanouts to wall or finished floor unless serviceable from below floor.
- .3 Building drain cleanout and stack base cleanouts: line size to maximum NPS 100 mm (4").

3.3 TRAP SEAL PRIMERS

- .1 Install for all floor, hub and trench drains and elsewhere, as indicated.
- .2 Install on cold water supply to nearest frequently used plumbing fixture, in concealed space, to approval of Consultant.
- .3 Install soft copper tubing to floor drains above grade and polyethylene piping to floor drains below grade.

3.4 TRAP SEAL PRIMER STATIONS

- .1 Provide primer stations where indicated.
- .2 Install for all floor drains and elsewhere, as indicated.
- .3 Install copper piping to floor drains above grade. Install polypropylene piping to floor drains on grade.

3.5 COMMISSIONING

- .1 In context of this paragraph, "verify" to include "demonstrate" to Consultant.
- .2 Timing: commission only after start-up deficiencies rectified.
- .3 Access doors: verify size and location relative to items to be services.

- .4 Adjust to suit site conditions, including, but not necessarily limited to, following:
 - .1 Floor drains:
 - .1 Verify proper operation of trap primer, flushing features.
 - .2 Verify security and removability of strainers.
 - .2 Cleanouts:
 - .1 Verify covers are gastight, secure and easily removable.
 - .2 Verify that cleanout rods can probe as far as next cleanout.
 - .3 Trap seal primers:
 - .1 Verify operation.
 - .2 Adjust flow rate to suit site conditions.
- .5 Commissioning reports:
 - .1 Record all results on approved report forms.
 - .2 Include signature of tester and supervisor.
 - .3 To be countersigned by Consultant.
- .6 Verification:
 - .1 Notify Consultant 48 h before commencing tests.
 - .2 All tests and procedures to be witnessed by Consultant.
 - .3 All reported results subject to verification by consultant.
- .7 Training:
 - .1 Train O&M personnel in start-up, operation, monitoring, servicing, maintenance and shut-down procedures.
- .8 Demonstrations:
 - .1 Demonstrate full compliance with Design Criteria.
 - .2 Demonstrations also to show completeness of O&M personnel training.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 ASTM B32, Specification for Solder Metal.
- .3 ASTM B306, Specification for Copper Drainage Tube (DWV).
- .4 ASTM C564, Specification for Rubber Gaskets for Cast Iron Soil Pipe and Fittings.
- .5 CAN/CSA-B70, Cast Iron Soil Pipe, Fittings and Means of Joining.
- .6 CAN/CSA-B125.3, Plumbing Fittings.
- .7 ASTM D2235, Specification for Solvent Cement for Acrylonitrille-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
- .8 ASTM D2564, Specification for Solvent Cements for Poly(Vinyl-Chloride) (PVC) Plastic Piping Systems.
- .9 CAN/CSA-B181.1, ABS Drain, Waste and Vent Pipe and Pipe Fittings.
- .10 CAN/CSA-B181.2, PVC and CPVC Drain, Waste and Vent Pipe and Pipe Fittings.
- .11 CAN/CSA-B182.1, Plastic Drain and Sewer Pipe and Pipe Fittings.

Part 2 Products

2.1 BELOW GRADE

- .1 PIPING AND FITTINGS
 - .1 Buried sanitary, storm and vent piping to:
 - .1 80 mm (3") and smaller: ABS drain waste and vent pipe to CAN/CSA-B181.1.
 - .2 100 mm (4") and larger: SDR-35 PVC drain waste and vent pipe to CAN/CSA-B181.2.
 - .3 Vent piping: any size, PVC-DWV plastic drain and sewer pipe and fittings CAN/CSA-B181.2.
- .2 JOINTS
 - .1 Solvent weld for PVC: to ASTM D2564.
 - .2 Solvent weld for ABS: to ASTM D2235.

2.2 ABOVE GRADE

.1 COPPER TUBE AND FITTINGS

.1 Sanitary and vent, maximum 65 mm (2½") Type DWV copper to: ASTM B306.

.1 Fittings.

.1 Cast brass: to CAN/CSA B125.3.

.2 Wrought copper: to CAN/CSA B125.3.

.2 Solder: tin-lead, 50:50, to ASTM B32, type 50A.

.2 CAST IRON PIPING AND FITTINGS

.1 Sanitary and vent, minimum NPS 80 mm (3"), cast iron to: CAN/CSA-B70.

.1 Mechanical joints (vents)

.1 Neoprene or butyl rubber compression gaskets: to ASTM C564 or CAN/CSA-B70.

.2 Stainless steel clamps (2 band).

.2 Mechanical joints (sanitary)

.1 Heavy duty neoprene or butyl rubber compression gaskets to: ASTM C1540.

.2 Stainless steel clamps (4 band min).

.3 PLASTIC

.1 Sanitary and vent piping:

.1 80 mm (3") and smaller: IPEX: PVC-XFR fire rated drain waste and vent pipe to CAN/CSA-B181.1.

.2 100 mm (4") and larger: IPEX: PVC-XFR drain waste and vent pipe to CAN/CSA-B181.2.

.3 Vent piping: any size, IPEX: PVC-XFR plastic drain and sewer pipe and fittings CAN/CSA-B181.2.

.2 JOINTS

.1 Solvent weld for PVC: to ASTM D2564.

.2 Solvent weld for ABS: to ASTM D2235.

.3 Where piping pierces a fire separation an approved fire stop system to the approval of authority having jurisdiction shall be used.

2.3 VENT FLASHINGS

.1 Thaler or equal spun aluminum complete with insulation, cap, and rubber gasket.

Part 3 Execution

3.1 INSTALLATION

.1 Install in accordance with Provincial Plumbing Code and local authority having jurisdiction.

- .2 Installation of underground pipe
 - .1 Provide all excavation, bedding, backfill, and compaction.
 - .2 Install materials in accordance with Manufacturer's instructions.
 - .3 Use jacks to make-up gasketed joints.
 - .4 Stabilize unstable trench bottoms.
 - .5 Bed pipe true to line and grade with continuous support from firm base.
 - .1 Bedding depth - 100 mm to 150 mm (4" to 6").
 - .2 Material and compaction to meet ASTM standard noted above.
 - .6 Excavate bell holes into bedding material so pipe is uniformly supported along its entire length. Blocking to grade pipe is forbidden.
 - .7 Trench width at top of pipe -
 - .1 Minimum 450 mm (18") or diameter of pipe plus 300 mm (12"), whichever is greater.
 - .2 Maximum - Outside diameter of pipe plus 600 mm (24").
 - .8 Piping and joints shall be clean and installed according to manufacturer's recommendations. Break down contaminated joints, clean seats and gaskets and reinstall.
 - .9 Do not use back hoe or power equipment to assemble pipe.
 - .10 Initial backfill shall be 300 mm (12") above top of pipe with material specified in referenced ASTM standard.
- .3 Before piping is covered, conduct tests in presence of Consultant and correct leaks or defective work. Conduct test prior to placing floor slab but after backfill is placed.
 - .1 Fill waste and vent system a minimum of 1.8 m (6 ft) above finished floor with water and show no leaks for 2 hours.
 - .2 Conduct ball test in presence of consultant to ensure proper grade and clear of obstructions.
- .4 Install above ground piping parallel and close to walls and ceilings to conserve headroom and space, and to grade as indicated.
- .5 Place Cleanouts
 - .1 Where shown on Drawings and near bottom of each stack and riser.
 - .2 At every 90 degree change of direction for horizontal lines.
 - .3 Every 15 m (50') of horizontal run.
 - .4 Extend clean out to accessible surface. Do not place cleanouts in carpeted floors. In such locations, use wall type cleanouts.
- .6 Each fixture and appliance discharging water into sanitary sewer or building sewer lines shall have a seal trap in connection with a complete venting system so gases pass freely to atmosphere with no pressure or syphon condition on water seal.
- .7 Vent entire waste system to atmosphere.
 - .1 Discharge 500 mm (20") above roof. Join lines together in fewest practicable number before projecting above roof.
 - .2 Set back vent lines so they will not pierce roof near an edge or valley.

- .3 Do not terminate vents within 3600 mm of any building intake and/or exhaust opening.
- .4 Provide copper vent piping through roof as per detail.
- .8 Use torque wrench to obtain proper tension in cinch bands when using hubless cast iron pipe. Butt ends of pipe against centering flange of coupling.
- .9 Flash pipes passing through roof with 453 g (16 oz) sheet copper flashing fitted snugly around pipes and caulk between flashing and pipe with flexible waterproof compound.
 - .1 Flashing base shall be at least 600 mm (24") square.
 - .2 Flashing may be a 24 kg/m² (5 lb/ft²) lead flashing fitted around pipes and turned down into pipe 15 mm (½") with turned edge hammered against pipe wall.
- .10 Before piping is covered, conduct tests in presence of Consultant and correct leaks or defective work. Conduct test prior to placing floor slab but after backfill is placed.
 - .1 Do not caulk threaded work.
 - .2 Fill waste and vent system to roof level [a minimum of 3,100 mm - (10')] with water and show no leaks for 2 hours.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 CSA B51, Boiler, Pressure Vessel, and Pressure Piping Code.
- .3 CAN/CSA C22.2 No. 110, Construction and Test of Electric Storage Tank Water Heaters.
- .4 CAN/CSA-C191, CSA Standards on Performance of Electric Storage Tank Water Heaters for Domestic Hot Water.
- .5 CAN/CSA-C309, Performance Requirements for Glass-Lined Storage Tanks for Household Hot Water Service.
- .6 ANSI Z21.10.1/CSA 4.1, Gas Water Heaters Volume I, Storage Water Heaters with Inputs Ratings of 75,000 Btuh, or less.
- .7 ANSI Z21.10.3/CSA 4.3, Gas Water Heaters Volume III; Storage Water Heaters with Input Ratings above 75,000 Btuh, circulating and Instantaneous.
- .8 CSA-B149.1, Natural Gas and Propane Installation Code.

Part 2 Products

2.1 DOMESTIC HOT WATER STORAGE TANK

- .1 Storage tank:
 - .1 Sizes, capacity: [as indicated].
 - .2 Shell: vertical, steel to CSA B51, ANSI/ASME Unfired Pressure Vessel Code and Province of Ontario standards, WWP/WSP 150 psi. Provide certificates.
 - .3 Lining: Glass lined and fired to 1600°F to ensure molecular fusing of glass and steel.
 - .4 Construct tank with an inner chamber baffle designed to receive all circulation and eliminate turbulence in the tank. The baffled tank shall supply 80% of tank capacity without a drop in outlet temperature, regardless of draw rate.
 - .5 Shell and Insulation: constructed of heavy gauge galvanized steel jacket assembly, primed and pre-painted on both sides with a minimum dry film thickness of 0.70 millimeters. Tank shall be completely encased in a minimum of 50mm thick, high density polyurethane foam insulation.
 - .6 Manhole: 280 mm x 380 mm (11¼" x 15¼") ASME, with gasketed cover.
 - .7 Cathodic protection: magnesium anodes, number and size to provide for 20 years protection of tank material.
 - .8 Thermal insulation: 1 ½ semi rigid with metal linear.
 - .9 Extended warranty: 10 years. Provide certificate.
- .2 Trim for storage tank:
 - .1 Relief valve, drain valve, temperature gauge, pressure gauge

- .3 Acceptable materials:

Lochinvar
Rheem
Clemmer
Ruud
A.O. Smith
Bradford White.

2.2 STAINLESS STEEL STORAGE TANK

- .1 Sizes, capacity: As indicated.
.2 150 PSI working pressure
.3 Construction: 316L stainless steel tank construction with textured impact resistant polypropylene jacket. Provide diffuser tube to reduce turbulence and increase stratification.
.4 Insulation: Tank shall be completely encased in a minimum of 50mm thick, high density polyurethane foam insulation.
.5 Acceptable materials:
Aerco
Lochinvar
Rheem
Clemmer
Ruud
A.O. Smith
Bradford White

2.3 WATER STORAGE TANK TRIM AND INSTRUMENTATION

- .1 Storage Tanks
.1 Reinstall all existing sensors, gauges, etc. to new storage tanks.

Part 3 Execution

3.1 WATER STORAGE TANK

- .1 Install in accordance with manufacturer's recommendations.
.2 Provide insulation between tank and supports.

3.2 Warranty

- .1 Glass Lined Storage Tanks: 5 years

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 CAN/CSA B45S1, Supplement #1 to CAN/CSA B-45 Series Plumbing Fixtures.
- .3 CAN/CSA-B45 Series, CSA Standards on Plumbing Fixtures.
- .4 CAN/CSA-B125.3, Plumbing Fittings.
- .5 CAN/CSA-B651, Accessible Design for the Built Environment.

1.2 PRODUCTS INSTALLED BUT NOT SUPPLIED UNDER THIS SECTION

- .1 Install rough-in for equipment supplied by others, complete with valves on hot and cold water supplies, waste and vent.
- .2 Equipment installed by others.
 - .1 Connect with unions.
- .3 Equipment not installed.
 - .1 Capped with valves for future connection by others.

Part 2 Products

2.1 MANUFACTURED UNITS

- .1 Fixtures: manufacture in accordance with CAN/CSA-B45 series.
- .2 Trim, fittings: manufacture in accordance with CAN/CSA-B125.3.
- .3 Exposed plumbing brass to be chrome plated.
- .4 Number, locations: Architectural drawings to govern.
- .5 Fixtures in any one location to be product of one manufacturer and of same type.
- .6 Trim in any one location to be product of one manufacturer and of same type.

2.2 FIXTURE CARRIERS

- .1 Provide factory manufactured floor-mounted carrier systems for all wall-mounted fixtures.
- .2 Acceptable materials:
 - .1 Zurn
 - .2 Smith
 - .3 Ancon

2.3 PLUMBING FIXTURES

- .1 Refer to plumbing fixture schedule on the drawings for fixture type, manufacturer, trim, drainage supply, and accessories.

2.4 FIXTURE PIPING

- .1 Hot and cold water supplies to each fixture:

Chrome plated flexible supply pipes each with screwdriver stop, reducers, escutcheon and chrome plated nipple.
 - .1 Acceptable materials:
 - .1 Delta 47T900 Series
 - .2 McGuire
 - .2 Waste:
Open grid strainer, or pop up as indicated, offset open grid strainer on Barrier-Free fixtures, cast brass fittings with tubular piping, chrome plated, rubber gasket compression fitting, and overflow flange.
 - .1 Acceptable materials:
 - .1 Delta 33T200 Series
 - .2 McGuire
 - .3 'P' Traps:

Cast brass P trap with cleanout on each fixture not having integral trap.

Chrome plated in all exposed places.
 - .1 Acceptable materials:
 - .1 Delta 33T300 Series
 - .2 McGuire

Part 3 Execution

3.1 INSTALLATION

- .1 Mounting heights:
 - .1 Standard: to comply with manufacturer's recommendations unless otherwise indicated or specified. Confirm mounting height(s) with consultant prior to rough-in.
 - .2 Wall-hung fixtures: measured from finished floor.
 - .3 Physically Barrier-Free: to comply with most stringent of either NBCC or CAN/CSA B651.

3.2 ADJUSTING

- .1 Conform to water conservation requirements specified this section.
- .2 Adjustments.
 - .1 Adjust water flow rate to design flow rates.
 - .2 Adjust pressure to fixtures to ensure no splashing at maximum pressures.
 - .3 Adjust flush valves to suit actual site conditions.

- .3 Checks.
 - .1 Aerators: operation, cleanliness.
 - .2 Vacuum breakers, backflow preventors: operation under all conditions.
- .4 Thermostatic controls.
 - .1 Verify temperature settings, operation of control, limit and safety controls.
- .5 Floor and wall mounted fixtures: caulk to floor or wall using silicone caulking to make water tight, colour to match fixture.
- .6 Counter mounted fixtures: lay fixtures into bead of caulking to ensure excess moisture does not reach the cut edge of the countertop. Clean excess caulking off outside the sink.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 SMACNA HVAC Duct Construction Standards, Metal and Flexible.
- .3 SMACNA HVAC Duct Leakage Test Manual.
- .4 ASTM A480/A480M, Specification for General Requirements for Flat-Rolled Stainless and Heat-Resisting Steel Plate, Sheet and Strip.
- .5 ASTM A653/A653M, Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process. (Metric).
- .6 ANSI/NFPA 90A, Installation of Air Conditioning and Ventilating Systems.
- .7 ANSI/NFPA 90B, Installation of Warm Air Heating and Air Conditioning Systems.

1.2 CERTIFICATION OF RATINGS

- .1 Catalogue or published ratings shall be those obtained from tests carried out by manufacturer or independent testing agency signifying adherence to codes and standards.

Part 2 Products

2.1 DUCTWORK

- .1 Galvanized Steel:
 - .1 Galvanized steel with Z90 designation zinc coating lock forming quality: to ASTM A653/A653M.
 - .2 Thickness:

Size Type	Class A Gauge	Class B Gauge	Class C Gauge
Square and Rectangular			
Up to 600 mm (24")	22	24	24
625 mm to 1000 mm (25" to 40")	20	22	24
1025 mm to 1800 mm (41" to 72")	18	20	22
1825 mm to 2400 mm (73" to 96")	16	18	20
2450 mm and over (97")	16	16	16
Round and Oval			
Up to 300 mm (12")	24	26	28
325 mm to 600 mm (13" to 24")	22	24	26
625 mm to 900 mm (25" to 36")	20	22	24
925 mm to 1200 mm (37" to 48")	18	20	22
1225 mm (49") and over	18	18	20

2.2 DUCT CONSTRUCTION

- .1 Round and oval:
 - .1 Ducts: factory fabricated, spiral wound, with matching fittings and specials to SMACNA.
 - .2 Transverse joints up to 900 mm (36"): slip type with tape and sealants.
 - .3 Transverse joints over 900 mm (36"): Ductmate or Exanno Nexus Duct System.
- .2 Square and rectangular:
 - .1 Ducts: to SMACNA.
 - .2 Transverse joints, longest side:
up to and including 750 mm (30"): SMACNA proprietary duct joints.
- .3 Ducts with sides over 750 mm (30") to 1200 mm (48"), transverse duct joint system by Ductmate/25, Nexus, or WDCI (Lite) (SMACNA "E" or "G" Type connection). Weld all corners.
 - .1 Acceptable materials:
 - .1 Ductmate Canada Ltd.
 - .2 Nexus, Exanno Corp.
 - .3 WDCI
- .4 Ducts 1200 mm (48") and larger, Ductmate/35, Nexus, or WDCI (heavy) (SMACNA "J" Type connection). Weld all corners.
 - .1 Acceptable materials:
 - .1 Ductmate Canada Ltd.
 - .2 Nexus, Exanno Corp.
 - .3 WDCII.

2.3 FITTINGS

- .1 Fabrication: to SMACNA.
- .2 Radiused elbows:
 - .1 Rectangular: standard radius and or short radius with single thickness turning vanes Centreline radius: 1.5 times width of duct.
 - .2 Round:
 - .1 In exposed areas one-piece smooth radius, 1.5 times diameter.
 - .2 In concealed areas 3-piece adjustable, 1.5 times diameter.
- .3 Mitred elbows, rectangular:
 - .1 To 400 mm (16"): with double thickness turning vanes.
 - .2 Over 400 mm (16"): with double thickness turning vanes.
- .4 Branches:
 - .1 Rectangular main and branch: with 45° entry on branch.
 - .2 Round main and branch: enter main duct at 45° with conical connection.

- .3 Provide volume control damper in branch duct near connection to main duct.
- .4 Main duct branches: with splitter damper.
- .5 Diffuser connection to main:
 - .1 90° round spin in collars with balancing damper and locking quadrant.
- .6 Transitions:
 - .1 Diverging: 20° maximum included angle.
 - .2 Converging: 30° maximum included angle.
- .7 Offsets:
 - .1 Full short radiused elbows.
- .8 Obstruction deflectors: maintain full cross-sectional area.

2.4 SEAL CLASSIFICATION

- .1 Classification as follows:

Maximum Pressure Pa (" w.c.)	SMACNA Seal Class
2500 (10")	A
1500 (6")	A
1000 (4")	A
750 (3")	A
500 (2")	B
250 (1")	B
125 (0.5")	C

- .2 Seal classification:
 - .1 Class A: longitudinal seams, transverse joints, duct wall penetrations and connections made airtight with sealant and tape.
 - .2 Class B: longitudinal seams, transverse joints and connections made airtight with sealant.
 - .3 Class C: transverse joints and connections made air tight with gaskets, or sealant or combination thereof. Longitudinal seams sealed with foil tape or sealant.

2.5 SEALANT

- .1 Sealant: oil resistant, polymer type flame resistant duct sealant. Temperature range of -30°C (-22°F) to plus 93°C (199°F).
 - .1 Acceptable materials:
 - .1 Duro Dyne S-2
 - .2 Foster

2.6 TAPE

- .1 Tape: polyvinyl treated, open weave fiberglass tape, 50 mm (2") wide.
 - .1 Acceptable material:
 - .1 Duro Dyne FT-2

2.7 DUCT LEAKAGE

- .1 In accordance with SMACNA HVAC Duct Leakage Test Manual.

2.8 FIRESTOPPING

- .1 40 mm x 40 mm x 3 mm (1½" x 1½" x 16ga) retaining angles all around duct, on both sides of fire separation.
- .2 Firestopping material and installation must not distort duct.
- .3 All ductwork passing through partition walls shall be firestopped.

2.9 HANGERS AND SUPPORTS

- .1 Band hangers: use on round and oval ducts only up to 500 mm (20") diameter, of same material as duct but next sheet metal thickness heavier than duct.
- .2 Trapeze hangers: ducts over 500 mm (20") diameter or longest side, to ASHRAE and SMACNA.
- .3 Hangers: galvanized steel angle with black steel rods to ASHRAE and SMACNA following table:

Duct Size mm (")	Angle Size mm (")	Rod Size mm (")
up to 750 (30)	25 x 25 x 3 (1 x 1 x 1/8)	6 (1/4)
>750 to 1050 (>30 to 42)	40 x 40 x 3 (1½ x 1½ x 1/8)	6 (1/4)
>1050 to 1500 (>42 to 60)	40 x 40 x 3 (1½ x 1½ x 1/8)	10 (3/8)
>1500 to 2100 (>60 x 84)	50 x 50 x 3 (2 x 2 x 1/8)	10 (3/8)
>2100 to 2400 (>84 x 96)	50 x 50 x 5 (2 x 2 x 1/8)	10 (3/8)
>2400 (96) and over	50 x 50 x 6 (2 x 2 x ¼)	10 (3/8)

- .4 Upper hanger attachments:
 - .1 For concrete: manufactured concrete inserts.
 - .1 Acceptable material:
 - .1 Myatt fig. 485
 - .2 For steel joist: manufactured joist clamp or steel plate washer.
 - .1 Acceptable material:
 - .1 Grinnell fig. 61 or 60
 - .3 For steel beams: manufactured beam clamps:
 - .1 Acceptable material:
 - .1 Grinnell Fig. 60

2.10 ACCESS DOORS IN DUCTS

- .1 Non-insulated ducts: sandwich construction of same material as duct, one sheet metal thickness heavier, minimum 0.6 mm (25 gauge) thick complete with sheet metal angle frame.
- .2 Insulated ducts: sandwich construction of same material as duct, one sheet metal thickness heavier, minimum 0.6 mm (24 gauge) thick complete with sheet metal angle frame and 25 mm (1") thick rigid glass fibre insulation.

- .3 Gaskets: neoprene
- .4 Hardware:
 - .1 Up to 300 mm (12"): 2 sash locks
 - .2 301 mm to 450 mm (13" to 18"): 4 sash locks Complete with safety chain.
 - .3 451 mm to 1000 mm (19" to 40"): piano hinge and minimum 2 sash locks.
 - .4 Doors over 1000 mm (40"): piano hinge and 2 handles operable from both sides.
 - .5 Hold open devices.
- .5 Acceptable materials:
 - Nailor
 - E. H. Price
 - Titus

2.11 DAMPERS & OPERATORS

- .1 SINGLE BLADE DAMPERS
 - .1 Of same material as duct, but one sheet metal thickness heavier. V-groove stiffened, minimum 1.6 mm (16 gauge).
 - .2 Size and configuration to recommendations of SMACNA, except maximum height 100 mm (4").
 - .3 Shaft extension to accommodate insulation thickness and locking quadrant.
 - .4 Inside and outside nylon end bearings.
 - .5 Channel frame of same material as adjacent duct, complete with angle stop.
- .2 MULTI-BLADED DAMPERS
 - .1 Factory manufactured of material compatible with duct.
 - .2 Opposed blade: configuration, metal thickness and construction to recommendations of SMACNA.
 - .3 Maximum blade height:
 - .1 50 mm (2") up to 375 mm (15") high duct.
 - .2 100 mm (4") max 400 mm (16") high duct and over.
 - .4 Bearings: self-lubricating nylon.
 - .5 Linkage: shaft extension with locking quadrant.
 - .6 Channel frame of same material as adjacent duct, complete with angle stop.
 - .7 Shaft extension to accommodate insulation thickness and locking quadrants.
 - .8 Acceptable materials:
 - .1 Duro Dyne
 - .2 National Controlled Air (NCA)
 - .3 Nailor
 - .4 T.A. Morrison

- .5 Tamco
- .6 Ruskin
- .7 Ventex/Alumavent
- .8 United Enertech

.3 LOCKING QUADRANTS

- .1 6 mm (1/4") dial regulator with square bearing shaft.
 - .1 18 gauge oval frame, cadmium plated, clearly shows damper position.
 - .2 18 gauge formed handle for easy adjustment.
 - .3 Bolt and wing nut lock damper securely.
 - .4 Offset mounting holes avoid interference with damper movement and mechanical fastening to duct.
- .2 9 mm (3/8") and larger: clamp quadrant with square bearing shaft.
 - .1 Accommodates and securely locks square rod, bearing fitting and adaptor pins.
 - .2 Heavily ribbed 16 gauge steel frame, 3 mm (1/8") thick formed steel handle, cadmium-plated.
 - .3 By tightening nut, bearing is securely locked in handle, preventing slippage and rattle.
 - .4 Neoprene and steel washer assembly seals bearing opening to eliminate air-leakage.
 - .5 Screw holes for mechanically fastening to ductwork.
- .3 High pressure system locking quadrant:
 - .1 Airtight, rattle-proof regulator, designed for ZERO leakage at high pressure. Use for applications up to 500°F constant temperature.
 - .2 Handle design for easy recognition of damper position.
 - .3 Heavy-gauge, zinc-plated steel, 2 high temperature rubber seals and washers, end bearing support, and 2 end bearings. Pressure loss and damper rattle in ductwork has been a constant annoyance for as long as HVAC ductwork has been installed. Now, a truly air-tight, rattle-proof regulator is available. The SPEC-SEAL regulator utilizes a special high-temperature rubber seal to eliminate leakage and rattle even at many times the pressure found in high pressure.
 - .4 Soft, comfortable grip handle with a highly-visible, plastic cover which indicates the damper position.
 - .5 Handle to accommodate 9 mm (3/8") or 12 mm (1/2") to match damper shaft size, square and round bearing shafts.
- .4 Acceptable manufacturers:
 - Duro Dyne
 - Ductmate

2.12 FLEXIBLE DUCTWORK

.1 GENERAL

- .1 Factory fabricated to CAN/ULC S110.
- .2 Pressure drop coefficients listed below are based on relative sheet metal duct pressure drop coefficient of 1.00.
- .3 Flame spread rating not to exceed 25. Smoke developed rating not to exceed 50.

.2 NON-METALLIC – INSULATED

- .1 Non-collapsible, coated aluminum foil mylar type mechanically bonded to, and helically supported by, external steel wire with factory applied, 25 mm (1") thick flexible glass fibre thermal insulation with vapour barrier and vinyl jacket, Class 1 duct material.
- .2 Performance:
 - .1 Factory tested to 2.5 kPa (10" w.c.) without leakage.
 - .2 Maximum relative pressure drop coefficient: 3.
 - .3 Operating pressure: 300 mm (12").
- .3 Acceptable materials:
 - .1 Flexmaster FAB 3T
 - .2 Ductmate

Part 3 Execution

3.1 GENERAL

- .1 The following systems shall conform to these requirements:

System	Class	Material
HVAC Supply and Return	B	Galvanized steel
General Exhaust	B	Galvanized steel

- .2 Do work in accordance with ASHRAE and SMACNA.
- .3 Do not break continuity of insulation vapour barrier with hangers or rods.
- .4 Support risers in accordance with ASHRAE and SMACNA.
- .5 Install breakaway joints in ductwork on each side of fire separation.
- .6 Install proprietary manufactured flanged duct joints in accordance with manufacturer's instructions.
- .7 Manufacture duct in lengths to accommodate installation of acoustic duct lining.

3.2 HANGERS

- .1 Strap hangers: install in accordance with SMACNA.
- .2 Angle hangers: complete with locking nuts and washers.

- .3 Hanger spacing: in accordance with ASHRAE, SMACNA and as follows:

Duct Size	Spacing
mm (")	mm (")
to 1500 (60")	3000 (120")
over 1500 (60")	2500 (100")

- .4 Do not support ductwork over 250 mm x 250 mm (10" x 10") from roof deck.

3.3 SEALING

- .1 Apply sealant to outside of joint to manufacturer's recommendations.
- .2 Bed tape in sealant and recoat with minimum of 1 coat of sealant to manufacturers recommendations.

3.4 CLEANING

- .1 Keep ducts clear from dust and debris
- .2 Keep duct liner clean from dust, debris, and moisture.
- .3 At completion of project vacuum ducts if dirt or dust is present.
- .4 Where new systems connect into existing systems the existing systems shall be cleaned and vacuumed prior to reconnection.
- .5 Ensure all systems are clean prior to start up.

3.5 ACCESS DOORS AND VIEWING PANELS:

- .1 Size:
- .1 600 mm x 600 mm (24" x 24") for person size entry.
 - .2 600 mm x 1000 mm (24" x 40") for servicing entry.
 - .3 300 mm x 300 mm (12" x 12") for viewing.
 - .4 As indicated.
- .2 Location:
- .1 At fire and smoke dampers.
 - .2 At control dampers.
 - .3 At devices requiring maintenance.
 - .4 At locations required by code.
 - .5 At inlet and outlet of reheat coils.
 - .6 Elsewhere as indicated.
 - .7 Inlet and outlet of duct mounted coils.

3.6 DAMPER & OPERATOR INSTALLATION

- .1 Install where indicated.
- .2 Install in accordance with recommendations of SMACNA and in accordance with manufacturer's instructions.

- .3 For supply, return and exhaust systems, locate balancing dampers in each branch duct.
 - .1 Single blade dampers up to 200 mm (8").
 - .2 Multi-blade dampers over 200 mm (8").
- .4 Runouts to registers and diffusers: install single blade damper located as close as possible to main ducts.
- .5 All dampers to be vibration free.
- .6 Leave all dampers in open position for T.A.B.
- .7 Fasten locking quadrants to ductwork and shaft.
- .8 Place locking quadrants on standoffs where ductwork insulated.
- .9 Lock down quadrant arm in the open position.

3.7 FLEXIBLE DUCT INSTALLATION

- .1 Install in accordance with: SMACNA.
- .2 Maximum length of flexible duct: 1.8 m (6' 0").
- .3 Provide support at centre of flexible duct.
- .4 Tape all joints.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 ANSI/NFPA 90A, Installation of Air Conditioning and Ventilating Systems.
- .3 CAN/ULC-S112, Standard Method of Fire Test of Fire Damper Assemblies.
- .4 CAN/ULC-S112.1, Standard Method of Fire Test of Ceiling Firestop Flap Assemblies.
- .5 ULC-S505, Fusible Links for Fire Protection Service.

1.2 PRODUCT DATA

- .1 Submit product data in accordance with general requirements.
- .2 Indicate the following:
 - .1 Fire dampers.
 - .2 Operators.
 - .3 Fusible links.

1.3 MAINTENANCE DATA

- .1 Provide maintenance data for incorporation into manual specified in general requirements.

1.4 MAINTENANCE MATERIALS

- .1 Provide following:
 - .1 6 fusible links of each type.

1.5 CERTIFICATION OF RATINGS

- .1 Catalogue or published ratings shall be those obtained from tests carried out by manufacturer or those ordered by him from independent testing agency signifying adherence to codes and standards.

Part 2 Products

2.1 FIRE DAMPERS (STATIC)

- .1 Fire dampers: arrangement as indicated, listed and bear label of ULC, meet requirements of provincial fire authority and authorities having jurisdiction. Fire damper assemblies to be fire tested in accordance with CAN/ULC-S112.
- .2 Mild steel, factory fabricated for fire rating requirement to maintain integrity of fire wall and/or fire separation.
- .3 Top hinged: offset single damper, round or square; multi-blade hinged or interlocking type; guillotine type; sized to maintain full duct cross section.

- .4 Fusible link actuated, weighted to close and lock in closed position when released or having negator-spring-closing operator for multi-leaf type or roll door type in horizontal position with vertical air flow.
- .5 40 mm x 40 mm x 3 mm (1½" x 1½" x 16ga) retaining angle iron frame, on full perimeter of fire damper, on both sides of fire separation being pierced.
- .6 Acceptable materials:
 - .1 Ruskin
 - .2 Nailor
 - .3 E.H. Price
 - .4 T.A. Morrison
 - .5 Tamco
 - .6 Ventex/Alumavent
 - .7 United Enertech
 - .8 Safeair-Dowco (stainless steel)
 - .9 Greenheck

2.2 FIRE DAMPERS (DYNAMIC)

- .1 Multi blade or roll type, fire damper suitable for HVAC system velocities up to 2000 fpm (610 m/mm), dual direction air flow, max 4" wg pressure.
- .2 Mild steel, factory fabricated for fire rating requirement to maintain integrity of fire wall and/or fire separation.
- .3 Top hinged: offset single damper, round or square; multi-blade hinged or interlocking type; guillotine type; sized to maintain full duct cross section (damper ass'y out of air stream).
- .4 Stainless closure spring to positively close damper upon fusible link release, for horizontal or vertical orientations.
- .5 Linkage concealed in frame.
- .6 40 mm x 40 mm x 3 mm (1½" x 1½" x 16ga) retaining angle iron frame, on full perimeter of fire damper, on both sides of fire separation being pierced.
- .7 Fire damper assemblies and type to meet requirements of provincial fire authority and authority having jurisdiction.
- .8 Acceptable materials:
 - .1 Ruskin
 - .2 Nailor
 - .3 E.H. Price
 - .4 T.A. Morrison
 - .5 Tamco
 - .6 Greenheck
 - .7 Ventex/Alumavent

Part 3 Execution

3.1 INSTALLATION

- .1 Provide where indicated and at all fire rated partitions indicated, on architectural drawing.
- .2 Install in accordance with ANSI/NFPA 90A and in accordance with conditions of ULC listing.
- .3 Maintain integrity of fire separation.
- .4 After completion and prior to concealment obtain approvals of complete installation from authority having jurisdiction.
- .5 Install access door adjacent to each damper.
- .6 Coordinate with installer of firestopping.
- .7 Static fire dampers: Only on transfer air ducts where ductwork is not connected to a fan/blower.
- .8 Dynamic fire dampers: In all duct work where air is moved by a fan/blower.

END OF SECTION

Part 1 General

1.1 CODES AND STANDARDS

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 ANSI/NFPA 90A, Installation of Air Conditioning and Ventilating Systems.
- .3 CAN/ULC-S112, Standard Method of Fire Test of Fire Damper Assemblies.
- .4 CAN/ULC-S112.1, Standard Method of Fire Test of Ceiling Firestop Flap Assemblies.
- .5 ULC-S505, Fusible Links for Fire Protection Service.
- .6 CAN/ULC-S524, Installation of Fire Alarm Systems
- .7 CAN/ULC-S1001.11, Integrated Systems Testing of Fire Protection and Life Safety Systems.

1.2 CERTIFICATION OF RATINGS

- .1 Catalogue or published ratings shall be those obtained from tests carried out by manufacturer or those ordered by him from independent testing agency signifying adherence to codes and standards.

Part 2 Products

2.1 COMBINATION FIRE AND SMOKE DAMPERS

- .1 Provide a complete system, consisting of the damper, damper actuator, smoke detector, sleeve and all other components necessary for a complete and operable system. The assembly shall be factory assembled as a single unit. Field assembly shall be permitted at contractor discretion provided all listings are maintained and the installation follows all manufacturer installation guidelines.
- .2 Damper
 - .1 Damper shall be ULC listed and labelled
 - .2 Both damper and damper actuator to be ULC listed and labelled.
 - .3 Normally closed smoke/seal: folding blade type. Blade edge seals of flexible stainless steel shall provide required constant sealing pressure. Stainless steel negator springs with locking devices shall ensure positive closure for units.
 - .4 Damper shall have Class I leakage rating.
 - .5 Suitable for horizontal or vertical installations.
- .3 Actuator/Link
 - .1 Actuator shall be ULC listed and labelled
 - .2 Motorized actuator: 2-position, spring return, normally open with power on. When power is interrupted damper shall close automatically. Upon return of power, damper shall automatically reset open. Actuators are to be located outside of airstream, unless otherwise specified or shown on drawings.
 - .3 Exterior visualization of damper position.

- .4 Damper actuator end switches for monitoring damper position by the BAS.
- .5 Combined actuator: electrical control system actuated from smoke sensor or smoke detection system and from fusible link.
- .6 Fusible link, or electric re-settable link (ERL).
- .7 Electric fire sensor capable of remote openable control is to be provided in place of fusible link where specifically indicated in project documents.
- .8 Where ERL or electric fire sensor is used in place of fusible link, this device shall fail closed upon power failure.
- .4 Factory sleeve.
 - .1 Type and style: matching application. Type B.
- .5 Operating Temperature: 0° Celsius to 99° Celsius ambient temperature rating for 300 fpm to 4000 fpm air velocity.
- .6 Smoke Detector:
 - .1 ULC approved photoelectric duct smoke detector;
 - .2 operates from 100 to 4000 ft/min air velocity, -4 to 158°F temperature, and 0 to 95% non-condensing humidity;
 - .3 test/reset button with LED display;
 - .4 The detector housing shall be ULC listed specifically for use in air handling systems; capable of local testing via magnetic switch and test button; plug-in sensor head in the duct, housing
- .7 Damper assembly to operate at 120V with single point power connection.
- .8 Large damper sizes can be provided in multiple sections. Field assembly is acceptable following manufacturer's installation guidelines.
- .9 Fire rating to match wall assembly i.e. 1 hour/1 ½ hour/2 hour/ 3 hour.
- .10 Size: as indicated on drawings.
- .11 Acceptable materials:
 - E H Price
 - NCA Ltd.
 - Nailor Industries Inc.
 - Ruskin
 - Alumavent
 - United Enertech
 - Safeair-Dowco (stainless steel)

2.2 NUMBER OF AIR TYPE SMOKE DETECTORS

- .1 Where air velocities are greater than 1.5 m/s (300 feet per second), one air duct type detector shall be installed for every 1.5 meters square (16 square feet) of cross-sectional duct area.
- .2 Where air velocities are less than 1.5 m/s (300 feet per second), one duct type smoke detector shall be installed for every 0.5 meters square (5.3 square feet) or cross-sectional duct area.

Part 3 Execution

3.1 INSTALLATION

- .1 Provide combination fire and smoke dampers where indicated and at all duct penetrations through fire rated smoke barrier partitions indicated on architectural drawings. To provide separated fire dampers and smoke dampers, obtain approval from the consultant for the alternate arrangement.
- .2 Install in accordance with ANSI/NFPA 90A, in accordance with conditions of ULC listing and manufacturer's recommendation.
- .3 Maintain integrity of smoke separation and fire rating.
- .4 After completion and prior to concealment obtain approvals of complete installation from authority having jurisdiction.
- .5 Install access door adjacent to each damper and smoke detector.
- .6 Provide proper firestopping and duct seal to fire barrier wall.
- .7 Confirm proper operation and test sheets.
- .8 Should contractor provide separated devices mount smoke detector downstream of damper and within 1.5 m (5 ft) of damper.
- .9 Ensure access doors/panels, fusible links, damper actuators and sensors are easily observed and accessible.

3.2 CLEANING

- .1 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools, and equipment.

3.3 INTEGRATED LIFE SAFETY SYSTEMS TESTING

- .1 Obtain the integrated Life Safety Systems agent used by the electrical contractor to perform crossover testing, commission, and confirm proper operation of all operating smoke dampers, and associated Life Safety Systems, i.e. fire alarm.
- .2 Provide written confirmation as part of the Integrated Life Safety Systems Test report.

END OF SECTION

Part 1 General

1.1 REFERENCES

- .1 All codes, standards, etc. as referenced shall be the latest edition.
- .2 SMACNA HVAC Duct Construction Standards, Metal and Flexible.
- .3 ANSI/NFPA 90A, Installation of Air Conditioning and Ventilating Systems.
- .4 ANSI/NFPA 90B, Installation of Warm Air Heating and Air Conditioning Systems.

Part 2 Products

2.1 GENERAL

- .1 To meet capacity, pressure drop, terminal velocity, throw, noise level, neck velocity as indicated.
- .2 Frames:
 - .1 Full perimeter gaskets.
 - .2 Plaster frames where set into plaster or gypsum board and as specified.
 - .3 Concealed fasteners.
- .3 Concealed operators.
- .4 Colour and Finish: standard as directed by Consultant.
- .5 Acceptable materials: As indicated.

2.2 GRILLES, REGISTERS, AND DIFFUSERS

- .1 Type, size, capacity, and options as indicated in schedule on drawings.

2.3 OPEN MESH SCREEN

- .1 15 mm x 15 mm (½" x ½") open mesh screen fastened on 25 mm (1") border, screw fasten.
- .2 On all open ends of ductwork and where indicated.
- .3 Size: To match ductwork size.

Part 3 Execution

3.1 INSTALLATION

- .1 Install in accordance with manufacturer's instructions.
- .2 Install with flat head screws in countersunk holes where fastenings are visible.
- .3 Bolt grilles, registers and diffusers, in place
- .4 Provide concealed safety chain on each grille, register and diffuser in gymnasium, similar game rooms, and on exposed diffusers, and elsewhere as indicated.

- .5 Clean grilles upon completion.
- .6 Paint ductwork beyond grilles, matte black where visible.
- .7 Ensure all grilles, diffusers, etc. match opening sizes as indicated on the drawings and as fabricated on site by the contractor.

END OF SECTION

Part 1 General

1.1 SHOP DRAWINGS

- .1 Submit shop drawings in accordance with general requirements.
- .2 Indicate:
 - .1 Equipment, capacity, piping, and connections.
 - .2 Dimensions, internal and external construction details, recommended method of installation with proposed structural steel support, sizes and location of mounting bolt holes.
 - .3 Special enclosures.

1.2 MAINTENANCE DATA

- .1 Provide maintenance data for incorporation into manual specified in general requirements.

Part 2 Products

2.1 FINNED TUBE RADIATION

- .1 Existing rad cabinet and element
- .2 Provide new closure panel at removed wall. Panel profile and size to match existing cabinet.
- .3 Acceptable materials:
 - .1 Engineered Air.
 - .2 Sigma.
 - .3 Rittling.

Part 3 Execution

3.1 INSTALLATION

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

END OF SECTION

1 General

1.1 GENERAL REQUIREMENTS

- .1 Conform to General Conditions for Mechanical Trades.
- .2 Related Work Specified Elsewhere.
 - .1 General Conditions for Mechanical Trades
 - .2 Plumbing & Drainage
 - .3 Heating, Ventilation & Air Conditioning
 - .4 Heating, Ventilation & Air Conditioning Equipment
 - .5 Electrical

1.2 DESCRIPTION OF SYSTEM

- .1 Furnish and install all components, devices and control wiring for a fully integrated Energy Management and Environmental Control System incorporating Direct Digital Control (DDC), and equipment monitoring. The system shall control/monitor HVAC and equipment and systems as specified in this section. The work shall include but is not limited to the following:
 - .1 All necessary hardware, software, control panels, control wiring, field devices, installation, documentation and owner training as specified.
 - .2 The installed system shall incorporate electronic and digital control devices to perform the control sequences and monitoring outlined herein. Specific control sequence requirements are as detailed elsewhere in this Section of the specification.
 - .3 Control and monitoring of the equipment and systems shown on the drawings (refer also to 'Sequence of Operation' for additional details).
 - .4 Control valves shall be supplied by this Trade but installed in the piping system by the Mechanical Trade complete with transitions and unions as required.
 - .5 Testing, debugging, calibrating, adjustment, programming and confirmation of total system operation.

1.3 MANUFACTURER AND INSTALLING CONTRACTOR

- .1 The temperature control manufacturer shall be Tour Andover (TAC).
- .2 The local TAC contractor is available at phone 519-893-2638.
- .3 Any new building must be a seamless extension of the current Energy Management and Building Control System.
 - .1 The existing TAC Vista software is, and shall continue to be, the only head-end BAS server for the entire School Board.

- .2 The head-end server contains the secure Energy Management Settings (i.e. Master Setpoints & Schedules) that are sent to all schools in real-time. The control system must be an extension of the head-end server and be able to be managed exclusively through the Vista head-end server.
- .3 Monitoring of all school board control systems are done in real-time and must be presented at the exclusive Vista head-end server as first-priority data.
- .4 The Vista head-end server has all the required controller databases and software to be able to centrally maintain and modify network configuration and controller software for the entire School Board. The Vista head-end server is the only system that can access the LacNet programming variables inside the controllers for real-time configuration of setpoint and time scheduling parameters.
- .5 The graphics and controller database must be presented inside the Vista head-end server in its native format in order to preserve the real-time speed, integrity and multi-site administration of the entire system.

1.4 SCOPE OF WORK

- .1 Revise VAV boxes and perimeter radiation in staff room to operate from one (1) thermostat.

1.5 QUALITY ASSURANCE

- .1 The system components shall be listed by Underwriters Laboratories Inc. and Canadian Standards Association.
- .2 The system control products shall be stored and handled according to manufacturer' recommendations.
- .3 The work shall be performed by skilled technicians all of whom shall be properly trained and qualified for this work.

1.6 SUBMITTALS

- .1 Prior to the installation of any equipment, the Contractor shall provide the Consultant with shop drawings and specifications for all devices and equipment used for the complete system installation. Shop drawings shall include the following:
 - .1 Identified schematic control diagrams for all systems, each diagram indicating or referencing input / output connection points, control components, component catalogue numbers, operation sequence, interlocking and RPU's to which they are connected.
 - .2 Complete network schematic indicating all programmable controllers and data connections.

- .3 Detailed listing of inputs and outputs of each programmable controller.
- .4 Control damper schedule indicating damper size, required torque and blade type.
- .5 Technical data sheets / manufacturer application manuals of each system component.
- .2 Upon completion of the installation and prior to acceptance and Owner training, the Contractor shall furnish the Consultant with three copies of installation and operation manuals for the system. Each manual shall include:
 - .1 Record drawings, including plan layout indicating major device locations and wiring diagrams as finally installed.
 - .2 All shop drawings, incorporating all required revisions to reflect as-built conditions.
 - .3 The Contractor shall also keep one copy of backup programs for the system archived in a software storage vault at their business location.

2 Products

2.1 GENERAL

- .1 The control system shall be a Tour Andover (TAC) Xenta/Distech building automation system (BAS).
- .2 The system shall integrate the operation of intelligent building management controllers distributed into the network.
- .3 The DDC System shall be generally comprised of the following devices to achieve the control functions described in this section:
 - .1 Xenta/Distech programmable controllers
 - .2 Distech input/ output programmable I/O modules.
 - .3 Control relays.
 - .4 Control dampers and valves.
 - .5 Sensors, actuators and other input/output devices.
- .4 Controllers shall execute the application programs, calculations, and commands to provide the control function specified for that unit. Each controller shall include its own micro-computer controller, power supply, input/output modules, termination modules and real time clock.
- .5 Controllers shall be capable of full control functionality and alarm reporting independently or as a part of the DDC network.
- .6 The system shall be stored in flash ram so no batteries are required.
- .7 Each control device shall be modular and expandable to provide additional inputs and outputs and control functionality for that device.

- .8 Each controller shall be able to transfer and receive data via the network for performance of control functions.
- .9 The system shall be modular, permitting expansion by adding hardware and software without changes in communication or processing equipment.
- .10 The complete system shall be capable of communication over a LonWorks network.
- .11 The controllers shall monitor the status of all overrides and include this information in logs and summaries to inform the operator that automatic control has been inhibited.
- .12 Controllers shall continuously perform self-diagnostics, communication diagnosis and diagnosis of all subsidiary equipment and provide both local and remote annunciation of any component failures.
- .13 Controllers shall activate an orderly shutdown of their operation in the event of loss of normal electrical power. Non-volatile memory shall be incorporated for all controller configuration data. The controllers shall automatically resume full operation without manual intervention.
- .14 The controllers shall have sufficient memory to support their own operating system and data bases including:
 - .1 control processes
 - .2 energy management applications
 - .3 alarm management
 - .4 trend data
 - .5 operator input/output
 - .6 remote communications
 - .7 manual override monitoring
- .15 Controllers shall incorporate the following software features:
 - .1 Energy management:
 - .1 Time of Day Scheduling
 - .2 Calendar Based Scheduling
 - .3 Holiday Scheduling
 - .4 Optimal Start and Stop
 - .5 Demand Limiting
 - .6 Heating/Cooling Interlock
 - .2 Alarm Management:
 - .1 Alarm Management shall be provided to monitor, buffer and direct alarm reports to operator devices and memory files. The controllers shall perform alarm analysis and filtering to minimize operator interruptions due to non-critical alarms, minimize network traffic and prevent alarms from being lost.
 - .2 All alarm or point change report shall include the points English language description and the time and date of occurrence.

- .3 The user shall be able to define the specific reaction for each point, the priority level (3 in total) and ability to inhibit alarm reporting for each point.
- .4 The user shall be able to define conditions under which point changes need to be acknowledged by an operator and logged for analysis at a later date.
- .5 The user shall be able to print, display or store a unique 60 character alarm message to more fully describe the alarm condition or direct operator response. The message shall be customizable to describe each individual alarm.
- .6 In web access applications only critical alarms shall initiate a call to a remote operator device, otherwise call activity shall be minimized by time stamping and saving reports until a manual request is received or until the buffer space (minimum 50 alarms) is full.
- .3 Trend Logs:
 - .1 Controllers shall provide an automatic roll-over trend log, which stores records up to an operator-selected number at an operator-selected sampling rate and then overwrites the oldest record with each new record.
 - .2 Sample intervals shall be from 1 minute to 24 hours.
 - .3 Provide graphical and tabular displays.
- .4 Runtime Totalization:
 - .1 The controllers shall automatically accumulate and store runtime hours for binary points with a sampling resolution of 1 minute. The user shall have the ability to define a warning limit to trigger maintenance or user-defined messages.
- .5 Custom Programming:
 - .1 The controllers shall permit user defined custom control processes based on:
 - .1 any system measured data or status
 - .2 any calculated data
 - .3 any results from other processes
 - .4 Boolean logic
 - .2 The custom processes may be triggered by:
 - .1 Time-of-day
 - .2 calendar date
 - .3 events (point alarm etc.)
- .16 The control strategy for each control loop shall be performed by software within the controller. The sequence of events required for each control loop is described for each system in the control sequence.
- .17 Outdoor air temperature indication shall be available at each controller as an integral part of the control strategies for that controller. Should the network transmission of the common outdoor air temperature (or any other common value) fail, then each controller shall use the last good value received.

- .18 Controls and Requirements for VVT Systems
 - .1 Where VVT controls are specified, units are to operate as part of a Variable Volume/Variable Temperature System complete with all necessary controls including zone dampers, temperature sensors, static pressure sensor probes and bypass damper.

2.2 NETWORK ARCHITECTURE

- .1 The controllers on the local network shall communicate via a two wire LonTalk TP/FT-10 network.

3 Execution

3.1 INSTALLATION

- .1 Installation
 - .1 All controllers and components in the system and on the network shall be installed according to manufacturer recommendations, general installation standards for digital controls and in accordance with the approved shop drawings.
 - .2 Locate room sensors in the locations shown on the mechanical drawings. All sensors shall be mounted at barrier free height (3'-11" (1175 mm) above finished floor).
 - .3 All control components for off site system access shall be located where noted on the drawings. The Electrical Contractor shall provide all required connections/cabling for off site access to the web access components.
 - .4 All programmable controllers, web access components, relays and other control components shall be located within control panels. Control Panels shall be wall mounted and shall be located within suspended ceiling spaces or other locations approved by the Consultant.

3.2 SYSTEM START-UP AND ACCEPTANCE

- .1 Upon completion of installation, test, adjust and calibrate controls provided under this Section.
- .2 On system completion, a demonstration of complete system operation shall be made to the Owner's authorized representative and Consultant.
- .3 The Consultant shall verify through the Owners representatives that the entire system is complete and operating to the satisfaction of the Owner before final acceptance is approved.

3.3 WARRANTY

- .1 Equipment, material and software shall be unconditionally guaranteed for a period of two years from the date of substantial completion.
- .2 Provide warranty service at no cost to the Owner for the guarantee period, which shall include but not be limited to the following:
 - .1 Emergency repair service on regular working hour basis during warranty.
 - .2 Replacing defective parts and components as required.
 - .3 System software support.

3.4 IDENTIFICATION

- .1 Provide system identification and provide nameplates identifying the following (nameplates shall be keyed to the wiring diagrams):
 - .1 Control panels (identify as to equipment / systems controlled). Each panel shall include an as-built drawing showing all the connected control points.

3.5 TESTING AND BALANCING

- .1 During the system testing and balancing by the Testing and Balancing Agency, demonstrate the operation of all controls. During balancing procedures, set controls to a fixed mode (bypass damper locked fully closed and all zone dampers locked fully open) to prevent any changes during the balancing procedure.

3.6 ELECTRICAL WIRING

- .1 All wiring shall be installed to the standards specified in the Electrical Division.
- .2 Use Echelon recommended orange jacket cable for all network wiring.
- .3 Run all wiring in EMT conduit where exposed, where running within concrete block walls and where required by the Ontario Electrical Code. Plenum rated cable shall be used in return air ceiling plenums.
- .4 Control relays necessary for BAS operation shall be provided by the Temperature Control Contractor but all contactors and their power supplies handling power wiring to the equipment shall be by the Electrical Contractor.

4 Sequence of Operation

4.1 GENERAL

- .1 All setpoints shall be adjustable.
- .2 Outdoor air temperature shall be broadcasted to all controllers.
- .3 Heating mode: Heating is enabled between October 15 and April 15 or if the outdoor air temperature is below 10°C. This heating mode is used in all controllers for the building.
- .4 Cooling Mode: Mechanical cooling is enabled if the outdoor air temperature is above 18°C.
- .5 Occupancy mode shall be determined by a weekly schedule with an annual holiday schedule. Each system shall have this schedule but there shall be provision for operating under a general (to the building) schedule as well. An adjustable parameter shall be available to select the local or general schedule for each system.
- .6 Two existing VAV boxes and perimeter radiation in the staff room currently operating from two (2) thermostats are to be revised to operate from one (1) thermostat. All existing sequences to remain.

END OF SECTION

7273-RW-22 - Eastwood Collegiate Institute - Washroom Renovations

Opening Date: March 14, 2022 12:00 PM

Closing Date: April 5, 2022 2:00 PM

Schedule of Prices

* Denotes a "MANDATORY" field

Do not enter \$0.00 dollars unless you are providing the line item at zero dollars to the Board.

Bid Price Form

Note: Cash Allowances included in BID PRICE.

Blackout Period Protocol is understood and will be adhered to.

HST is additional.

Line Item	Description	Unit of Measure	Quantity	Bid Price *	Total
1	Eastwood Collegiate Institute Washroom Renovations, as per tender documents	Lump Sum	1		
Subtotal:					

Summary Table

Bid Form	Amount
Bid Price Form	
HST (13%)	\$ 0.00
Total Contract Amount:	

Specifications

Bidder's Contact Information

Provide contact information for the following employees for this project.

If any of the contacts are to change within the duration of the contract the Board must be immediately notified and pre-approve the change(s).

Title	Name *	E-mail *	Cell Phone Number *	
Project Manager				*
Site Supervisor				*

Documents

It is your responsibility to ensure the uploaded file(s) is/are not defective or corrupted and are able to be opened and viewed by the Owner. If the attached file(s) cannot be opened or viewed, your Bid Submission may be rejected.

COVID RESPONSE

Submit a work plan that outlines how the company plans to address COVID-19, including implementing workplace strategies that include, but are not limited to, social distancing, personal hygiene recommendations, and other relevant recommendations made by the government of Ontario, the government of Canada, the local municipal government, and their respective ministries,

agencies, and departments, in respect of the employees and other personnel of the successful bidder, their subcontractors and suppliers, as well as the employees and other personnel of the Board, the Board's Consultant, and the general public.

- WSIB * (mandatory)
- Covid Response * (mandatory)

BONDING UPLOAD SECTION

Refer to the Bonding Requirements Section of the Terms and Conditions.

- Bid Deposit Bond (10%) * (mandatory)
- Agreement to Bond * (mandatory)

Addenda, Terms and Conditions

I/We have read and understand this Bid Solicitation document, and agree to perform the Work required in accordance with this Bid Solicitation document, including all addenda, at the price(s) detailed in the Bid.

I/We confirm that:

1. The person named in this Bid is authorized to sign and electronically submit this Bid through the Bidding System.
2. I/We meet all mandatory requirements of the Bid Solicitation document.
3. The bid will remain open for a specified acceptance period after the Closing Time. The Board may, at any time within this period, accept the Bid whether or not any other Bid has previously been accepted.
4. All prices provided in the Bid will remain fixed and firm for the duration of the term of the agreement, unless specified otherwise.
5. All prices provided in my/our Bid are in Canadian funds and include all charges of every kind attributable to the Work. Harmonized Sales Tax will be extra and not shown, unless specified otherwise.
6. To the best of my/our knowledge and belief:
 - a) the information provided in the Bid is correct; and
 - b) the Bid is made without any comparison of figures or arrangement with any other individual, corporation or person submitting a Bid for the same Work and is in all respects fair and without collusion or fraud.
7. I/We comply with the all applicable Board policies, provincial, and federal laws, and are aware of the Board's "Principles of Business Conduct" and will comply.
8. I/We agree and understand that the recommendation to award the Work may be subject to the approval from the Board as well as availability of funds.
9. I/We agree to be bound by the terms and conditions of the Bid Solicitation document and submit this Bid on behalf of the Bidder.

I have the authority to bind the Bidder.

The Bidder/Proponent is to declare any actual, potential or perceived conflict of interest that could arise from submitting the Bid/Proposal.

Do you have a potential conflict of interest?

Yes No

The Bidder acknowledges and agrees that the addendum/addenda below form part of the Bid Solicitation Document.

Please check the box in the column "**I have reviewed this addendum**" below to acknowledge each of the addenda.

File Name	I have reviewed the below addendum and attachments (if applicable)	Pages
There have not been any addenda issued for this bid.		