Waterloo Region District School Board

REQUEST FOR TENDER

GALT COLLEGIATE INSTITUTE

BOILER REPLACEMENT AND H&V UPGRADES – PHASE 2

PROJECT NO. 26-7860-RFT

ISSUE DATE: March 17, 2026

The Bidding System will receive ELECTRONIC SUBMISSIONS, no later than **2:00:00 p.m. local time, on April 9, 2026 ("Closing Date and Time")**

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00 01 00 Consultant/ Professional Seals

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
CORNERSTONE ARCHITECTURE INCORPORATED
102-320 Thames Street
London Ontario N6A 0E1
Phone: 519 432 6644 Fax: 519 432 6737



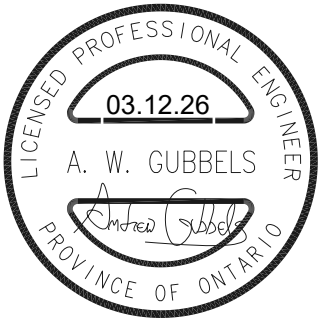
1.1.2 Structural
MTE CONSULTANTS INC.
1061 Hargrieve Road
London Ontario N6E 1P6
Phone: 519 204 6510 Fax: 519 204 6511



1.1.3 Mechanical
MNE ENGINEERING INC.
22 Kevco Place
Kitchener Ontario N2C 2G5
Phone: 519 894 9408 Fax: 519 894 5682



1.1.4 Electrical
MNE ENGINEERING INC.
22 Kevco Place
Kitchener Ontario N2C 2G5
Phone: 519 894 9408 Fax: 519 894 5682



END OF SECTION

DIVISION 00 – BIDDING AND CONTRACT DOCUMENTS

00 21 13 - Instructions to Bidders

1.1 Designated Representative

To contact the Waterloo Region District School Board ("WRDSB" or the "Board") or ask questions in relation to this Procurement, bidders must initiate communication electronically through the Bidding System. The WRDSB will not accept any communications by any other means, except as specifically stated in the Procurement. Bidders must not communicate in any manner with anyone other than the Designated Representative.

The Designated Representative for this procurement process is:

Procurement Lead: Ardith Inapan
Title: Buyer
Waterloo Region District School Board
Email: ardith_inapan@wrdsb.ca

1.2 Consultant

The WRDSB has hired the following consultant to assist in the preparation of this Procurement: Cornerstone Architecture

The Consultant and any subconsultants are not to respond to any questions or communicate with bidders and/or any interested parties from the bid issue date to the bid award notification. Reference: 1.5 Communication and Question Protocol.

The Consultant 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 WRDSB.

1.3 Blackout Period

A blackout 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 WRDSB, or any WRDSB consultants or employees, unless initiated by the Board's Designated Representative, noted above.

1.4 Doing Business with the Waterloo Region District School Board

Waterloo region District School Board (WRDSB) serves approximately 65,000 students in 123 schools, as well as alternative and continuing education sites. WRDSB is committed to creating learning environments that support the achievement and well-being of all students through partnering with staff, parents, families, caregivers, and communities to promote success in learning and life.

Bid opportunities above $10,001 CAD will be solicited through an electronic bidding system (bids&tenders) or the WRDSB may also utilize Supplier roster lists awarded through a competitive process, participate in cooperative procurements with various public entities, or buying groups. These may include, but are not limited to, Ontario Education Collaborative Marketspace, Supply Ontario, and other Cooperative Group(s).

WRDSB competitive opportunities are posted on the Electronic Bidding System, bids&tenders/wrdsb.

The WRDSB only accept electronic Bid Submissions submitted through the Electronic Bidding System, bids&tenders/wrdsb

Bid opportunities may be posted as Public or by Invitation and are based on dollar thresholds outlined in Administration Procedure 4570 PROCUREMENT. Click here to access the WRDSB's Administrative Procedures, Section 4000 – Business Services.

1.5 Certificate of Recognition (COR) Certification (General Contractors)

i. All bidders must possess and maintain a valid Certificate of Recognition (COR) issued by a recognized certifying partner at the time of bid submission.
ii. Bidders shall provide proof of current COR Certification with their tender submission. Failure to provide acceptable documentation may render the bid non-compliant and subject to rejection.
iii. The WRDSB reserves the right to verify the validity and status of COR Certification at any time during the procurement process and throughout the term of the contract.
iv. If a bidder's COR Certification expires, is suspended, or is revoked during the contract period, the Board may, at its sole discretion, require immediate corrective action or terminate the contract without penalty

1.6 Communication and Question Protocol

Bidders and their representatives are NOT permitted to contact WRDSB Project Managers/Leads, agents of the WRDSB; any member of the WRDSB's governing body (such as Board of Trustees, or advisors); any employee, consultant, or agent of the WRDSB's Clients, other than the Designated Representative listed above. Any attempt by a Bidder to bypass or influence the procurement process may result in disqualification of the Bidder and the rejection of the Bidder's submission.

The WRDSB will not be responsible for any verbal statements, instructions, 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 Designated Representative, noted above in writing, shall not be relied upon.

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

All requests for information, instructions, or clarifications shall be through the Bidding System by clicking on the "Submit a Question" button found within the bid detail of the specified Procurement. Addenda will be issued accordingly.

It is the responsibility of the Bidder to seek clarification of any matter that they consider unclear before submitting their application. The Board is not responsible for any misunderstanding of the Procurement documents on the part of the Bidder.

1.7 Anticipated Project Schedule

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

DESCRIPTION	DATE
Issue Date of Tender	Tuesday, March 17, 2026
Non-Mandatory Pre-Bid Site Examination	Date: Monday, March 23, 2026 Time: 3:00 pm local time Galt Collegiate Institute 200 Water Street North Cambridge Ontario N1R 6V2 Meeting Area: Main Office
Deadline for Questions	Monday, April 6, 2026
Closing Date and Time	**Thursday, April 9, 2026** **2:00:00 pm local time**
Anticipated Contract Start / Work begins *(Note: Work in Occupied Areas must be completed after hours)*	Monday, June 1, 2026
Occupancy Date for Corridors and Classrooms	Friday, August 21, 2026
Substantial Completion Date *(New Boilers Operational)*	Friday, October 16, 2026
Ready for Takeover	Friday, October 16, 2026
Deemed Complete Date	Friday, November 20, 2026
Note: Work of the Contract will be completed concurrently with another ongoing construction Contract. Coordination of time and space will be required for certain aspects of this project. It is required that the successful Bidder work with the Owner and Consultant to coordinate.	

1.8 Site Pre-Bid Examination

Bidders are strongly encouraged to attend the non-mandatory pre-bid site meet and sign the attendance sheet. Date, time and location are provided above in the

Anticipated Project Schedule. The WRDSB may not provide another opportunity to visit the site.

i. Bidders shall attend site meetings at their own risk and hold the WRDSB harmless for any issues or damage arising out of their attendance at the site meeting.
ii. The WRDSB will not consider any claims for additional payments during the execution of the Work for extra work or difficulties encountered resulting from conditions which were either visible or could be reasonably inferred from an examination of the Place of the Work and the available project information prior to the submission of Bids
iii. Absence from a non-mandatory site meeting will not disqualify any Bidder.
iv. Bidders are solely responsible for making their own assessment of the site.
v. Bidders are encouraged to bring their own measuring tape, camera, or other portable tools as required to the site meeting. Bidders are solely responsible for making their own assessment of the site.

1.9 Secondary Site Examinations

Bidders may request a secondary site examination visit through the Bidding System by clicking on the "Submit a Question" button found within the bid details page of that Procurement. Include the contact's name, phone number and email address of the person who will visit the site.

Bidders shall attend the secondary site examination visit at their own risk and hold the Board harmless for any issues or damage arising out of their attendance of the site meeting.

In the event the WRDSB holds a Mandatory Pre-Bid Site Examination meeting, Bidders not in attendance will not be provided an opportunity to a secondary stie examination visit.

Bidders must adhere to all communication protocols, as described above in 1.5. Communication Protocol.

The Owner will not consider any claims for additional payments during the execution of the Work for extra work or difficulties encountered resulting from conditions which were either visible or could be reasonably inferred from an examination of the Place of the Work and the available project information prior to the submission of Bids.

Bidders are encouraged to bring their own measuring tape, camera, or other portable tools as required to the site meeting. Bidders are solely responsible for making their own assessment of the site.

1.10 Examination of Bid Documents and Work and Submitting Questions

Bidders are required to fully acquaint themselves with the Procurement documents; fully inform themselves of all conditions, limitations and requirements involved in the Procurement; and obtain all information that may be necessary to complete those requirements before submitting a Bid.

Submission of a Bid shall be considered conclusive evidence that the Bidder has satisfied itself as to the requirements of this Procurement.

In the event a Bidder discovers any errors, discrepancies, inconsistencies, or omissions or requires clarification within this Procurement, they are to submit their observations and/or questions through bids&tenders by clicking on the "Submit a Question" button found within the bid detail of the specified Procurement by the Deadline for Questions specified in this paragraph.

Bidders are strongly encouraged to ask clear and concise questions(s) or statements citing the relevant section of the Procurement Document. The Board cannot guarantee a response to questions received by the Board after the Deadline for Questions.

The WRDSB has endeavored to provide complete, correct information and estimates to enable Bidders to accurately 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 Designated Representative prior to the Deadline for Responses indicated in this document, if they have any questions or queries whatsoever or find omissions from or discrepancies in this Procurement 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 responses or clarifications to issues of substance will be shared with all Bidders in the form of an Addendum.

1.11 Electronic Bid Submission Only / Electronic Bidding System

The Bidder must complete and submit their bid through the Bidding System only. All components of the submission and supporting documents must be in English only. Any other form of submittal will not be considered. It is the Bidder's responsibility to read the Procurement documents thoroughly including all attachments and addenda, if any, as these contain information that is highly pertinent to this Procurement and to clarify any details with the Designated Representative prior to their submission. To be considered, Bidders must respond to this Procurement.

To submit a bid, bidders must be registered with bids&tenders. The sole onus is on the bidder to have the most current correct information set-up in bids&tenders e.g. plan taker contact information, categories, and agency etc.

All Bids shall be submitted through bids&tenders only. The onus is on the Bidder to ensure all requirements of this Procurement are submitted.

If a bidder encounters technical issues, the onus is on the bidder to have this resolved prior to the closing date and time by contacting support@bidsandtenders.ca

Bidder shall have a "Vendor account" in the Bidding System and shall ensure the account is created with the Bidders full legal company name and be registered as a "plan taker" for this Procurement. Only the plan takers will have access to download bid documents,

receive addenda email notifications, download addenda, and submit their bid electronically through the Bidding System.

The onus is on the Bidder to ensure that the Bid is received in the Bidding System on or before 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 Bidding System receives the Bid, not when a Bidder submits a Bid.

Bidders shall allow sufficient time to upload their Bid submission including all requirements as stated in this Procurement 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

All prices including provisional pricing, if requested, shall be submitted in the Schedule of Prices forms available through the Bidding System.

The Owner reserves the right to accept or reject any or all provisional bid prices submitted. Failure to submit provisional prices where required may result in the Bid being declared non-compliant.

Bids submitted by fax or paper copy, or any other format will not be accepted.

The Bidding System will not accept Bids after the Closing Time as determined by the Bidding System's web clock.

The WRDSB hereby consents 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.

Upon submitting 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

There will be no public opening for this Bid.

If a Bid is a joint submission of two (2) or more firms, a single Bid is to be coordinated and submitted by the lead Bidder with the required information. If two or more parties submitted a joint response to this Procurement, they shall decide between them who is to be the Bidder, without any involvement of the WRDSB.

Your online Bid submission shall be taken as your statement that you understand the requirements and agree to comply with the requirements as well as terms and conditions stated in this Procurement document, including WRDSB's Standard Terms and Conditions. Your Bid submission through the Bidding System confirms that you have checked and confirmed your pricing and by submitting the Bid online, you agree that you have not omitted any items from your Bid.

For construction projects with Bids above $200,000 the Successful Bidder will be required to execute a "Canadian Standard Form of Construction Contract to a Stipulated Sum" (CCDC 2 - 2020 including amendments thereto as set out in this Procurement.

1.12 Bid Prices

The amounts stipulated on the Schedule of Prices are intended to cover the cost of the complete Work as described in this Procurement Document.

All prices shall be in Canadian Funds, Free On Board (FOB) Destination, Freight Prepaid (WRDSB sites/locations).

Exclusive of the HST, or other similar taxes.

Unit pricing shall be exclusive of Harmonized Sales Tax (HST) but shall include all applicable costs including but not limited to overhead, material, labour, travel, fuel, fuel surcharge, equipment, disbursements, expenses, customs, charges, freight, shipping and handling costs, and all other charges of every kind attributable to the services, equipment or goods provided.

The person submitting the Bid on behalf of the Bidder must have authority to bind the Bidder.

Quantities may be estimated and subject to change, and therefore the WRDSB, at its discretion, may purchase more or less of the commodity based on the unit price bid.

All information required on the forms shall be completed in full including references and subcontractors that it proposes to use for Work described. Changes made to the list of subcontractors after the closing of the Bid must have prior written approval of the WRDSB's Project Representative.

All price(s) submitted shall be a reasonable price for each item as determined by the WRDSB and under no condition will an unbalanced Bid be considered. Submissions containing prices which appear to be so unbalanced as to likely affect the interests of the WRDSB adversely will be clarified and may be rejected.

Unit prices and/or optional pricing, if any will set the foundation for any approved increases or decreases in Work. The unit prices must remain fixed and firm for the term of the Contract, unless otherwise specified in this Procurement document.

Provisional or Optional Pricing may or may not be required for completion of the Work called for under the Contract. The WRDSB will decide necessity of these items and quantities thereon based on the unit prices(s) included in their Bid. If Provisional or Optional items are not purchased, or quantities are less than estimated, no adjustment or compensation will be awarded to the Bidder by the WRDSB. Optional pricing is not used for comparison of Bids for award purposes.

1.12.1 Bonding: for awards over $200,000.00 unless otherwise instructed is required – Refer to Standard Terms and Conditions, Clause #4 Bonding Requirements.

1.13 References

1.13.1 References are NOT required. This Section does not apply to this Project.

1.14 Addenda

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

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

Prior to bid closing any discrepancies, omissions, questions, or clarifications regarding the procurement documents must be sent immediately through the Bidding System by clicking on the "Submit a Question" button found within the bid details page of that opportunity.no later than the deadline noted in the Anticipated Project Schedule. Those that are deemed pertinent to the Procurement Document will be addressed in the form of an Addendum.

It is understood and acknowledged that while the Procurement document includes specific requirements, a complete review and recommendation is required. Minor items or details not herein specified but obviously required for the Work shall be provided as if specified in conformance with modern practices. Any omissions or errors or misrepresentation of these requirements and specifications within the Procurement document shall not relieve the Bidder of the responsibility of providing the services or products as aforesaid.

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

Where an Addendum is issued after a Bid has been submitted, the Bidding System will automatically withdraw the submitted Bid. The Bid status will change to incomplete and will not be accepted by the WRDSB as a submitted Bid. It is the responsibility of the Bidder to make any required adjustments to their submission, acknowledge all Addenda and ensure the Bid has been received by the Bidding System. Bidders should check the Bidding System for Addenda up until the Bid Closing Date and Time.

Addenda cannot be acknowledged after the Closing Date and Time.

1.15 Edit and Withdrawal of Bid Submission

A Bidder who has submitted a bid may edit or withdraw its bid at any point up to the Closing Date and Time.

Any edits to a bid submission will cause the submission to automatically be withdrawn. The bid submission must be re-submitted to be accepted.

The Bidder is solely responsible for ensuring that its re-submission is received prior to Closing Date and Time. The closing time shall be determined by the web clock within the Bidding System. After such time, requests to withdraw Bid will not be considered.

1.16 Irrevocable Period

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

1.17 Tie Bids

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

1.18 Bid Irregularities

Bids with one or more of the following may be declared informal and/or disqualified and/or non-compliant:

i. Bids that do not comply strictly with all terms and conditions of the Procurement Document.

ii. Bids that are incomplete, conditional, qualified, or obscure.

iii. Bids that are based upon an unreasonable period for completion of the Work.

iv. Bids received from Bidders involved in Claims with either of the WRDSB or banned or on probation with the WRDSB.

v. Bids received from any Bidder deemed to be unskilled or inexperienced in the work contemplated, or those who have defaulted on, or failed to satisfactorily complete other similar work in the past.

vi. Bids submitted by Bidders that are not prequalified, where applicable.

1.19 Bid Review

i. All Bids received on or before the Closing Time will be reviewed for compliance based on this Procurement document. Non-compliant Bids will be rejected. Bids not meeting any of the mandatory requirements included in this Procurement document will be disqualified. Bidders may be contacted to clarify their submissions.

ii. Should there be any error in extensions, additions or computations, the WRDSB shall be entitled to correct such errors based upon the unit prices supplied, and the corrected total shall be considered as representing the intention of the Bidder and shall be used as the basis for comparison of Bids.

iii. It is the Bidder's responsibility to satisfy the WRDSB that they can comply with the requirements contained within this Procurement document and that they possess the necessary inventory, equipment, facilities, resources, and staff to perform the work specified in this Procurement document. Bidders may be required to submit

evidence of above in a form acceptable to the WRDSB. Substitution of materials, equipment, or methods different from those outlined in the terms of reference will not be accepted unless provided for within this Procurement document or with the written approval of the WRDSB.

iv. The WRDSB also reserves the right to examine Bidder's facilities, equipment and visit the subcontractors or subconsultants proposed and/or Bidder's existing and past clients. The award decision may be revised based on the above.

v. The WRDSB will not be responsible for travel costs if travel is required. No additional charges will be accepted by the WRDSB for any cost incurred by the Bidder or any other party in participating in the Bid evaluations.

vi. The WRDSB may, in its 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 WRDSB in its selection. The WRDSB reserves the right to consider all, or any information received from all available sources, whether internally or externally obtained. The WRDSB 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 WRDSB's own experiences with the respective Bidder(s) or any of the subcontractors and subconsultants proposed in their Bid.

1.20 Intent to Award

Bidders are advised not to make any business decisions, assignments, or any sub-contract for the execution of the Work, before receiving a Purchase Order from the WRDSB.

There shall be no obligation on the WRDSB because of seeking Bids or conducting the procurement process and the WRDSB reserves the right to pursue other Bidders, cancel the Procurement, issue a revised request, or to pursue any other course of action which would aid in meeting their needs.

If instructed, within **twenty-four (24) hours**, excluding hours occurring during a Saturday, Sunday, or a legal holiday, from the issuance date an intent to award from the WRDSB, the Bidder (the "Recommended Bidder") shall provide a list of all subcontractors/subconsultants that it proposes to use for all Work described in this Procurement including the Company Name, Subtrade Category and if applicable, related Divisions.

1.20.1 Within **seven (7) calendar days**, from the issuance date of an intent to award notice or requested by the WRDSB, the Bidder (the "Recommended Bidder") shall provide the following mandatory requirements:

i. Insurance certificate with coverage specified in the Procurement Document.
ii. WSIB clearance certificate valid on the date of award or an exemption letter (if applicable and requested).

iii. Non-Disclosure Agreement (NDA) duly signed by the authorized signatory (to be renewed annually). The WRDSB will provide this form.
iv. Bonding Requirements, if applicable, as specified in the Procurement Document.
v. An executed WRDSB issued Form of Agreement, if applicable, and duly signed by the authorized signatory.
vi. Any other submittal specified in the Procurement Document or in the intent to award, as a requirement of award.
vii. For construction projects above $200,000 the Successful Bidder will be required to execute a "Canadian Standard Form of Construction Contract to a Stipulated Sum" (CCDC 2 – 2020) including amendments thereto as set out in this Procurement.

1.20.2 The documents listed below will be incorporated as deemed necessary by the WRDSB, into the Contract with the 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:

i. WRDSB approved change order(s) or Contract / Agreement / CCDC 2 - 2020 amendment(s)
ii. Purchase Order(s), Contract(s) Agreement(s) / CCDC 2 -2020 executed with the Bidder including exhibits
iii. Procurement document issued by the WRDSB, including addenda, if applicable
iv. Bid submitted by the Bidder

1.21 Post- Closing/Pre-Award Meeting

The WRDSB may request a meeting with Bidders after the bid closing dates.

1.22 Award

Unless otherwise stated, the contract will be awarded to the lowest compliant bidder on the base bid, who meets the requirements, the scope of work outlined in this Procurement, and satisfactory references and experience. The WRDSB reserves the right to decrease quantities and/or the Scope of Work or not award this Project, due to insufficient budget.

1.23 Post-Award Meeting (Kick off Meeting)

A post-award meeting may be held consisting of the successful Contractor, and their key personnel assigned to the contract, the WRDSB's Project Manager/Lead and if applicable the Consultant, to discuss the program and exchange information before the contract commences. This meeting will be at the sole expense of the Bidder and shall be considered part of the contract. If applicable, the meeting date will be scheduled after the Award.

1.24 Post Award

In addition to all the WRDSB's other remedies, if a recommended Bidder fails to satisfy the requirements and/or execute the Form of Agreement or any other applicable conditions within seven (7) calendar days of notice of selection, the WRDSB may, in their sole and absolute discretion and without incurring any liability, rescind the selection of that Bidder.

The Bidder may protest within the five (5) day Notice of Intent to Award, after that, the protest will not be reviewed or accepted.

1.25 Award Posting Notification

For procurements valued at $121,200 or more, and in accordance with the Broader Public Sector Procurement Directive, once the WRDSB is satisfied that all requirements are met, the project award notification will be posted in the same manner as the procurement documents were posted. The notification will be posted after the purchase order and/or agreement between the successful bidder and the WRDSB has been issued/executed. The award notification will list the name of the successful bidder, agreement start and end dates, and any extension options.

END OF SECTION

00 21 14 – General Contractors, Subcontractors, Prequalified Rosters

1.1 General Contractors

1.1.1 Only invited prequalified General Contractors, by award through a competitive prequalification process, 7430-RFPQ, may submit a bid for this opportunity.

1.1.2 Invitations are based on awarded Project Size Categories. Only approved GCs (on the Roster) may bid on the project size categories based on their award.

1.1.3 A Site Supervisor and Project Manager, assigned to manage and supervise the Work, must be named in the Bidder's Contact Information Specification section through the electronic Bidding System only and include resumes. Personnel will be subject to approval by the WRDSB and cannot be changed without prior written approval from the WRDSB.

1.1.4 Refer to COR Certification Requirements, Clause 1.5.

1.2 Subcontractors/Subconsultants

1.2.1 Refer to specifications for products and suppliers that will be required.

1.2.2 The subcontractor/subconsultant list is not required at time of bid submission.

1.2.3 The subcontractor/subconsultant list is mandatory after the bid closing date from the Recommended Bidder within twenty-four (24) hours of receiving a request or intent to award from the WRDSB.

1.2.4 In the event the WRDSB has a Prequalified Roster List for a Trade Category required for this project, the General Contractors will select from the list below in *3.0 WRDSB Prequalified Roster Lists*. General Contractor's subcontracting other than the companies listed below or identified by Addendum will have their Bid ruled informal.

1.2.5 The Bidder (the "Recommended Bidder") shall provide a list of subcontractor/subconsultant that it proposes to use for all Work described in this Procurement including the specification sections, as per the following:

i. Bidders shall select experienced and qualified subcontractor/subconsultant or Suppliers in their field to perform or supply an item of Work indicated in this Procurement.

ii. The Bidder shall be fully aware of the capability of each subcontractor/subconsultant and/or Supplier included in its bid, including but not limited to technical ability, financial stability, and ability to maintain the proposed construction schedule.

iii. The WRDSB reserves the right to reject any proposed subcontractor/subconsultant or supplier, based on the following but not limited to unsatisfactory past performance, suspended/removed from doing business

with the WRDSB and/or outstanding/unresolved corrective action notice issued by the Owner to the subcontractor/subconsultant within the last three (3) years.

iv. The WRDSB reserves the right to obtain information from the Bidder and from third parties respecting the qualifications and experience of the Bidder's nominated list of subcontractor/subconsultant for such item of the Work.

v. The WRDSB reserves the right to examine Bidder's facilities, equipment and visit the subcontractor/subconsultant's proposed.

vi. The substitution of any subcontractor/subconsultant and/or suppliers after the list is submitted will not be accepted unless a valid reason is given in writing to and approved by the Owner, whose approval may be arbitrarily withheld.

vii. Where a bidder lists "own forces" in place of a subcontractor/subconsultant, the bidder shall conduct such item of the Work with its own forces.

viii. Where "own forces" have been listed by a bidder, the WRDSB 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.

1.3 WRDSB Prequalified Roster Lists

NOT APPLICABLE.

END OF SECTION

00 21 15 – Scope of Work

The scope of work for the Boiler Replacement and Heating and Ventilation Upgrades – Phase 2 project at Galt Collegiate Institute includes, but is not limited to the following:

1. Boiler Replacement:
    - Removal of existing steam boilers
    - Removal of existing heating piping between the existing boiler room and the new boiler room
    - Removal of ceilings and floor trench to permit installation of new heating piping
    - Removal of ceiling mounted lighting and electrical devices in areas where ceilings are removed
    - Provision of new boilers
    - Provision of new heating piping
    - Provision of new controls
    - Installation of new ceiling finishes/ re-installation of removed ceiling finishes as noted on Drawings
    - Installation of new lighting/ re-installation of lighting and electrical devices
    - Electrical servicing required by new boiler system
2. Heating and Ventilation Upgrades:
    - Provision of new HVAC units in Classroom 101A, Transportation 103, Classroom 104, Science Room 301, Prep Room 301A, Art Prep Room 409, and Classroom 409.
    - Removal and replacement of interior finishes required by the installation of the new HVAC units.
    - Provision of new openings in exterior walls and roofs as required by new HVAC units.
    - Provisions of electrical services to support new HVAC units.
3. Miscellaneous
    - Provision of new welding booths in Transportation 122, including all electrical requirements.

Refer to Drawings and Specifications for full Scope of Work.

END OF SECTION

00 31 34 – Subsurface Investigation Report – Not Applicable

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: Not Applicable

.2 Dated: Not Applicable

.3 Prepared By: Not Applicable

.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 was 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

Appendix 00 31 34A – Soil Report – NOT APPLICABLE.

Appendix 00 41 13A – Asset and Warranty Card

WRDSB PROJECT ASSET & WARRANTY CARD

Instructions:

a. The WRDSB Project Asset & Warranty Card shall be filled out and completed for any project or work that calls for the replacement or new installation of any asset that has a warranty and requires ongoing preventative maintenance, as well any asset that is being removed.

b. The information for the WRDSB Project Asset & Warranty Card shall be collected and coordinated by the General Contractor responsible for the overall project. The WRDSB Project Asset & Warranty Card shall be filled out and submitted to the Board electronically to FAC_maintenance@wrdsb.ca and carbon copy the project coordinator at the point in time where the project is deemed "Substantially Complete" or at the start of the Warranty Period for said asset. For any project without a General Contractor, the Contractor or Trade responsible for the installation and/or removal of the asset shall complete the WRDSB Project Asset & Warranty Card and submit it to the Board in the same manner as mentioned above.

c. All items shall include the asset Identifier, asset description, location, manufacturer, model, serial number, and warranty end date (refer to example at bottom of page).

d. NO Warranty Period shall start without the written permission of the Board prior to the point of Substantial Completion of the project.

e. The Contractor that is responsible for the coordination and completion of the WRDSB Project Asset & Warranty Card shall ensure that the contractor or trade responsible for the installation of the item understands that the contractor or trade is responsible for the preventative and general maintenance of that item for the minimum 2 year warranty period as noted on the WRDSB Project Asset & Warranty Card.

f. All items installed under this contract that require ongoing preventative maintenance (PM) shall be included on the WRDSB Project Asset & Warranty Card. The following list contains examples to be included but not limited to;

Air Compressor	Chiller	Grease Trap
Air Handler- ERV, Heat Pump, RTU	Cooling Tower	Gym Equipment
AC Split -Indoor/Outdoor Unit	Elevator/Lift	Hoods- Kitchen/Fume
Automatic Doors	Eyewash Station-location only	Operable Partitions
Backflow Preventer	Fire Panel	Sprinkler System -area covered
Boiler		Tech Equipment

g. All maintenance during the warranty period shall be the responsibility of the contractor. This shall include, but not be limited to: air handling unit filter changes (3x min.per year), or as per manufacturers recommendations; servicing testable backflow preventors, including fees; and any and all required maintenance.

Sample:

To be filled out by Consultant				*To be filled out by Contractor*				
IDENTIFIER	ASSET	LOCATION (incl. Rm. No.)	REMOVED (R), OR NEW (N)	CONTRACTOR	MANUFACTURER	MODEL	SERIAL NUMBER	WARRANTY END DATE
Boiler 2	*Condensing Boiler*	*Boiler Rm. B005*	*R*	*Bob's Mechanical*	*Viessman*	*Vitocrossal 300 CA3B*	*1234x5678y90*	*Jan. 1, 2025*
HVAC 7	*New RTU*	*Roof D*	*N*	*Bob's Mechanical*	*Daiken*	*DPS020A*	*ABCD1EFGH2IJ*	*Jan. 1, 2025*
n/a	*Gym Partition*	*Gyms 122/123*	*R*	*Extreme Partitions*	*Hufcor*	*933EC*	*n/a*	*Jun. 30, 2028*

WRDSB Project Asset & Warranty Card

Project Name: _____

School / Location: _____

Date: _____

To be filled out by Consultant				*To be filled out by Contractor*				
IDENTIFIER	ASSET	LOCATION (include Room No.)	ASSET REMOVED (R) OR NEW (N)	CONTRACTOR	MANUFACTURER	MODEL	SERIAL NUMBER	WARRANTY END DATE

00 56 13 – Definitions Stipulated Price

1.1. Definitions Declaration

.1 CCDC 2-2020 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 2-2020

.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 usable 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 Ready for Takeover: *Ready-for-Takeover* shall have been attained when the conditions set out in GC12.1, SC 55.1, 12.1.1

.16 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.

.17 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.

.18 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.

.19 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.

.20 Tender: Refer to definition of Bid.

.21 Unit Price: The amount payable for a single unit of Work as stated in a Schedule of Prices.

.22 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.

.23 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.

.24 Provide: To Supply and Install

.25 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.

.26 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

00 72 13 – WRDSB Standard Terms and Condition

1. Applicable Terms and Conditions

None of the standard or other terms, conditions, or policies of the Bidder, whether published or otherwise shall be of any effect unless accepted by the WRDSB in writing. This includes, without limitations, terms in publications, website, sales invoice, delivery document as well as those commonly applied by the Bidder. WRDSB's acceptance of goods, equipment or service, acknowledgement thereon or paying invoices shall not imply acceptance of such terms, conditions, or provisions.

2. Bankruptcy

If, during the term of the Contract, the Supplier makes an assignment for the benefit of creditors, or becomes bankrupt or insolvent, or makes a proposal to its creditors, the Contract with the Supplier shall immediately be terminated, and the WRDSB shall be entitled to enter into an agreement with another party without the consent of the Supplier.

3. Basis of Award (Price factor)

Bidders shall be deemed to have included all costs related to the Work in the Total Price as provided in their Bid, except for items clearly identified as provisional in the Procurement document. In no case shall the invoicing for the entire Work performed exceed the Total Price unless additional Work is ordered by the WRDSB in writing. The unit prices as well as provisional pricing shall be used to invoice the additional or provisional work, as required by the WRDSB. For the purpose of award, the Total Price will be considered as representing the intention of the Bidders and will be used as the basis for comparison of Bids for the price factor.

4. Bonding Requirements

Bonding is only required if the project is equal to or greater than $200,000.00.

Note: The Bidding System has flagged these fields as mandatory. If your bid is less than $200,000.00, you may upload a pdf document stating: Not Applicable.

i. Bid Amount

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

ii. Bid Deposit Bond & Agreement to Bond

Bid submissions 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 of 10% of the total base bid (inclusive of HST) made payable to the Waterloo Region District School 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.

Bid Submissions must be accompanied by an Agreement to Bond in the form of a digital Bond in an electronically verifiable and enforceable (e-Bond), completed and executed by the Bidder's Surety, assuring the successful Supplier shall provide for a Performance Bond for 50% of the total Contract Price, and a Labour and Material Payment Bond for 50% of the total Contract Price.

Bidders shall upload their digital Bid Deposit Bond and Agreement to Bond separately to the Bidding System, in the bid submission files labeled "Bid Deposit Bond" & "Agreement to Bond". If both Bonds are within one (1) document, upload it in both files. All instructions and details for accessing authentication shall be included with the digital Bonds 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 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 Procurement document (including but not necessarily limited to: signed agreement, satisfactory security, insurance certificate, appropriate Workplace Safety and Insurance Board letter of clearance certificate) within the time stipulated as a written notice from the WRDSB.

For bid amounts where Bonding is not requested, the Awarded Bidder agrees to pay to the WRDSB 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 Procurement within seven (7) calendar days of written notification of the award of the contract.

iii. Performance and Labour & Materials Bonds

For bid amounts where bonding is required, inclusive of all taxes, the Supplier 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 Price made payable to the Waterloo Region District School Board as surety that, if the Bid is accepted, a Contract will be entered into for the proper performance of the work and extends protection to Subcontractors, Suppliers,

and any other persons supplying labour or materials to the Project. For more information, contact your surety company or visit the Surety Association of Canada website.

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

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

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

Bonds must be submitted through the Bidding System within seven (7) calendar days of receiving the Intent to Award.

5. Business Code of Conduct for Board Employees

The WRDSB will not knowingly purchase goods and/or services from Suppliers who operate in contravention of local and international laws. If a product and/or service supplied to the WRDSB is discovered to be in contravention, the WRDSB reserves the right to rectify the issue with the Supplier, including the cancellation of the contract.

The WRDSB expects that all employees and Suppliers act within the parameters of the in Administration Procedure 4360 PRINCIPLES OF BUSINESS CONDUCT FOR BOARD EMPLOYEES. Click here to access the WRDSB's Administrative Procedures, Section 4000 – Business Services.

6. Code of Conduct for Suppliers

These Guidelines cover any contractor, supplier, consultant, business, firm, company or individual doing work, providing a service or delivering goods on any Waterloo Region District School Board property, as well as the Supplier's employees, subcontractors, agents, consultants, and others on site in connection with the Supplier's work or at the Supplier's express or implied invitation.

i. Courtesy and Respect: all Suppliers and their employees must conduct themselves in a manner that is lawful, courteous, respectful, businesslike, and free of bias to the WRDSB, its officer, employees, students, guests, or visitors.

ii. Language and Behavior: Suppliers and their employees cannot engage in behavior that is rude, threatening, or offensive. Use of profane or insulting language is prohibited. Harassment of any type, including sexual harassment is strictly prohibited. Abusive, derogatory, obscene or improper language, gestures, remarks, whistling, cat calls or other disrespectful behavior cannot be tolerated. Rough housing, fighting, fisticuffs, physical threats, destruction of property, vandalism, littering, or physical abuse of anyone on WRDSB property are not permitted under any circumstance.

iii. No Weapons, Alcohol, or Drugs: The use, possession, distribution, or sale of any weapon, alcohol, illegal drug, or controlled dangerous substance by any Supplier or Supplier's employee is prohibited. Offenders will be removed from WRDSB property and/or reported to the local Police Department.

iv. Smoking: Suppliers and their employees are not permitted to smoke on WRDSB property, in or near any buildings.

v. Fraternization: Suppliers and their employees may not fraternize or socialize with WRDSB students or employees.

vi. Appearance: Suppliers and their employees, where applicable, are required to wear appropriate Personal Protective Equipment (PPE), work wear, hard hats and safety footwear high-visibility clothing, while on WRDSB property. Articles of clothing must be neat and tidy in appearance, and cannot display offensive or inappropriate language, symbols, or graphics. WRDSB has the right to decide if such clothing is inappropriate.

vii. Identification: contracted suppliers and their employees are required to wear branded attire of the company they work for when on WRDSB property.

viii. Vehicles and Driving on WRDSB Property: Vehicles must clearly indicate the Supplier's company name, identifier number and telephone number. It must be readable from 8 meters (25 feet) away. Vehicles including movable Equipment/Machinery must not enter, leave or drive on WRDSB premises during nutritional breaks, before and after school hours, or anytime there are students or staff outside of the building.

ix. Reporting: The Supplier is required to report any matter involving a violation of these rules of conduct, any matter involving health or safety, including any altercations, to WRDSB Facilities staff.

The Supplier is responsible for its employees, agents, consultants and guests. If prohibited conduct does occur, the Supplier will take all necessary steps to stop and prevent any future occurrence. Any breach of these conditions will result in the removal of the person

responsible from the school premises and prohibited actions could result in the termination of any contract or agreement with WRDSB.

7. Compliance with Laws, Acts and Regulations

Suppliers shall abide by all applicable municipal, provincial and federal laws, as well as WRDSB Policies. Some of the applicable laws are highlighted below for information purposes only. In case of any discrepancy between this Procurement Document and the provision of applicable laws, the latter shall prevail. This list is not intended to be a comprehensive summary of relevant laws or be a complete list of applicable regulations or interpretation of the provisions of any laws

i. Accessibility for Ontarians with Disabilities Act (AODA)
ii. Architect Act
iii. Bill S-211 Fighting Against Forced Labour and Child Labour in Supply Chains Act
iv. Broader Public Sector Accountability Act, 2010
v. Building Ontario Businesses Initiative (BOBI) Act, 2022
vi. Canada Revenue Agency (CRA) regulations
vii. Confidentiality Acts (MFIPPA, PIPEDA etc.)
viii. Construction Act
ix. Education Act
x. Occupational Health and Safety Act
    a. Ontario Regulation 157/25, Section 27.1.
       This regulation requires Constructors to have a defibrillator (AED) on construction projects with 20 or more regularly employed workers (effective January 1, 2026), and ensure a worker trained in CPR/AED operation is present at all times.
xi. Supply Ontario: Supply Chain Management Act (Government, Broader Public Sector and Health Sector Entities), 2019, S.O. 2019, c. 15, Sched. 37
xii. Trade Agreements (CETA/CFTA etc.)
xiii. Workplace Safety and Insurance Act (WSIB)
xiv. WRDBS Procurement Services Policies website
xv. WRDSB Policies and Procedures

Non-compliance with provincial and/or federal laws, or WRDSB Policies may result in rejection of the Bidder's Bid submission and/or termination of Contract.

Bidders should make themselves aware of provisions in all applicable provincial and federal laws as well as WRDSB policies and ensure full compliance. Non-compliance may result in rejection of Bid and/or termination of Contract.

The Supplier(s) will be required to comply with all applicable federal, provincial laws as well as WRDSB policies in performing its obligations under the Contract including, without limitation, the Occupational Health and Safety Act, as amended, and the Workplace Safety and Insurance Act, 1997, as amended, and Accessibility for Ontarians With

Disabilities Act, 2005, S.O. 2005, c.11, Accessibility Standards for Customer Services O. Reg. 429/07 requirements, under the Accessibility for Ontarians With Disabilities Act, 2005, as amended, or any successor legislation applicable, and to provide to the WRDSB, upon request, periodic reports and evidences confirming such compliance.
By supplying the goods or equipment and/or providing services, the Supplier warrants that the goods or equipment supplied, and services provided to the WRDSB conforms in all respects to the standards and codes set forth by federal and provincial agencies. Failure to comply with this condition will be considered a breach of this Contract.

The obligations of the parties and resolutions of any disputes shall be governed by and construed in accordance with the laws of the Province of Ontario and the federal laws of Canada, including the Construction Act, as to interpretation and performance, and shall be treated, in all respects, as an Ontario contract. The parties shall attorn to the exclusive jurisdiction of the courts of the Province of Ontario.

8. Confidential Information, MFIPPA, and PIPEDA

All information and documentation provided by the WRDSB or to the WRDSB in connection with this Procurement, before or after the issuance of this Procurement is the sole property of the WRDSB and shall be treated as confidential, subject to the provisions of the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA).

Bidders shall identify any confidential information in their Bid Submission. The WRDSB will make reasonable efforts to safeguard confidential information, subject to its disclosure requirements under MFIPPA or any other disclosure requirements imposed by law or by order of a court or competent tribunal. Bidders are advised that their Bid submissions may be disclosed, on a confidential basis, to advisers retained by the WRDSB to advise or assist with the Bid process, including the evaluation of Bid submissions.

Bidders should be aware that when submitting a Bid, the name, title, and contact information will be made public upon request. Under MFIPPA, and as a record of the WRDSB, the Bid prices submitted and agreed to under contract with the WRDSB can also be made available through a Freedom of Information request. Bidders will be notified regarding requests for any other information submitted in a Bid; information may be disclosed to a requester in whole or part unless otherwise considered exempt from disclosure under MFIPPA.

The Supplier represents and warrants that if it is or becomes subject to any private sector privacy legislation during the Term it will be solely responsible for compliance with such legislation. Without limitation, the Supplier represents and warrants that if it is subject to the *Personal Information Protection and Electronic Documents Act*, S.C. 2000, c.5, including any further amendments thereto (PIPEDA):

i. it and all the Supplier's Subcontractors shall ensure the PIPEDA compliance of all PIPEDA Protected Information it collects directly from individuals or indirectly from the WRDSB, uses or discloses while performing their obligations under this Agreement; and,

ii. without limitation, it shall ensure the PIPEDA compliance of all PIPEDA Protected Information it transfers or discloses to the WRDSB.

9. Confirmation to Proceed

No work shall commence until the WRDSB has issued a purchase order and/or contract, if applicable to the Supplier. 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 and/or the CCDC 2 - 2020, if applicable, are executed by the Supplier and the WRDSB. For payment purposes, a Purchase Order shall be generated and issued to the Supplier. The Purchase Order number must appear on all invoices to ensure prompt payment.

10. Conflict of Interest

By submitting a Bid, the Bidder confirms that they have no conflict of interest with respect to other work and/or other clients. The Bidder shall ensure that all subcontractors, subconsultants and suppliers also have no conflict with respect to other work and/or other clients.

The Supplier, subcontractors and sub-suppliers 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 Owner) with the provision of the Work pursuant to the Contract. The Supplier acknowledges and agrees that a conflict of interest, as described in this section includes, but is not limited to, the use of Confidential Information where the Owner has not specifically authorized such use.

The Supplier shall disclose to the Owner, 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 Subcontractor or Supplier that is directly or indirectly affiliated with or related to the Supplier.

The Supplier covenants and agrees that it will not hire or retain the services of any employee or previous employee of the Owner where to do so constitutes a breach by such employee or previous employee of the Owner's conflict of interest policy, as it may be amended from time to time, until after completion of the Work/Services under the Contract.

It is of the essence of the Contract that the Owner shall not have direct or indirect liability to any Subcontractor or Supplier, and that the Owner relies on the maintenance of an arm's-length relationship between the Supplier and its Subcontractors and Sub-suppliers. Consistent with this fundamental term of the Contract, the Supplier will not enter into any agreement or understanding with any Subcontractor or Supplier, 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 Owner, directly or through the Supplier, where such claim is, in whole or in part, in respect of a disputed claim by the Subcontractor or Supplier against the Supplier, where the payment to the Subcontractor or Supplier by the Supplier is agreed to be conditional or contingent on the ability to recover those amounts or a portion thereof from the Owner, failing which the Supplier shall be saved harmless from all or a portion of those claims. The Supplier acknowledges that any such agreement would undermine the required arm's-length relationship and constitute a conflict of interest. For greater certainty, the Supplier shall only be entitled to advance claims against the Owner for amounts pertaining to Subcontractor or Supplier claims where the Supplier has actually paid or unconditionally acknowledged liability for those claims or where those claims are the subject of litigation or binding arbitration between the Subcontractor or Supplier and the Supplier has been found liable for those claims.

A breach by the Supplier, any of the Subcontractors, Sub-suppliers or any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall entitle the Owner to terminate the Contract, in addition to any other rights and remedies that the Owner has in the Contract, in law, or in equity."

11. Construction Act Guidelines

For Work that is governed by the provisions of the Construction Act, the Construction Act shall apply where applicable including in respect to release of 10% holdback, 2% deficiency holdback, adjudication, and the provision of security.

12. Criminal Background Checks and Collection of Personal Information

The WRDSB must comply with Ontario Regulation 521/01 (Collection of Personal Information) of the Education Act with respect to criminal background checks and offence declarations.

If required by the WRDSB, the Supplier will provide to the WRDSB, or designate, a Criminal Background check for pertinent individuals 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.

An Offence Declaration on a WRDSB-approved form for every employee of the Supplier who may come in direct contact with WRDSB staff and/or students on a regular basis at any WRDSB site prior to the occurrence and on or before September 1 each year

thereafter may be required. Updated Offence Declarations may be required annually. The WRDSB will determine in its sole discretion whether this is a requirement.

Termination of contracts may be the result of non-compliance to this requirement.

13. Damage Responsibility of Supplier

The Supplier, their agents and all workers and persons employed by them or under their control, shall use due care that no person or property is injured and that no rights are infringed in the prosecution of the work, and the Supplier shall be solely responsible for all damages by whomsoever claimable in respect of any injury to persons or to lands, buildings, structures, utilities, survey markers, fences, livestock, trees, crops, roads, ways, ditches, drains and in watercourses, whether natural or artificial, or property or whatever description and in respect of any infringement of any right, privilege or easement whatever occasioned in the carrying on of the work or any part thereof, or by any neglect, misfeasance or nonfeasance on the Supplier's part or on the part of any of his agents, workers and persons employed by them or under their control shall bear the full cost thereof and shall at his own expense make such temporary provisions as may be necessary to ensure the avoidance of any such damage, injury or infringement.

The Supplier shall indemnify and save harmless the WRDSB from and against all claims, demands, loss, costs, damages, actions suits or other proceedings by whomsoever made, brought, or prosecuted in any manner based upon, occasioned by, or attributed to any such damage, injury, or infringement.

Notwithstanding the indemnity provisions contained in this section, where in the opinion of the WRDSB Representative the Supplier has failed to rectify any damage, injury or infringement or has failed to adequately compensate any person for any damage, injury or infringement for which the Supplier is responsible under the Contract, the WRDSB, following notice in writing to the Supplier of his intention so to do, may withhold payment of any monies due to the Supplier under this or any other Contract until the Supplier has rectified such damage, injury or infringement or has paid adequate compensation for such damage, injury or infringement.

14. Damage Reporting

If a utility structure or device, utility cable/conduit, or utility related infrastructure is damaged, the Supplier shall notify the WRDSB representative the same working day of any service disruption or damage and the Supplier will immediately notify the utility company to initiate repair. The Supplier will additionally make every reasonable effort to advise impacted resident(s) of a service disruption.

It is understood that all damage caused by workers engaged in the work under these specifications will be repaired by the Supplier and at the Supplier's sole expense. Damaged turf areas will be levelled and seeded, all horticultural planting damaged beyond repair will be replaced and any damage to structures, utilities, signs, light fixtures, landscape furniture, irrigation systems etc. will be repaired or replaced. Repair work will

be carried out by skilled workers acceptable to the WRDSB representative. All repairs and replacements will be approved by a WRDSB representative prior to final payment.

15. Debriefing Requests

For procurements valued at $121,200 or more, and in accordance with the Broader Public Sector Procurement Directive, unsuccessful Bidders are entitled to a debriefing to receive feedback with respect to their Bid submission. To obtain a debriefing, Bidders shall contact the Single Point of Contact listed in this Procurement Document in writing with their request within sixty (60) calendar days of the award notification.

16. Default

If the Supplier fails to properly, promptly, and fully carry out the Work required by these documents, the WRDSB reserves the right to notify the Supplier to discontinue all Work under this Contract, to advertise for new Bids or carry out the Work in any way as the WRDSB may, in their sole discretion, deem best.

The Supplier further agrees to indemnify and save harmless the Indemnified Parties from all loss, damage, liability, cost, charge, or expense whatsoever which it, they or any of them may suffer, incur or be put to by reason of such default or failure.

17. Delay Claims

The Supplier shall be responsible for all deliverables including lead times. The bidder shall include in their bid price any costs associated with an extended schedule beyond the stated substantial completion date due to delayed deliveries of items. Cost is to be inclusive of any afterhours work required due to the school being occupied by staff and students during the school year until completion.

The WRDSB will not accept or consider any "delay claim" requests for delayed deliverables outlined in the tender documents.

18. Delivery and Transportation Charges

Unless otherwise specified under the Special Provisions and/or Scope of Work and Deliverables sections of this document, prices documented shall be net prices including transportation and delivery charges fully paid by the Supplier and Free On Board (FOB) Destination, Freight Prepaid (any/all WRDSB locations).

19. Designated Substances

The Occupational Health and Safety Act of Ontario (OHSA) allow for certain toxic substances to be especially designated. The OHSA defines a designated substance as “a biological, chemical, or physical agent or combination thereof prescribed as a designated substance to which the exposure of a worker is prohibited, regulated, restricted, limited, or controlled”. Ontario Regulation 490/09 - Designated Substances (O.Reg. 490/09), made under the Occupational Health and Safety Act outlines required steps to control exposure of workers to designated substances. Under O. Reg. 490/09 there are eleven (11)

designated substances: acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica and vinyl chloride. This regulation applies to every employer and worker at a workplace where the designated substances are present, produced, processed, used, handled or stored and at which a worker is likely to be exposed to the designated substance.

i. Asbestos

Asbestos-containing material (ACMs) were identified during the completion of the Asbestos Audit Update Report (AAU), prepared by WRDSB retained consultants. Each facility was surveyed, and if applicable, an AAU Report is available, refer to attached**,** Appendix 01 35 34A. If these materials, including those deemed or suspected, will be disturbed, or will likely be disturbed, during building maintenance, renovations, construction, or demolition activities, they must be handled and disposed of in accordance with the procedures prescribed by O. Reg. 278/05.

Should the Supplier encounter asbestos, not noted in the above AAU Report, which would be disturbed during the course of the Work they should stop the work in that immediate area and report the same to the WRDSB Contact.

All asbestos work must be conducted by Suppliers approved by the WRDSB, who are trained in the type of asbestos operations required and should be overseen by a qualified third-party Health, Safety and Environmental professional. To conduct Type 3 asbestos operations, Suppliers 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 as prescribed by Section 20 of O. Reg. 278/05.

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 0.6 meter (2’-0”) 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.

ii. Lead

Lead was historically used in mortar pigments, ceramic glazing; plumbing solder, electrical equipment and electronics solder, in pipe gaskets as packing in cast iron bell and spigot joints of sanitary drains, flexible plumbing connections, flashing panels, acoustical dampeners, phone cable casing and some architectural applications. The assessment of lead for this assignment was limited to paint on interior and exterior surfaces which may be disturbed during the Work.

Preliminary paint, coatings or materials were collected within the work area to determine if lead-containing paints, including lead-based paints, are present. The analytical results, if applicable, including the location marked on the floor plans are available, refer to attached, Appendix 01 35 34B.

Should the Supplier encounter paint and coatings, not sampled, 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 WRDSB Contact.

Unless otherwise specifically covered by Cash Allowance or Contingency Allowance for known lead-containing paint and coatings, include in this contract for the removal or disturbance of lead-containing materials, must be completed in compliance with "Lead on Construction Projects" guideline (April 2011). No claims for extra cost will be accepted for lead-containing paint or coatings in identified areas.

The classification of typical lead-containing construction tasks is based on presumed airborne concentrations obtained from the U.S. Occupational Safety and Health Administration (OSHA), the Ontario Ministry of Labour, and published research studies. The classification of Type 1, Type 2, or Type 3 operations are grouped based on the following concentrations of airborne lead

Supplier shall inform all workers of the presence of paint finishes that are lead containing. Disturbance of lead-containing materials, 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. Waste to be handled and disposed of in accordance with O.Reg. 347.

iii. Mercury

Mercury is typically used in building service applications such as 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 to be handled and disposed of in accordance with O.Reg. 347.

iv. Silica

Silica is present in rock, stone, soil, and sand. Masonry products such as concrete block, brick, and mortar, as well as concrete and associated products contain silica.

Due to its ubiquitous nature, silica was historically used in a wide variety of building materials and is still used today in new construction.

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 Supplier shall implement dust suppression methods and protect workers.

v. Other Designated Substance

In addition to asbestos and/or lead, silica, and mercury are present in all WRDSB facilities. New construction, renovation, or alterations require compliance by the Supplier with the applicable legislation. Other designated substances (i.e., 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.

20. Dispute Resolution

All disputes arising out of or in connection with this Contract, or in respect of any legal relationship associated with or derived from this Contract, other than with respect to the WRDSB's right to terminate this Contract, shall first be mediated pursuant to the National Mediation Rules of the ADR Institute of Canada, Inc. Despite this agreement to mediate, the Supplier or the WRDSB may apply to a court of competent jurisdiction or other competent authority for interim measures of protection at any time. All disputes remaining unsettled after mediation shall be arbitrated and finally resolved before a single arbitrator pursuant to the National Arbitration Rules of the ADR Institute of Canada, Inc. The place of mediation and arbitration shall be Toronto, Ontario, Canada. The language of the mediation shall be English.

21. Duty to Disclose Change of Control

If the Supplier undergoes a change in control, the Supplier shall immediately disclose such change in control to the Designated Representative and shall comply with any terms and conditions subsequently prescribed by the WRDSB resulting from the disclosure.

22. Electrical Safety Requirements

All electrical equipment and components must be C.S.A., or Electrical Safety Association (E.S.A.) certified. A certification sticker must be affixed to the equipment in a visible location.

23. Emergency and Maintenance

The care of the Works until completed, delivered to and accepted by the WRDSB, rests solely with the Supplier who shall assume all risk of damage to the work.

For emergency and maintenance measures, the name, address, and telephone number of a responsible official of the contracting firm shall be given to the WRDSB's contact person in charge of the project, if requested. This official shall always be available and

have the necessary authority to mobilize workers and machinery and to take any action as directed by the WRDSB in the event emergency or maintenance measures are required, although the emergency or requirement of maintenance may have been caused by the Supplier's negligence, Act of God, or any cause whatsoever.

Should the Supplier be unable to carry out the required immediate remedial measures, the WRDSB may carry out the necessary repairs and the costs for this work shall be deducted from payments due to the Supplier.

24. Equivalents and Alternatives

24.1 Equivalents or Brands Names

24.1.1 Any reference to a brand name or a particular manufacturer shall be understood to have been made solely for the purpose of establishing and describing required performance and quality levels of the product to be supplied, unless specified otherwise.

24.1.2 No reference to the brand name of a particular manufacturer shall be construed to restrict Bidders to that manufacturer. Bidders are invited to Bid equivalent and comparable equipment or items of any manufacturer, pending approval from the WRDSB in the form of an Addendum. It is the Bidder's responsibility to demonstrate that the item meets the specifications.

24.1.3 Bidders shall request through the Bidding System by clicking on the "Submit a Question" button found within the bid details page of that Procurement that a proposed product be considered an approved equivalent prior to the Deadline for Questions in the Anticipated Project Schedule. Upon receipt of a request, the WRDSB will respond by providing further instructions where you may submit documentation.

24.1.4 The response must include enough detail to determine equivalency by comparing the WRDSB's specifications to the equivalent product. It will not be the WRDSB's responsibility to make this comparison.

24.1.5 The WRDSB/ Consultant may, depending on the nature of the product request site visits within a reasonable distance (preferable within 100 km of the WRDSB) showing product and installation based on a certain age, minimum 18 months in use, room use, room size, etc. based on same or similar purpose as described in this Procurement.

24.1.6 The WRDSB/Consultant will endeavor to complete a review and decide prior to the Closing Date, and, if required, the WRDSB reserves the right to extend the Closing Date to complete its review. However, in the event additional time is required beyond a suitable extension to the Closing Date, the request will be pending until the product is thoroughly vetted, therefore, it may not be approved for this Procurement.

24.1.7 If the WRDSB is willing to consider the product with its differences, it will be communicated in the form of an Addendum prior to the Closing Date.

24.1.8 The cost of any testing requirements to establish acceptable equivalent or comparable products will be borne by the Bidder, unless otherwise stated by the WRDSB.

24.2 Alternatives and Substitutions

24.2.1 After Contract Award, the Contractor may submit an alternate material or piece of equipment to the Consultant and Owner for review. An Alternate will only be evaluated and considered acceptable if it meets the intent of the original design and specifications, and where there is a credit or no additional cost to the Owner. The Specification Sections contain pertinent performance criteria, quality, function and requirements for materials and methods to achieve work described.

24.2.2 Material or equipment of equal or better performance and quality may be offered in substitution for those specified. Requests for review of substitute items of material and equipment will not be accepted by the Consultant from anyone other than the Contractor. All requests for substitution must be accompanied by a detailed listing of the expected cost savings to the Owner.

24.2.3 Substitutions will not be considered when they are indicated or implied on Shop Drawings or product data submittals without a separate written request.

24.2.4 Requests for substitution shall include any request for changes from the Contractor that require significant design changes, redesign, or significant design reviews.

A request for substitution constitutes a representation that the Contractor:

i. Has investigated the proposed product and determined that it meets or exceeds the quality level of the specified product.
ii. Will provide the same warranty for the substitution as for the specified product.
iii. Will coordinate the installation and amend other Work which may be required for the Work to be complete at the Contractor's expense and at no additional cost to the Owner.
iv. Waives claims for additional costs or time extension which may subsequently become apparent.
v. Will reimburse the Owner for review or redesign services.

24.2.5 Request for substitution to be made by written application to the Consultant and is to include sufficient data to enable the Consultant to assess the acceptability of requirements, including the following:

i. All submittal information required for the specified equipment, including all deviations from the specified requirements and/or necessitated by the requested substitution.
ii. Materials of construction, including material specifications and references.

iii. Dimensional drawings, showing required access and clearances, including any changes to the work required to accommodate the proposed substitution.

iv. Drawings and details showing changes if the offered substitution necessitates changes to or coordination with other portions of the Work. Perform these changes as part of the substitution of material or equipment at no additional cost.

v. Certification that the proposed substitute will adequately perform the functions and achieve the results called for by the general design, be similar and of equal substance to that specified and be suited to the same use as that specified with the same or better warranty.

vi. Information and performance characteristics for all system components and ancillary devices to be furnished as part of the proposed substitution.

vii. Certification that acceptance of the proposed substitute will not prejudice achievement of Substantial Performance.

viii. Itemization of all costs including any licenses fee or royalty that will result directly or indirectly from the acceptance of the proposed substitution. Include redesign and cost of claims of any other contract affected by the resulting change.

ix. Guaranteed credit or cost reduction offered if the proposed substitution is accepted and a waiver of claims for additional expenses which may subsequently become apparent.

x. Recommended maintenance requirements and availability of spare parts and service.

xi. Written confirmation from subcontractors and suppliers on cost, schedule, and technical requirements if requested by the Consultant.

24.2.6 Consultant will evaluate each proposed substitution. Consultant will be the sole judge of acceptability, and no substitute will be ordered, installed, or utilized without the Consultant's prior written acceptance by either a Change Order or a reviewed shop drawing. The burden of proof is on the Contractor.

24.2.7 Pay the Consultant's cost for evaluating the requested substitution even though the request may be denied, or for additional redesign work required because of any substitution. Costs will be charged on a time and expense basis and will be deducted from progress payments due to the Contractor.

25. Evidence of Quality

It is the Bidder’s responsibility to prove their product/service quality meets the WRDSB’s requirements and Bidders may be required to submit evidence in a form acceptable to the WRDSB. Substitution of materials, equipment or methods different from those outlined in the specifications / terms of reference will not be accepted unless provided for within the Procurement document or without the written approval of the WRDSB.

26. Force Majeure

If either party is delayed in the performance of their obligations under this Contract by Force Majeure, then the Contract Time shall be extended for such reasonable time as the Owner, and the Supplier shall agree. The extension of time shall not be less than the time lost because 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 Contract Time attributable to the Force Majeure event, the Owner and the Supplier shall execute a Change Order indicating the length of the extension to the Contract Time and confirming that there are no costs payable by the either party for the extension of Contract Time. However, if at the time an event of Force Majeure arises a party is in default of its obligations under the Contract and has received a notice of default 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 Force Majeure."

Any cause, unknown at the effective date of the Contract and beyond either party's control, other than financial difficulties, bankruptcy or insolvency, which prevents the performance by a party, or both, of any of their respective obligations under the Contract and the event of Force Majeure did not arise from a party's default and could not be avoided or mitigated by the exercise of reasonable effort or foresight. Force Majeure includes Labour Disputes; fire; unusual delay by common carriers or unavoidable casualties; delays in obtaining third-party licenses, permits, agreements, or approvals (excluding approvals of any Subcontractors or Suppliers of any tier); civil disturbance; emergency acts, orders, legislation, regulations or directives or revoking of funding from 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 Place of the Work; acts of God; or declared epidemic or pandemic outbreak or other public health emergency (e.g. SARS, COVID-19)

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 WRDSB shall either terminate the Contract forthwith without any future payments being made or authorize the Bidder 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.

27. Hold Back or Set Off

The WRDSB may hold back payment or set off against payment if, in the opinion of the WRDSB, the Supplier has failed to comply with any requirements of the Contract.

28. Hot Work Procedure

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:

i. Whenever possible, complete Hot Work in a welding shop or out of doors at the school.
ii. 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.
iii. Explosive atmosphere in area eliminated. Floors swept clean. Combustible floors wet down, covered with damp sand or fire-resistive tarpaulins.
iv. All wall and floor openings covered. Fire-resistive tarpaulins suspended beneath Work.
v. For on-site Work (indoor and out of doors), advise the Head Custodian, Principal, Consultant (if assigned) and Project Coordinator/Lead prior to Work being performed, and of related dangers.
vi. 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.
vii. In the event of a fire because 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 WRDSB.
viii. 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.
ix. 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.
x. Provide and keep fire extinguishers handy and in good Working condition. Temporarily cover all smoke detectors in the area during time of Work.
xi. Provide a fire watch/spot check for several hours after Work is completed. Uncover smoke detectors.
xii. 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.
xiii. On additions to existing buildings, the requirements for Hot Work permits shall remain in place.

28.2 Hot Work Permit

i. Each permit is valid for seven (7) days only and must be renewed prior to its expiration date
ii. The contractor must obtain Hot Work Permits from the WRDSB's representative prior to the start of work.
iii. The contractor must complete the form as required and must keep the form on site.
iv. Return each completed form to the WRDSB's representative on the date of expiration.
v. The most current version of the Permit and its requirements shall be used for the purposes of the Work.

29. Incurred Costs

The WRDSB will not be liable, nor reimburse any Bidder for costs incurred in the preparation of the Bid, or any other services that may be requested as part of the procurement process.

30. Indemnification

The Bidder will indemnify and save harmless and defend the WRDSB, and their respective elected officials, officers, employees, agents and their respective successors and assigns, from and against all actions claims and demands whatsoever which may be brought against or made upon any of the Indemnified Parties and against all losses, liability, judgments, claims, costs, demands or expenses which the Indemnified Parties may sustain, suffer, or be put to resulting from or arising out of the Bidder's failure to exercise reasonable care, skill or diligence in the performance or rendering of any Work or service required hereunder to be performed or rendered by the Bidder, its agents, servants, employees or Subcontractors, or any of them as well as for the infringement of or use of any intellectual property rights including any copyright or patent arising out of the reproduction or use in any manner of any plans, designs, drawings, specifications, information, negatives, data, material, sketches, notes, documents, memoranda, or computer software furnished by the Bidder in the performance of this Contract.

31. Inspection of Supplier's Work and Equipment.

i. The WRDSB reserves the right to inspect and/or have demonstration of the products/equipment/services offered prior to award of this Procurement.

ii. The WRDSB reserves the right to have all work, including maintenance and repair work reviewed by a third-party Contractor, Agency, or Consultant to confirm that work within this Contract is being completed satisfactorily.

32. Insurance Requirements

If selected, it is the responsibility of the Supplier and its Insurance Broker to review all potential operations and exposures to determine if the coverage and limits noted below

are sufficient to address all insurance related exposures presented by the specification of the Project, Work, or Supply. The Supplier shall ensure its undertaking, business, and equipment under the following coverage to protect and indemnify and save harmless the WRDSB.

Throughout the term of this Contract (including any renewal thereof), the Supplier shall obtain, upload through bids&tenders and maintain at its own expense, including the cost of any applicable deductible or self-insured retention, the following policies of insurance:

i. **Commercial General Liability Insurance** shall be in the name of the Supplier, and shall name the **Waterloo Region District School Board** and any other person or party identified in the contract documents, as an **additional insured**, with limits of not less than $5 Million inclusive per occurrence for bodily injury, death, and damage to property, including loss of use thereof, for itself and each of its employees, *Subcontractors* and/or agents. To achieve the desired limit, umbrella, or excess liability insurance may be used. The policy shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of any cancellation and of change or amendment restricting coverage.

ii. **Automobile Liability Insurance** in respect of licensed vehicles with limits of not less than $2 Million inclusive per occurrence for bodily injury, death and damage to property, covering all licensed vehicles owned or leased by the Supplier, and endorsed to provide the Owner with not less than 30 days' notice, in writing, in advance of any cancellation, change or amendment restricting coverage. Where the policy has been issued pursuant to a government-operated automobile insurance system, the Supplier shall provide the Owner with confirmation of automobile insurance coverage for all automobiles registered in the name of the Contractor.

iii. **Contractor's Equipment Insurance:** If applicable/requested, Broad Form Contractor's Equipment Insurance: The General Contractor shall provide and maintain during the term of the Agreement coverage for construction machinery and equipment used by the Contractor for the performance of the work. Such insurance shall be in a form acceptable to the WRDSB and shall not allow subrogation claims by the Insurer against the WRDSB.

iv. **All Risk Installation Floater:** If applicable/requested, the General Contractor shall provide and maintain during the term of the Agreement an All Risk Installation Floater Insurance policy covering the installation of any machinery and equipment associated with the construction project. Coverage shall be in an amount equal to the value of the machinery and/or equipment and shall include coverage while it is in transit too, while stored at a temporary location, and awaiting installation at the work site.

v. **Professional Liability Insurance (Errors and Omissions):** If applicable/requested, Contractors and/or Consultants shall ensure its professional consultants, architects, landscape architects, planners, engineers, including IT providing a professional service in connection with the contract, maintain until three (3) years after the Agreement, Professional Liability Insurance to a limit not less than $1 Million per claim providing coverage for acts, errors and omissions arising from their professional services performed under this Agreement including but not limited to . design errors, project management mistakes, failure to perform etc. The policy SIR/deductible shall not exceed $100,000 per claim and if the policy has an aggregate limit, the amount of the aggregate shall be double the required per claim limit. Certificates evidencing such coverage shall be supplied to the WRDSB prior to the completion of the project and in accordance with the provisions stated above.

vi. **Pollution Liability:** If applicable, (i.e., for projects with environmental liability concerns) the General Contractor shall take out and keep in force Contractor's Pollution Liability (CPL) coverage to ensure that its work does not exacerbate any pre-existing environmental conditions during construction. Coverage shall be in an amount of not less than $5 Million per claim or per occurrence, or such greater amount as the WRDSB may from time to time require, naming the WRDSB as an additional insured, whose coverage shall be maintained in force for 1 year following the termination of the Contract. The policy SIR/deductible shall not exceed $100,000 per claim and if the policy has an aggregate limit, the amount of the aggregate shall be double the required per occurrence limit.

vii. **Cyber Insurance**: If applicable/requested: In addition to the insurance required under the Agreement, the Contractor shall procure and maintain cyber and network privacy insurance at its sole cost and expense with an aggregate limit of not less than $1 million per occurrence.

The insurance policy shall include coverage for any and all liabilities, damages, claims, losses, costs, and expenses of any kind that may be incurred by or asserted resulting from or related to: (1) any act, error, omission, or negligence related to the Proponent's technology and/or professional services; (2) intellectual property infringement arising out of software and/or content; (3) breaches of security and/or data; (4) violation or infringement of any right to privacy, or any breach of federal, provincial or local security and/or privacy laws or regulations; and (5) theft, damage, destruction, or corruption of any WRDSB data or any employee, or student of WRDSB, including without limitation, unauthorized access, unauthorized use, identity theft, theft of personally identifiable information or confidential corporate information, the transmission of a computer virus or other type of malicious code.

Evidence of coverage must be provided to the WRDSB within 7 days of the Intent to Award. The policy must be kept in force by the Proponent during the term of this

Agreement and for three (3) years (either as a policy in force or Extended Reporting Endorsement) after this Agreement is terminated or after completion of the Project provided for herein, whichever is later. Proof of insurance may be requested during the agreement term and for three (3) years after. If the policy is to be cancelled or non-renewed for any reason, a 90-day notice of said cancellation or non-renewal must be provided to the WRDSB. The WRDSB has the right to request that the Proponent purchase an Extended Reporting Endorsement at the Proponent's sole expense.

viii. **Provisions**: Prior to the commencement of work, the Supplier shall forward a Certificate of Insurance evidencing this insurance with the executed Agreement. The Certificate shall state that coverage will not be suspended, voided, canceled, reduced in coverage or in limits except after thirty (30) days (ten (10) days if cancellation is due to non-payment of premium) prior written notice by certified mail to the WRDSB.

It is also understood and agreed that in the event of a claim any deductible or self-insured retention under these policies of insurance shall be the sole responsibility of the General Contractor and that this coverage shall preclude subrogation claims against the WRDSB and any other person insured under the policy and be primary insurance in response to claims. Any insurance or self-insurance maintained by the WRDSB and any other person insured under the policy shall be considered excess of the Contractor's insurance and shall not contribute with it. The minimum amount of insurance required herein shall not modify, waive, or otherwise alter the Contractor's obligation to fully indemnify the WRDSB under this Agreement.

The WRDSB reserves the right to modify the insurance requirements as deemed suitable.

ix. Third Party Claims Process:

a. The WRDSB's claims process for Third Party claims is to refer the claimant directly to the Supplier and to leave the resolution of the claim with the Supplier. This applies regardless of whether it is an insured loss.

b. As WRDSB has a responsibility to the taxpayers, we must ensure that claimants are dealt with in a fair and efficient manner. Claims reported to the Supplier, either directly by a third party or through the WRDSB shall be promptly investigated by the Supplier. The Supplier shall contact the third party claimant within 48 hours of receipt of notice of a claim. The Supplier shall initiate an investigation of the claim immediately upon notice, and advise the third party claimant in writing, with a copy to the WRDSB, of its position regarding the claim within 21 calendar days of the notice. The Supplier shall include in its response the reasons for its position.

c. Should this position not resolve the claim and be accepted by the third party claimant, the Supplier shall immediately report the claim to its Insurer for further review. (Insurer for this purpose is defined as either the Claims Department of the Supplier's Insurance Company or the Claims Administrator at the Supplier's Insurance Broker.) The Supplier's Insurer upon receipt of this claim shall advise the third party claimant by letter, with a copy to the WRDSB, that it is now investigating the claim. When a final position on the claim has been determined, the Supplier's Insurer shall advise the third party claimant by letter, with a copy to the WRDSB. Failure to follow this procedure shall permit the WRDSB to investigate and resolve any such claims.

d. Nothing herein shall limit the right of the WRDSB to investigate and resolve any such claims notwithstanding the response of the Supplier and/or its Insurer and to seek indemnification from the Supplier or to exercise any other rights under the Contract.

e. The WRDSB may, without breaching this contract, retain from the funds owing to the Supplier an amount that, as between the WRDSB and the Supplier, is equal to the balance in the WRDSB's favour of all outstanding debts, claims or damages, whether related to this contract.

33. Invoicing and Payment Terms

33.1 Submit all invoices to finance-ap@wrdsb.ca for payment at the completion of the Work or after receipt of goods, unless otherwise stated. Not Applicable for Credit Card orders.

33.2 Fiscal Year End: All work scheduled within a single school year (Sept 1-Aug 31) must be completed and invoiced received by the WRDSB no later than August 31 of that same school year, unless budgets dictate that work must extend into the following school year and/or mutually agreed upon both parties.

33.3 New Account, in advance of invoicing, upon request, Suppliers will provide:

i. necessary company information to set up a WRDSB account and
ii. banking information to receive payment by Electronic Funds Transfer (EFT).

33.4 Requests to change company information must be submitted in writing accompanied by a legal document/letter signed by a lawyer on the law firm's letterhead.

33.5 Invoices must contain the following information, where applicable, to be deemed complete:

i. Purchase Order Number
ii. Invoice Date
iii. Unique Invoice Number

iv. Supplier name and address
v. Quantity, Unit Price, Unit of Measure and Extended Price
vi. Description for each line item
vii. Date of Service Call, if applicable
viii. HST
ix. Payment Terms
x. Work Order Number, if applicable
xi. Name of WRDSB Project Lead, if known, and

33.6 Payment terms shall be net thirty days (30) days after receipt of invoice, unless otherwise agreed by the WRDSB in writing. An early payment discount, if offered, may be considered on a mutual agreement basis. Payment may be delayed if the invoice is incorrect or the goods, equipment and/or services are not acceptable to the WRDSB. The WRDSB will not pay any interest, penalty, or late fee for delayed payments. The WRDSB preferred payment method is Credit Card or EFT, however alternate payment methods may be approved. Suppliers are required to invoice promptly, without delay. For Work that falls under the Construction Act, refer to 34 Construction Act – Proper Invoice.

34. Construction Act – Proper Invoice

The WRDSB will pay such invoice within twenty-eight (28) calendar days of the WRDSB's receipt of such proper invoice if the work has been performed to the satisfaction of the WRDSB For Work that is governed by the provisions of the Construction Act and the Regulations thereto, the Supplier shall submit its invoices in the form of a Proper Invoice. For the purposes of this section, a "Proper Invoice" shall include the following:

i. the Supplier's name, address, telephone number, and mailing address.
ii. the date of the Proper Invoice and the period during which the services or materials for which payment is being made were supplied.
iii. information identifying the authority, whether in the contract or otherwise, under which the services or materials were supplied.
iv. a description, including quantity where appropriate, of the services or materials that were supplied during the payment period.
v. the amount payable for the services or materials that were supplied during the payment period, with a clear identification of the portions of the amount that are holdbacks, and HST.
vi. the name, title, telephone number, and mailing address of the person to whom payment is to be sent.
vii. the payment terms as specified by the WRDSB in the Contract.
viii. the invoice number and if applicable, the revision number.
ix. the Supplier's HST number.
x. invoices and time sheets from all subtrades whose work is included in the Proper Invoice, if required in the Contract.

xi. backup documentation to support any cash allowances and extra work claimed in the Proper Invoice.

xii. a schedule of values indicating:

a. for lump sum contracts, the percentage of work completed per division with each division further subdivided to show the percentage of work completed for each subtrade,

b. for unit price contracts, the tender quantity, unit of measure, previous quantity, current quantity, to-date quantity,

c. an updated list of change orders, showing the percentage of work completed under each change order, and

d. an updated cash allowance list, showing the percentage of work completed in respect of each cash allowance, if required by the Contract.

xiii. a Statutory Declaration where required by the Contract attesting to the truth of the statements made therein.

35. Interpretive Value of Headings

The headings in this Procurement document or subsequent Agreements are for convenience of reference only and in no manner modify, interpret, or construe the Procurement document or subsequent Agreements.

36. Licenses and Permits

The Supplier will be responsible for applications and fees associated with all licenses and permits required by all governing bodies. The Supplier will attach a copy of all permits, and any other required documentation to the applicable assigned work order for WRDSB records.

37. Locates

All required utility locates must be obtained before any on-site work commences, be available for Supplier operator/employee review, and are the sole responsibility of the Supplier. Any damage to any utility installation arising from work performed by the Supplier or their employees shall be the Supplier's responsibility.

The Supplier will obtain all utility locates in advance of work and all cost(s) associated with obtaining the utility locates will be the Supplier's responsibility.

The Supplier shall possess the ability to supply and or share with the WRDSB Representative utility locates for the sole purpose of Quality Control inspections. This is to be done at no additional cost to the WRDSB.

38. Log Reports

If requested, the Supplier must submit a completed Log Report with invoices. The WRDSB may request more frequent log submissions if it is necessary.

39. Materials - Specifications

Only new materials in perfect condition will be accepted. 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 Supplier at the Supplier's expense.

40. Material Safety Data Sheets (M.S.D.S.)

Where applicable, a materials safety data sheet (M.S.D.S.), must accompany all purchased goods, that fall under the requirements of the Occupational Health and Safety Act. The WRDSB will not accept any additional charges or surcharges related to the supply of M.S.D.S.

41. Mathematical Errors (Unit Prices Prevail)

Should there be any error in extensions, additions or computations, the WRDSB shall be entitled to correct such errors based upon the unit prices supplied, and the corrected total shall be considered as representing the intention of the Bidder and shall be used as the basis for comparison of bid submissions.

42. No Branding

The Supplier shall not place any sign at the site, public meetings, any public or private property or along curbside prior, during or after the Work without prior written permission of the WRDSB.

43. No Collusion

Bidders/Proponents including any of their agents are prohibited from engaging in any comparison of figures or arrangement with any other individual, corporation or person submitting a Bid/Proposal for the same Work and shall be fair in all respects and shall be without collusion or fraud.

44. No Lobbying

Any attempt by the Bidder or its agents to contact any of the following people, directly or indirectly, with respect to this procurement may lead to disqualification:

i. any elected or appointed officer.
ii. any staff of the WRDSB except the Designated Representative as identified in the Procurement Document; or
iii. any other person connected in any way with the procurement.

45. No Smoking and Scent-Free Environment

The Province of Ontario has legislated under the Smoke Free Ontario Act that smoking is not permitted on any WRDSB owned properties. Furthermore, most WRDSB 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.

46. Non-Assignment

No assignment by the Supplier shall relieve the Supplier of any responsibility for the full performance of all its' obligations under this contract.

The Supplier shall not change its corporate name without the prior written approval of the WRDSB.

47. Non-Disclosure Agreement (NDA)

The WRDSB requires all service providers to sign off on a non-disclosure agreement and for the service provider to complete the Software Privacy and Security Standards Document (if necessary) in accordance with WRDSB procedure AP4790. Prior to any sharing of WRDSB personal, sensitive, or confidential information, the Supplier will be subject to further privacy and security reviews as required. This agreement will be renewed on an annual basis.

48. Ownership of Work

For the purposes of this paragraph:

"Deliverables" means all material prepared by the Bidder forming the Work under this Contract including, without limitation, all electronic media, reports, documents, and instruments of service.

"Intellectual Property Rights" means any and all rights provided under: (a) patent law; (b) copyright law; (c) trade-mark law; (d) industrial design law; (e) any other statutory provision or common law principle applicable to this Contract, including trade secret law; and (f) any and all registrations and licenses in relation to the foregoing; and

"Personnel" means employees, representatives, agents, and Subcontractors.

The Bidder and the WRDSB acknowledge and agree that the development of the Deliverables and the provision of the Work may result in the creation or development of new intellectual property and may contain or utilize the existing intellectual property of the Bidder or of third parties. Accordingly, the Bidder and the WRDSB agree as follows.

i. Except as set out in paragraph (b) below, the Bidder hereby assigns and agrees to assign to the WRDSB all right, title and interest, including all Intellectual Property Rights, in and to each Deliverable from the moment of creation, and will cause its Personnel to assign the same. The Bidder will cause its Personnel to waive all moral rights they may have in each Deliverable.
ii. To the extent that a Deliverable contains or utilizes the intellectual property of the Bidder or a third party ("Retained Materials"), and the Bidder expressly identifies such Retained Materials, the Bidder and the applicable third party will, subject to the following sentence, retain all their respective right, title and interest, including all Intellectual Property Rights, which each may have in such Retained Materials. To the extent that a Deliverable contains or utilizes Retained Materials, the Bidder hereby grants to each of the WRDSB a royalty-free, irrevocable, perpetual, world-

wide, non-exclusive license to make, use, sell, modify, prepare derivative works, disclose, publish, sublicense, copy and communicate by electronic means such Retained Materials.

iii. The Supplier agrees to always cooperate fully and will cause its Personnel to always cooperate fully, with respect to signing such documents and doing such acts and other things reasonably requested by the WRDSB to confirm the transfer of ownership rights in the Deliverables.

49. Patent, Copyright and Other Proprietary Rights

The Bidder (by responding) agrees that the Bid on acceptance by the Designated Representative, becomes the property of the WRDSB. The copyright for respective purchased concepts and/or materials will become the property of the WRDSB unless otherwise mutually agreed upon by the Bidder and the WRDSB.

All reports submitted by the successful bidder, including the "Asbestos Audit Update Report" dated [Month/Day/Year], and any related documentation, shall become the exclusive property of the Board upon submission, including all associated intellectual property rights, except for any pre-existing intellectual property of the contractor unless otherwise agreed in writing.

The consultant shall ensure the accuracy and legal compliance of all submitted materials, which may be verified or audited by the Board.

The Board and its authorized agents may use, reproduce, and disclose the report as necessary to fulfill obligations under applicable legislation, including the Occupational Health and Safety Act, Ontario Regulation 278/05, and relevant privacy laws such as but not limited to Freedom of Information and Protection of Privacy Act (FIPPA), the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA).

All information shall be treated as confidential and shall not be disclosed by the consultant to third parties without prior written consent from the Board representative, unless required by law.

All Bids, other documents as well as correspondence are subject to the provisions of the Municipal Freedom of Information and Protection of Privacy Act (MFIPPA).

50. Performance

i. Where the Supplier is in default in conducting any of its obligations under the contract, the WRDSB may issue a verbal warning outlining the deficiency in supply or other aspects of performance and requiring the Supplier to correct those deficiencies within such period as stated.

ii. If the deficiency is not corrected within the time specified, or there is a further instance of deficient performance, the WRDSB may issue a written notice to the Supplier, identifying the deficiency in performance and setting a final date or period for its correction.

iii. If corrective steps are not taken by the final date or within that time, the WRDSB may terminate the Contract and take corrective action.

iv. Termination of any Contract can be immediate depending on the severity of the default.

v. The Supplier shall have no right to perform the services contemplated under this agreement beyond the time when such services become unsatisfactory to the WRDSB; and in the event that Supplier shall be discharged before all the services contemplated hereunder have been completed, or the services are for any reason terminated, stopped or discontinued because of the inability of the Supplier to serve under this agreement they shall be paid only for that portion of the Work which shall have been satisfactorily completed at the time of termination.

vi. Where deemed appropriate, a performance evaluation shall be completed by the WRDSB. The evaluation report shall be reviewed with Procurement Services, and a copy of the completed evaluation forwarded to the Supplier for their records. Dependent on the evaluation scoring, the WRDSB may request a corrective action plan and/or project size/value may be affected on future bid opportunities for your company.

51. Permits and Licenses

Unless stated otherwise, the Supplier shall apply for all required permits and licenses, supply all necessary notices required for the Work and pay all required fees. These costs shall be included in the Total Price. A copy of all permits, and any other required documentation shall be provided to the WRDSB upon request.

52. Proceedings Against the WRDSB

The Bidder represents and warrants that the Bidder is not a party to any legal suits, actions, litigation proceedings, arbitrations, alternative dispute resolutions, investigations, or claims (Hereinafter collectively referred to as “Claims”) by or against or otherwise involving the WRDSB and the Bidder. The WRDSB may reject any Bid in the event of potential, current, pending, or threatened litigation, arbitration, alternative dispute resolution, or disputes involving the WRDSB and the Bidder.

53. Protection of WRDSB Assets

The Supplier (the Supplier / Subcontractor) shall be informed of and protect all WRDSB assets including existing structures and vehicles, to the satisfaction of the WRDSB. Any damage shall be reported to the WRDSB and subsequently repaired and/or replaced by the Supplier, at their expense, to the satisfaction of the WRDSB. The Supplier shall not cause any inconvenience to WRDSB operations, staff, public or users of the WRDSB facilities, within reason. Communication between the successful Supplier and the school

(or WRDSB representative if school contact is not available) must be timely and effective to ensure all stakeholders are considered / aware of work to be completed.

54. Records, Inspection, Audits

The WRDSB will have the right, upon reasonable notice, to full access to the accounts and records of the Supplier in respect of the goods, services and equipment provided by it under the Contract, for the purposes of inspection and/or audit. The Supplier shall make and retain such records during the term of the Contract and for a minimum of seven (7) years following its termination, cancellation, or expiry.

55. Reserved Rights of the WRDSB

The WRDSB reserve the right, in their respective sole and unfettered discretion, to:

i. Reject any Bid received from a Bidder which is party to any potential, current, past or existing suits, actions, and litigation proceedings, arbitrations, alternative dispute resolutions, investigations, Bidder performance evaluations that are below expectations, significant or persistent deficiencies in performance of any substantive requirement or obligation under a prior agreement or agreements or claims by or against or otherwise involving either of the WRDSB and the Bidder.
ii. waive formalities and accept Bids which substantially comply with the requirements of this tender.
iii. accept any Bid in whole or in part.
iv. accept, reject, or cancel any or all Optional or Provisional pricing.
v. discuss with any Bidders different or additional terms to those contemplated in this Procurement Document or in any Bid submission.
vi. make public the names of any or all Bidders.
vii. accept or reject equivalent or alternative brand names.
viii. check references other than those provided by any Bidder.
ix. Verify with any Bidder or with a third party any information set out in a Bid.
x. reject any, or any part of, any or all Bids, or cancel the bidding process at any stage and/or issue a new Bid call for the same or similar deliverables.
xi. disqualify any Bidder:
    a. whose Bid contains misrepresentations or any other, inaccurate, or misleading information, or any qualifications within its Bid,
    b. who has engaged in conduct prohibited by the Procurement Document,
    c. with inadequate credentials or due to unsatisfactory past performance,
xii. reject Bid(s) from Bidder who has engaged in lobbying or has contravened any of the terms of the Procurement Document.
xiii. reject a Bid based on:
    a. information provided by references or credit check or other due diligence efforts,
    b. the information provided by a Bidder pursuant to the WRDSB exercising its clarification rights under the procurement process, or
    c. other relevant information that arises during the procurement process.

xiv. choose to reject a Bid if only a single Bid is received and cancel the bidding process or enter direct negotiations with the sole Bidder.

xv. accept a Bid other than the lowest or highest scoring and/or to not accept any Bid for any reason whatsoever.

xvi. award the contract as split-order, lump sum or individual-item basis, or such combination as shall best serve the interests of the WRDSB.

xvii. negotiate in circumstances permitted for in the Bid document or by relevant policies, or directives, and include additional terms and conditions during the process of negotiations.

xviii. no longer consider a Bidder if a satisfactory outcome is not reached as part of negotiation, as determined by the WRDSB in their sole discretion and move to the next highest ranked Bid in such event.

xix. select a Bidder other than the Bidder whose Bid reflects the lowest cost to the WRDSB and/or award the Contract to any Bidder.

xx. award any business/Work described in this Procurement to more than one (1) Bidder.

xxi. not award the Contract if the costs of completing the Work exceed budget funding; or do not respond to all requirements or do not represent fair market value or where necessary internal approvals are not obtained, and

xxii. if the WRDSB receives a bid from a Supplier with Rates that are abnormally lower than the Rates in other Bids, the WRDSB may verify with the Bidder that the Bidder satisfies the conditions for participation and can fulfill the Agreement.

These reserved rights are in addition to any other expressed rights or any other rights which may be implied in the circumstances. The WRDSB shall not be liable for any expenses, costs or losses suffered by any Bidder or any third party resulting from the WRDSB exercising any of its express or implied rights under this bidding process.

56. Responsibilities of the Supplier

Acceptance of a purchase order issued by the WRDSB and/or a signed agreement shall constitute a contract (the "Contract") between the WRDSB and the Supplier, which shall bind the Supplier on their part to furnish and deliver the goods, equipment and services at the prices given and in accordance with the conditions of the Procurement document.

The Supplier shall:

i. perform the Contract in accordance with the specifications, terms and conditions under which it is awarded.

ii. act in a professional manner always when dealing with WRDSB staff, with the public, and while working on site.

iii. not, except with the consent of the WRDSB in writing, release information relating to any subsequent order for advertising, promotional or technical purposes or otherwise give it publicly in any fashion, nor shall the name of either of the WRDSB

be used for, or in connection with, any advertising or promotional purpose of the Supplier.

iv. treat information gained while working with the WRDSB confidentially and not use it for any other project and return it to the WRDSB if requested.

v. submit to Finance – Accounts Payable, an invoice for payment at the completion of the Work, unless otherwise stated. All applicable taxes, including HST, are to be itemized separately on invoices. Include the purchase order number on each invoice; and

vi. provide necessary information if they wish to receive payment by Electronic Funds Transfer (EFT).

57. Site and Work Examination

i. Bidders will accept the site conditions, and the requirements of the Work, as is. No modifications to the Bid will be accepted after the Closing Time.

ii. No claim for extras will be allowed for Work or difficulties encountered due to conditions of the site which were visible, knowable, or reasonably inferable, prior to the time of submission of Bid. Bidders shall accept sole responsibility for any error or neglect on their part in this regard.

iii. Before submitting a Bid, each Bidder shall:
   a. carefully examine this entire Procurement Document to determine the extent of the Work, and various provisions including the maps, drawings, reports and specifications.
   b. immediately report all discrepancies between the various documents and site conditions.
   c. provide the names of Subcontractors, subconsultants, and suppliers to whom the Bidder intends to sublet a portion or portions of the Work with complete information as to the requirements of the Work. This is to include maps, drawings, reports, specifications, and all requirements of the Procurement Document including any addenda.

iv. In the event of discrepancies between the maps, drawings, reports, and the specifications regarding quantity or quantities of materials or items, and in the absence of Addenda in clarification of said discrepancies, the Bidder is to include for the larger quantity or quantities.

v. No additional payments will be made for any costs incurred through failure of the Bidder to abide by provisions stipulated in all the articles and sub-articles of this item.

vi. 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.

vii. Each Bidder is solely responsible, at its own cost and expense, to conduct 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. The Bidders' obligations set out in this paragraph apply irrespective of any Reports, Data or any information contained in the Bid Documents.

viii. 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.

58. Site Existing Services, if applicable

The position of utility pole lines, underground conduits, and services, watermains, sewers and other underground and over ground utilities and structures are not necessarily known, and the accuracy of the position of such utilities and structures on any reference documents is not guaranteed. The WRDSB will not be responsible for damages or extra work caused or occasioned by the Supplier relying on this or any other information or records.

Before starting work, the Supplier shall familiarize themselves of the exact location of all such utilities and structures and shall assume all liability for damage to them. Where extra measures are required to support utility poles during construction either by the utility involved or the Supplier themself, the costs involved shall be borne by the Supplier. The Supplier will be responsible for any fees that may be associated with these services.

59. Site Inspection and Control

A representative of the WRDSB (appointed by the WRDSB) reserves the right to enter the site at any time for the review & inspection. The presence of a said representative does not indicate satisfaction or compliance unless these comments are made by the representative and submitted to the Supplier in written form.

60. Site Investigation

Bidders shall not rely solely upon information furnished by the WRDSB but shall do their own investigation of the locations and quantity of the work to be completed under this

contract.

The Bidder assumes all risk of conditions, existing or arising, in the course of the work, which might or could make the work or any items therefore more expensive in character, or more onerous to fulfill, than was contemplated or known when the Bid was made, or the Contract signed.

61. Site Safety and Clean Up

For safety of students, staff, and community members alike, it is expected that cleanup operations will progress with the job.

Repair work will be conducted by skilled workers acceptable to the WRDSB Representative, under the liability of the Supplier.

The WRDSB Authorized Representative must approve all repairs and replacements prior to final payment.

62. Suspension of Bidders

At the sole discretion of the Manager of Procurement Services, any Bidder may be suspended from consideration for default of delivery, unsatisfactory performance, safety concerns, lobbying or contravention of the Procurement Document.

63. Sustainable Purchasing

The procurement needs of the WRDSB 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 should include the consideration of environmentally tangible and intangible factors when determining the total life-cycle costs and environmental impact.

64. Termination

If the Supplier fails to comply with any provision of this agreement or otherwise fails to fulfil its obligations hereunder in a competent manner satisfactory to the WRDSB, the WRDSB may give the Supplier notice in writing of such failure. If the Supplier has not remedied its failure within ten (10) working days of the said notice, the WRDSB shall be entitled to exercise any one or more of the following remedies:

i. The WRDSB may terminate the contract without further notice and exercise its rights to the Contract security provided by the Supplier.
ii. The WRDSB may withhold any payment due to the Supplier hereunder until the Supplier has remedied its failure.

iii. The WRDSB may engage the services of another Bidder to remedy the Supplier's failure and obtain reimbursement therefore from the Supplier. The said reimbursement may be obtained either through deduction from any amounts owing to the Supplier hereunder, or through any other legal means available to the WRDSB; or

iv. The WRDSB may assert any other remedy available to it in law or equity.

Unless the WRDSB expressly agrees to the contrary, any failure of the WRDSB to exercise any of the foregoing remedies, or the granting of any extension or indulgences, shall not be prejudicial to any right of the WRDSB to subsequently obtain such remedies.

65. Termination for Convenience

The WRDSB may terminate the Contract, in whole or in part, whenever the WRDSB determine that such termination is in the best interests of the WRDSB without showing cause, upon providing written notice to the Supplier. The WRDSB shall pay all reasonable costs incurred by the Supplier/Contract up to the date of termination considering the Work performed and/or services were provided in accordance with the Contract and to the complete satisfaction of the WRDSB. Payment shall be in accordance with prices as per Contract. However, in no event shall the Supplier be paid an amount, which exceeds the Total Bid Price. The Supplier will not be reimbursed for any profits which may have been anticipated but which have not been earned up to the date of termination.

66. Termination for Lack of Funding

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

67. Tools and Equipment

All equipment and methods used to fulfill this contract shall be in accordance with best practices, guidelines, regulations, and standards with respect to safety and quality.

No equipment, tools or materials are to be stored or left overnight within WRDSB property.

At the time of bid, if requested, the bidders will indicate the type of equipment that will be used to fulfill the terms and conditions of this contract. Prior to the WRDSB entering into an agreement with the Supplier, or at any time during the contract, the WRDSB may, at its discretion, request an inspection of the equipment proposed for use.

It is the responsibility of the Supplier, in the event of a major mechanical equipment breakdown, to have available substitute equipment of similar capability. It shall be supplied and put into service to fulfill the requirements of this procurement. Failure to provide alternative equipment within expectations specified within this procurement may result in termination of the contract. It is the responsibility of the Supplier to ensure

work continues and deadlines are met, despite any unforeseen interruption because of equipment failure.

It is the Supplier's responsibility to ensure that the equipment and the operator, are licensed in accordance with the Ministry of Transportation. The WRDSB may, at their discretion, require the Supplier to provide proof that the equipment has passed a recent (within the last 12 months) government safety inspection and that the operators are suitably licensed prior to commencement of the contract. All vehicles, tools, equipment, and voltage rated gloves requiring dielectric testing shall have current certification and all applicable documentation.

The equipment must be in good working order, and the Supplier is responsible for all general and preventative maintenance, fuel, and repair and those costs shall be included in the bid. All preventative maintenance and repairs are to be conducted off peak hours. No other charges to the WRDSB shall apply.

68. Traffic/Pedestrian Safety

Vehicles, including Couriers and movable Equipment/Machinery must take all precautions to avoid entering or driving on WRDSB premises during nutritional breaks, before and after school hours, or anytime there are students or staff outside of the building.

69. Traffic Control and Site use

Supplier's activities shall be limited to areas for work and storage as directed by the WRDSB. Except where expressly permitted by the WRDSB, materials and/or equipment must not be stored within four metres of the travelled portion of any roadway. Notwithstanding the foregoing, the Supplier shall, at their own expense, remove any equipment or material, which, in the WRDSB's opinion, constitutes a traffic hazard.

The Supplier shall plan and schedule the routes of vehicles transporting all materials to, from or within the job, so that vehicular movements are accomplished with minimum interference and interruption to traffic. This will necessitate vehicles to "slip off" or "slip on" in the direction of traffic lanes.

The Supplier shall maintain the adjacent side streets in a condition free from debris resulting from their operations, such as materials spilling from trucks. It is expected that the Supplier shall regularly inspect the surface condition of these streets and promptly dispose of all the debris.

Should the Supplier be unable to conduct the required remedial measures, the WRDSB may conduct the necessary maintenance and the costs for the work shall be deducted from payments due to the Supplier.

The Supplier shall, at his own expense and to the satisfaction of the WRDSB, provide all vehicular traffic control equipment, signs, material, and labor required to perform the work in a safe manner in accordance with the "Occupational Health and Safety Act" and the "Ontario Traffic Manual" (Book 7). The Supplier shall assure that all required

forms are completed and on-site for inspection. In the event a traffic control company is contracted for the purpose of signage, information regarding the Supplier must be included in the quotation and included with the bid price.

The Supplier shall be responsible for the supply of traffic flag person(s) where required under the "Ontario Traffic Manual" (Book 7), with all costs included in the base unit price.

70. Usage Reports

The WRDSB, at no additional cost, may request detailed usage reports or activity log reports in Excel (unprotected) to be provided annually or upon request. Reports may include but are not limited to descriptions, codes, quantities, extended quantity, price.

71. Variation of Bid Prices

No variation in the Total Price, unit prices and/or optional pricing will be permitted after Closing Time, except in the instance of variation solely due to an increase or decrease in the rate of eligible taxes, beyond the control of the Bidder, occurring after the time of submission of their Bid. An increase or a decrease in the rate of eligible taxes, under these circumstances, shall alter the price of the Bid, but only to the extent of the tax increase or decrease.

72. Volume and Exclusivity

Quantities and/or WRDSB sites may be added, deleted, or adjusted at the discretion of the WRDSB due to but not limited to unintentional omissions, inventory adjustments, new schools/school closures, and/or budget restraints.

The WRDSB makes no guarantee of value or volume of work to be assigned to the Supplier. Any agreement executed with the Supplier may not be an exclusive contract for the provision of the described goods/services. The WRDSB reserves the right to contract with other Supplier for good(s) and/or service(s) of the same as or like the deliverables or may obtain such good(s) and service(s) internally.

73. Waiver

No term or provision of the Procurement Document shall be deemed waived, and no breach consented to, unless such waiver or consent is in writing and signed by an authorized representative of the party claimed to have waived or consented to the breach. No consent by a party to, or waiver of, a breach under the procurement process shall constitute consent to, waiver of, or excuse for any other, different, or subsequent breach.

The WRDSB does not accept responsibility for any information or any errors or omissions which may be contained in the Procurement Document, or the data, materials or documents disclosed or as provided to the Bidders pursuant to the procurement. The WRDSB make no representation or warranty, either expressed or implied, in fact or in law with respect to the accuracy or completeness of the Procurement Document or such data, materials or documents and the WRDSB shall not be responsible for any actions, costs, losses or liability whatsoever arising from any Bidder's reliance or use of the Procurement

Document or any other technical or historical data, materials or documents provided by the WRDSB. The Bidder is responsible for obtaining its own independent financial, legal, accounting, and technical advice with respect to any information included in the Procurement Document or in any data, materials, or documents provided or required by the WRDSB.

74. Warranty and Maintenance

The Supplier, 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, unless otherwise stated. Individual sections may extend warranties beyond the two (2) year time frame. The Supplier is responsible for all required maintenance complete with materials and labour during the warranty period.

75. Work Continuity

The Supplier shall take adequate care to protect the Work, the WRDSB's property, adjacent properties and shall be fully responsible for any damage or injury due to their act or neglect or is attributable to the acts or omissions of the Supplier, its Subcontractors, sub-suppliers, agents, employees, officers, directors, and all other persons and other entities for whose acts the Supplier may be liable or for whom it is responsible in law and their respective officers, directors, agents and employees.

The Supplier shall ensure minimal to no disturbance to the user(s) of the surrounding facilities. Replacement and repairs due to any damage caused to any existing structure, WRDSB equipment, public assets or private property during the Work shall be the responsibility of the Supplier.

76. Work Requirements

The Supplier shall perform entire work with minimal to no disturbance to the routine operations of the respective facility. Further, the Supplier shall ensure safety of WRDSB assets, students, staff as well as public always.

77. Workplace Safety Insurance Board (WSIB) Certificate

The WRDSB requires all Suppliers and service providers be in full compliance with all requirements imposed upon them by the Workplace Safety Insurance Board. All certificates of training and Safety Policies and Manuals must be available for presentation upon request.

Prior to a formal award and commencing the services covered by this Procurement, the recommended Bidder(s) make available to the WRDSB a copy of certificates of good standing with the Workplace Safety and Insurance Board (“WSIB Certificates”) listing appropriate NAICS Code and Code Description stating that the Supplier/consultant and all of its subcontractors/consultants have complied with the requirements of the Workplace Safety and Insurance Act and in particular, that all requisite premiums under such Act

have been paid. Where the Bidder is exempt from registration with the WSIB, the Bidder must provide evidence of such by way of written confirmation from WSIB.

WSIB Certificate evidencing renewal or replacement of Certificates listing appropriate NAICS Code and Code Description shall be uploaded through the Bidding System within 72 hours of the expiration or replacement of the current certificate, without demand by the WRDSB.

END OF SECTION

00 73 00 "The Supplementary Conditions"

SUPPLEMENTARY CONDITIONS & AMENDMENTS TO STANDARD CONSTRUCTION DOCUMENT CCDC2 -2020 STIPULATED PRICE SUBCONTRACT

(the "Supplementary Conditions")

AGREEMENT, DEFINITIONS, AND

GENERAL CONDITIONS

The Standard Construction Document CCDC 2 2020 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 13 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

ARTICLE A-1 – THE WORK

SC17.1	A-1.3	Amend Article A-1.3 by deleting all of the words after *"Contract Documents"* and replace them with the following" "attain .1 *Substantial Performance of the Work* by the 16th day of October in the year 2026. .2 (if applicable) *Occupancy* by the 16th day of October in the year 2026, and .3 *Ready-for-Takeover* by the 16th day of October in the year 2026."
SC1.1		

ARTICLE A-3 – CONTRACT DOCUMENTS

SC2.1	A-3.1	Add the following documents to the list of *Contract Documents* in Article A-3.1: • Waterloo Region District School Board's Supplementary Conditions & Amendments to Standard Construction Document CCDC 2-2020 Stipulated Price Subcontract, May 2022 Version, including any Special Supplementary Conditions listed in Appendix 2 thereto • *Drawings* • *Specifications* • Performance Bond (Form 32 -Performance Bond under Section 85.1 of the *Act*) if applicable • Labour and Material Payment Bond (Form 31 – Labour and Material Payment Bond under Section 85.1 of the *Act*), if applicable

ARTICLE A-4 – CONTRACT PRICE

SC3.1	A-4.4	Delete Article A-4.4 and replace it with the following: "4.4 The *Contract Price* shall remain fixed for the duration of the *Contract Time*, subject only to adjustments as provided for in the *Contract Documents*. For certainty, and without limiting the general application of the preceding sentence, the *Contractor* assumes all risks in connection with cost increases for overhead, *Products, Labour*, and *Construction Equipment* prescribed by the *Contract Documents* for the performance of the *Work*, and the *Contractor* assumes all responsibility for liabilities and additional costs that may arise as a result of the *Contractor's* inclusion of any *Product, Construction Equipment, Supplier*, or *Subcontractor* in its calculation of the *Contract Price*."

ARTICLE A-5 – PAYMENT

SC4.1	A-5.1	Delete Article A- 5.1 in its entirety including all subparagraphs and replace it with the following:

		"5.1 Subject to the provisions of the *Contract Documents* and the *Construction Act*, the *Owner* shall: .1 make progress payments to the *Contractor* on account of the *Contract Price* when due together with such *Value Added Taxes* as may be applicable to such payments, .2 upon *Substantial Performance of the Work* as certified by the *Consultant*, and on the 61st day after the publication of the certificate of *Substantial Performance of the Work*, in accordance with the *Construction Act*, there being no claims for lien registered against the title to the *Place of the Work* and no written notices of lien delivered to the *Owner*, pay the *Contractor* the unpaid balance of the 10% holdback, together with such *Value Added Taxes* as may be applicable to such payment, less any amount stated in the *Owner's Notice of Non-Payment*. .3 after *Ready-for-Takeover* has been achieved in accordance with the *Contract Documents* and the *Work* is complete, there being no claims for lien registered against the title to the *Place of the Work* and no written notices of lien delivered to the *Owner*, pay the *Contractor* any unpaid balance of the *Contract Price* in accordance with GC 5.5 – FINAL PAYMENT, excluding *Deficiency Holdback*, together with such *Value Added Taxes* as may be applicable to such payment."
SC 4.2	A-5.2.1	Delete subparagraph 5.2.1 in its entirety and replace it with the following: ".1 Should either party fail to make payments as they become due under the terms of the *Contract* 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 *Courts of Justice Act* (Ontario), as it may change from time to time."

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

SC3.1	A-9	Add new ARTICLE A-9 CONFLICT OF INTEREST as follows: "**ARTICLE A-9 CONFLICT OF INTEREST** 9.1 The *Contractor*, *Subcontractors* and *Suppliers* 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 *Owner*) with the provision of the *Work* pursuant to the *Contract*. The *Contractor* acknowledges and agrees that a conflict of interest, as described in this Article A-9, includes, but is not limited to, the use of *Confidential Information* where the *Owner* has not specifically authorized such use. 9.2 The *Contractor* shall disclose to the *Owner*, 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 *Subcontractor* or *Supplier* that is directly or indirectly affiliated with or related to the *Contractor*. 9.3 The *Contractor* covenants and agrees that it will not hire or retain the services of any employee or previous employee of the *Owner* where to do so constitutes a breach by such employee or previous employee of the *Owner's* conflict of interest policy, as it may be amended from time to time, until after completion of the *Work* under the *Contract*. 9.4 It is of the essence of the *Contract* that the *Owner* shall not have direct or indirect liability to any *Subcontractor or Supplier*, and that the *Owner* relies on the maintenance of an arm's-length relationship between the *Contractor* and its *Subcontractors and Suppliers*. Consistent with this fundamental term of the *Contract*, the *Contractor* will not enter into any agreement

		or understanding with any *Subcontractor or Supplier*, 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 *Owner*, directly or through the *Contractor*, where such claim is, in whole or in part, in respect of a disputed claim by the *Subcontractor or Supplier* against the *Contractor*, where the payment to the *Subcontractor or Supplier* by the *Contractor* is agreed to be conditional or contingent on the ability to recover those amounts or a portion thereof from the *Owner*, failing which the *Contractor* shall be saved harmless from all or a portion of those claims. The *Contractor* acknowledges that any such agreement would undermine the required arm's-length relationship and constitute a conflict of interest. For greater certainty, the *Contractor* shall only be entitled to advance claims against the *Owner* for amounts pertaining to *Subcontractor or Supplier* claims where the *Contractor* has actually paid or unconditionally acknowledged liability for those claims or where those claims are the subject of litigation or binding arbitration between the *Subcontractor or Supplier* and the *Contractor* has been found liable for those claims. 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 *Contractor*, any of the *Subcontractors*, or any of their respective advisors, partners, directors, officers, employees, agents, and volunteers shall entitle the *Owner* to terminate the *Contract*, in addition to any other rights and remedies that the *Owner* has in the *Contract*, in law, or in equity."

***NEW* ARTICLE A-10 TIME OF THE ESSENCE**

SC6.1	Article A-10	Add the following new Article A-10 as follows: **"ARTICLE A-10 TIME OF THE ESSENCE** 10.1 It is agreed that one of the reasons the *Contractor* was selected by the *Owner* for this *Contract* is the *Contractor's* representation and covenant that it will attain *Substantial Performance, Occupancy (*if applicable), and *Ready-for-Takeover* within the *Contract Time* stated in Article A-1 of this *Contract*. 10.2 The *Contractor* acknowledges and agrees that it is responsible to marshal its resources and those of its *Subcontractors and Suppliers* in a manner which will permit timely attainment of *Substantial Performance, Occupancy (*if applicable), and *Ready-for-Takeover*. The *Contractor* agrees that time is of the essence of this *Contract*."
SC6.2		

DEFINITIONS

Revisions to Existing Definitions		
SC5.1	Consultant	Amend the definition of "Consultant" by adding the following to the end of the definition: "For the purposes of the *Contract*, the terms "*Consultant"*, "*Architect*" and "*Engineer*" shall be considered synonymous."
SC5.2	Payment Legislation/Construction Act	Delete the Definition of *Payment Legislation* and replace it with "Construction Act" as follows: "**Construction Act** *Construction Act* means the *Construction Act*, 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 *Contract*. For certainty, the first procurement process for the *Project* (*i.e.*, the "improvement" as that term is defined in the *Construction Act*) commenced on or after October 1, 2019."
SC5.3	Ready-for-Takeover	Amend the Definition of *Ready-for-Takeover* by deleting all the words after "as verified" and replacing them with "and approved by the *Owner*."
New Definitions		
	Adjudication	Add the following definition: "**Adjudication** *Adjudication* means construction dispute interim adjudication as defined under the *Construction Act*."
	Close-Out Documentation	Add the following new definition: "**Close-Out Documentation** *Close-Out Documentation* has the meaning given to it under GC 5.4.2."
	Confidential Information	Add the following definition: "**Confidential Information** *Confidential Information* means all the information or material of the *Owner* 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 *Contractor* at any time, but *Confidential Information* shall not include information that: .1 is or becomes generally available to the public without fault or breach on the part of the *Contractor*, including without limitation breach of any duty of confidentiality owed by the *Contractor* to the *Owner* or to any third party, but only after that information becomes generally available to the public; .2 the *Contractor* can demonstrate to have been rightfully obtained by the *Contractor* from a third party who had the right to transfer or disclose it to the *Contractor* free of any obligation of confidence;

		.3 the *Contractor* can demonstrate to have been rightfully known to or in the possession of the *Contractor* at the time of disclosure, free of any obligation of confidence; or .4 is independently developed by the *Contractor* without use of any *Confidential Information*."
	Construction Schedule	Add the following definition: "**Construction Schedule** *Construction Schedule* means the schedule for the performance of the *Work* provided by the *Contractor*, and approved by the *Owner*, pursuant to GC 3.4.1, including any amendments to the *Construction Schedule* made pursuant to the *Contract Documents*."
	Construction Schedule Update	Add the following definition: "**Construction Schedule Update** *Construction Schedule Update* means an update to the *Construction Schedule* by the *Contractor* using Microsoft Project (or other approved scheduling software) that accurately depicts the progress of the *Work* relative to the critical path established in the *Construction Schedule* approved in GC 3.5.1 (or any approved successor *Construction Schedule*), aligns with the currently approved date for *Substantial Performance of the Work*, 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 *Work* relative to the last *Construction Schedule Update,* and includes the following minimum deliverables: (a) a record version of the updated *Construction Schedule* in .pdf format; (b) an editable copy of the updated original digital file of the *Construction Schedule* (*e.g.*, .mpp format files for Microsoft Project)."
	Deficiency Holdback	Add the following definition: **Deficiency Holdback** - a value applied to the total contract value to cover the cost of completing deficiencies in, or correcting defects in The Work.
	Direct Costs	Add the following definition: "**Direct Costs** *Direct Costs* 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."
	EFT	Add the following definition: "**EFT**

		EFT has the definition given to it under GC 5.3.2."
	Excess Soil	Add the following definition: "**Excess Soil** *Excess Soil* means "excess soil" as that term is defined under section 3 of the *Excess Soil Regulation*."
	Excess Soil Regulation	Add the following Definition: "**Excess Soil Regulation** *Excess Soil Regulation* means O. Reg. 406/19: On-Site and Excess Soil Management to the *Environmental Protection Act,* R.S.O. 1990, c. E.19."
	Final Pre-Invoice Submission Meeting	Add the following ne definition: "**Final Pre-Invoice Submission Meeting** *Final Pre-Invoice Submission Meeting* has the meaning given to it in GC 5.5.1."
	Force Majeure	Add the following definition: "**Force Majeure** *Force Majeure* means any cause, unknown at the effective date of the *Contract* and beyond either party's control, other than financial difficulties, bankruptcy or insolvency, which prevents the performance by a party, or both, of any of their respective obligations under the *Contract* and the event of *Force Majeure* did not arise from a party's default and could not be avoided or mitigated by the exercise of reasonable effort or foresight. *Force Majeure* includes *Labour Disputes*; fire; unusual delay by common carriers or unavoidable casualties; delays in obtaining third-party licences, permits, agreements, or approvals (excluding approvals of any *Subcontractors* or *Suppliers* of any tier); civil disturbance; emergency acts, orders, legislation, regulations or directives or revoking of funding from 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 *Place of the* Work; acts of God; or declared epidemic or pandemic outbreak or other public health emergency (*e.g*. SARS, COVID-19)."
	Install	Add the following definition: "**Install** *Install* means install and connect. *Install* has this meaning whether or not the first letter is capitalized."
	Labour Dispute	Add the following definition: "**Labour Dispute** *Labour Dispute* 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 *Work*."

	Notice of Non-Payment	Add the following definition: "**Notice of Non-Payment** *Notice of Non-Payment* means a notice of non-payment of holdback (Form 6) or a notice of non-payment (Form 1.1) under the *Act*, as applicable to the circumstances."
	OHSA	Add the following definition: "**OHSA** *OHSA* means the *Occupational Health and Safety Act*, R.S.O. 1990, c. O.1, as amended, including all regulations thereto."
	Overhead	Add the following definition: "**Overhead** *Overhead* 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 *Place of the Work*; 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."
	Payment Period	Add the following definition: "**Payment Period** *Payment Period* has the definition given to it under GC 5.2.1."
	Pre-Invoice Submission Meeting	Add the following definition: "**Pre-Invoice Submission Meeting** *Pre-Invoice Submission Meeting* has the definition given to it under GC 5.2.1."
	Proper Invoice	Add the following definition: "**Proper Invoice** *Proper Invoice* means a "proper invoice" as that term is defined in Section 6.1 of the *Act*, including the minimum requirements set out in Appendix "1" of the Supplementary Conditions."
	Proper Invoice Submission Date	Add the following definition: "**Proper Invoice Submission Date** *Proper Invoice Submission Date* has the definition given to it under GC 5.2.2.1."
	Request for Information (RFI)	Add the following definition: "**Request for Information (RFI)** *Request for Information* or *RFI* means written documentation sent by the *Contractor* to the *Owner* or to the *Owner's* representative or the *Consultant* requesting written clarification(s) and/or interpretation(s) of the *Drawings* and/or *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*."
	Restricted Period	Add the following definition: "**Restricted Period** *Restricted Period* means the (inclusive) period of time between December 1 to January 8 and August 15 to September 15 of any given year throughout the duration of the *Contract*."

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

GC 1.1 CONTRACT DOCUMENTS

SC5.1	1.1.3	Delete GC 1.1.3 in its entirety and replace it with the following: "1.1.3 The *Contractor* shall review the *Contract Documents* and shall report promptly to the *Consultant* any error, inconsistency, or omission the *Contractor* may discover. Such review by the *Contractor* shall be undertaken with the standard of care described in GC 3.13.1. Except for its obligation to make such a review and report the result, the *Contractor* does not assume any responsibility to the *Owner* or to the *Consultant* for the accuracy of the *Contract Documents*. Provided it has exercised the degree of care and skill described in this GC 1.1.3, the *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the *Contract Documents*, which the *Contractor* could not reasonably have discovered through the exercise of the required standard of care."
SC5.2	1.1.4	Delete GC 1.1.4 in its entirety and replace it with the following: "1.1.4 Except for the obligation to complete the review prescribed in GC 1.1.3, and report the results as set out in this GC 1.1.4, the *Contractor* is not responsible for errors, omissions or inconsistencies in the *Contract Documents*. If there are errors, omissions or inconsistencies discovered by or made known to the *Contractor* as part of its review under GC 1.1.3 or at any time during the performance of the *Work*, the *Contractor* shall immediately notify the *Consultant*, and request instructions, a *Supplemental Instruction*, *Change Order*, or *Change Directive*, as the case may require, and shall not proceed with the *Work* affected until the *Contractor* has received corrected or additional information from the *Consultant*. The *Contractor* shall not be liable for damage or costs resulting from such errors, inconsistencies, or omissions in the *Contract Documents*, which the *Contractor* could not reasonably have discovered through the exercise of care and skill described in GC 3.13."
	1.1.5.1	Delete GC 1.1.5.1 and replace with the following: ".1 the order of priority of documents, from highest to lowest, shall be: .1 Supplementary Conditions; .2 the Agreement between the Owner and the Contractor; .3 the Definitions;

		.4 the General Conditions; .5 Division 01 of the *Specifications* .6 technical *Specifications;* .7 material and finishing schedules; and .8 the *Drawings*.
	1.1.5.5	Delete GC 1.1.5.5 and replace with the following: ".5 Noted materials and annotations on the *Drawings* shall govern over the graphic representation of the *Drawings.*"
	1.1.5.6 to 1.1.5.8	Add the following new GC 1.1.5.6 to 1.1.5.8 as follows: ".6 Finishes in the room finish schedules shall govern over those shown on the *Drawings.* .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 *Consultant* or its sub-*Consultants* are to remain with each of the applicable drawing disciplines. .8 Should reference standards contained in the *Specifications* conflict with the *Specifications*, the *Specifications* shall govern. Should reference standards and *Specifications* conflict with each other or if certain requirements of the *Specifications* conflict with other requirements of the *Specifications*, the more stringent requirements shall govern."
	1.1.9	Add the following to the end of GC 1.1.9: "The *Specifications* 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 *Contract Documents* will be construed to place responsibility on the *Owner* or the *Consultant* to settle disputes among the *Subcontractors* and *Suppliers* with respect to such divisions. The *Drawings* are, in part, diagrammatic and are intended to convey the scope of the *Work* and indicate general and appropriate locations, arrangements and sizes of fixtures, equipment, outlets and other elements. The *Contractor* shall obtain more accurate information about the locations, arrangements and sizes from study and coordination of the *Drawings,* including *Shop Drawings* and shall become familiar with conditions and spaces affecting those matters before proceeding with the *Work.* Where site conditions require reasonable minor changes where the change requires only the additional labour two hours or less, the *Contractor* shall make such changes at no additional cost to the *Owner.* Similarly, where known conditions or existing conditions interfere with new installation and require relocation, the *Contractor* shall include such relocation in the *Work.* The *Contractor* 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 *Contract Documents*, wherever located and whenever issued, which compile information of similar content and may consist of drawings, tables and/or lists.*"*
	1.1.13	Add new paragraphs 1.1.13 as follows: 1.1.13 The *Contractor* shall keep one copy of the current *Contract Documents*, *Supplemental Instructions*, contemplated *Change Orders*, *Change Orders*, *Change Directives*, cash allowance disbursement authorizations, reviewed *Shop Drawings*, submittals, reports and records of meeting at the *Place of the Work*, in good order and available to the *Owner* and *Consultant*."

GC 1.3 RIGHTS AND REMEDIES

SC6.1	1.3.2	In paragraph 1.3.2 delete the word "No" from the beginning of the paragraph and replace it with the words: "Except with respect to the requirements set out in paragraphs 6.4.1, 6.5.4, 6.6.1 and 8.3.2, no…"

***NEW* GC 1.5 EXAMINATION OF DOCUMENTS AND SITE**

SC8.1	1.5	Add new GC 1.5 – EXAMINATION OF DOCUMENTS AND SITE as follows: "**GC 1.5 EXAMINATION OF DOCUMENTS AND SITE** 1.5.1 The *Contractor* declares and represents that in tendering for the *Work*, and in entering into a Contract with the *Owner* for the performance of the *Work*, it has investigated for itself the character of the *Work t*o be done, based on information generally available from a visit to the *Place of the Work* and to the standard set out under GC 3.14.1 and further represents and warrants and acknowledges that it considered and took into account in the *Contract Price* all reasonably known impacts and restrictions arising from the COVID-19 pandemic, including without limitation corresponding legislative changes that may impact performance of the *Project*, various weather conditions that may affect the *Work*, the availability of supplies and labour or other conditions or risks that the *Contractor* knew about or reasonably ought to have known about prior to the date of the *Contract.* The *Contractor* has assumed and does hereby assume all risk of known conditions now existing or arising in the course of the *Work* which might or could make the Work, or any items thereof more expensive in character, more onerous to fulfill than was contemplated or known when the tender was made or the *Contract* signed. 1.5.2 The *Contractor* also declares that prior to commencement of the *Work*, where in tendering for the *Work* and in entering into this *Contract*, the *Contractor* relied upon information furnished by the *Owner* or any of its agents or servants respecting the nature or confirmation of the ground at the site of the Work, the Contractor shall review to the standard specified in GC 3.14.1, the accuracy of the information furnished by the *Owner*. If a condition is materially different than what is stated in the information furnished by the *Owner*, the *Contractor* shall, no later than five (5) *Working Days* after the first observation of such condition(s), deliver to the *Owner* and to the *Consultant* a *Notice in Writing* specifying the materially different condition and the *Contractor* shall not proceed with the affected part of the Work until receiving written direction from the *Owner* or the *Consultant*. Where the *Contractor* fails to provide prompt *Notice in Writing* in accordance with this GC 1.5.2, the *Contractor* expressly waives and releases the *Owner* from all claims with respect to the said information with respect to the *Work*.

PART 2 ADMINISTRATION OF THE CONTRACT

GC 2.2 ROLE OF THE CONSULTANT

SC11.1	2.2.5	Delete paragraph 2.2.4 and replace it with the following: "2.2.4 Upon receipt of an application for payment that satisfies the requirement of a *Proper Invoice*, based on the *Consultant's* observations and evaluation of the *Contractor's* application for payment, the *Consultant* will determine the amounts owing to the *Contractor* under the *Contract* and will issue certificates for payment as provided in Article A-5 - PAYMENT, GC 5.3 - PAYMENT, GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK

		AND PAYMENT OF HOLDBACK, and GC 5.5 - FINAL PAYMENT. If the *Consultant* determines that the amount payable to the *Contractor* differs from the amount stated in a *Proper Invoice*, the *Consultant* shall notify the *Owner* as provided in GC 5.3.1.2 and prepare a draft of the applicable *Notice of Non-Payment* for the amount in dispute."
	2.2.6	In the first sentence of paragraph 2.2.6, delete the words "Except with respect to GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER".
	2.2.12	At paragraph 2.2.12, insert the following at end of that paragraph: "If, in the opinion of the *Contractor*, the *Supplemental Instruction* involves an adjustment in the *Contract Price* or in the *Contract Time*, it shall, within ten (10) *Working Days* of receipt of a *Supplemental Instruction*, provide the *Consultant* with a notice in writing to that effect. Failure to provide written notification within the time stipulated in this paragraph 2.2.12 shall be deemed an acceptance of the *Supplemental Instruction* by the *Contractor*, without any adjustment in the *Contract Price* or *Contract Time*."

GC 2.3 REVIEW AND INSPECTION OF THE WORK

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

GC 2.4 DEFECTIVE WORK

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

		of the *Owner* or which, in the sole discretion of the *Consultant*, adversely affects the progress of the *Work*."
	2.4.2	Delete paragraph 2.4.2 in its entirety and replace it with the following: "2.4.2 The *Contractor* shall promptly pay the *Owner* for costs incurred by the *Owner*, the *Owner's* own forces or the *Owner's* other contractors, for work destroyed or damaged or any alterations necessitated by the *Contractor's* removal, replacement or re-execution of defective work."
	2.4.4	Add new paragraph 2.4.4 as follows: "2.4.4 Neither acceptance of the *Work* by the *Consultant* or the *Owner*, nor any failure by the *Consultant* or the *Owner* to identify, observe or warn of defective *Work* or any deficiency in the *Work* shall relieve the *Contractor* from the sole responsibility for rectifying such defect or deficiency at the *Contractor's* sole cost, even where such failure to identify, observe or warn is negligent."

PART 3 EXECUTION OF THE WORK

GC 3.1 CONTROL OF THE WORK

SC12.1	3.1.2	Amend paragraph 3.1.2 by inserting the words "Construction Schedule" after the word "sequences".
SC12.2	3.1.3 & 3.1.4	Add new paragraphs 3.1.3 and 3.1.4 as follows: "3.1.3 Prior to commencing individual procurement, fabrication and construction activities, the *Contractor* shall verify at the *Place of the Work*, all relevant measurements and levels necessary for proper and complete fabrication, assembly and installation of the *Work* and shall further carefully compare such field measurements and conditions with the requirements of the *Contract Documents*. Where dimensions are not included or exact locations are not apparent, the *Contractor* shall immediately notify the *Consultant* in writing and obtain written instructions from the *Consultant* before proceedings with any part of the affected *Work*. 3.1.4 Notwithstanding the provisions of paragraphs 3.1.1 and 3.1.2, the *Owner* 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 *Contractor* to fulfill its contractual obligations."

GC 3.2 CONSTRUCTION BY OWNER OR OTHER CONTRACTORS

SC13.1	3.2.2.1	Delete subparagraph 3.2.2.1 and replace it with "[Intentionally left blank]".
	3.2.3.2	Delete subparagraph 3.2.3.2 and replace it with the following: ".2 co-ordinate and schedule the activities and work of other contractors and the *Owner's* own forces, including where other contractors or the Owner's own forces are used after the *Owner* and the *Contractor* cannot reach agreement on the value of a change, with the *Work* of the *Contractor* and connect as specified or shown in the *Contract Documents*."
	3.2.3.4	Delete the period at the end of subparagraph 3.2.3.4 and replace it with a semicolon.
	3.2.3.5	Add new subparagraph 3.2.3.5 as follows:

		".5 Subject to GC 9.4 CONSTRUCTION SAFETY, for the *Owner's* 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 *Place of the Work*, including all of the responsibilities of the "constructor", pursuant to the *OHSA*."

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 *Consultant*".

GC 3.4 CONSTRUCTION SCHEDULE

SC17.1	3.4.1	Delete GC 3.4.1 in its entirety and replace it with the following: "3.4.1 The *Contractor* shall: 1 within five (5) calendar days of receiving written confirmation of the award of the *Contract*, prepare and submit to the *Owner* and the *Consultant* for their review and approval, a construction schedule in the format indicated below that indicates the timing of the activities of the *Work* and provides sufficient detail of the critical events and their inter-relationship to demonstrate the *Work* will be performed in conformity with the *Contract Time* and in accordance with the *Contract Documents.* Such schedule is to include a delivery schedule for *Products* whose delivery is critical to the schedule for the *Work* or are required by the *Contract* to be included in a *Products* delivery schedule. The *Contractor* shall employ construction scheduling software, being the latest version of "Microsoft Project", that permits the progress of the *Work* to be monitored in relation to the critical path established in the schedule. The *Contractor* shall provide such schedule and any successor or revised schedules in both original digital file format (*e.g.,* .mpp format for Microsoft Project), portable data file (PDF) format, and hard copy. Once accepted by the *Owner* and the *Consultant*, the construction schedule submitted by the *Contractor* shall become the baseline "**Construction Schedule**"; .2 provide the expertise and resources, such resources including manpower equipment and tools, as are necessary on a best efforts basis to maintain progress under the accepted baseline *Construction Schedule* or revised construction schedule accepted by the *Owner* pursuant to GC 3.4 CONSTRUCTION SCHEDULE, which includes without limitation, the *Contractor*'s use of all possible and, if necessary, extraordinary measures, to bring the progress of the *Work* into compliance with the *Construction Schedule*, such as (i) increasing the presence of its own forces at the *Place of the Work*; (ii) directing any *Subcontractors* or *Suppliers* to increase their labour forces and equipment; (iii) working overtime and extra shifts; and (iv) providing any additional supervision and coordination of the *Project*, all at the *Contractor's* own cost and expense save and except where GC 6.5.1, 6.5.2, or 6.5.3 apply; and, .3 monitor the progress of the *Work* on a weekly basis relative to the baseline *Construction Schedule*, or any revised *Construction Schedule* accepted by the *Owner* pursuant to GC 3.4 CONSTRUCTION SCHEDULE, deliver a *Construction Schedule Update* to the *Consultant* and *Owner* with each application for payment, at a minimum, or as may be reasonably required

		by the *Consultant* and advise the *Consultant* and the *Owner* weekly in writing of any variation from the baseline or slippage in the schedule; and, .4 if after applying the expertise and resources required under paragraph 3.4.1.2, the *Contractor* forms the opinion that the slippage in schedule reported in paragraph 3.4.1.3 cannot be recovered by the *Contractor*, it shall, in the same notice provided under paragraph 3.4.1.3, indicate to the *Consultant* if the *Contractor* intends to apply for an extension of *Contract Time* as provided in PART 6 —CHANGES IN THE WORK; and, .5 ensure that the *Contract Price* shall include all costs required to phase or stage the *Work*."
	3.4.2	Add new GC 3.4.2 and GC 3.4.3 as follows: "3.4.2 If, at any time, it should appear to the *Owner* or the *Consultant* that the actual progress of the *Work* is behind schedule or is likely to become behind schedule, or if the *Contractor* has given notice of such to the *Owner* or the *Consultant* pursuant to GC 3.4.1.3, the *Contractor* shall, either at the request of the *Owner* or the *Consultant*, or following giving notice pursuant to GC 3.4.1.3, take appropriate steps to cause the actual progress of the *Work* to conform to the schedule or minimize the resulting delay. Within 5 calendar days of the request by the *Owner* or the *Consultant* or the notice being given pursuant to GC 3.4.1.3, the *Contractor* shall produce and present to the *Owner* and the *Consultant* a plan demonstrating how the *Contractor* will recover the performance of the *Work* to align with the currently approved *Construction Schedule*. 3.4.3 The *Contractor* shall not amend the *Construction Schedule* without the prior written consent of the *Owner*.. Any revisions to the *Construction Schedule* approved by the *Owner* shall not be deemed to be an extension of the *Contract Time*. All requests by the Contractor for a revision to the Construction Schedule that include an extension to the *Contract Time* must be approved by the *Owner* through an executed *Change Order*."

GC 3.5 SUPERVISION

SC17.1	3.5.1	Delete GC 3.5.1 and replace it with the following: "3.5.1 The *Contractor* shall employ a competent full-time superintendent, acceptable to the *Owner* and *Consultant*, who shall be in full time attendance at the *Place of the Work* while the *Work* is being performed. The superintendent shall not be changed by the *Contractor* without valid reason which shall be provided in writing and shall not be changed without prior consultation with and agreement by the Owner and the *Consultant*. The *Contractor* shall replace the superintendent within 7 *Working Days* of the *Owner's* written notification, if the superintendent's performance is not acceptable to the *Owner*. The *Contractor* shall provide the *Owner* and the *Consultant* with the names, addresses and telephone numbers of the superintendent referred to in this GC 3.5.1 and other responsible persons who may be contacted for emergency and other reasons during non-working hours. ."

	3.5.2	Delete GC 3.5.2 and replace it with the following: "3.5.2 The superintendent, and any project manager appointed by the *Contractor*, shall represent the *Contractor* at the *Place of the Work* and shall have full authority to act on written instructions given by the *Consultant* and/or the *Owner*. Instructions given to the superintendent or the project manager shall be deemed to have been given to the *Contractor* and both the superintendent and any project manager shall have full authority to act on behalf of the *Contractor* and bind the *Contractor* in matters related to the *Contract*."
	3.5.3 to 3.5.6	Add new GC 3.5.3, 3.5.4, 3.5.5 and 3.5.6 as follows: "3.5.3 The *Owner* may, at any time during the course of the *Work*, request the replacement of the appointed representative(s). Immediately upon receipt of the request, the *Contractor* shall make arrangements to appoint an acceptable replacement, which is approved by the *Owner*. 3.5.4 The supervisory staff assigned to the *Project* shall also be fully competent to implement efficiently all requirements for scheduling, coordination, field engineering, reviews, inspections and submittals defined in the *Specifications,* and have a minimum 5 years documented "Superintendent/Project Management" experience. 3.5.5 The *Consultant and Owner* shall reserve the right to review the record of experience and credentials of supervisory staff assigned to the *Project* prior to commencement of the *Work*. 3.5.6 A superintendent assigned to the *Work* 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 *Project* to the sole satisfaction of the *Owner*."

GC 3.6 SUBCONTRACTORS AND SUPPLIERS

SC18.1	3.6.1.1	In paragraph 3.6.1.1 add to the end of the second line the words "including any warranties and service agreements which extend beyond the term of the *Contract*."
	3.6.1.2	In subparagraph 3.6.1.2 after the words "the *Contract Documents*" add the words "including any required surety bonding".
	3.6.2	Delete paragraph 3.6.2. in its entirety and replace it with the following: "3.6.2 The substitution of any *Subcontractor* and/or *Suppliers* after submission of the *Contractor's* bid will not be accepted unless a valid reason is given in writing to and approved by the *Owner*, whose approval may be arbitrarily withheld. The reason for substitution must be provided to the *Owner* and to the original *Subcontractor* and/or *Supplier* and the *Subcontractor* and/or *Supplier* shall be given the opportunity to reply to the *Contractor* and *Owner.* The *Contractor* shall be fully aware of the capability of each *Subcontractor* and/or *Supplier* included in its bid, including but not limited to technical ability, financial stability and ability to maintain the proposed construction schedule."
	3.6.7, 3.6.8,	Add new paragraphs 3.6.7, 3.6.8, 3.6.9, and 3.6.10 as follows:

	3.6.9 & 3.6.10	"3.6.7 The *Contractor* represents and warrants that it has confirmed the availability of its *Subcontractors* for the *Project* and, in particular, for the performance of their respective portions of the *Work* to ensure completion of the *Project* within the *Contract Price* and the *Contract Time*. 3.6.8 The *Consultant* or the *Owner*, acting reasonably, may from time to time require the *Contractor* to remove from the *Project* any personnel of the *Contractor*, including project managers, superintendents or *Subcontractors*. Such persons shall be replaced by the *Contractor* in a timely fashion to the satisfaction of the *Consultant* or the *Owner*, as the case may be, at no cost to the *Owner*. 3.6.9 Where provided in the *Contract*, the *Owner* may assign to the *Contractor*, and the *Contractor* agrees to accept, any contract procured by the *Owner* for *Work* or services required on the *Project* that has been pre-tendered or pre-negotiated by the *Owner*, and upon such assignment, the *Owner* shall have no further liability to any party for such contract. 3.6.10 The *Contractor* covenants that each subcontract or supply contract which the *Contractor* enters into for the purpose of performing the *Work* shall expressly provide for the assignment thereof to the *Owner* (at the option of the *Owner*) and the assumption by the *Owner* of the obligations of the *Contractor* thereunder, upon the termination of the *Contract* and upon written notice by the *Owner* to the other parties to such subcontracts or supply contracts, without the imposition of further terms or conditions; provided, however, that until the *Owner* has given such notice, nothing herein contained shall be deemed to create any contractual or other liability upon the *Owner* for the performance of obligations under such subcontracts or supply contracts and the *Contractor* shall be fully responsible for all of its obligations and liabilities (if any) under such subcontracts and supply contracts."

GC 3.7 LABOUR AND PRODUCTS

SC19.1	3.7.1	Amend paragraph 3.7.1 by adding the words, "…, agents, *Subcontractors* and *Suppliers*…" after the word "employees" in the first line.
SC19.2	3.7.2	Delete paragraph 3.7.2 and substitute with the following: "3.7.2 *Products* 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 *Place of the Work*, unless otherwise specified. *Products* which are not specified shall be of a quality consistent with those specified and their use acceptable to the *Consultant*. *Products* brought on to the *Place of the Work* by the *Contractor* shall be deemed to be the property of the *Owner*, but the *Owner* shall be under no liability for loss thereof or damage thereto arising from any cause whatsoever. The said *Products* shall be at the sole risk of the *Contractor*. Workmanship shall be, in every respect, first class and the *Work* shall be performed in accordance with the best modern industry practice."
	3.7.4 to 3.7.8	Add new paragraphs 3.7.4, 3.7.5, 3.7.6, 3.7.7, and 3.7.8 as follows: "3.7.4 Upon receipt of a *Notice in Writing* from the *Owner,* the *Contractor* shall immediately remove from the *Place of the Work*, tradesmen and labourers or anyone whose conduct

		jeopardizes the safety of the *Owner's* operations or who are considered by the *Owner* or the *Consultant* to be unskilled or otherwise objectionable. Immediately upon receipt of the request, the *Contractor* shall make arrangements to appoint an acceptable replacement. 3.7.5 The *Contractor* shall cooperate with the *Owner* and its representatives and shall take all reasonable and necessary actions to maintain stable and harmonious labour relations with respect to the *Work* at the *Place of the Work*, including cooperation to attempt to avoid *Work* stoppages, trade union jurisdictional disputes and other *Labour Disputes*. Any costs arising from labour disputes shall be at the sole expense of the *Contractor.* 3.7.6 The cost for overtime required beyond the normal *Working Day* to complete individual construction operations of a continuous nature, such as pouring or finishing of concrete or similar work, or *Work* that the *Contractor* elects to perform at overtime rates without the *Owner* requesting it, shall not be chargeable to the *Owner*. 3.7.7 All manufactured *Products* which are identified by their proprietary names or by part or catalogue number in the *Specifications* shall be used by the *Contractor.* No substitutes for such specified *Products* shall be used without the written approval of the *Owner* and the *Consultant*. Substitutes will only be considered by the *Consultant* when submitted in sufficient time to permit proper review and investigation. When requesting approval for the use of substitutes, the *Contractor* shall include in its submission any proposed change in the *Contract Price*. The *Contractor* shall use all proprietary *Products* in strict accordance with the manufacturer's directions. Where there is a choice of proprietary *Products* specified for one use, the *Contractor* may select any one of the *Products* so specified for this use. 3.7.8 Materials, appliances, equipment and other *Products* are sometimes specified by reference to brand names, proprietary names, trademarks or symbols. In such cases, the name of a manufacturer, distributor, *Supplier* or dealer is sometimes given to assist the *Contractor* to find a source *Supplier*. This shall not relieve the *Contractor* from its responsibility from finding its own source of supply even if the source names no longer supplies the *Product* specified. If the *Contractor* is unable to obtain the specified *Product*, the *Contractor* shall supply a substitute product equal to or better than the specified *Product,* as approved by the *Consultant* with no extra compensation. Should the *Contractor* be unable to obtain a substitute *Product* equal to or superior to the specified *Product* and the *Owner* accepts a different Product, the *Contract Price* shall be adjusted accordingly, as approved by the *Consultant*."

GC 3.8 SHOP DRAWINGS

SC21.1	3.8.1	Delete paragraph 3.8.1 in its entirety and replace with the following: "3.8.1 The *Contractor* shall provide shop drawings as described in the *Contract Documents* and as the *Consultant* may reasonably request."
	3.8.3	Delete paragraph 3.8.3 and replace it with the following: "3.8.3 The *Contractor* shall prepare a *Shop Drawings* schedule acceptable to the *Owner* and the *Consultant* prior to the first application for payment. A draft of the proposed *Shop*

		Drawings schedule shall be submitted by the *Contractor* to the *Consultant* and the *Owner* for approval. The draft *Shop Drawings* schedule shall clearly indicate the phasing of *Shop Drawings* submissions. The *Contractor* shall periodically re-submit the *Shop Drawings* schedule to correspond to changes in the *Construction Schedule*."
	3.8.5	Delete paragraph 3.8.5 in its entirety and substitute the following: "3.8.5 At the time of providing *Shop Drawings*, the *Contractor* shall advise the *Consultant* in writing of any deviations in *Shop Drawings* from the requirements of the *Contract Documents*. The *Consultant* 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 review is requested."
	3.8.8 to 3.8.12	Add new paragraphs 3.8.8, 3.8.9, 3.8.10, 3.8.11, and 3.8.12 as follows: "3.8.8 Reviewed *Shop Drawings* shall not authorize a change in the *Contract Price* and/or the *Contract Time*. 3.8.9 Except where the parties have agreed to a different *Shop Drawings* schedule pursuant to paragraph 3.10.3, the *Contractor* shall comply with the requirements for *Shop Drawings* submissions stated in the *Specifications*. 3.8.10 The *Contractor* shall not use the term "by others" on *Shop Drawings* or other submittals. The related trade, *Subcontractor* or *Supplier* shall be stated. 3.8.11 Certain *Specifications* sections require the *Shop Drawings* to bear the seal and signature of a professional engineer. Such professional engineer must be registered in the jurisdiction of the *Place of the Work* and shall have expertise in the area of practice reflected in the *Shop Drawings*. 3.8.12 The *Consultant* will review and return *Shop Drawings* and submittals in accordance with the schedule agreed upon in paragraph 3.10.3, The *Contractor* shall allow the *Consultant* a minimum of 10 *Working Days* to review *Shop Drawings* from the date of receipt. If resubmission of *Shop Drawings* is required, a further 10 *Working Day* period is required for the *Consultant's* review."

***NEW* GC 3.9 USE OF THE WORK**

SC22.1	GC 3.9	Add new GC 3.9 – USE OF THE WORK as follows: "**GC 3.9 USE OF THE WORK** 3.9.1 The *Contractor* shall confine *Construction Equipment*, *Temporary Work*, storage of *Products*, waste products and debris, and operations of employees and *Subcontractors* to limits indicated by laws, ordinances, permits, by the direction of the *Owner* or the *Consultant*, or the *Contract Documents* and shall not unreasonably encumber the *Place of the Work*.

		3.9.2 The *Contractor* shall not load or permit to be loaded any part of the *Work* with a weight or force that will endanger the safety of the *Work*. 3.9.3 The *Owner* shall have the right to enter or occupy the *Place of the Work* in whole or in part for the purpose of placing fittings and equipment, or for other use before *Substantial Performance of the Work*, if, in the opinion of the *Consultant*, such entry and occupation does not prevent or substantially interfere with the *Contractor* in the performance of the *Contract* within the *Contract Time.* Such entry or occupation shall neither be considered as acceptance of the *Work* or in any way relieves the *Contractor* from its responsibility to complete the *Contract*."

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***NEW* GC 3.10 CUTTING AND REMEDIAL WORK**

SC23.1	GC 3.10	Add new GC 3.10 – CUTTING AND REMEDIAL WORK as follows: "**GC 3.10 CUTTING AND REMEDIAL WORK** 3.10.1 The *Contractor* shall perform the cutting and remedial work required to make the affected parts of the *Work* come together properly. Such cutting and remedial work shall be performed by specialists familiar with the *Products* affected and shall be performed in a manner to neither damage nor endanger the *Work*. 3.10.2 The *Contractor* shall coordinate the *Work* to ensure all cutting and remedial work required is kept to a minimum. 3.10.3 Unless specifically stated otherwise in the *Specifications*, the *Contractor* shall do all cutting and making good necessary for the proper installation and performance of the *Work.* 3.10.4 To avoid unnecessary cutting, the *Contractor* shall lay out its work and advise the *Subcontractors,* when necessary, where to leave holes for installation of pipes and other work."

***NEW* GC 3.11 CLEAN UP**

SC24.1	3.11.1, 3.11.2, 3.11.3, 3.11.4, 3.11.5 & 3.11.6	Add new paragraphs 3.11.1, 3.11.2, 3.11.3, 3.11.4, 3.11.5, and 3.11.6 as follows: "3.11.1 The *Contractor* shall maintain the *Work* in a safe and tidy condition and free from the accumulation of waste products and debris, other than that caused by the *Owner*, other contractors or their employees. The *Contractor* shall remove accumulated waste and debris at least once a week as a minimum or as required by the nature of the *Work*. 3.11.2 Before applying for *Substantial Performance of the Work*, the *Contractor* shall remove waste products and debris, other than that resulting from the work of the *Owner*, other contractors or their employees, and shall leave the *Place of the Work* clean and suitable for use or occupancy by the *Owner*. The *Contractor* shall remove products, tools, materials,

		Construction Equipment, and *Temporary Work* not required for the performance of the remaining work. 3.11.3 As a condition precedent to submitting its application for final payment, the *Contractor* shall remove any remaining products, tools, materials, *Construction Equipment*, *Temporary Work*, and waste products and debris, other than those resulting from the work of the *Owner*, other contractors or their employees. 3.11.4 The *Contractor* shall clean up garbage during and after construction and maintain the *Place of the Work* in a neat and orderly condition on a daily basis. Prior to leaving the *Place of the Work* and following completion of the *Work*, the *Contractor* shall make good all damage to the building and its components caused by the performance of the *Work* or by any *Subcontractor* or *Supplier*. The *Contractor* shall leave the *Place of the Work* in a clean and finished state; remove all *Construction Equipment* and materials; remove all paint, stains, labels, dirt, etc. from the *Place of the Work*; and touch up all damaged painted areas (if applicable). The *Contractor* shall be responsible for restoring those areas of the *Place of the Work*, impacted by the *Work*, to their original condition." 3.11.5 Without limitation to or waiver of the *Owner's* other rights and remedies, the *Owner* shall have the right to back charge to the *Contractor* the cost of damage to the site caused by transportation in and out of the *Place of the Work* by the *Contractor*, *Subcontractors* or *Suppliers,* if not repaired before final payment. 3.11.6 The *Contractor* shall dispose of debris at a location and in a manner acceptable to the *Owner* (and to the authorities having jurisdiction at the *Place of the Work* and at the disposal area) and the *Contractor* shall cover containers with tarpaulins."

***NEW* GC 3.12 EXCESS SOIL MANAGEMENT**

SC25.1	GC 3.12	Add new GC 3.12 – EXCESS SOIL MANAGEMENT as follows: "**GC 3.12 EXCESS SOIL MANAGEMENT** 3.12.1 The *Contractor* shall be solely responsible for the proper management of all *Excess Soil* at the *Place of the Work* and for performance of the *Work* in compliance with the rules, regulations and practices required by the *Excess Soil Regulation* until such time as *Ready-for-Takeover* is achieved. Without restricting the generality of the previous sentence, the *Contractor*'s responsibility under this GC 3.12 includes the designation, transportation, tracking, temporary and/or final placement, record keeping, and reporting of all *Excess Soil* in connection with the Work all in compliance with the *Excess Soil Regulation*. 3.12.3 The *Contractor* shall indemnify and save harmless the *Owner*, their agents, officers, directors, administrators, employees, consultants, successors and assigns from and against the consequences of any and all health and safety infractions committed directly by the *Contractor*, or those for whom it is responsible at law, under the *Excess Soil Regulation*, or any environmental protection legislation, including the payment of legal fees and disbursements on a substantial indemnity basis. Such indemnity shall apply to the extent

		to which the *Owner* is not covered by insurance."

***NEW* GC 3.13 CONTRACTOR STANDARD OF CARE**

SC25.1	3.13	Add a new GC 3.13 – CONTRACTOR STANDARD OF CARE as follows: "**GC 3.13 CONTRACTOR STANDARD OF CARE** "3.13.1 In performing its services and obligations under the *Contract*, the *Contractor* 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 *Contractor* acknowledges and agrees that throughout the *Contract,* the performance of the *Contractor's* obligations, duties and responsibilities shall be interpreted in accordance with this standard. The *Contractor* shall exercise the same standard of care, skill and diligence in respect of any *Products*, personnel or procedures which it may recommend to the *Owner* or employ on the *Project*. 3.13.2 The *Contractor* further represents, covenants and warrants to the *Owner* that: .1 the personnel it assigns to the *Project* are appropriately experienced; .2 it has a sufficient staff of qualified and competent personnel to replace any of its appointed representatives, subject to the *Owner's* approval, in the event of death, incapacity, removal or resignation; and .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 *Contractor* to perform its work under the *Contract*."

PART 4 ALLOWANCES

GC 4.1 CASH ALLOWANCES

SC27.1	4.1.3	In GC 4.1.3 delete the words "through the *Consultant*" and replace them with "in writing."
	4.1.4	Delete GC 4.1.4 in its entirety and replace it with the following: "4.1.4 Where the actual cost of the *Work* under any cash allowance exceeds the amount of the allowance, any unexpended amounts from other cash allowances shall be reallocated, by the *Consultant* at the *Owner*'s direction, to cover the shortfall, and, in that case, there shall be no additional amount added to the *Contract Price* for overhead and profit. Only where the actual cost of the *Work* under all cash allowances exceeds the total amount of all cash allowances shall the *Contractor* be compensated for the excess incurred and substantiated, plus an amount for overhead and profit on the excess only, as set out in the *Contract Documents.*"

	4.1.7	Delete GC 4.1.7 in its entirety and replace it with the following: "4.1.7 The net amount of any unexpended cash allowances, after providing for any reallocations as contemplated in paragraph 4.1.4, shall be deducted from the *Contract Price* by *Change Order* without any adjustment for the *Contractor's* overhead and profit on such amount."
	4.1.8 and 4.1.9	Add new GC 4.1.8 and 4.1.9 as follows: "4.1.8 The *Owner* reserves the right to call, or to have the *Contractor* call, for competitive bids for portions of the *Work* to be paid for from cash allowances. 4.1.9 Cash allowances cover the net cost to the *Contractor* of services, *Products*, *Construction Equipment*, freight, unloading, handling, storage, installation, provincial sales tax, and other authorized expenses incurred in performing any *Work* stipulated under the cash allowances but does not include any *Value Added Taxes* payable by the *Owner* and the *Contractor."*

PART 5 PAYMENT

GC 5.1 FINANCING INFORMATION REQUIRED OF THE OWNER

SC28.1	5.1	Delete GC 5.1 – FINANCING INFORMATION REQUIRED OF THE OWNER and all paragraphs thereunder, including any reference to GC 5.1 throughout the *Contract*.

GC 5.2 APPLICATIONS FOR PAYMENT

SC29.1	5.2.1	Delete GC 5.2.1 and replace it with the following: "5.2.1 Upon execution of the *Contract*, and in any event prior to the *Contractor* submitting its first application for payment, the *Owner* shall issue a purchase order to the *Contractor* for the performance of the *Contract*. 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 *Contract* (each a "**Payment Period**"). Within 3 calendar days of the end of each *Payment Period*, the *Contractor* will submit a draft application for payment to the *Owner* and the *Consultant*. Upon receipt of the draft application for payment, and within 7 calendar days, a representative of each of the *Contractor*, *Owner*, and the *Consultant* shall attend a meeting to discuss and review the work completed during the *Payment Period*, including quantities, if applicable (the "**Pre-Invoice Submission Meeting**"). In the event that the scheduled date for the *Pre-Invoice Submission Meeting* is not a *Working Day*, the *Pre-Invoice Submission Meeting* shall occur on the next *Working Day*. The *Contractor* shall bring with it to the *Pre-Invoice Submission Meeting* the following: .1 a copy of the draft application for payment;

		.2 any documents the *Contractor* is required to bring to the *Pre-Invoice Submission Meeting* as stipulated in the *Contract Documents* or as reasonably requested by the *Owner*; and .3 any other documents reasonably requested, in advance, by the *Owner* or the *Consultant*."
SC29.2	5.2.2	Delete GC 5.2.2 in its entirety and replace it with the following: "5.2.2 Applications for payment shall be given in accordance with the following requirements: .1 Within 5 calendar days following the *Pre-Invoice Submission Meeting*, the *Contractor* shall deliver its application for payment to the *Owner* and to the *Consultant* for *Work* performed during the *Payment Period* ("**Proper Invoice Submission Date**") subject to the following: .1 If the fifth calendar day following the *Pre-Invoice Submission Meeting*, to which an invoice relates falls on a day that is not a *Working Day*, the *Proper Invoice Submission Date* shall be deemed to fall on the next *Working Day*. .2 The application for payment must be delivered to the *Owner* and to the *Consultant* in the same manner as a *Notice in Writing* during the hours of 9:00 am to 4:00pm (EST) on the *Proper Invoice Submission Date*. Delivery to the *Owner* shall be to the following email address: **facilities_cap@wrdsb.ca** .3 If an application for payment is received after 4:00 p.m. (EST) on the applicable *Proper Invoice Submission Date*, the application for payment will not be considered or reviewed by the *Owner* and *Consultant* until the next *Proper Invoice Submission Date.* Notwithstanding the foregoing, the *Owner* in its sole and absolute discretion may elect to accept an application for payment submitted after 4:00 p.m. on the applicable *Proper Invoice Submission Date*; however, such acceptance shall not be construed as a waiver of any of its rights or waive or release the *Contractor*'s 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 *Owner* prior to the *Proper Invoice Submission Date*. .5 All applications for payment shall include all of the requirements for a *Proper Invoice* prescribed by the *Construction Act* and this *Contract* and be dated the last day of the applicable *Payment Period*;"
SC29.3	5.2.3	Delete GC 5.2.3 and replace it with the following: "5.2.3 The amount claimed shall be for the value, proportionate to the amount of the *Contract*, of *Work* performed and *Products* delivered and incorporated into the *Work* as of the last date of the applicable *Payment Period*. Materials may also be deemed to be supplied to an improvement, for payment purposes, when, in the *Owner's* opinion, they are placed

		and properly secured on the land on which the improvement is made, or placed upon land designated by the *Owner* or agent of the *Owner*, 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 *Products* delivered to the *Place of the Work* unless the *Products* are free and clear of all security interests, liens, and other claims of third parties."
SC29.4	5.2.4	After the word "*Consultant*" in GC 5.2.4 add the words "and the *Owner*"
SC29.5	5.2.5	After the word "*Consultant*" in GC 5.2.5 add the words "or the *Owner*".
SC29.6	5.2.9	Add new 5.2.9 as follows: "5.2.9 The *Contractor* shall prepare and maintain current as-built drawings which shall consist of the *Drawings* and *Specifications* revised by the *Contractor* during the *Work*, showing changes to the *Drawings* and *Specifications*, which current as-built drawings shall be maintained by the *Contractor* and made available to the *Consultant* for review with each application for progress payment. The *Consultant* shall recommend to the *Owner* that the *Owner* retain a reasonable amount for the value of the as-built drawings not presented for review."

GC 5.3 PAYMENT

SC30.1	5.3.1	Delete GC 5.3.1 in its entirety, including all subparagraphs thereunder, and replace it with the following: "5.3.1 After receipt by the *Owner* and the *Consultant* of an application for payment submitted by the *Contractor* in accordance with GC 5.2 - APPLICATIONS FOR PAYMENT: .1 the *Consultant* will either: (a) issue to the *Owner* with a copy to the *Contractor*, a progress payment certificate in the amount applied for by the *Contractor* in the *Proper Invoice*, or (b) issue to the *Owner*, with a copy to the *Contractor*, a certificate for payment for an amount determined by the *Consultant* to be properly due to the *Contractor* after applying any credits, withheld amounts, or other set-offs which the *Consultant* has determined that the *Owner* is entitled to notwithstanding any notice of dispute or disagreement that the *Contractor* may have served, along with the *Consultant's* reasons why an amount other than what is claimed in the *Proper Invoice* is properly due to the *Contractor*, which finding the *Owner* may accept or amend prior to the *Owner* issuing a *Notice of Non-Payment*, if any, in accordance with GC 5.3.2; .2 the *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 PAYMENT,

		(a) in the amount stated in the certificate for payment, or (b) in the amount stated in the certificate for payment less such amount stated in the *Owner's Notice of Non-Payment* issued pursuant to GC 5.3.3, on the 28th calendar day after receipt of a *Proper Invoice*, unless such 28th calendar day lands on a day that is other than a *Working Day*, in which case payment shall be made on the next *Working Day* after such 28th day."
	5.3.2 to 5.3.7	Add new paragraphs 5.3.2, 5.3.3, 5.3.4, 5.3.4, 5.3.5, 5.3.6, and 5.3.7 as follows: 5.3.2 All payments to the *Contractor* shall be processed using electronic funds transfer ("**EFT**") and deposited directly to the *Contractor's* bank account unless agreed to otherwise by the *Contractor* and the *Owner* in writing. Prior to the *Contractor* submitting its first application for payment, the *Owner* and the *Contractor* shall exchange such information as is necessary to facilitate *EFT* payments. 5.3.3 In the event that the application for payment delivered by the *Contractor* pursuant to GC 5.2 - APPLICATIONS FOR PAYMENT does not include the requirements for a *Proper Invoice* or where the *Owner* disputes the amount claimed as payable in the *Proper Invoice*, then the *Owner* shall within 14 calendar days of receipt of the application for payment, issue a *Notice of Non-Payment* (Form 1.1). 5.3.4 Where the *Owner* has delivered a *Notice of Non-Payment*, the *Owner* and the *Contractor* shall first engage in good faith negotiations to resolve the dispute. If within 5 calendar days following the issuance of a *Notice of Non-Payment*, despite good faith efforts by both parties and the assistance of the *Consultant*, the *Owner* and the *Contractor* cannot resolve the dispute, either party may commence an *Adjudication* in accordance with the procedures set out in the *Construction Act.* Any portion of the *Proper Invoice* which is not the subject of the *Notice of Non-Payment* shall be payable within the time period set out in GC 5.3.1.2. 5.3.5 Provided that the *Owner* complies with its obligations under the *Construction Act*, and subject to any interim determination of an adjudicator in accordance with any *Adjudication*, and where applicable, a final determination made in accordance with the dispute resolution

		processes prescribed by this *Contract*, the *Owner* shall be entitled to claim in a *Notice of Non-Payment* a right to deduct from or, set off against, any payment of the *Contract Price*: .1 any amount expended by the *Owner* in exercising the *Owner's* rights under this *Contract* to perform any of the *Contractor's* obligations that the *Contractor* has failed to perform; .2 any damages, costs or expenses (including, without limitation, reasonable legal fees and expenses) incurred by the *Owner* as a result of the failure of the *Contractor* to perform any of its obligations under the *Contract*; .3 any other amount owing from the *Contractor* to the *Owner* under this *Contract*. 5.3.6 The amounts disputed and described under the *Notice of Non-Payment* shall be held by the *Owner* until all disputed amounts of the *Proper Invoice* have been resolved pursuant to PART 8 – DISPUTE RESOLUTION. 5.3.7 The *Contractor* represents, warrants, and covenants to the *Owner* that it is familiar with its prompt payment and trust obligations under the *Construction Act* and will take all required steps and measures to ensure that it complies with the applicable prompt payment and trust provisions under the *Construction Act* including, without limitation, section 8.1 of the *Construction Act*. Evidence of the *Contractor's* compliance under this GC 5.3.7, including evidence demonstrating that all *EFTs* by the *Owner* to the *Contractor* are kept in a bank account in the *Contractor's* name will be made available to the *Owner* within 5 *Working Days* following receipt by the *Contractor* of a *Notice in Writing* making such request."

GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK- AND PAYMENT OF HOLDBACK

SC32.1	GC 5.4	Delete GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK in its entirety and replace it with the following: "**GC 5.4 SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK** 5.4.1 When the *Contractor* considers that *Substantial Performance of the Work* has been achieved, the *Contractor* shall prepare and submit to the *Consultant* and the *Owner* a comprehensive deficiency list of items to be completed or corrected, including any incomplete *Close-Out Documentation*, and apply for a review by the *Consultant* and the *Owner* to establish *Substantial Performance of the Work*. Failure to include an item on the list does not alter the responsibility of the *Contractor* to complete the *Contract*. 5.4.2 Prior to, or as part of its written application for *Substantial Performance of the Work* the *Contractor* shall submit to the *Consultant* submit to the *Consultant* all closeout documentation required by the *Contract Documents*, including but not limited to, warranties, manuals, guarantees, as-built drawings, warranty cards and all other relevant literature from suppliers and manufacturers including, but not limited to, where applicable

		(the "**Close-Out Documentation**"): .1 equipment, maintenance, and operations manuals; .2 equipment specifications, data sheets and brochures, parts lists and assembly drawings, performance curves and other related data; .3 line drawings, value charts and control sheets sequences with description of the sequence of operations; .4 warranty documents; .5 guarantees; .6 certificates; .7 service and maintenance reports; .8 *Specifications*; .9 *Shop Drawings*; .10 coordination drawings; .11 testing and balancing results and reports; .12 *Commissioning* and quality assurance documentation; .13 distribution system diagrams; .14 spare parts; .15 samples; .16 existing reports and correspondence from authorities having jurisdiction in the *Place of the Work*; .17 inspection certificates; .18 red-lined record drawings from the construction trailer in two copies and .19 other materials or documentation required to be submitted under the *Contract.* 5.4.3 The *Consultant* will review the *Work* to verify the validity of the application and shall promptly, and in any event, no later than 30 calendar days after receipt of the *Contractor's* complete deficiency list and application: .1 prepare a final deficiency list incorporating all items to be completed or corrected, including any incomplete or unsubmitted *Close-Out Documentation*. Each item shall have an indicated value for correction or completion and the determination of the total value of such items shall be determined pursuant to GC 5.8 – DEFICIENCY HOLDBACK. The final deficiency list complete with values is to be included with the *Consultant's* draft verification and shall be reviewed with the *Owner* prior to the *Consultant* rendering a determination in accordance with GC 5.4.3.2 .2 having completed the requirements set out in GC 5.4.3.1, (a) the *Consultant* shall advise the *Contractor* in writing that the *Work* or the designated portion of the *Work* is not substantially performed and give reasons why, or (b) the *Consultant* shall state the date of *Substantial Performance of the Work* in a certificate and issue a copy of that certificate to each the *Owner* and the *Contractor.* 5.4.4 Following the issuance of the certificate of *Substantial Performance of the Work* referenced in subparagraph 5.4.3.2(b):

.1 The Contractor shall publish, in a construction trade newspaper in the area of the location of the Work, a copy of the certificate of S*ubstantial Performance of the Work* referred to in GC 5.4.2.2(b) within seven (7) calendar days of receiving a copy of the certificate signed by the *Consultant*, and the *Contractor* shall provide suitable evidence of the publication to the *Consultant* and the *Owner*. If the Contractor fails to publish such notice, the Owner shall be at liberty to publish said certificate and back-charge the Contractor its reasonable costs for doing so;

.2 The *Contractor* shall complete the *Work* within forty (40) calendar days of the date certified as the date of *Substantial Performance of the Work*;

.3 Notwithstanding any other provisions of the *Contract,* no payments will be processed between *Substantial Performance of the Work* and *Ready-for-Takeover*;

.4 The *Owner* reserves the right to contract out any or all unfinished *Work* if it has not been completed within forty (40) days of *Substantial Performance of the Work* using, without limitation, the funds retained in accordance with GC 5.8 - DEFICIENCY HOLDBACK, without prejudice to any other right or remedy and without affecting the warranty period. The cost to the *Owner* of completing the *Work* including *Owner* and *Consultant* wages and materials shall be deducted from the *Contract Price.*

5.4.5 After publication of the certificate of the *Substantial Performance of the Work*, and provided that the *Contractor* has completed performance of the *Work* within the 40 calendar days following certification of *Substantial Performance of the Work*, the *Contractor* may submit an application for payment of the outstanding *Construction Act* holdback amount, which application for payment shall:

.1 include all of the requirements listed in EXHIBIT "1" - PROJECT SPECIFIC REQUIREMENTS FOR A PROPER INVOICE, as applicable to the application for payment of the holdback amount; and

.2 include a statement that the *Contractor* has not received any written notices of lien or any claims for liens from any *Subcontractor* or *Supplier.*

5.4.6 The *Construction Act* holdback amount shall become due and payable the day immediately following the expiration of the holdback period prescribed by the *Construction Act* (in most cases being the 61st calendar day following the publication of the certificate of *Substantial Performance of the Work* referred to in GC 5.4.4.1), subject to the occurrence of any of the following:

.1 the preservation of a lien in respect of the *Project* that has not been satisfied, discharged or otherwise provided for in accordance with the *Construction Act*;

.2 receipt by the *Owner* of a written notice of lien that has not been satisfied, discharged or otherwise provided for in accordance with the *Construction Act*; or

.3 prior to the expiry of 40 calendar days following the publication of the certificate of *Substantial Performance of the Work,* the *Owner* publishes a *Notice of Non-Payment* of holdback in accordance with the *Construction Act* (Form 6)*,* setting out the amount of holdback that will not be paid, which may include non-payment to secure the correction of deficiencies and/or the completion of the *Work*.

		5.4.7 Notwithstanding the *Owner's* obligation to make payment of the holdback amount in accordance with GC 5.4.6, the processing of such payment remains subject to the *Owner's* internal *EFT* timing limitations. The *Owner* covenants, and the *Contractor* agrees, that payment of the holdback shall be made by *EFT* at the first opportunity during the *Owner's* normal processing of *EFTs* upon the holdback becoming due in accordance with GC 5.4.6..

GC 5.5 FINAL PAYMENT

SC35.1	GC 5.5	Delete GC 5.5 in its entirety, including all subparagraphs thereunder and replace it with the following: "5.5.1 When *Ready-for-Takeover* has been achieved in accordance with GC 12.1 – READY-FOR-TAKEOVER and the *Contractor* considers the *Work* is complete, and after the *Contractor*, the *Owner*, and the *Consultant* have attended a *Pre-Invoice Submission Meeting* analogous to the requirement in GC 5.2.1 (the "***Final Pre-Invoice Submission Meeting***"), the *Contractor* may submit an application for final payment to the *Owner* and to the *Consultant*, which application for payment shall: .1 include all of the requirements set out in GC 5.2.2, including without limitation those requirements listed in APPENDIX "1" - PROJECT SPECIFIC REQUIREMENTS FOR A PROPER INVOICE that are specific to an application for final payment; and .2 if applicable, (a) a certificate from the *Consultant* or written confirmation from the *Owner* that the deficiencies or incomplete *Work* waived by the *Owner* pursuant to GC 12.1.2 have been fully rectified as of the date of the *Contractor's* application for final payment, and/or (b) written confirmation, signed by the *Owner* and the *Contractor,* that the *Contract Price* has been reduced by a specified amount in exchange for the *Owner* releasing the *Contractor* of its obligation to rectify the certain outstanding deficiencies and/or incomplete *Work* waived by the *Owner* pursuant to GC 12.1.2, as detailed in such written confirmation. 5.5.2 No later than 5 calendar days prior to the *Final Pre-Invoice Submission Meeting*, the *Contractor* will, if not already provided, submit to the *Consultant* all *Close-Out Documentation*. 5.5.3 Delivery of all *Close-Out Documentation* is a requirement for the *Proper Invoice* for final payment. 5.5.4 After receipt by the *Owner* and the *Consultant* of an application for payment submitted by the *Contractor* that is a *Proper Invoice* and by no later than 10 calendar days after the receipt of the *Proper Invoice*: .1 the *Consultant* will either: (a) issue to the *Owner* with a copy to the *Contractor*, a progress payment certificate in the amount applied for by the *Contractor* in the *Proper Invoice*, or

(b) deliver a finding to the *Owner* with reasons why an amount other than what is claimed in the *Proper Invoice* is properly due to the *Contractor*, which finding the *Owner* may accept or amend prior to issuing a *Notice of Non-Payment* (Form 1.1), if any, in accordance with GC 5.5.2;

.2 the *Owner* shall make payment to the *Contractor* on account as provided in Article A-5 PAYMENT,

(a) in the amount stated in the certificate for payment, or

(b) in the amount stated in the certificate for payment less such amount stated in the *Owner's Notice of Non-Payment* issued pursuant to GC 5.5.5,

on the 28th calendar day after receipt of a *Proper Invoice*, unless such 28th calendar day lands on a day that is other than a *Working Day*, in which case payment shall be made on the next *Working Day* after such 28th day.

5.5.5 In the event that the application for final payment delivered by the *Contractor* does not include the requirements of GC 5.5.1 (including the requirements for a *Proper Invoice*) and GC 5.5.2 or where the *Owner* disputes the amount claimed as payable in the *Proper Invoice*, then the *Owner* shall within 14 calendar days of receipt of the application for payment, issue a *Notice of Non-Payment*. Where the *Owner* has delivered a *Notice of Non-Payment*, as specified under this GC 5.5.5, the *Owner* and the *Contractor* shall first engage in good faith negotiations to resolve the dispute. If within 5 calendar days following the issuance of a *Notice of Non-Payment*, despite good faith efforts by both parties with the assistance of the *Consultant*, the *Owner* and the *Contractor* cannot resolve the dispute, either party may commence an *Adjudication* in accordance with the procedures set out in the *Construction Act*. Any portion of the *Proper Invoice* which is not the subject of the *Notice of Non-Payment* shall be payable within the time period set out in GC 5.5.4.2.

5.5.6 Subject to the provisions of the *Construction Act* and any other rights conferred on the *Owner* at law or under this *Contrac*t to withhold payment or back charge or set-off against payment, the *Owner* shall pay the amount payable under a *Proper Invoice* for final payment in accordance with the *Construction Act*.

5.5.7 When the *Consultant* issues a certificate of completion in accordance with GC 5.5.4.1, the *Consultant* shall also issue a certificate for release of any holdback for finishing work amount. In accordance with the *Construction Act,* the *Owner* may retain any amounts which are required by law to satisfy any liens against the *Work*, in respect of any third party claims made to the *Owner* in respect of the *Contract* or the *Work*, and in respect of any claims the *Owner* may have against the *Contractor*. Subject to the foregoing, the *Owner* shall release the holdback in accordance with the *Construction Act.*"

GC 5.6 DEFERRED WORK

SC33.1	5.6.1	Delete paragraph 5.6.1 and replace with the following: "5.6.1 If because of conditions reasonably beyond the control of the *Contractor*, there are items of work that cannot be performed, payment in full for that portion of the *Work* which has been performed as certified by the *Consultant* shall not be withheld or delayed by the *Owner* on account thereof, but the *Owner* may withhold, subject to its requirement to issue a *Notice of Non-Payment* under the *Construction Act*, until the remaining portion of the *Work* is finished, only such an amount that the *Consultant* 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 5.8.1."

***NEW* GC 5.8 DEFICIENCY HOLDBACK**

SC34.1	5.8.1	Add new GC 5.8 – DEFICIENCY HOLDBACK as follows: "**GC 5.8 DEFICIENCY HOLDBACK** 5.8.1 Notwithstanding any provisions contained in the *Contract Documents* concerning certification and release of monies to the *Contractor*, the *Owner* reserves the right to retain a *Deficiency Holdback*, In addition to the Construction Act holdback. The *Deficiency Holdback* in the value of 2% shall be applied against the total Contract value and shall be applied to each progress payment. The *Deficiency Holdback* shall be payable to the Contractor upon the confirmation of completion of all deficiencies and defects in work by the Consultant and the Owner. 5.8.2 In performing the calculation under GC 5.8.1, .1 no individual deficiency will be valued at less than five hundred dollars ($500.00); and .2 for any *Close-Out Documentation* not submitted in advance of or as part of the *Contractor's* application for *Substantial Performance of the Work*, an amount shall be retained by the *Owner* as part of the deficiency holdback that is equal to the estimated time and material costs to retain a third-party to re-create the applicable *Close-Out Documentation*, as determined by the *Consultant*, until such time as the applicable *Close-Out Documentation* is submitted and approved. 5.8.3 The deficiency holdback shall be due and payable to the *Contractor* on the 61st day following completion of all of the deficiencies listed by the *Consultant* and confirmed to be corrected, there being no claims for lien registered against the title to the *Place of the Work* issued in accordance with the *Construction Act*, and less any amounts disputed under an *Owner*'s *Notice of Non-Payment* (Form 1.1)."

PART 6 CHANGES IN THE WORK

GC 6.1 OWNER'S RIGHT TO MAKE CHANGES

SC37.1	6.1.2	Add the following to the end of GC 6.1.2:

		"This requirement is of the essence and it is the express intention of the parties that any claims by the *Contractor* for a change in the *Contract Price* and/or *Contract Time* 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 *Work* and no claims that the *Owner* has been unjustly enriched by any alteration or addition to the *Work*, whether in fact there is any such unjust enrichment or not, shall be the basis of a claim for additional payment under this *Contract,* an increase to the *Contract Price*, or a claim for any extension of the *Contract Time*."
	6.1.3 to 6.1.8	Add new paragraphs 6.1.3, 6.1.4, 6.1.5, 6.1.6, 6.1.7 and 6.1.8 as follows: "6.1.3 The *Contractor* agrees that changes resulting from construction coordination, including but not limited to, scheduling, site surface conditions, site coordination, and *Subcontractor and Supplier* coordination are included in the *Contract Price* and the *Contractor* shall be precluded from making any claim for a change in the *Contract Price* as a result of such changes. 6.1.4 Labour costs shall be actual, prevailing rates at the *Place of the Work* paid to workers, plus statutory charges on labour including WSIB, unemployment insurance, Canada pension, vacation pay, hospitalization and medical insurance. The *Contractor* shall provide these rates, when requested by the *Consultant*, for review and/or agreement. 6.1.5 Quotations for changes to the *Work* shall only include *Direct Costs* and be accompanied by itemized breakdowns together with detailed, substantiating quotations or cost vouchers from *Subcontractors* and *Suppliers,* submitted in a format acceptable to the *Consultant* and shall include any *Direct Costs* associated with extensions in *Contract Time.* 6.1.6 When both additions and deletions covering related *Work* or substitutions are involved in a change to the *Work*, payment, including *Overhead* and profit, shall be calculated on the basis of the net difference, if any, with respect to that change in the *Work*. 6.1.7 Changes to the contract shall be quoted to permit the work to be executed within the *Contract Time* unless approved by the *Consultant* and the *Owner.* 6.1.8 No extension to the *Contract Time* shall be granted for changes in the *Work* unless the *Contractor* can clearly demonstrate that such changes significantly alter the overall construction schedule submitted at the commencement of the *Work.* Extensions of *Contract Time* and all associated costs, if approved, shall be included in the relevant *Change Order*. 6.1.9 When a change in the *Work* is proposed or required, the *Contractor* shall within 10 calendar days submit to the *Consultant* for review a claim for a change in *Contract Price* and/or *Contract Time.* Should 10 calendar days be insufficient to prepare the submission, the *Contractor* shall within 5 calendar days, advise the *Consultant* in writing of the proposed date of submission of the claim. Claims submitted after the dates prescribed herein will not be considered."

GC 6.2 CHANGE ORDER

SC38.1	6.2.1	In paragraph 6.2.1 after the last sentence in the paragraph add the following: "The adjustment in the *Contract Time* and the *Contract Price* shall include an adjustment, if any, for delay or for the impact that the change in the *Work* has on the *Work* of the *Contractor*, and once such adjustment is made, the *Contractor* shall be precluded from making any further claims for delay or impact with respect to the change in the *Work.*"
	6.2.3 to 6.2.5	Add 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 *Consultant*: .1 by estimate and acceptance of a lump sum; .2 by negotiated unit prices which include the *Contractor's* overhead and profit, or; .3 by the actual *Direct Cost* to the *Owner,* 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 Subcontractor on work of their own forces, 5% overhead, 5 % profit .3 Contractor on work of Subcontractor, 5% overhead only. 6.2.4 All quotations shall include *Direct Costs* and be submitted in a complete manner listing: .1 quantity of each material, .2 unit cost of each material, .3 man hours involved, .4 cost per hour, .5 *Subcontractor* quotations submitted listing items 1 to 4 above and item 6 below. .6 mark-up. 6.2.5 The *Owner* and the *Consultant* will not be responsible for delays to the *Work* resulting from late, incomplete or inadequately broken-down valuations submitted by the *Contractor.*"

GC 6.3 CHANGE DIRECTIVE

SC39.1	6.3.6.1	Amend paragraph 6.3.6.1 by deleting the final period and adding the following: ".1 Contractors work by their own forces - 5% overhead and 5% profit, Subcontractor work by their own forces – 5% overhead and 5% profit, Contractors on Subcontractors work – 5% overhead only.
	6.3.6.2	Delete paragraph 6.3.6.2 and replace it with the following: ".2 If a change in the *Work* results in a net decrease in the *Contract Price*, the amount of the credit shall be the net cost, without deduction for *Overhead* or profit."
	6.3.7.1(4)	Delete GC 6.3.7.1(4).
	6.3.7.7	Amend GC 6.3.7.7 by deleting the words "described in paragraph 6.3.7.1" and replacing them with "approved by the *Owner* in writing and in advance of any such expenses being incurred;"
	6.3.7.9	Amend GC 6.3.7.9 by adding the following to the end of the paragraph: "…when specifically requested by the *Owner* or as directed by the *Consultant*;".
	6.3.7.10	Amend GC 6.3.7.10 by adding the following to the end of the paragraph: ", provided that such amounts are not caused by negligent acts, omissions, or default of the *Contractor* or *Subcontractor*;".
	6.3.7.13	Delete GC 6.3.7.13.
	6.3.7.15	Delete GC 6.3.7.15.
	6.3.7.17	Delete GC 6.3.7.17 in its entirety including all subparagraphs.
	6.3.11	Delete GC 6.3.11 and replace it with the following: "6.3.11 The value of the *Work* performed as a result of a *Change Directive* shall not be eligible to be included in progress payments until the amount, including the method for determining the amount, of such *Change Directive* has been determined."

GC 6.4 CONCEALED OR UNKNOWN CONDITIONS

SC40.1	6.4.1	Delete paragraph 6.4.1 in its entirety and replace with the following: "6.4.1.1 Prior to the submission of the bid on which the Contract was awarded, the Contractor confirms that it carefully investigated the Place of the Work insofar as the Place of Work

		was available for investigation and, in doing so, applied to that investigation the degree of care and skill required by paragraph 3.14.1 6.4.1.2 No claim by the *Contractor* will be considered by the *Owner* or the *Consultant* in connection with conditions which could reasonably have been ascertained by such investigation or other due diligence undertaken prior to the execution of the *Contract*.
	6.4.2	Amend paragraph 6.4.2 by adding a new first sentence as follows: "Having regard to paragraph 6.4.1, if the *Contractor* believes that the conditions of the *Place of the Work* differ materially from those reasonably anticipated, differ materially from those indicated in the *Contract Documents* and were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1, it shall provide the *Owner* and the *Consultant* with *Notice in Writing* no later than five (5) *Working Days* after the first observation of such conditions." -and- amend the existing second sentence of paragraph 6.4.2 in the second line, following the word "materially" by adding the words "or were concealed from discovery notwithstanding the conduct of the investigation described in paragraph 6.4.1,".
	6.4.3	Delete paragraph 6.4.3 in its entirety and substitute the following: "6.4.3 If the *Consultant* makes a finding pursuant to paragraph 6.4.2 that no change in the *Contract Price* or the *Contract Time* is justified, the *Consultant* shall report in writing the reasons for this finding to the *Owner* and the *Contractor*."
	6.4.5	Add new paragraph 6.4.5 as follows: "6.4.5 No claims for additional compensation or for an extension of *Contract Time* shall be allowed if the *Contractor* fails to give *Notice in Writing* to the *Owner* or *Consultant,* as required by paragraph 6.4.2."

GC 6.5 DELAYS

SC41.1	6.5.1	In paragraph 6.5.1 delete the words after the word "for" in the fourth line and replace them with the words "…reasonable *Direct Costs* 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)."
	6.5.2	Delete GC 6.5.2 in its entirety and replace it with the following: "6.5.2 If the *Contractor* is delayed in the performance of the *Work* by a stop work order issued by a court or other public authority and providing that such order was issued on account of a direct breach, violation, contravention, or a failure to abide by any laws, ordinances, rules, regulations, or codes by the *Owner*, *Other Contractor(s)*, or the *Consultant*, and relating to the *Work* or the *Place of the Work*, then the *Contract Time* shall be extended for such reasonable time as the *Consultant* may determine. The *Contractor* shall be reimbursed by

		the *Owner* for reasonable *Direct Costs* 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)."
	6.5.3	Delete paragraph 6.5.3 in its entirety and replace with the following: "6.5.3 If either party is delayed in the performance of their obligations under this *Contract* by *Force Majeure*, then the *Contract Time* shall be extended for such reasonable time as the *Owner* and the *Contractor* 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 *Contract Time* attributable to the *Force Majeure* event, the *Owner* and the *Contractor* shall execute a *Change Order* indicating the length of the extension to the *Contract Time* and confirming that there are no costs payable by the either party for the extension of *Contract Time*. However, if at the time an event of *Force Majeure* arises a party is in default of its obligations under the *Contract* 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 *Force Majeure*."
	6.5.4	Delete paragraph 6.5.4 in its entirety and replace it with the following: "6.5.4 No extension or compensation shall be made for delay or impact on the *Work* unless notice in writing of a claim is given to the *Consultant* not later than ten (10) *Working Days* after the commencement of the delays or impact on the *Work*, provided however, that, in the case of a continuing cause of delay or impact on the *Work*, only one notice of claim shall be necessary."
	6.5.6 to 6.5.8	Add new paragraphs 6.5.6, 6.5.7 and 6.5.8 as follows: "6.5.6 If the *Contractor* is delayed in the performance of the *Work* by an act or omission of the *Contractor* or anyone directly or indirectly employed or engaged by the *Contractor,* or by any cause within the *Contractor's* control, then (i) firstly, at its expense, and to the extent possible, the *Contractor* 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 *Contractor* to recover the time lost by implementing acceleration measures and/or overtime work, the *Contract Time* may be extended for such reasonable time as the *Owner* may decide in consultation with the *Consultant* and the *Contractor*. The *Owner* shall be reimbursed by the *Contractor* for all reasonable costs incurred by the *Owner* as the result of such delay, including, but not limited to, Owner's staff costs, the cost of all additional services required by the *Owner* from the *Consultant* or any sub-consultants, project managers, or others employed or engaged by the *Owner*, and in particular, the costs of the *Consultant's* services during the period between the date of *Substantial Performance of the Work* stated in Article A-1 herein, as the same may be extended through the provision of

		these General Conditions, and any later or actual date of *Substantial Performance of the Work* achieved by the *Contractor*. 6.5.7 Without limiting the obligations of the *Contractor* described in GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS or GC 9.4 – CONSTRUCTION SAFETY, the *Owner* or *Consultant* may, by *Notice in Writing*, direct the *Contractor* to stop the *Work* where the *Owner* or *Consultant* determines that there is an imminent risk to the safety of persons or property at the *Place of the Work*. In the event that the *Contractor* receives such notice, it shall immediately stop the *Work* and secure the site. The *Contractor* shall not be entitled to an extension of the *Contract Time* or to an increase in the *Contract Price* unless the resulting delay, if any, would entitle the *Contractor* to an extension of the *Contact Time* or the reimbursement of the *Contractor's* costs as provided in paragraphs 6.5.1, 6.5.2 or 6.5.3. 6.5.8 No claim for delay shall be made by the *Contractor* and the *Contract Time* shall not be extended due to climatic conditions or arising from the *Contractor's* efforts to maintain the *Construction Schedule*."

PART 7 DEFAULT NOTICE

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

SC43.1	7.1.2	In GC 7.1.2, delete the words "and if the *Consultant* has given a written statement to the *Owner* and *Contractor* which provides the detail of such neglect to perform the *Work* properly or such failure to comply with the requirements of the *Contract* to a substantial degree".
SC43.2	7.1.3.4	Add a new subparagraph 7.1.3.4 as follows: ".4 an "acceptable schedule" as referred to in subparagraph 7.1.3.2. means a schedule approved by the *Consultant* and the *Owner* wherein the default can be corrected within the balance of the *Contract Time* and shall not cause delay to any other aspect of the *Work* or the work of other contractors, and in no event shall it be deemed to give a right to extend the *Contract Time*."
	7.1.4.1	Delete subparagraph 7.1.4.1 and replace it with the following: ".1 correct such default and deduct the cost, including *Owner's* expenses, thereof from any payment then or thereafter due the *Contractor*."
	7.1.4.2	Delete subparagraph 7.1.4.2 and replace it with the following: ".2 by providing *Notice in Writing* to the *Contractor*, terminate the *Contractor's* right to continue with the *Work* in whole or in part or terminate the *Contract*, and publish a notice of termination (Form 8) in accordance with the *Act*."
	7.1.5.3	In subparagraph 7.1.5.3 delete the words: "however, if such cost of finishing the *Work* is less than the unpaid balance of the *Contract Price*, the *Owner* shall pay the *Contractor* the difference"
	7.1.6 to 7.1.10	Delete GC 7.1.6 and replace it with new paragraphs 7.1.6, 7.1.7, 7.1.8, 7.1.9 and 7.1.10 as follows:

		"7.1.6 In addition to its right to terminate the *Contract* set out herein, the *Owner* may terminate this *Contract* at any time for any other reason and without cause upon giving the *Contractor* fifteen (15) *Working Days Notice in Writing* to that effect. In such event, the *Contractor* shall be entitled to be paid for all *Work* performed including reasonable profit, for loss sustained upon *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the termination of the *Contract*, but in no event shall the *Contractor* be entitled to be compensated for any loss of profit on unperformed portions of the *Work*, or indirect, special, or consequential damages incurred. 7.1.7 The *Owner* may suspend *Work* under this *Contract* at any time for any reason and without cause upon giving the *Contractor Notice in Writing* to that effect. In such event, the *Contractor* shall be entitled to be paid for all *Work* 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 *Products* and *Construction Equipment*, and such other damages as the *Contractor* may have sustained as a result of the suspension of the *Work*, but in no event shall the *Contractor* 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 *Contract* shall be deemed to be terminated and the provisions of paragraph 7.1.6 shall apply. 7.1.8 In the case of either a termination of the *Contract* or a suspension of the *Work* 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 *Contractor* shall use its best commercial efforts to mitigate the financial consequences to the *Owner* arising out of the termination or suspension, as the case may be. 7.1.9 Upon the resumption of the *Work* 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 *Contractor* will endeavour to minimize the delay and financial consequences arising out of the suspension. 7.1.10 The *Contractor's* obligations under the *Contract* as to quality, correction, and warranty of the *Work* performed by the *Contractor* up to the time of termination or suspension shall continue after such termination of the *Contract* or suspension of the *Work*."

GC 7.2 CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT

SC44.1	7.2.2	Delete paragraph 7.2.2 and replace it with the following: "7.2.2 If the *Work* is suspended or otherwise delayed for a period of 40 consecutive *Working Days* 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 *Owner*, the *Owner's* other contractor(s), or the *Consultant*, and relating to the *Work* or the *Place of the Work*, the *Contractor* may, without

		prejudice to any other right or remedy the *Contractor* may have, terminate the *Contract* by giving the *Owner* Notice in *Writing* to that effect."
SC44.2	7.2.3.1	Delete subparagraph 7.2.3.1 in its entirety.
	7.2.3.2	Delete subparagraph 7.2.3.2 in its entirety.
	7.2.3.4	In subparagraph 7.2.3.4, delete the words "except for GC 5.1 - FINANCING INFORMATION REQUIRED OF THE OWNER".
	7.2.5	Delete paragraph 7.2.5 and replace it with the following: "7.2.5 If the default cannot be corrected within the 5 *Working Days* specified in paragraph 7.2.4, the *Owner* shall be deemed to have cured the default if it: .1 commences correction of the default within the specified time; .2 provides the *Contractor* with an acceptable schedule for such correction; and, .3 completes the correction in accordance with such schedule."
	7.2.6 to 7.2.9	Add new paragraphs 7.2.6, 7.2.7, 7.2.8 and 7.2.9 as follows: "7.2.6 If the *Contractor* terminates the *Contract* under the conditions described in GC 7.2 – CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* shall be entitled to be paid for all *Work* performed to the date of termination, as determined by the *Consultant*. The *Contractor* shall also be entitled to recover the direct costs associated with termination, including the costs of demobilization and losses sustained on *Products* and *Construction Equipment*. The *Contractor* shall not be entitled to any recovery for any special, indirect or consequential losses, including loss of profit. 7.2.7 The *Contractor* shall not be entitled to give notice of the *Owner's* default or terminate the *Contract* in the event the *Owner* withholds certificates or payment or both in accordance with the *Contract* because of: .1 the *Contractor's* failure to pay all legitimate claims promptly, or .2 the failure of the *Contractor* to discharge construction liens which are registered against the title to the *Place of the Work.* 7.2.8 The *Contractor's* obligations under the *Contract* as to quality, correction and warranty of the *Work* performed by the *Contractor* up to the effective date of termination shall continue in force and shall survive termination of this *Contract* by the *Contractor*. 7.2.9 If the *Contractor* suspends the *Work* or terminates the *Contract* as provided for in GC 7.2 – CONTRACTOR'S RIGHT TO SUSPEND THE WORK OR TERMINATE THE CONTRACT, the *Contractor* shall ensure the site and the *Work* are left in a safe, secure condition as required by authorities having jurisdiction at the *Place of the Work* and the *Contract Documents*."

PART 8 DISPUTE RESOLUTION

GC 8.1 AUTHORITY OF THE CONSULTANT

SC45.1	8.1.3	Delete paragraph 8.1.3 in its entirety and substitute as follows: "8.1.3 If a dispute is not resolved promptly, the *Consultant* will give such instruction as in the *Consultant's* opinion are necessary for the proper performance of the *Work* 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."

GC 8.2 ADJUDICATION

SC45.2	8.2.2 to 8.2.7	Add new GC 8.2.2, 8.2.3, 8.2.4, 8.2.5, 8.2.6, and 8.2.7 as follows: "8.2.2 Save and except where the *Contractor* has given an undertaking, in accordance with the *Act*, to refer a dispute to *Adjudication*, prior to delivering a notice of *Adjudication* in a form prescribed by the *Act*, the parties agree to first address all disputes with at least one in-person meeting with the *Owner's* representative, the *Consultant's* representative, and the *Contractor's* representative. The parties agree that such steps will be taken to resolve any disputes in a timely and cost-effective manner. 8.2.3 Notwithstanding any other provisions in PART 8 DISPUTE RESOLUTION, the parties shall engage in *Adjudication* proceedings as required by, and in accordance with, the *Construction Act*. 8.2.4 The following procedures shall apply to any *Adjudication* the parties engage in under the *Construction Act*: .1 any hearings shall be held at a venue within the jurisdiction of the *Place of the Work* or such other venue as the parties may agree and which is acceptable to the adjudicator; .2 the *Adjudication* shall be conducted in English; .3 each party may be represented by counsel throughout an *Adjudication*; .4 there shall not be any oral communications with respect to issues in dispute that are the subject of an *Adjudication* between a party and the adjudicator unless it is made in the presence of both parties or their legal representatives; and .5 a copy of all written communications between the adjudicator and a party shall be given to the other party at the same time. 8.2.5 Any documents or information disclosed by the parties during an *Adjudication* are confidential and the parties shall not use such documents or information for any purpose other than the *Adjudication* in which they are disclosed and shall not disclose such documents and information to any third party, unless otherwise required by law, save and except the for the adjudicator. 8.2.6 If the *Contractor* fails to comply with any of the notice requirements set out in the *Contract*, including the time limits set out in any of the following: .1 GC 6.4 – CONCEALED OR UNKNOWN CONDITIONS; .2 GC 6.5 – DELAYS; .3 GC 6.6 – CLAIMS FOR A CHANGE IN CONTRACT PRICE; .4 PART 8 DISPUTE RESOLUTION

		.5 GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES .6 GC 9.3 – ARTIFACTS AND FOSSILS; or .7 GC 9.5 - MOULD in respect of any claim or dispute, the *Contractor* shall have no entitlement whatsoever (including to an increase in the *Contract Price*, or an extension of *Contract Time*) in the context of an *Adjudication* under the *Construction Act* and waives the right to make any such claims or disputes in an *Adjudication*. This GC 8.2.6 shall operate conclusively as an estoppel and bar in the event such claims or disputes are brought in an *Adjudication* and the *Owner* may rely on this GC 8.2.6 as a complete defence to any such claims or disputes. 8.2.7 The parties hereby acknowledge and agree, .1 that counterclaims, claims of set-off or the exercise or use of other contractual rights that permit the *Owner* to withhold, deduct or retain from monies otherwise owed to the *Contractor* under the *Contract* may be referred to, and included as part of, *Adjudications* under the *Construction Act*; .2 that disputes related to the termination or abandonment of the *Contract*, as well as any disputes that arise or are advanced following the termination or abandonment of the *Contract*, shall not be referred to *Adjudication* under the *Construction Act*; .3 that notice(s) of *Adjudication,* with respect to any dispute or claim relating to the *Project,* shall not be given, and no *Adjudication* shall be commenced following *Contract* completion, *Contract* abandonment, or termination of the *Contract*; .4 that any *Adjudication* between the *Contractor* and a *Subcontractor* or a supplier that relates to an *Adjudication* between the *Owner* and the *Contractor* shall be joined together to be adjudicated by a single adjudicator, provided that the adjudicator agrees to do so, and the *Contractor* shall include a provision in each of its contracts that contain an equivalent obligation to this GC 8.2.7.4; and .5 that, other than where the *Contractor* is obliged to commence an *Adjudication* pursuant to an undertaking under the *Construction Act,* neither the *Owner* nor the *Contractor* shall commence an *Adjudication* during the *Restricted Period*. 8.2.8 The parties acknowledge and agree that no *Adjudication*, arbitration, action, suit or other proceeding may be brought by the *Contractor* against the *Owner* in respect of a claim for an increase to the *Contract Price* as set out in GC 6.6, before the *Consultant* has issued its findings in respect of same, pursuant to GC 6.6.5. For greater clarity and without limiting the foregoing, the amount applied for in each *Proper Invoice* shall not include any amounts pertaining to the *Contractor's* claim for an increase in *Contract Price* unless and until the *Consultant* has issued a written notice to the *Contractor* regarding the validity of such claim, as provided for in GC 6.6.5. However, nothing in this GC 8.2.8 shall prevent a *Contractor* from commencing an *Adjudicatio*n where, pursuant to the *Construction Act*, the *Contractor* is required to give an undertaking to a *Subcontractor* to commence an *Adjudication* following delivery of a *Notice of Non-Payment*."

GC 8.3 NEGOTIATION, MEDIATION AND ARBITRATION

SC46.1	8.3.1	Amend paragraph 8.3.1 by changing part of the second line from "shall appoint a *Project Mediator*" to "may appoint a *Project Mediator,* except that such an appointment shall only be made if both the *Owner* and the *Contractor* agree."
	8.3.4	Amend paragraph 8.3.4 by changing part of the second line from "the parties shall request the *Project Mediator"* to "and subject to paragraph 8.3.1 the parties may request the *Project Mediator".*
	8.3.6 to 8.3.9	Delete paragraphs 8.3.6, 8.3.7 and 8.3.8 in their entirety and replace them with the following new GCs 8.3.6, 8.3.7, 8.3.8, and 8.3.9: "8.3.6 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 *Contractor* and the *Owner* agree. If the *Contractor* and the *Owner* agree to resolve the dispute by arbitration, the arbitration shall be conducted in the jurisdiction of the *Place of the Work*. 8.3.7 Prior to delivering a notice of *Adjudication* in a form prescribed by the *Act*, the parties agree to first address all disputes by attending at least one meeting with the *Owner*'s representative, the *Consultant*'s representative, and the *Contractor*'s representative, prior to commencing an *Adjudication*. The parties agree that such steps will be taken 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 *Adjudication* shall provide the other party with 5 *Working Days' Notice in Writing* of its intention to issue a notice of *Adjudication*. 8.3.8 Other than where the *Contractor* is obliged to commence an *Adjudication* pursuant to an undertaking under the *Construction Act*, neither the *Owner* nor the *Contractor* shall commence an *Adjudication* during the *Restricted Period*. 8.3.9 Where either party has delivered a notice of *Adjudication* in a form prescribed by the *Act*, the procedures and rules set out under the *Construction Act* and the regulations thereto shall govern the *Adjudication*."

PART 9 PROTECTION OF PERSONS AND PROPERTY

GC 9.1 PROTECTION OF WORK AND PROPERTY

SC47.1	9.1.1.1	Delete subparagraph 9.1.1.1 in its entirety and substitute the following: ".1 errors in the *Contract Documents* which the *Contractor* could not have discovered applying the standard of care described in paragraph 3.14.1;"
	9.1.2	Delete paragraph 9.1.2 in its entirety and substitute as follows: "9.1.2 Before commencing any *Work*, the *Contractor* shall determine the locations of all underground or hidden utilities and structures indicated in or inferable from the *Contract Documents*, or that are inferable from an inspection of the *Place of the Work* exercising the degree of care and skill described in paragraph 3.14.1."
	9.1.5	Add new paragraph 9.1.5 as follows: "9.1.5 With respect to any damage to which paragraphs 9.1.3 or 9.1.4 apply, the *Contractor* 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 *Contractor*, without first consulting the *Owner* and receiving written instructions as to the course of action to be followed from either the *Owner* or the *Consultant*. Where, however, there is danger to life, the environment, or public safety, the *Contractor* shall take such emergency action as it deems necessary to remove the danger."

GC 9.2 TOXIC AND HAZARDOUS SUBSTANCES

SC48.1	9.2.1	Amend GC 9.2.1 by inserting the following to the end of the paragraph: "For the purposes of GC 9.2 – TOXIC AND HAZARDOUS SUBSTANCES, *Excess Soil* shall not be considered a 'toxic and hazardous substance'."
SC48.2	9.2.5.5	Add 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."
	9.2.6	Amend GC 9.2.6 by adding the following words after the word "responsible" in the second line: "or whether any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damages to the property of the *Owner* or others,".
	9.2.8	Amend GC 9.2.8 by adding the following words after the word "responsible" in the second line: "or whether any toxic or hazardous substances or materials already at the *Place of the Work* (and which were then harmless or stored, contained or otherwise dealt with in accordance with legal and regulatory requirements) were dealt with by the *Contractor* or anyone for whom the *Contractor* is responsible in a manner which does not comply with legal and regulatory requirements, or which threatens human health and safety or the environment, or material damages to the property of the *Owner* or others,".
	9.2.10	Add new paragraph 9.2.10 as follows: "9.2.10 The *Contractor*, *Subcontractors* and *Suppliers* shall not bring on to the *Place of the Work* any toxic or hazardous substances and materials except as required in order to perform the *Work*. 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 *Place of the Work*."

GC 9.4 CONSTRUCTION SAFETY

SC49.1	9.4.1	Delete GC 9.4.1 in its entirety and replace it with the following: "9.4.1 The *Contractor* shall be solely responsible for construction safety at the *Place of the Work* and for compliance with the rules, regulations, and practices required by the *OHSA*, 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 *Work*. The *Contractor*'s health and safety program documentation shall be made available for review by the *Owner* or *Consultant* immediately upon request. Without limiting the foregoing, the *Contractor* shall be solely responsible for construction safety in respect of the *Consultant*, *Subcontractors* and *Suppliers*, the *Owner's* own forces, *Other Contractors*, and all persons attending the *Place of the Work* during the course of the *Project*."
	9.4.2	Amend GC 9.4.2 by adding the following words after "and the *Contractor*": ", *Subcontractors* and *Suppliers*".
	9.4.3	Amend GC 9.4.3 by adding the following words after "and the *Contractor*": ", *Subcontractors* and *Suppliers*".
	9.4.4	Delete GC 9.4.4 and replace it with the following: "9.4.4 The *Owner* 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 *Contractor* with respect to occupational health and safety and related matters."
	9.4.5	Delete GC 9.4.5 in its entirety and replace it with the following: "9.4.5 Prior to the commencement of the *Work*, the *Contractor* shall submit to the *Owner*: .1 a current WSIB clearance certificate; .2 copies of the *Contractor*'s insurance policies having application to the *Project* or certificates of insurance, at the option of the *Owner*; .3 documentation setting out the *Contractor*'s in-house safety programs; .4 a copy of the Notice of Project filed with the Ministry of Labour naming itself as "constructor" under the *OHSA*; and

		. 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 *Place of the Work*;"
	9.4.6 to 9.4.12	Add new GC 9.4.6, 9.4.7, 9.4.8, 9.4.9, 9.4.10, 9.4.11, and 9.4.12 as follows: "9.4.6 The *Contractor* shall indemnify and save harmless the *Owner*, 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 *Contractor* under *OHSA* and any other occupational health and safety legislation in force at the *Place of the Work* including the payment of legal fees and disbursements on a solicitor and client basis. Such indemnity shall apply to the extent to which the *Owner* is not covered by insurance. 9.4.7 If the *Owner* is of the reasonable opinion that the *Contractor* has not taken such precautions as are necessary to ensure compliance with the requirements of paragraph 9.4.1, the *Owner* may take any remedial measures which it deems necessary, including stopping the performance of all or any portion of the *Work,* and the *Owner* may use its employees, the *Contractor*, any *Subcontractor* or any other contractors to perform such remedial measures. 9.4.8 The *Contractor* shall file any notices or any similar document required pursuant to the *Contract* or the safety regulations in force at the *Place of the Work*. This duty of the *Contractor* will be considered to be included in the *Work* and no separate payment therefore will be made to the *Contractor*. 9.4.9 Unless otherwise provided in the *Contract Documents*, the *Contractor* shall develop, maintain and supervise for the duration of the *Work* 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 *Owner* and any workers' compensation or occupational health and safety statutes or regulations in force at the *Place of the Work*. 9.4.10 The *Contractor* shall provide a copy of the safety program described in GC 9.4.9 hereof to the *Consultant* for delivery to the *Owner* prior to the commencement of the *Work*, and shall, ensure, as far as it is reasonably practical to do so, that every employer and worker performing work in respect of the *Project* complies with such program. 9.4.11 The *Contractor* 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 *Place of the Work*, including, without limitation, articles necessary for administering first-aid to any person and an emergency procedure for the immediate removal of any injured person to a hospital or a doctor's care. 9.4.12 The *Contractor* shall promptly report in writing to the *Owner* and the *Consultant* all accidents of any sort arising out of or in connection with the performance of the *Work*, 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 *Contractor* to the *Owner* and the *Consultant* by telephone or messenger in addition to any reporting required under the applicable safety regulations.”.”

PART 10 GOVERNING REGULATIONS

GC 10.1 TAXES AND DUTIES

SC50.1	10.1.2	Amend paragraph 10.1.2 by adding the following sentence to the end of the paragraph: “For greater certainty, the *Contractor* shall not be entitled to any mark-up for overhead or profit on any increase in such taxes and duties and the *Owner* shall not be entitled to any credit relating to mark-up for overhead or profit on any decrease in such taxes. The *Contractor* shall provide a detailed breakdown of Additional taxes if requested by the *Owner* in a form satisfactory to the *Owner*.”
	10.1.3	Add new paragraph 10.1.3 as follows: “10.1.3 Where the *Owner* is entitled to an exemption or a recovery of sales taxes, customs duties, excise taxes or *Value Added Taxes* applicable to the *Contract*, the *Contractor* shall, at the request of the *Owner*, 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 *Owner*. The *Contractor* agrees to endorse over to the *Owner* any cheques received from the federal or provincial governments, or any other taxing authority, as may be required to give effect to this paragraph.”

GC 10.2 LAWS, NOTICES, PERMITS, AND FEES

SC51.1	10.2.5	Amend paragraph 10.2.5 by adding the words “Subject to paragraph 3.4” at the beginning of the paragraph. -and- Add the following to the end of the second sentence: “…and no further *Work* on the affected components of the *Contract* shall proceed until these directives have been obtained by the *Contractor* from the *Consultant*.”
	10.2.6	Amend paragraph 10.2.6 by adding the following sentence to the end of the paragraph: “In the event the *Owner* suffers loss or damage as a result of the *Contractor’s* failure to comply with paragraph 10.2.5 and notwithstanding any limitations described in paragraph 12.1.1, the *Contractor* agrees to indemnify and to hold harmless the *Owner* and the *Consultant* from and against any claims, demands, losses, costs, damages, actions suits or proceedings resulting from such failure by the *Contractor*.”
	10.2.7	Amend paragraph 10.2.7 by inserting the words “which changes were not, or could not have reasonably been known to the *Owner* or to the *Contractor*, as applicable, at the time of bid closing and which changes did not arise as a result of a public emergency or other *Force Majeure* event” to the second line, after the words “authorities having jurisdiction”.
	10.2.8	Add new paragraph 10.2.8 as follows: “10.2.8 The *Contractor* shall furnish all certificates that are required or given by the appropriate governmental authorities as evidence that the *Work* as installed conforms with the laws

		and regulations of authorities having jurisdiction, including certificates of compliance for the *Owner's* occupancy or partial occupancy. The certificates are to be final certificates giving complete clearance of the *Work*, in the event that such governmental authorities furnish such certificates."

GC 10.4 WORKERS' COMPENSATION

SC52.1	10.4.1	Delete paragraph 10.4.1 and replace with the following: "10.4.1 Prior to commencing the *Work*, and with each and every application for payment thereafter, including the *Contractor's* application for payment of the holdback amount following *Substantial Performance of the Work* and again with the *Contractor's* application for final payment, the *Contractor* shall provide evidence of compliance with workers' compensation legislation in force at the *Place of the Work*, including payments due thereunder."

GC 11.1 INSURANCE

SC53.1	11.1	Delete entirety of GC 11.1 and replace with the following: "**GC 11.1 INSURANCE** 11.1.1 Without restricting the generality of GC 12 – INDEMNIFICATION, the *Contractor* 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 *Work* until the expiration of the warranty periods set out in the *Contract Documents*. Prior to commencement of the *Work* and upon the placement, renewal, amendment, or extension of all or any part of the insurance, the *Contractor* shall promptly provide the *Owner* 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 amending endorsements. .1 **General Liability Insurance** General liability insurance shall be in the name of the *Contractor,* with the *Owner* and the *Consultant* named as Additional insureds, with limits of not less than $5,000,000.00 inclusive per occurrence for bodily injury, death, and damage to property, including loss of use thereof, for itself and each of its employees, *Subcontractors* and/or agents. The insurance coverage shall not be less than the insurance required by IBC Form 2100, or its equivalent replacement, 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 *Ready-for-Takeover*, as set out in the certificate of *Ready-for-Takeover,* on an ongoing basis for a period of 6 years following *Ready-for-Takeover*. Where the *Contractor* maintains a single, blanket policy, the Addition of the *Owner* and the *Consultant* is limited to liability arising out of the *Project* and all operations necessary or incidental thereto. The policy shall be endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of any cancellation and of change or amendment restricting coverage. .2 **Automobile Liability Insurance** 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 *owned* or leased by the *Contractor*, and endorsed to provide the *Owner* with not less than 30 days' notice, in writing, in advance of any cancellation, change or amendment restricting coverage. Where the policy has been issued pursuant to a government-operated automobile insurance system, the *Contractor* shall provide the *Owner* with confirmation of automobile insurance coverage for all automobiles registered in the name of the *Contractor.*

.3 **Aircraft and Watercraft Liability Insurance**

Intentional Deleted. Not Applicable

.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.

(3) The policies shall allow for partial or total use or occupancy of the *Work.*

(4) The policies shall provide that, in the case of a loss or damage, payment shall be made to the *Owner* and the *Contractor* as their respective interests may appear. The *Contractor* shall act on behalf of the *Owner* 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 *Contractor* shall proceed to restore the *Work*. Loss or damage shall not affect the rights and obligations of either party under the *Contract* except that the *Contractor* shall be entitled to such reasonable extension of the *Contract Time,* relative to the extent of the loss or damage, as determined by the *Owner*, in its sole discretion.

		(5) The *Contractor* shall be entitled to receive from the *Owner*, in Addition to the amount due under the *Contract*, the amount at which the *Owner's* interest in restoration of the *Work* has been appraised, such amount to be paid as the restoration of the *Work* proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT. In Addition, the *Contractor* shall be entitled to receive from the payments made by the insurer the amount of the *Contractor's* interest in the restoration of the *Work*. (6) In the case of loss or damage to the *Work* arising from the work of other contractors, or the *Owner's* own forces, the *Owner*, in accordance with the *Owner's* obligations under paragraph 3.2.2.4 of GC 3.2 – CONSTRUCTION BY OWNER OR OTHER CONTRACTORS, shall pay the *Contractor* the cost of restoring the *Work* as the restoration of the *Work* proceeds and as provided in GC 5.2 – APPLICATIONS FOR PROGRESS PAYMENT and GC 5.3 – PROGRESS PAYMENT. **.5 Contractors' Equipment Insurance** "All risks" contractors' equipment insurance covering construction machinery and equipment used by the *Contractor* for the performance of the *Work*, excluding boiler insurance, shall be in a form acceptable to the *Owner* and shall not allow subrogation claims by the insurer against 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. Subject to satisfactory proof of financial capability by the *Contractor* for self-insurance of his equipment, the *Owner* agrees to waive the equipment insurance requirement. 11.1.2 The *Contractor* shall be responsible for deductible amounts under the policies except where such amounts may be excluded from the *Contractor's* responsibility by the terms of GC 9.1 - PROTECTION OF WORK AND PROPERTY and GC 9.2 - DAMAGES AND MUTUAL RESPONSIBILITY. 11.1.3 Where the full insurable value of the *Work* is substantially less than the *Contract Price*, the *Owner* may reduce the amount of insurance required to waive the course of construction insurance requirement. 11.1.4 If the *Contractor* fails to provide or maintain insurance as required by the *Contract Documents*, then the *Owner* shall have the right to provide and maintain such insurance and provide evidence of same to the *Contractor*. The *Contractor* shall pay the costs thereof to the *Owner* on demand, or the *Owner* may deduct the amount that is due or may become due to the *Contractor*. 11.1.5 All required insurance policies shall be with insurers licensed to underwrite insurance in the jurisdiction of the *Place of the Work*."

***NEW* GC 11.2 CONTRACT SECURITY**

SC52.1	GC 11.2	Add new GC 11.2 – CONTRACT SECURITY as follows:

		"**GC 11.2 CONTRACT SECURITY** 11.2.1 The *Contractor* shall, prior to the execution of the *Contract*, furnish a performance bond and labour and material payment bond which meets the requirements under paragraph 11.2.2. 11.2.2 The performance bond and labour and material payment bond shall: .1 be issued by a duly licensed surety company, which has been approved by the *Owner* and is permitted under the *Construction Act*, .2 be issued by an insurer licensed under the *Insurance Act* (Ontario) and authorized to transact a business of suretyship in the Province of Ontario; .3 shall be in the form prescribed by the *Construction Act*; .4 have a coverage limit of at least 50 per cent of the *Contract Price*, or such other percentage of the *Contract Price* as stated in the *Contract Documents*; .5 extends protection to *Subcontractors*, *Suppliers,* and any other persons supplying labour or materials to the *Project*; and .6 shall be maintained in good standing until the fulfillment of the *Contract*, including all warranty and maintenance periods set out in the *Contract Documents*.. 11.2.3 It is the intention of the parties that the performance bond shall be applicable to all of the *Contractor's* obligations in the *Contract Document* and, wherever a performance bond is provided with language which conflicts with this intention, it shall be deemed to be amended to comply. The *Contractor* represents and warrants to the *Owner* that it has provided its surety with a copy of the *Contract Documents* prior to the issuance of such bonds. 11.2.4 Without limiting the foregoing in any way, the bonds shall indemnify and hold harmless the *Owner* for and against costs and expenses (including legal and *Consultant* services and court costs) arising out of or as a consequence of any default of the *Contractor* under this *Contract*. 11.2.4 The *Contractor* shall be responsible for notifying the surety company of any changes made to the *Contract* during the course of construction. 11.2.5 The premiums for bonds required by the *Contract Documents* shall be included in the *Contract Price*. 11.2.6 Should the *Owner* require additional bonds by the *Contractor* or any of his *Subcontractors*, after the receipt of bids for the *Work*, the *Contract Price* shall be increased by all direct costs attributable to providing such bonds. The *Contractor* shall promptly provide the *Owner*, through the *Consultant*, with any such bonds that may be required."

PART 12 OWNER TAKEOVER

GC 12.1 READY-FOR-TAKEOVER

SC55.1	12.1.1	Delete GC 12.1.1 in its entirety and replace it with the following: "12.1.1 *Ready-for-Takeover* shall be achieved when all of the following has occurred, as verified and approved by the *Owner*: .1 *Substantial Performance of the Work* has been achieved, as certified by the *Consultant*;

		.2 a permit for occupancy of the *Place of the Work* has been obtained from the authorities having jurisdiction; .3 the *Work* to be performed under the *Contract* has satisfied the requirements for deemed completion in accordance with Section 2(3) of the *Construction Act*, .4 final cleaning and waste removal, as required by the *Contract Documents*; .5 the *Contractor* has delivered to the *Consultant* and the *Owner* all inspection certificates from authorities having jurisdiction with respect to any component of the *Work* which has been completed; .6 subject only to GC 12.1.2, the entire *Work* has been completed to the requirements of the *Contract Documents*, including completion of all items on the punch list prepared at the time of *Substantial Performance of the Work* and the *Work* is being used for its intended purpose, and is so certified by the *Consultant*; .7 subject only to GC 12.1.2, the *Contractor* has submitted to the *Owner* and the *Consultant* in a collated and organized matter, all *Close-Out Documentation* and any other materials or documentation required by the *Contract Documents*; .8 subject only to GC 12.1.2, all *Products*, systems and components of the *Project* have been commissioned and certified for operation and accepted by the *Owner* and *Consultant*, and 9 subject only to GC 12.1.2, the *Contractor* has submitted to the *Owner* and the *Consultant* full and complete as-built drawings and *Specifications* revised by the *Contractor* to reflect the as-built state of the *Work*, clearly showing changes to the *Drawings* and *Specifications* from the original *Contract Documents*, all of which have been approved by the *Owner* acting reasonably."
SC55.2	12.1.2	Delete GC 12.1.2 in its entirety and replace it with the following: "12.1.2 The *Owner* may, in its sole, absolute, and unfettered discretion, waive compliance with a requirement, or a part thereof, for achieving *Ready-for-Takeover* set out in GC 12.1.1.6 to 12.1.1.9 (inclusive). Where the *Owner* exercises the discretion afforded under this GC 12.1.2, the *Contractor* shall be required to comply with GC 5.5.1.2 as part of its application for final payment and the *Owner* and the *Contractor*, in consultation with the *Consultant*, shall establish a reasonable date for completing the *Work*."
SC55.3	12.1.3	Delete GC 12.1.3 in its entirety and replace it with the following: "12.1.3 When the *Contractor* considers the *Work Ready-for-Takeover*, it shall submit a written application to the *Owner* and the *Consultant* for review."
SC55.4	12.1.4	In GC 12.1.4, delete the words "list and" from the second line.
SC55.5	12.1.5	Delete GC 12.1.5 in its entirety and replace it with the following:

		"12.1.5 Following the confirmation of the date of *Ready-for-Takeover* by the *Consultant* and as confirmed by the *Owner*, the *Contractor* may submit a final application for payment in accordance with GC 5.5 – FINAL PAYMENT."
SC55.6	12.1.6	Delete GC 12.1.6 in its entirety.

GC 12.2 EARLY OCCUPANCY

SC56.1	GC 12.2	Delete GC 12.2 – EARLY OCCUPANCY BY THE OWNER in its entirety, including all subparagraphs thereunder and replace it with the following: "12.2.1 The Owner reserves the right to take possession of and use for any intended purpose any portion or all of the undelivered portion of the Project even though the Work may not have reached Substantial Performance of the Work. Where the Work extends beyond the Contract Time, progress and completion of the Work shall not unduly interfere with the delivery of scheduled school programs. The taking of possession or use of any such portion of the Project shall not be deemed to be the Owner's acknowledgement or acceptance of the Work or Project nor shall it relieve the Contractor of any of its obligations under the Contract. 12.2.2 Whether the Project contemplates Work by way of renovations in buildings which will be in use or be occupied during the course of the Work or where the Project involves Work that is adjacent to a structure which is in use or is occupied, the Contractor, without in any way limiting its responsibilities under this Contract, shall take all reasonable steps to avoid interference with fire exits, building access and egress, continuity of electric power and all other utilities, 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."

GC 12.3 WARRANTY

SC57.1	12.3.1 12.3.2	Delete from the first line of paragraph 12.3.1 the words "one year" and replace it with the words "two years" Delete from the first line of paragraph 12.3.2 the word "The" and replace it with the words "Subject to GC 1.1.3, the…"
	12.3.7 to 12.3.12	Add new paragraphs 12.3.7 to 12.3.12 as follows: "12.3.7 Where required by the *Contract Documents*, the *Contractor* shall provide a maintenance bond as security for the performance of the *Contractor's* obligations as set out in GC 12.3 WARRANTY. 12.3.8 The *Contractor* shall provide fully and properly completed and signed copies of all warranties and guarantees required by the *Contract Documents*, containing: .1 the proper name of the *Owner*; .2 the proper name and address of the *Project*;

		.3 the date the warranty commences, which shall be at the "*Ready-for-Takeover*" unless otherwise agreed upon by the *Consultant* in writing. .4 a clear definition of what is being warranted and/or guaranteed as required by the *Contract Documents*; and .5 the signature and seal (if required by the governing law of the *Contract*) of the company issuing the warranty, countersigned by the *Contractor*. 12.3.9 Should any *Work* need to 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. 12.3.10 The *Contractor* shall ensure that its *Subcontractors* are bound to the requirements of GC 12.3 – WARRANTY for the *Subcontractor's* portion of the *Work.* 12.3.11 The *Contractor* shall ensure that all warranties, guarantees or other obligations for *Work*, services or *Products* performed or supplied by any *Subcontractor, Supplier* or other person in connection with the *Work* are obtained and available for the direct benefit of the *Owner.* In the alternative, the *Contractor* shall assign to the *Owner* all warranties, guarantees or other obligations for *Work*, services or *Products* performed or supplied by any *Subcontractor, Supplier* or other person in connection with the *Work* 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 *Owner* under the *Contract Documents*. 12.3.12 The *Contractor* shall commence or correct any deficiency within 2 *Working Days* after receiving a *Notice in Writing* from the *Owner* or the *Consultant*, and shall complete the *Work* 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 *Owner* 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 *Contractor* fail to provide this emergency service within 8 hours of a request being made during the normal business hours of the *Contractor*, the *Owner* is authorized, notwithstanding GC 3.1, to carry out all necessary repairs or replacements at the *Contractor's* expense."

PART 13 INDEMNIFICATION AND WAIVER

GC 13.1 INDEMNIFICATION

SC58.1	GC 13.1	Delete GC 13.1 – INDEMNIFICATION in its entirety and replace it with the following: *"*13.1.1 The *Contractor* shall indemnify and hold harmless the *Owner*, its parent, subsidiaries and affiliates, their respective partners, trustees, officers, directors, agents and employees and the *Consultant* 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 *Owner* or in respect of claims by third parties, that directly or indirectly arise out of, or are attributable to, the acts or

		omissions of the *Contractor*, its employees, agents, *Subcontractors*, *Suppliers* 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 *Work*, the *Owner's* property or equipment, the *Contractor's* property or equipment or equipment or property adjacent to the *Place of the Work* or death or injury to the *Contractor's* personnel). 13.1.2 The *Owner* shall indemnify and hold the *Contractor*, its agents and employees harmless from and against claims, demands, losses, costs, damages, actions, suits or proceedings arising out of the *Contractor*'s performance of the *Contract* which are attributable to a lack of or defect in title or an alleged lack of or defect in title to the *Place of the Work*. 13.1.3 The provisions of GC 13.1 - INDEMNIFICATION shall survive the termination of the *Contract,* 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 *Work* shall constitute a waiver or release of any of the provisions of GC 13.1 13.1.4 Notwithstanding the provisions of GC1.1 - CONTRACT DOCUMENTS, GC 1.1.6, GC13.1 - INDEMNIFICATION shall govern over the provisions of GC 1.3.1 of GC1.3 – RIGHTS AND REMEDIES."

GC 13.2 WAIVER OF CLAIMS

	13.2.1	In paragraph 13.2.1 in the third line after the word "limitation" add the words "claims for delay pursuant to GC 6.5 DELAYS" -and- add the words "(collectively "**Claims**")" after "*Ready-for-Takeover*" in the fourth line.
	13.2.1.1	In subparagraph 13.2.1.1, in each instance change the word "claims" to "Claims" and change the word "claim" to "Claim".
	13.2.1.2	In subparagraph 13.2.1.2 change the word "claims" to "Claims".
	13.2.1.3	Delete subparagraph 13.2.1.3 in its entirety.
	13.2.1.4	In paragraph 13.2.1.4 change the word "claims" to "Claims".
	13.2.2.1	In paragraph 13.2.2.1 delete the words "in paragraphs 13.2.1.2 and 13.2.1.3" and replace them with "in paragraph 13.2.1.2" -and- change the word "claims" to "Claims" in both instances and change the word "claim" to "Claim".

	13.2.3	Delete paragraph 13.2.3 in its entirety.
	13.2.4	Delete paragraph 13.2.4 in its entirety.
	13.2.5	Delete paragraph 13.2.5 in its entirety.
	13.2.6	In paragraph 13.2.6 change the word "claim" to "Claim" in all instances in the paragraph.
	13.2.8	In paragraph 13.2.8 change "The party" to "The *Contractor* -and- change the word "claim" to "Claim" in all instances in the paragraph.
	13.2.9	In paragraph 13.2.9 delete the words "under paragraphs 13.2.1 or 13.2.3" and replace them with "under paragraph 13.2.1" -and- change both instances of the words "the party" to "the *Contractor*". Change the word "claim" to "Claim" in all instances in the paragraph.

***NEW* PART 14 OTHER PROVISIONS**

SC58.1	14.1	Add new PART 14 – OTHER PROVISIONS as follows: "**PART 14 OTHER PROVISIONS** **GC 14.1 OWNERSHIP OF MATERIALS** 14.1.1 Unless otherwise specified, all materials existing at the *Place of the Work* at the time of execution of the *Contract* shall remain the property of the *Owner*. All *Work* and *Products* delivered to the *Place of the Work* by the *Contractor* shall be the property of the *Owner.* The *Contractor* shall remove all surplus or rejected materials as its property when notified in writing to do so by the *Consultant*."
	14.2	Add new GC 14.2 – CONSTRUCTION LIENS as follows: **"GC 14.2 LIENS** 14.2.1 Notwithstanding any other provision in the *Contract*, the *Consultant* shall not be obligated to issue a certificate, and the *Owner* shall not be obligated to make payment,

subject to the *Owner*'s requirement to issue a *Notice of Non-Payment* (Form 1.1) to the *Contractor*, if at the time such certificate or payment was otherwise due:

.1 a claim for lien has been registered against the *Project* lands by a *Subcontractor* or a *Supplier* that has not been vacated or discharged by the *Contractor* in accordance with the requirements of this *Contract*, or

.2 if the *Owner* or a mortgagee of the *Project* lands has received a written notice of a lien that has not been resolved by the *Contractor* through the posting of security or otherwise.

14.2.2 In the event a construction lien arising from the performance of the *Work* is registered or preserved against the *Project* lands by a *Subcontractor* or a *Supplier*, or a written notice of a lien is given or a construction lien action is commenced against the *Owner* by a *Subcontractor* or a *Supplier*, then the *Contractor* shall, at its own expense:

.1 within 10 calendar days of registration of the construction lien, vacate or discharge the lien from title to the premises (i.e. the *Place of the Work*). If the lien is merely vacated, the *Contractor* shall, if requested, undertake the *Owner*'s defence of any subsequent action commenced in respect of the lien, at the *Contractor*'s 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 *Owner* against all costs and expenses arising from same, including legal costs on a full indemnity basis.

14.2.3 In the event that the *Contractor* fails or refuses to comply with its obligations pursuant to paragraph 14.2.2, the *Owner* 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 *Owner's* 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 *Project* lands, and in so doing will be entitled to a full indemnity from the *Contractor* for all legal fees, security, disbursements and other costs incurred and will be entitled to deduct same from amounts otherwise owing to the *Contractor*.

14.2.4 In the event that any *Subcontractor* or *Supplier* registers any claim for lien with respect to all or part of the *Place of Work*, the *Owner* 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 lien and any associated certificate of action in respect of that lien, in accordance with Section 44 of the *Act*, by paying into court as security the amount withheld.

14.2.5 Nothing in this GC 14.2 serves to preclude the *Contractor* from preserving and perfecting its lien in the event of non-payment by the *Owner*."

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 –PAYMENTS for progress payments, GC 5.4 – SUBSTANTIAL PERFORMANCE OF THE WORK AND PAYMENT OF HOLDBACK GC 5.5 – 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 5.2.4, 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 *Close-Out Documentation*, 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 3.11.

END OF AMENDMENTS TO CCDC 2 - 2020

DIVISION 01 - GENERAL REQUIREMENTS

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 the course of work.

.1 Keep duration of interruptions minimum.

.2 Perform interruptions after normal working hours of occupants, preferably on weekends.

.2 Provide for vehicular, pedestrian and personnel traffic.

.3 Construct barriers in accordance with Section 01 53 00.

1.2. 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 the 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.

1.3. SPECIAL REQUIREMENTS

.1 Schedule and perform work in occupied areas to the Board Representative's approval.

.2 Schedule and perform noise generating work to the 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

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 contractor'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

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 cash allowances to address the cost of the following items:

1	Designated Substance Removal (Additional removal not already identified in the ACM Summary report)	$15,000.00
2	Independent Testing & Inspection (concrete, structural steel, steel deck, air barrier, painting) (As directed by the Consultant)	$7,500.00
3	Roof Tie-ins for new HVAC equipment on existing roofs	$25,000.00
4	Firestopping of existing openings in fire separations	$10,000.00
5	Patch/ repair/ paint allowance (as directed by Consultant) for areas not already noted on Drawings:	$20,000.00
6	Supply and Installation of Metal Lockers	$75,000.00
7	Upgrading of miscellaneous controls uncovered during construction (and not already noted on the Drawings)	$20,000.00
8	Data cabling installation and network equipment (Including terminations)	$7,500.00
	Total of All Allowances:	**$180,000.00**

END OF 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 Coordinate 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. PRE-CONSTRUCTION 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 shutdown procedures
- .18 Any other items as required by the 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 the 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 the 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

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

01 33 00 – Submittal Procedures

1.0 GENERAL

1.1 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.

1.1 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 coordinated 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.

1.2 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.

1.3 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.

1.4 MOCK-UP

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

1.5 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

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.

.6 Appendix 01 35 17A Contractor Hot Work Permit

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 the 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 attached Appendix 01 35 17-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 the date of expiration.

.6 The most current version of the Permit and its requirements shall be used for the purposes of the Work.

1.6. FIRE PROTECTION SYSTEMS

.1 Any Modifications to Fire Alarm system and its 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 with CSA regulations. Certificate of Verification is required before occupancy.

1.7. FIRE ALARM SHUT-DOWN PROCEDURE

.1 Plan the operation such that the required work minimizes system down time to the least amount possible. Do not shut the system down or engage silence mode when the building is occupied by students. Only shut the system down when necessary.

.2 For the purposes of this section, unoccupied shall mean when the school is not occupied by students.

.3 Wherever possible, shut down only the zone needing work,

.4 and schedule down time in unoccupied school hours.

.5 Contractor(s) shall ensure all costs are included in their bid price for work related to the fire alarm system outside of regular hours and/or during unoccupied school hours. This shall include evening and weekend work.

.6 A fire alarm system must remain active when the building is not occupied by school or contractor's forces and should never be offline overnight.

.7 Procedure

The following procedure shall be followed when a fire alarm system is completely or partially affected by maintenance, shutdown, bypass, silence, loss of power, or any other nomenclature that affects the proper operation of the complete system.

.1 Inform both the principal and head custodian whenever the fire alarm system is to be disabled prior to any partial or whole system shut down. Where school staff are not available, ensure that the Project Coordinator and/or area supervisor are informed.

.2 Ensure that the school or building administration has advised all staff when the fire alarm system is disabled and/or when it is back online. This will include instructions to call 911 if they detect smoke or a fire.

.3 Immediately prior to alarm system shutdown and upon restoring the fire alarm system, the person supervising the shutdown must:

.1 obtain the school account number, located on a red decal attached to the fire alarm panel. This number will be formatted as 20-9xxx, with the xxx being the school location code,

.2 contact Direct Detect at 519-741-2494 (the fire alarm monitoring company), to inform them of the state of the fire alarm and the approximate amount of time the fire alarm will be offline. They will require the building name and account number, the contact name, the contractor name as well as any other information they request, and

.3 contact Bestell at 519-741-2494 (the current security monitoring company), to inform them of the state of the fire alarm and the approximate amount of time the fire alarm will be offline. They may require the building name and account number as well as any other information they request.

.4 A fire watch, at the Contractor's expense, shall be undertaken by a person with the sole and express purpose of completing the following tasks and in the event of the detection of smoke, fire, or any other emergency, notifying the fire department, and the building occupants. The fire watch patrol shall:

.1 patrol all halls and high-risk areas affected,

.2 have access to a phone and call 911 if they see or detect smoke or fire,

.3 report any other problems they encounter,

.4 notifying the building occupants in the event of an emergency and

.5 remain on patrol until the fire alarm system is reactivated and fully operational.

.5 Contact Direct Detect, Bestell, and school administration to inform them that the fire alarm is back online.

.6 In the event that a fire alarm system is activated, whether by smoke, fire or accidentally, the system must not be reset until authorized by the Fire Department (verbally or in person) 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 online

.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 subcontractor 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 the 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 put in 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 subcontractors 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 the 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. The 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 flashpoint 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

Appendix 013517-A Contractor Hot Work Permit

Waterloo Region District School Board

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:
i. Verify precautions taken in Section A
ii. Complete and retain Part 1
iii. Complete Section B prior to commencement of Hot Works
iv. Issue Part 2 to Contractor completing Hot Work & Post
v. Obtain Part 2 when Fire Monitoring complete
vi. Return Part 1 and Part 2 to Controller, Facility Services

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

PART 1

Section A Indicate Precautions Taken

☐ Available sprinklers, hose streams, and extinguishers available and in service

Within 35' or 11m of hot work
☐ Flammable liquid, dust, lint and oily deposits removed
☐ Explosive atmosphere in area eliminated
☐ Floors swept clean
☐ All wall and floor openings covered
☐ Combustible floors covered with fire resistant sheets
☐ Protect or shut down ducts that might carry sparks/smoke

Hot work on walls, ceiling or roofs
☐ Construction is noncombustible and without combustible covering or insulation
☐ Combustible materials on other side of walls, ceilings or roofs moved away
☐ Combustible structure wetted down

Hot work on enclosed equipment
☐ Enclosed equipment cleaned of all combustible material
☐ Containers purged of flammable liquid/vapour
☐ Pressurized vessels, piping & equipment removed from service, isolated & vented

Fire watch/hot work and monitoring
☐ Fire watch will be provided during and for 1 hour after work including break
☐ Fire watch is trained and supplied with suitable extinguishers
☐ Fire watch is trained in the use of sounding fire alarm
☐ Fire watch conducted in adjoining areas, above and below the space where appropriate
☐ Monitor hot work area for an additional 2 hours after fire watch
☐ 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 1200 Hot Works/Fire Watch (Copies Available on Request)

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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 – **Designated Substances**

.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. The Health and Safety Plan must address project specifications.

.2 Consultant may respond in writing, where deficiencies or concerns are noted and may request resubmission 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 the 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, the person responsible for design, or their representative, shall inspect the structure and certify it has been constructed according to their design.

1.5. RESPONSIBILITY

.1 The "Prime Contractor" according to 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 the 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 subcontractors.

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 the 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 the 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 **Designated Substances**

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 devices.

1.15. OVERHEAD LIFTING

.1 Under no circumstances will a crane or lifting device be used over an 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

01 35 43 –Designated Substances

1.0 GENERAL

1.1. 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.

1.2. REFERENCES

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

1.3. ASBESTOS and OTHER REGULATED SUBSTANCES

.1 An Asbestos Audit, as prepared by WRDSB retained consultants, for this facility, is attached under Appendix 01 35 43A. 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 A Project Specific Designated Substance/ Lead Report, as prepared by WRDSB retained consultants or Environmental Officer for this facility, is attached under Appendix 01 35 43B.

.3 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.

.4 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.

1.4. PROTOCOL FOR ABATEMENT WORK

.1 This Protocol establishes the requirements to be followed by all Asbestos Abatement Contractors working in buildings owned or operated by the Waterloo Region District School Board (hereinafter referred to as the Board). This protocol applies to Type 1,

Type 2 and Type 3 Operations as identified in the most current form of Ontario Regulation 278 as amended, and applies to both emergency and non-emergency work, whether directly retained by the Board or working as a subcontractor to a General Contractor retained by the Board.

.2 Asbestos Abatement Contractors must maintain appropriate insurance coverage and WSIB certification and provide proof upon request.

.3 Asbestos Abatement Contractors shall only use personnel certified by the Ontario College of Trades and must provide the Board with proof of asbestos certification (AAS and AAW) for all supervisors and all staff involved.

.4 School Access: During regular school hours, all abatement contractors are to report to the school office upon arrival. They must sign in all personnel and identify to a person of authority, preferably the Principal, their purpose for being there as well as the area of work. After school hours, ensure card-in/card-out procedures are followed and building security is maintained. Contractor staff shall NOT prop doors open, and ensure that doors are locked.

.5 Communication:

.1 Asbestos Abatement Contractor will contact the school's Principal and/or Vice Principal (phone numbers are available on the WRDSB website) to set up a firm date and time for the abatement (removal/repair). This communication shall allow at least 72 hours notice ahead of the proposed work unless it is emergency work.

.2 Confirmation of the date shall be via email to the following:

.1 Principal / Vice-principal

.2 Facility Manager

.3 Environmental Officers (environmental@wrdsb.ca)

.3 When working under a general contractor, also notify:

.1 Project manager for the General Contractor

.2 Architect/Consultant for the project

.3 The Board's Project Coordinator

.4 This communication shall indicate the date, the start time, the anticipated completion time (including any required air clearances and teardowns), the asbestos abatement type, and the areas of work within the school or building. It should also identify any mechanical equipment that is required to be disabled for the duration of the operations.

.5 For emergency work where requested by Area Supervisors, Facility Managers, On-Call Manager/Supervisor, or Environmental Officers, no notification to the school is required by the abatement contractor. Notification to the Principal or

Vice-Principal will be managed by the Area Supervisor, Facility Manager, On-Call Manager/Supervisor, or Environmental Officers.

.6 For **Type 2 Removals**, also notify: the Ministry of Labour, Immigration, Training and Skills Development (MLITSD) where required by Regulation.

.7 For Type 3 Removals, also notify: Manager of Health, Safety & Security, (healthandsafety@wrdsb.ca); and, the MLITSD where required by Regulation.

.8 Discussions related to the work, whether with media, school staff, or any others, is NOT permitted. Questions or enquiries shall be directed to the Board's Communication Officer (comms-team@wrdsb.ca) by the person(s) seeking information, where warranted.

.6 Asbestos Removal Assessment

.1 When working directly with the Board to undertake non-emergency abatement, the contractor is to assess the work on site and provide a cost estimate to the Environmental Officer. Some work will require discussion with the Facility Manager or Environmental Officer to determine if additional work should be done to completely remove all additional ACM material from the area or similar.

.2 When abatement is to be done under a General Contractor, the proposed work is to be quoted directly to the General Contractor. Additional abatement not already within the original scope of work or tender is to be quoted to the General Contractor for approval by the Project Coordinator or Architect.

.7 Asbestos Operations

.1 Asbestos operations shall be conducted according to Type, where each Type will require special timing and considerations as follows:

.2 **Type 1:** Any time behind a secured door or enclosure.

.3 **Type 2:** Any time when students and teaching staff are NOT present in the building, and behind a secured door or enclosure. During the school year, the work shall be performed outside of the regular program hours, Monday to Friday, anytime on weekends, when no regular programs are scheduled.

.4 The work shall be performed anytime during March Break, Winter Break, and Summer Break, when teaching staff are NOT present in the building.

.5 **Type 3:** Outside of school regular program hours, during unoccupied times, and behind a secured door or enclosure. During the school year, the work shall be performed outside of the regular program hours, Monday or Friday, anytime on weekends, provided all rentals are cancelled and card access is restricted for teaching staff entering the facility.

.6 The work shall be performed anytime during March Break, Winter Break, and Summer Break, provided all rentals are cancelled and card access is restricted for teaching staff entering the facility

.7 Facility Services personnel and Office staff may be present in the building due to training in Asbestos Awareness.

.8 All Type 3 work must consider one (1) additional day in case the clearance sampling fail.

.9 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 the potential for health and safety concerns by the staff, students, and school community. Where warranted, contact Area Supervisor, Facility Manager, On-Call Manager/Supervisor, or Environmental Officer to obtain further direction.

.10 Before beginning any Type 1, Type 2, or Type 3 Operations, the work area must be secured, all doors locked, WHITE poly and caution tape used in open areas/corridors and “construction” warning signs added to all access points to keep school staff and students clear of all work areas.

.11 If the work area is in use by Board staff, contact the Area Supervisor to assist in vacating the area. If unable, contact the Area Supervisor, Facility Manager, On-Call Manager/Supervisor, Environmental Officer, or Project Coordinator to reschedule the work.

.12 Board preference is to use “construction” warning signs at all areas accessible to school staff and students. Behind those secured areas, a sufficient number of “asbestos” signs, posted in compliance with O. Reg. 278/05.

.13 The Asbestos Abatement Contractor is responsible to disable the air handling unit/fan serving the work area (school wing, floor, or multiple floors if air handling unit/fan serve more than one floor) and prevent operation using Lock-out/Tag-out devices for each air handling unit/fan. Exercise caution during the heating season to ensure areas of the building are maintained above freezing and ensure equipment is turned back on after abatement/air clearance completed.

.14 Asbestos Abatement Contractor’s employees shall put on/take off PPE within the work area marked by construction signs. No employee shall leave the work area wearing PPE.

.15 All dust and waste is to be cleaned up and removed at frequent/regular intervals as the work proceeds and immediately upon completion, but no later than the end of the work day. No waste bags or similar are to be left behind.

No additional construction work shall be performed by an Asbestos Abatement Contractor.

1.5. SUBMITTALS

.1 Once the abatement is completed, forward a Letter of Completion to the Environmental Officers (environmental@wrdsb.ca). This letter shall be received no later than 72 hours after completion of each abatement area/phase and shall include any sample results. The letter must also clearly identify what specifically has been abated and where (Fixed Reference Numbers), so that this information can be attached to the current AAU Asbestos Audits for future updates.

.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 contractor must allow one (1) additional day to re-clean and re-sample before school is to resume operations. For those projects not under the direct supervision of an Environmental Consultant, the contractor 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 (contact info sent with Work Request)
- .2 Facility Manager (contact info sent with Work Request)
- .3 Environmental Officers (environmental@wrdsb.ca)
- .4 Manager of Mechanical, Electrical and Environmental Services (lou_lima@wrdsb.ca)
- .5 Manager of Health, Safety & Security (healthandsafety@wrdsb.ca)
- .6 Project team when working under a General Contractor

1.6. 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

Appendix 01 35 43A Asbestos Audit Report

Galt Collegiate Institute

2024 Asbestos Audit Update Report

Project Location:
200 Water Street North, Cambridge, ON

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

Prepared by:
MTE Consultants
520 Bingemans Centre Drive
Kitchener, ON N2B 3X9

January 17, 2024
Revision: June 24, 2024

MTE File No.: C34532-944

Engineers, Scientists, Surveyors.

MTE Consultants
520 Bingemans Centre Drive, Kitchener, Ontario N2B 3X9

January 17, 2024
Revision: June 24, 2024

MTE File No.: C34532-944

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

RE: 2024 Asbestos Audit Update – Galt Collegiate Institute
200 Water Street North, Cambridge, Ontario

1.0 INTRODUCTION

MTE Consultants Inc. (MTE) was authorized by the Waterloo Region District School Board (WRDSB) to conduct the 2024 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.

- The following rooms:
  - WRDSB Room 168 – Hydro One electrical room and school staff do not have access keys.
  - WRDSB Room 179 – Not accessible with on keys on site and school staff did not have access keys.
  - WRDSB Room 915 – Not accessible due to warning that alarm will be activated. Emergency stairwell only.
  - WRDSB Room 204E – Not accessible with on keys on site and school staff did not have access keys.
- 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.

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 January 3, 2024. The 4-storey school was constructed in 1853 with additions in 1876, 1906, 1923, 1954, 1956, 1962, and 1986. The inspection did not include areas of post 1990 construction or renovation (where all building finishes have been removed and replaced), as applicable.

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**.

4.1 Analytical Results

During this inspection, no samples were collected.

Refer to Appendix C, Table 3 for a detailed summary of the analytical results for each sampled material.

4.2 Removed ACM

A summary of ACM that has been removed since the previous audit/inspection is provided below:

WRDSB Room 101

- 3 parged pipe fittings.

WRDSB Room 103

- 4 parged pipe fittings.

WRDSB Room 103A

- 2 parged pipe fittings.

WRDSB Room 105A

- 12”x12” beige with brown vinyl floor tile.

WRDSB Room 111

- 1 parged pipe fitting.
- Window caulking.

WRDSB Room 175

- 200 ft² of Transite ceiling.

WRDSB Room 177

- 2 parged pipe fittings.

WRDSB Room 266A-E, 265A-C, & 267

- 2’x2’ long thin fissure ceiling tile.

4.3 Discovery of Additional ACM

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

Non-Friable Material:

- WRDSB Room 213A – 4 duct expansion joints.

4.4 Damaged ACM

Damaged ACM was identified. Refer to **Appendix C, Tables 1** and **2** for a detailed summary of required actions, specific to each material. At the time of the audit, all other ACM at the building was noted to be in good condition.

5.0 RECOMMENDATIONS

5.1 Remedial

Damaged ACM was identified. Refer to Appendix C, Tables 1 and 2 for a detailed summary of required actions, specific to each material. At the time of the audit, all other ACM at the building was noted to be in good condition.

Type 1 abatement Operations may be conducted internally by trained and qualified WRDSB staff. All other abatement work must 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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Appendix A

Asbestos Management Database

	School Name	Legend:	Notes:
	Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
	Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
	Original: 1853		
	Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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										
	Throughout	Structure	Concrete	Concrete	-	Non ACM	-	-	-	-
	Throughout	Façade	Brick Veneer	Brick and Mortar	-	Non ACM	-	-	-	-
	Throughout	Not Inspected	Not Inspected	Roofing Materials	NF	Suspect ACM	VC	-	-	-
	Throughout	Ceiling	1'x1' Ceiling Tile Mastic	Mastic on Medium and Small Pinhole (Cellulose)	-	Non ACM	SL	S02ABC	11/14/2018	ND
	Throughout	Ceiling	1'x1' Ceiling Tile Mastic	Mastic on Random Pinhole	-	Non ACM	SL	S01ABC	11/14/2018	ND
	Throughout	Ceiling	1'x1' Ceiling Tile Mastic	Patterned Pinhole	NF	ACM	HM	GCI-207-1x1ACT	20-Mar-07	1% Amosite
	Original Building	Structure	Deck	Wood	-	Non ACM	-	-	-	-
	Original Building	Windows	Interior Panes	Black Sealant	NF	ACM	SL	S23	28-Jun-18	5% Chrysotile
	Original Building	Windows	Exterior Frames	Not Inspected						
	Original Building	Windows	Exterior Panes	Not Inspected						
	Original Building	Floor	Mastic	Black Mastic	-	Non ACM	SL	32523-800-Galt-S08	16-Mar-09	ND
	1876 Addition	Structure	Deck	Wood	-	Non ACM	-	-	-	-
	1876 Addition	Windows	Exterior Frames	Not Inspected						
	1876 Addition	Windows	Exterior Panes	Not Inspected						
	1876 Addition	Floor	Mastic	Black Mastic	-	Non ACM	SL	S24	28-Jun-18	ND
	1906 Addition	Structure	Deck	Wood	-	Non ACM	-	-	-	-
	1906 Addition	Windows	Interior Frames	Beige Sealant	-	Non ACM	SL	S16	28-Jun-18	ND
	1906 Addition	Windows	Interior Panes	Silicon Sealant	-	Non ACM	-	-	-	-
	1906 Addition	Windows	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1906 Addition	Windows	Exterior Panes	Silicon Sealant	-	Non ACM	-	-	-	-
	1906 Addition	Doors	Interior Frames	White Sealant	-	Non ACM	SL	S15	28-Jun-18	ND
	1906 Addition	Doors	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1906 Addition	Doors	Exterior Panes	White Sealant	-	Non ACM	SL	S14	28-Jun-18	ND
	1906 Addition	Floor	Mastic	Black Mastic		Non ACM	SL	32523-800-Galt-S03a	16-Mar-09	ND
	1923 Addition	Structure	Deck	Wood	-	Non ACM	-	-	-	-
	1923 Addition	Windows	Interior Frames	Grey Sealant	-	Non ACM	SL	S11	28-Jun-18	ND
	1923 Addition	Windows	Interior Panes	Grey Sealant	-	Non ACM	SL	S11	28-Jun-18	ND
	1923 Addition	Windows	Exterior Frames	Grey Sealant	-	Non ACM	SL	S11	28-Jun-18	ND
	1923 Addition	Windows	Exterior Panes	Grey Sealant	-	Non ACM	SL	S11	28-Jun-18	ND
	1923 Addition	Doors	Interior Frames	White Sealant	-	Non ACM	SL	S10	28-Jun-18	ND
	1923 Addition	Doors	Interior Panes	Grey Sealant	-	Non ACM	SL	S09	28-Jun-18	ND
	1923 Addition	Doors	Exterior Frames	Beige Sealant	-	Non ACM	SL	S12	28-Jun-18	ND
	1923 Addition	Doors	Exterior Panes	Black Sealant	NF	ACM	SL	S13	28-Jun-18	0.5% Chrysotile
	1923 Addition	Floor	Mastic	Black Mastic	NF	ACM	SL	32523-800-Galt-S07a	16-Mar-09	0.5% Chrysotile
	1929 Addition	Structure	Deck	Wood	-	Non ACM	-	-	-	-
	1929 Addition	Windows	Interior Frames	Beige Sealant	-	Non ACM	SL	S27	28-Jun-18	ND
	1929 Addition	Windows	Interior Panes	Black Sealant	NF	ACM	SL	S26	28-Jun-18	8% Chrysotile
	1929 Addition	Windows	Exterior Frames	Not Inspected						
	1929 Addition	Windows	Exterior Panes	Not Inspected						
	1929 Addition	Floor	Mastic	Black Mastic	-	Non ACM	SL	S28	28-Jun-18	ND

	School Name		**Legend:**					**Notes:**			
	Galt Collegiate Institute		**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable					**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**			
	Date Built:							**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**			
	Original: 1853										
	Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986										

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
	1954 Addition	Structure	Deck	Steel	-	Non ACM	-	-	-	-
	1954 Addition	Windows	Interior Frames	Grey Sealant	NF	ACM	SL	S19	28-Jun-18	1% Chrysotile
	1954 Addition	Windows	Interior Panes	Silicon Sealant	-	Non ACM	-	-	-	-
	1954 Addition	Windows	Exterior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1954 Addition	Windows	Exterior Panes	Black Sealant	-	Non ACM	SL	S20	28-Jun-18	ND
	1954 Addition	Doors	Interior Frames	Grey Sealant	NF	ACM	HM	S19	28-Jun-18	1% Chrysotile
	1954 Addition	Doors	Interior Panes	Black Sealant	-	Non ACM	HM	S20	28-Jun-18	ND
	1954 Addition	Doors	Exterior Frames	Grey Sealant	NF	ACM	SL	S21	28-Jun-18	1% Chrysotile
	1954 Addition	Doors	Exterior Panes	Black Sealant	-	Non ACM	HM	S20	28-Jun-18	ND
	1956 Addition	Structure	Deck	Steel	-	Non ACM	-	-	-	-
	1962 Addition	Structure	Deck	Steel	-	Non ACM	-	-	-	-
	1962 Addition	Windows	Interior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1962 Addition	Windows	Interior Panes	Silicon Sealant	-	Non ACM	-	-	-	-
	1962 Addition	Windows	Exterior Frames	Grey Sealant	NF	ACM	SL	S07	28-Jun-18	1% Chrysotile
	1962 Addition	Windows	Exterior Panes	Black/Grey Sealant	NF	ACM	SL	S08	28-Jun-18	10% Chrysotile
	1962 Addition	Doors	Interior Frames	Beige Sealant	-	Non ACM	SL	S06	28-Jun-18	ND
	1962 Addition	Doors	Interior Panes	Brown Sealant	NF	ACM	SL	S04	28-Jun-18	10% Chrysotile
	1962 Addition	Doors	Exterior Frames	Silicon Sealant	-	-	-	-	-	-
	1962 Addition	Doors	Exterior Panes	Silicon Sealant	-	-	-	-	-	-
	1962 Addition	Floor	Mastic	Black Mastic	NF	ACM	SL	32523-800-Galt-S15a	16-Mar-09	1.2% Chrysotile
	1986 Addition	Structure	Deck	Steel	-	Non ACM	-	-	-	-
	1986 Addition	Windows	Interior Frames	Grey Sealant	NF	ACM	SL	S01	28-Jun-18	0.5% Chrysotile
	1986 Addition	Windows	Interior Panes	Silicon Sealant	-	Non ACM	-	-	-	-
	1986 Addition	Windows	Exterior Frames	Grey Sealant	NF	ACM	HM	S01	28-Jun-18	0.5% Chrysotile
	1986 Addition	Windows	Exterior Panes	Black Sealant	NF	ACM	HM	S02	28-Jun-18	8% Chrysotile
	1986 Addition	Doors	Interior Frames	Silicon Sealant	-	Non ACM	-	-	-	-
	1986 Addition	Doors	Interior Panes	Black Sealant	NF	ACM	SL	S02	28-Jun-18	8% Chrysotile
	1986 Addition	Doors	Exterior Frames	Grey Sealant	NF	ACM	SL	S03	28-Jun-18	1% Chrysotile
	1986 Addition	Doors	Exterior Panes	Black Sealant	NF	ACM	HM	S02	28-Jun-18	8% Chrysotile
	1986 Addition	Floor	Mastic	Black Mastic	-	Non ACM	SL	S08	20-Mar-15	ND
Level 1										
100	Custodial	Floor	12"x12" Vinyl Floor Tile	White with Grey Fleck and Blue Fleck	-	Non-ACM	SL	32523-800-Galt-S21	16-Mar-09	ND
100	Custodial	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
100	Custodial	Wall	Drywall	-	-	Non ACM	HM	GCI-301-DWC-04	20-Mar-07	ND
100	Custodial	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
100	Custodial	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	SL	32523-800-Galt-S17	16-Mar-09	ND
100	Custodial	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
100	Custodial	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	SL	GCI-152-PI	20-Mar-07	ND
101	Classroom	Floor	Concrete	-	-	Non-ACM	-	-	-	-
101	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-103A-CP-01,02,03	20-Mar-07	ND
101	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
101	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
101	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
101	Classroom	Piping	Expansion Joint	-	F	ACM	VC	-	-	-
101A	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
101A	Classroom	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
101A	Classroom	Wall	Wood Paneling	-	-	Non-ACM	-	-	-	-
101A	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
101B	Office	Floor	Concrete	-	-	Non-ACM	-	-	-	-
101B	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-103A-CP-01,02,03	20-Mar-07	ND
101B	Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
101B	Office	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
102	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
102	Classroom	Wall	Plaster	-	-	Non-ACM	HM	SO02ABC	20-Mar-07	ND
102	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
102	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
102A	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
102A	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
102A	Office	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
102A	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
103	Classroom	Floor	Concrete	-	-	Non-ACM	-	-	-	-
103	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
103	Classroom	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
103	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
103	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
103	Classroom	Ducting	Expansion Joint	-	NF	ACM	VC	-	-	-
103A	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
103A	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-103A-CP-01,02,03	20-Mar-07	ND
103A	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	SL	GCI-103A-1x1ACT	20-Mar-07	ND
103A	Classroom	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-103A-CP-01,02,03	20-Mar-07	ND
103A	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
103A	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
103B	Classroom	Floor	Concrete	-	-	Non-ACM	-	-	-	-
103B	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
103B	Classroom	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
103B	Classroom	Ducting	Expansion Joint	-	NF	ACM	VC	-	-	-
104	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
104	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
104	Classroom	Wall	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
104	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
104A	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
104A	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
104A	Classroom	Wall	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
104A	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND

	School Name	Legend:	Notes:
	Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
	Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
	Original: 1853		
	Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
105	Storage	Floor	12"x12" Vinyl Floor Tile	Beige with Brown and White Fleck	NF	ACM	HM	32523-800-Galt-S03	16-Mar-09	2.3% Chrysotile
105	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
105	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
105	Storage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
105	Storage	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
105A	Storage	Floor	12"x12" Vinyl Floor Tile	Beige with Brown and White Fleck	NF	ACM	HM	32523-800-Galt-S03	16-Mar-09	2.3% Chrysotile
105A	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
105A	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
106	Computer Room	Floor	12"x12" Vinyl Floor Tile	Cream and Burgundy	-	Non-ACM	SL	GCI-108-12x12FT	20-Mar-07	ND
106	Computer Room	Wall	Plaster	-	-	Non-ACM	SL	GCI-106-WP-01,02,03	20-Mar-07	ND
106	Computer Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
106	Computer Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
107	Classroom	Floor	Concrete	-	-	Non-ACM	-	-	-	-
107	Classroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-19A-DWC-01,02,03	20-Mar-07	ND
107	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
107	Classroom	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
107	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
107	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
107	Classroom	Ducting	Expansion Joint	-	F	ACM	VC	-	-	-
107A	Classroom	Floor	Concrete	-	-	Non-ACM	-	-	-	-
107A	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
107A	Classroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-19A-DWC-01,02,03	20-Mar-07	ND
107A	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
107A	Classroom	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
107A	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
107A	Classroom	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
107B	Classroom	Floor	Concrete	-	-	Non-ACM	-	-	-	-
107B	Classroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-19A-DWC-01,02,03	20-Mar-07	ND
107B	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
107B	Classroom	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
107B	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
107B	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
107B	Classroom	Ducting	Expansion Joint	-	F	ACM	VC	-	-	-
107C	Storage	Floor	Concrete	-	-	Non-ACM	-	-	-	-
107C	Storage	Wall	Brick	-	-	Non-ACM	-	-	-	-
107C	Storage	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
107C	Storage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
107C	Storage	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
107D	Corridor	Floor	Vinyl Sheet Flooring	Smokey Cloud	-	Non-ACM	HM	32523-800-Galt-S16	16-Mar-09	ND
107D	Corridor	Wall	Concrete	-	-	Non-ACM	-	-	-	-
107D	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
107D	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
108	Computer Room	Floor	12"x12" Vinyl Floor Tile	Cream and Burgundy	-	Non-ACM	SL	GCI-108-12x12FT	20-Mar-07	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
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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
108	Computer Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
108	Computer Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
108	Computer Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
108	Computer Room	Piping	Pipe Fitting	Parged Cement	-	Non-ACM	SL	GCI-108-PARGE-01,02,03	20-Mar-07	ND
109A	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
109A	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-19A-DWC-01,02,03	20-Mar-07	ND
109A	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
109A	Classroom	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
109B	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
109B	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
109B	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
109B	Classroom	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
109B	Classroom	Pipe Fitting	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
109B	Classroom	Pipe Fitting	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
109C	TV Studio	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
109C	TV Studio	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
109C	TV Studio	Wall	Concrete	-	-	Non-ACM	-	-	-	-
109C	TV Studio	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
109D	Storage	Floor	Concrete	-	-	Non-ACM	-	-	-	-
109D	Storage	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
109D	Storage	Ceiling	1'x1' Ceiling Tile	Large Random Pinhole (Cellulose/Stapled)	-	Non-ACM	-	-	-	-
109E	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
109E	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
109E	Classroom	Ceiling	1'x1' Ceiling Tile	Large Random Pinhole (Cellulose/Stapled)	-	Non-ACM	-	-	-	-
109F	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
109F	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
109F	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
109F	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
109F	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
109G	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
109G	Office	Wall	Drywall	-	-	Non-ACM	SL	GCI-19A-DWC-01,02,03	20-Mar-07	ND
109G	Office	Wall	Concrete	-	-	Non-ACM	-	-	-	-
109G	Office	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
111	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
111	Classroom	Floor	Rubber	-	-	Non-ACM	-	-	-	-
111	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
111	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
111	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
111	Classroom	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
111A	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
111A	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
111A	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
111B	Cyclone Room	Not Inspected								

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
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Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
111C	Office	Floor	Wood	-	-	Non-ACM	-	-	-	-
111C	Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
111C	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
111C	Office	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
112	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
112	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
112	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
112	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
114	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
114	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
114	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
114	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
114	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
115	Classroom	Floor	9"x9" Vinyl Floor Tile	Green with White Streak	NF	ACM	HM	32523-800-Galt-S18	16-Mar-09	1.3% Chrysotile
115	Classroom	Floor	Leveling Compound	-	-	Non-ACM	HM	32523-800-Galt-S18	16-Mar-09	ND
115	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
115	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
115	Classroom	Ceiling	Drywall	-	-	Non ACM	HM	GCI-8206-DWC-02	20-Mar-07	ND
115	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
115	Classroom	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
116	Office	Floor	12"x12" Vinyl Floor Tile	White with Brown Fleck	-	Non-ACM	HM	32523-800-Galt-S19	16-Mar-09	ND
116	Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
116	Office	Ceiling	2'x4' Short Fissure	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
116A	Office	Floor	12"x12" Vinyl Floor Tile	White with Brown Fleck	-	Non-ACM	HM	32523-800-Galt-S19	16-Mar-09	ND
116A	Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
116A	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
116A	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
117	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
117	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
117	Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
117	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
117A	Mechanical Room	Floor	9"x9" Vinyl Floor Tile	Green with White Streak	NF	ACM	HM	32523-800-Galt-S18	16-Mar-09	1.3% Chrysotile
117A	Mechanical Room	Floor	Leveling Compound	-	-	Non-ACM	HM	32523-800-Galt-S18	16-Mar-09	ND
117A	Mechanical Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
117A	Mechanical Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
117A	Mechanical Room	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
117A	Mechanical Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
117A	Mechanical Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
118	Classroom	Floor	12"x12" Vinyl Floor Tile	White with Brown Fleck	-	Non-ACM	SL	32523-800-Galt-S19	16-Mar-09	ND
118	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
118	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
118	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
119	Classroom	Floor	9"x9" Vinyl Floor Tile	Green with White Streak	NF	ACM	HM	32523-800-Galt-S18	16-Mar-09	1.3% Chrysotile

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
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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
119	Classroom	Floor	Leveling Compound	-	-	Non-ACM	HM	32523-800-Galt-S18	16-Mar-09	ND
119	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
119	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
119	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
150	Exterior Storage	Not Inspected								
151	Storage	Floor	Concrete	-	-	Non-ACM	-	-	-	-
151	Storage	Wall	Concrete	-	-	Non-ACM	-	-	-	-
151	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
151	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
151A	Mechanical Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-
151A	Mechanical Room	Wall	Concrete	-	-	Non-ACM	-	-	-	-
151A	Mechanical Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
151A	Mechanical Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
151A	Mechanical Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
151A	Mechanical Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
151B	Storage	Floor	Concrete	-	-	Non-ACM	-	-	-	-
151B	Storage	Wall	Concrete	-	-	Non-ACM	-	-	-	-
151B	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
151B	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
153	Transformer Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-
153	Transformer Room	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
153	Transformer Room	Wall	Brick	-	-	Non-ACM	-	-	-	-
153	Transformer Room	Wall	Concrete	-	-	Non-ACM	-	-	-	-
153	Transformer Room	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-DWC-01 to 07	20-Mar-07	ND
153	Transformer Room	Ceiling	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
153	Transformer Room	Upper Ceiling	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
153	Transformer Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
153	Transformer Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
154	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
154	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-DWC-01 to 07	20-Mar-07	ND
154	Office	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-DWC-01 to 07	20-Mar-07	ND
154A	Water Service	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
154A	Water Service	Wall	Drywall	-	-	Non-ACM	HM	GCI-DWC-01 to 07	20-Mar-07	ND
154A	Water Service	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-DWC-01 to 07	20-Mar-07	ND
155	Landing	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
155	Landing	Wall	Concrete	-	-	Non-ACM	-	-	-	-
155	Landing	Wall	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
156	Changeroom	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
156	Changeroom	Wall	Drywall	-	-	Non-ACM	HM	S05	5-Aug-15	ND
156	Changeroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
156	Changeroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
156A	Changeroom	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
156A	Changeroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-301-DWC-04	20-Mar-07	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
156A	Changeroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
156A	Changeroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
156B	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
156B	Washroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-301-DWC-04	20-Mar-07	ND
156B	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
156B	Washroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
157	Storage	Floor	Concrete	-	-	Non-ACM	-	-	-	-
157	Storage	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
157	Storage	Wall	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
157	Storage	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
158	Changeroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
158	Changeroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-202-DWC-04	20-Mar-07	ND
158	Changeroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
158	Changeroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
158A	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
158A	Washroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-202-DWC-04	20-Mar-07	ND
158A	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
158A	Washroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
160	Office	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
160	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-202-DWC-04	20-Mar-07	ND
160	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
160A	Corridor	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
160A	Corridor	Wall	Drywall	-	-	Non-ACM	HM	GCI-202-DWC-04	20-Mar-07	ND
160A	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
160A	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
161	Mechanical Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-
161	Mechanical Room	Wall	Concrete	-	-	Non-ACM	-	-	-	-
161	Mechanical Room	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
161	Mechanical Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
162	Lobby	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
162	Lobby	Wall	Concrete	-	-	Non-ACM	-	-	-	-
162	Lobby	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
162	Lobby	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
162	Lobby	Ceiling	2'x'4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
162	Lobby	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
162	Lobby	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
162A	Lobby	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
162A	Lobby	Wall	Concrete	-	-	Non-ACM	-	-	-	-
162A	Lobby	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
162A	Lobby	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
162A	Lobby	Ceiling	2'x'4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
162A	Lobby	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
162A	Lobby	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
162B	Storage	Floor	Carpet	-	-	Non-ACM	-	-	-	-
162B	Storage	Wall	Concrete	-	-	Non-ACM	-	-	-	-
162B	Storage	Wall	Field Stone	-	-	Non-ACM	-	-	-	-
162B	Storage	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
162B	Storage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
162B	Storage	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
163	Electrical Room	Floor	Wood	-	-	Non-ACM	-	-	-	-
163	Electrical Room	Wall	Metal	-	-	Non-ACM	-	-	-	-
163	Electrical Room	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
163	Electrical Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-301-DWC-04	20-Mar-07	ND
163	Electrical Room	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-153-CP-01,02,03	20-Mar-07	ND
163	Electrical Room	Ceiling	Plaster	Upper Ceiling	-	Non-ACM	SL	GCI-153-UCP-01, 02, 03	20-Mar-07	ND
164	Storage	Floor	Concrete	-	-	Non-ACM	-	-	-	-
164	Storage	Wall	Field Stone	-	-	Non-ACM	-	-	-	-
164	Storage	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
164	Storage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
164	Storage	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
164A	Storage	Floor	Concrete	-	-	Non-ACM	-	-	-	-
164A	Storage	Wall	Field Stone	-	-	Non-ACM	-	-	-	-
164A	Storage	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
164A	Storage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
164A	Storage	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
165A	Electrical Room	Floor	Wood	-	-	Non-ACM	-	-	-	-
165A	Electrical Room	Wall	Metal	-	-	Non-ACM	-	-	-	-
165A	Electrical Room	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
165A	Electrical Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-301-DWC-04	20-Mar-07	ND
165A	Electrical Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-CP-01,02,03	20-Mar-07	ND
165B	Corridor	Floor	Wood	-	-	Non-ACM	-	-	-	-
165B	Corridor	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
165B	Corridor	Wall	Drywall	-	-	Non-ACM	HM	GCI-301-DWC-04	20-Mar-07	ND
165B	Corridor	Wall	Steel	-	-	Non-ACM	-	-	-	-
165B	Corridor	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
165B	Corridor	Ceiling	2'x4' Ceiling Tile	-	-	Non-ACM	SL	GCI-165A-CT	20-Mar-07	ND
165C	Fan Room	Floor	Wood	-	-	Non-ACM	-	-	-	-
165C	Fan Room	Wall	Metal	-	-	Non-ACM	-	-	-	-
165C	Fan Room	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
165C	Fan Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-301-DWC-04	20-Mar-07	ND
165C	Fan Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-CP-01,02,03	20-Mar-07	ND
165D	Fan Room	Floor	Wood	-	-	Non-ACM	-	-	-	-
165D	Fan Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-301-DWC-04	20-Mar-07	ND
165D	Fan Room	Ceiling	Plaster	Presumed Based on Wall Sample	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
165D	Fan Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
167	Mechanical Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-

	School Name	Legend:	Notes:
	Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
	Date Built: Original: 1853 Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		**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
167	Mechanical Room	Wall	Concrete	-	-	Non-ACM	-	-	-	-
167	Mechanical Room	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
167	Mechanical Room	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-167-CP-01,02,03	20-Mar-07	ND
167	Mechanical Room	Piping	Pipe Fitting	Parged Cement	F	ACM	SL	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
167	Mechanical Room	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
167	Mechanical Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
167	Mechanical Room	Piping	Vermiculite	Ceiling Patch	F	ACM	SL	GCI-BR-VERM	20-Mar-07	5% Chrysotile
167A	Corridor	Floor	Concrete	-	-	Non-ACM	-	-	-	-
167A	Corridor	Wall	Concrete	-	-	Non-ACM	-	-	-	-
167A	Corridor	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
167B	Office	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
167B	Office	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
167B	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
167B	Office	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
168	Transformer Room	Not Inspected								
169	Storage	Floor	Concrete	-	-	Non-ACM	-	-	-	-
169	Storage	Wall	Concrete	-	-	Non-ACM	-	-	-	-
169	Storage	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
170	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
170	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
170	Washroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
171	Change Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-
171	Change Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
171	Change Room	Wall	Brick	-	-	Non-ACM	-	-	-	-
171	Change Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
171A	Shower	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
171A	Shower	Wall	Brick	-	-	Non-ACM	-	-	-	-
171A	Shower	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
171A	Shower	Wall	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
171A	Shower	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
171B	Change Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-
171B	Change Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
171B	Change Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
171C	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
171C	Washroom	Wall	Brick	-	-	Non-ACM	-	-	-	-
171C	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
172	Change Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-
172	Change Room	Wall	Concrete	-	-	Non-ACM	-	-	-	-
172	Change Room	Wall	Brick	-	-	Non-ACM	-	-	-	-
172	Change Room	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	GCI-172-HardStucco-01,02,03	20-Mar-07	ND
172	Change Room	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
172A	Shower	Floor	Ceramic	-	-	Non-ACM	-	-	-	-
172A	Shower	Wall	Ceramic	-	-	Non-ACM	-	-	-	-

School Name

Galt Collegiate Institute

Date Built:

Original: 1853

Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986

Legend:

HM - Homogenous Material - homogeneous with previously sampled material
SL - Sample Location - Material Sampled
VC - Visually Confirmed - Material not sampled, deemed ACM
NF - Non-Friable
F- Friable

Notes:

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.

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
172A	Shower	Ceiling	Transite Paneling	Asbestos Cement	NF	ACM	VC	-	-	-
172A	Shower	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
172B	Washroom	Floor	Concrete	-	-	Non-ACM	-	-	-	-
172B	Washroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
172B	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-174-CP-01,02,03	20-Mar-07	ND
173	Storage	Floor	Concrete	-	-	Non-ACM	-	-	-	-
173	Storage	Wall	Concrete	-	-	Non-ACM	-	-	-	-
173	Storage	Ceiling	Steel	-	-	Non-ACM	-	-	-	-
174	Mechanical Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-
174	Mechanical Room	Wall	Concrete	-	-	Non-ACM	-	-	-	-
174	Mechanical Room	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-174-CP-01,02,03	20-Mar-07	ND
174	Mechanical Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
175	Quiet Area	Floor	Carpet	-	-	Non-ACM	-	-	-	-
175	Quiet Area	Floor	Carpet	-	-	Non-ACM	-	-	-	-
175	Quiet Area	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
175	Quiet Area	Wall	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
175	Quiet Area	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
175	Quiet Area	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
175	Quiet Area	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
175	Quiet Area	Ceiling	Transite	Pegboard	NF	ACM	VC	-	-	-
175A	Work Room	Floor	12"x12" Vinyl Floor Tile	Black and White (Post 2007)	-	Non-ACM	-	-	-	-
175A	Work Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
175A	Work Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
175A	Work Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
175A	Work Room	Ceiling	Transite	Pegboard	NF	ACM	VC	-	-	-
175B	Quiet Area	Floor	Carpet	-	-	Non-ACM	-	-	-	-
175B	Quiet Area	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
175B	Quiet Area	Wall	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
175B	Quiet Area	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
175B	Quiet Area	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
175B	Quiet Area	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
175B	Quiet Area	Ceiling	Transite	Pegboard	NF	ACM	VC	-	-	-
175C	Seminar Room	Floor	12"x12" Vinyl Floor Tile	Black and White (Post 2007)	-	Non-ACM	-	-	-	-
175C	Seminar Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
175C	Seminar Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
175C	Seminar Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
175C	Seminar Room	Ceiling	Transite	Pegboard	NF	ACM	VC	-	-	-
176	Workroom	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
176	Workroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
176	Workroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
176	Workroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
176	Workroom	Ceiling	2'x2' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
176	Workroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
176	Workroom	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built: Original: 1853 Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		**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
177	Media Room	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
177	Media Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
177	Media Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
177	Media Room	Wall	Ceramic Tile	-	-	Non-ACM	-	-	-	-
177	Media Room	Ceiling	2'x2' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
177	Media Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
177	Media Room	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
178	Seminar Room	Floor	12"x12" Vinyl Floor Tile	Black (Post 2007)	-	Non-ACM	-	-	-	-
178	Seminar Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
178	Seminar Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
178	Seminar Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
178	Seminar Room	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
179	Network Room	Not Inspected								
180	Washroom	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
180	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
180	Washroom	Ceiling	Hard Texture Coat	-	NF	ACM	HM	S03	5-Aug-15	1.3% Chrysotile
180A	Washroom	Floor	Concrete	-	-	Non-ACM	-	-	-	-
180A	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
180A	Washroom	Ceiling	Hard Texture Coat	-	NF	ACM	HM	S03	5-Aug-15	1.3% Chrysotile
181	Washroom	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
181	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
181	Washroom	Ceiling	Hard Texture Coat	-	NF	ACM	HM	S03	5-Aug-15	1.3% Chrysotile
182	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
182	Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
182	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
182A	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
182A	Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
182A	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
183	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
183	Office	Floor	Vinyl Sheet Flooring	Beige	-	Non-ACM	HM	S03	20-Mar-15	ND
183	Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
183	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
183A	Storage	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
183A	Storage	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
183A	Storage	Ceiling	Drywall	-	-	Non-ACM	HM	S05	5-Aug-15	ND
184	Mechanical Room	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
184	Mechanical Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
184	Mechanical Room	Ceiling	Drywall	-	-	Non-ACM	HM	S05	5-Aug-15	ND
184	Mechanical Room	Piping	Fibreglass	-	-	Non-ACM	-	-	-	-
185	Storage	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
185	Storage	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
185	Storage	Ceiling	Steel	-	-	Non-ACM	-	-	-	-
185	Storage	Ducting	Duct Expansion Joint	-	NF	ACM	VC	-	-	-

School Name	Legend:	Notes:
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Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
186	Servery	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
186	Servery	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
186	Servery	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
186	Servery	Ceiling	Drywall	-	-	Non-ACM	HM	S05	5-Aug-15	ND
187	Servery	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
187	Servery	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
187	Servery	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
187	Servery	Ceiling	Drywall	-	-	Non-ACM	HM	S05	5-Aug-15	ND
188	Kitchen	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
188	Kitchen	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
188	Kitchen	Ceiling	Drywall	-	-	Non-ACM	HM	S05	5-Aug-15	ND
189	Cafeteria	Floor	Vinyl Sheet Flooring	Beige	-	Non-ACM	HM	GCI-170/8404/8101A/189	20-Mar-15	ND
189	Cafeteria	Floor	Vinyl Sheet Flooring	Red	-	Non-ACM	SL	S04	20-Mar-15	ND
189	Cafeteria	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
189	Cafeteria	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	S06DE, GCI-189-CS-01,02,03,04,05	20-Mar-15	ND
189	Cafeteria	Ceiling	2'x2' Ceiling Tile	Dense Pinhole	-	Non-ACM	SL	S07	20-Mar-15	ND
189	Cafeteria	Ceiling	2'x2' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
189	Cafeteria	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
189A	Student Activities	Floor	12"x12" Vinyl Floor Tile	Beige with Grey and Peach	-	Non-ACM	SL	S08	20-Mar-15	ND
189A	Student Activities	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
189A	Student Activities	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
189B	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige with Grey and Peach	-	Non-ACM	HM	S08	20-Mar-15	ND
189B	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
189B	Washroom	Ceiling	Drywall	-	-	Non-ACM	HM	S05	5-Aug-15	ND
190	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
190	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
190	Washroom	Ceiling	2'x4' Ceiling Tile	Flat (Post 2007)	-	Non-ACM	-	-	-	-
191	Storage	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
191	Storage	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
191	Storage	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
903	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-
903	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
903	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
903	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
903	Stairwell	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
903	Stairwell	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
904	Stairwell	Floor	12"x12" Vinyl Floor Tile	Brown Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
904	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
904	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
905	Stairwell	Floor	Vinyl Sheet Flooring	Gold	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
905	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
905	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
906	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-

School Name	Legend:	Notes:
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Original: 1853		
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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
906	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
906	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
909	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-
909	Stairwell	Wall	Concrete Block	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
909	Stairwell	Ceiling	Concrete	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
909	Stairwell	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
909	Stairwell	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
910	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
910	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
910	Stairwell	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	GCI-910-CS-01,02,03	20-Mar-07	ND
911	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
911	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
911	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-106-WP-01,02,03	20-Mar-07	ND
911	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
912	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
912	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
912	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
912	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
912	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
912	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
913	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
913	Stairwell	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
913	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
915	Stairwell	Not Inspected								
916	Stairwell	Not Inspected								
8101A	Corridor	Floor	Vinyl Sheet Flooring	Gold	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8101A	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8101A	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
8101A	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8101A	Corridor	Piping	Pipe Fittings	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8101A	Corridor	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
8101B	Corridor	Floor	Vinyl Sheet Flooring	Gold	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8101B	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8101B	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
8101B	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8101B	Corridor	Piping	Pipe Fittings	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8101B	Corridor	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
8101C	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8101C	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
8101C	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8101C	Corridor	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
8101C	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8101C	Corridor	Piping	Pipe Fittings	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8101C	Corridor	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
8101D	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-

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Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
8101D	Corridor	Wall	Plaster	-	-	Non-ACM	SL	GCI-8108B-WP-01,02,03,04	20-Mar-07	ND
8101D	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8101D	Corridor	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
8101D	Corridor	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-8101B-CP-01,02,03,04	20-Mar-07	ND
8101D	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8101D	Corridor	Piping	Pipe Fittings	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8101D	Corridor	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
8101F	Corridor	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
8101F	Corridor	Wall	Drywall	-	-	Non-ACM	SL	GCI-19A-DWC-01,02,03	20-Mar-07	ND
8101F	Corridor	Wall	Concrete	-	-	Non-ACM	-	-	-	-
8101F	Corridor	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
8102	Corridor	Floor	Vinyl Sheet Flooring	Gold	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8102	Corridor	Floor	Leveling Compound	-	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8102	Corridor	Wall	Brick	-	-	Non-ACM	-	-	-	-
8102	Corridor	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-8101B-CP-01,02,03,04	20-Mar-07	ND
8102	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8102	Corridor	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
8103	Corridor	Floor	Vinyl Sheet Flooring	Gold	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8103	Corridor	Floor	Leveling Compound	-	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8103	Corridor	Wall	Plaster	-	-	Non-ACM	SL	GCI-8103-WP01,02,03	20-Mar-07	ND
8103	Corridor	Wall	Drywall	-	-	Non-ACM	SL	GCI-8103-DWC-01,02,03	20-Mar-07	ND
8103	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8103	Corridor	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
8103	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
8103A	Corridor	Floor	Concrete	-	-	Non-ACM	-	-	-	-
8103A	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
8103A	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
8103A	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8103A	Corridor	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
8104	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8104	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
8104	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8104	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
8104	Corridor	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
8105	Corridor	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
8105	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
8105	Corridor	Wall	Drywall	-	-	Non-ACM	HM	GCI-8206A-DWC-02	20-Mar-07	ND
8105	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8105	Corridor	Ceiling	2'x2' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
8106	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8106	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
8106	Corridor	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
8106	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
8106	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8106	Corridor	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
8106A	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8106A	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
8106A	Corridor	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
8106A	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8108A	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8108A	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8108A	Corridor	Ceiling	Hard Texture Coat	-	-	Non-ACM	HM	S06ABC	20-Mar-15	ND
8108B	Corridor	Floor	12"x12" Vinyl Floor Tile	Brown with Dense Fleck	-	Non-ACM	HM	32523-800-Galt-S06	16-Mar-09	ND
8108B	Corridor	Floor	Vinyl Sheet Flooring	Beige	-	Non-ACM	SL	S03	20-Mar-15	ND
8108B	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8108B	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8108B	Corridor	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	S06ABC	20-Mar-15	ND
8108B	Corridor	Piping	Pipe Insulation	-	-	Non-ACM	SL	GCI-8101B-PI	20-Mar-15	ND
8108C	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8108C	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8108C	Corridor	Wall	Stone	-	-	Non-ACM	-	-	-	-
8108C	Corridor	Ceiling	Hard Texture Coat	-	-	Non-ACM	HM	S06ABC	20-Mar-15	ND
Level 2										
201	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
201	Classroom	Floor	12"x12" Vinyl Floor Tile	Brown with Dark Brown Fleck	-	Non-ACM	SL	GCI-305-12x12FT	20-Mar-07	ND
201	Classroom	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
201	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
201	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
201	Classroom	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
202	Office	Floor	Vinyl Sheet Flooring	Smokey Cloud	-	Non-ACM	HM	32523-800-Galt-S16	16-Mar-09	ND
202	Office	Wall	Plaster	-	-	Non-ACM	SL	GCI-202-WP-03	20-Mar-07	ND
202	Office	Wall	Drywall	-	-	Non-ACM	SL	GCI-202-DWC-04	20-Mar-07	ND
202	Office	Wall	Concrete	-	-	Non-ACM	-	-	-	-
202	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
202	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
202	Office	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
202A	Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
202A	Office	Wall	Wood	-	-	Non-ACM	-	-	-	-
202A	Office	Wall	Plaster	-	-	Non-ACM	SL	GCI-8206A-WP-01	20-Mar-07	ND
202A	Office	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
202A	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
202B	Classroom	Floor	Carpet	-	-	Non-ACM	-	-	-	-
202B	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
202B	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
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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
202C	Storage	Floor	Carpet	-	-	Non-ACM	-	-	-	-
202C	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
202C	Storage	Wall	Wood	-	-	Non-ACM	-	-	-	-
202C	Storage	Wall	Concrete	-	-	Non-ACM	-	-	-	-
202C	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
202D	Washroom	Floor	Vinyl Sheet Flooring	Wood (Post 2009)	-	Non-ACM	-	-	-	-
202D	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
202D	Washroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
203	Classroom	Floor	12"x12" Vinyl Floor Tile	Brown with Dark Brown Fleck	NF	Non-ACM	HM	S08	16-Mar-09	5% Chrysotile
203	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
203	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-203-DWC-05	20-Mar-07	ND
203	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
203	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
203A	Storage	Wood	-	-	-	Non-ACM	-	-	-	-
203A	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
203A	Storage	Wall	Drywall	-	-	Non-ACM	SL	GCI-203-DWC-05	20-Mar-07	ND
203A	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
203A	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
204	Office	Floor	Vinyl Sheet Flooring	Wood (Post 2009)	-	Non-ACM	-	-	-	-
204	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-205-DWC-06	20-Mar-07	ND
204	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
204	Office	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
204A	Office	Floor	Vinyl Sheet Flooring	Wood (Post 2009)	-	Non-ACM	-	-	-	-
204A	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-205-DWC-06	20-Mar-07	ND
204A	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
204C	Office	Floor	Vinyl Sheet Flooring	Wood (Post 2009)	-	Non-ACM	-	-	-	-
204C	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-205-DWC-06	20-Mar-07	ND
204C	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
204C	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
204C	Office	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
204D	Office	Floor	Vinyl Sheet Flooring	Wood (Post 2009)	-	Non-ACM	-	-	-	-
204D	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-205-DWC-06	20-Mar-07	ND
204D	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
204D	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
204D	Office	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
204E	Vault	Not Inspected								
204F	Office	Floor	Vinyl Sheet Flooring	Wood (Post 2009)	-	Non-ACM	-	-	-	-
204F	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-205-DWC-06	20-Mar-07	ND
204F	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
204F	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
204F	Office	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
205	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
205	Classroom	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile

School Name	Legend:	Notes:
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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
205	Classroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-203-DWC-05	20-Mar-07	ND
205	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
205	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-201-CP-02	20-Mar-07	ND
206	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
206	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
206	Office	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-208-CP-01	20-Mar-07	ND
206	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
206A	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
206A	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
206A	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
206B	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
206B	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
206B	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
206C	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
206C	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
206C	Washroom	Ceiling	2'x4' Ceiling Tile	Medium Fissure Random Pinhole (Post 2009)	-	Non-ACM	-	-	-	-
206C	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-208-CP-01	20-Mar-07	ND
207	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
207	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-207-WP-07	20-Mar-07	ND
207	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
207	Classroom	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-207-CP-03	20-Mar-07	ND
207	Classroom	Ceiling	1'x1' Ceiling Tile	Pattern Pinhole	NF	ACM	SL	GCI-207-1x1ACT	20-Mar-07	1% Amosite
207	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
207	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
208	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
208	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-208-WP-02	20-Mar-07	ND
208	Classroom	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-208-CP-01	20-Mar-07	ND
208	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
209	Career Center	Floor	Carpet	-	-	Non-ACM	-	-	-	-
209	Career Center	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
209	Career Center	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
209	Career Center	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
209	Career Center	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
210	Classroom	Floor	Carpet	-	-	Non-ACM	-	-	-	-
210	Classroom	Wall	Brick	-	-	Non-ACM	-	-	-	-
210	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
210	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-208-CP-01	20-Mar-07	ND
210A	Classroom	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
210A	Classroom	Wall	Brick	-	-	Non-ACM	-	-	-	-
210A	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
210A	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-208-CP-01	20-Mar-07	ND
210B	Storage	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
210B	Storage	Wall	Brick	-	-	Non-ACM	-	-	-	-

School Name	Legend:	Notes:
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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
210B	Storage	Wall	Drywall	-	-	Non-ACM	HM	GCI-205-DWC-06	20-Mar-07	ND
210B	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-208-CP-01	20-Mar-07	ND
211	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
211	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
211	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
211	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
211	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
211	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
211A	Storage	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
211A	Storage	Wall	Drywall	Post 2007	-	Non-ACM	-	-	-	-
211A	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole (Post 2007)	-	Non-ACM	-	-	-	-
212	Classroom	Floor	Carpet	-	-	Non-ACM	-	-	-	-
212	Classroom	Wall	Brick	-	-	Non-ACM	-	-	-	-
212	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
212	Classroom	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
212A	Instructor	Floor	Carpet	-	-	Non-ACM	-	-	-	-
212A	Instructor	Wall	Brick	-	-	Non-ACM	-	-	-	-
212A	Instructor	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
212A	Instructor	Ceiling	1'x1' Ceiling Tile	Random Pinhole	-	Non-ACM	HM	S01ABC	14-Nov-18	ND
212B	Storage	Floor	Carpet	-	-	Non-ACM	-	-	-	-
212B	Storage	Wall	Brick	-	-	Non-ACM	-	-	-	-
212B	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
212B	Storage	Ceiling	1'x1' Ceiling Tile	Random Pinhole	-	Non-ACM	HM	S01ABC	14-Nov-18	ND
212C	Storage	Floor	Carpet	-	-	Non-ACM	-	-	-	-
212C	Storage	Wall	Brick	-	-	Non-ACM	-	-	-	-
212C	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
212C	Storage	Ceiling	1'x1' Ceiling Tile	Random Pinhole	-	Non-ACM	SL	S01ABC	14-Nov-18	ND
212D	Storage	Floor	Carpet	-	-	Non-ACM	-	-	-	-
212D	Storage	Wall	Brick	-	-	Non-ACM	-	-	-	-
212D	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
212D	Storage	Ceiling	1'x1' Ceiling Tile	Random Pinhole	-	Non-ACM	HM	S01ABC	14-Nov-18	ND
212E	Storage	Floor	Carpet	-	-	Non-ACM	-	-	-	-
212E	Storage	Wall	Brick	-	-	Non-ACM	-	-	-	-
212E	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
212E	Storage	Ceiling	1'x1' Ceiling Tile	Random Pinhole	-	Non-ACM	HM	S01ABC	14-Nov-18	ND
212F	Storage	Floor	Carpet	-	-	Non-ACM	-	-	-	-
212F	Storage	Wall	Brick	-	-	Non-ACM	-	-	-	-
212F	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
212F	Storage	Ceiling	1'x1' Ceiling Tile	Random Pinhole	-	Non-ACM	HM	S01ABC	14-Nov-18	ND
213	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige with Tan and Grey	-	Non-ACM	HM	32523-800-Galt-S02	16-Mar-09	ND
213	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
213	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
213	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built: Original: 1853 Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		**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
213	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
213A	Classroom	Floor	9"x9" Vinyl Floor Tile	Grey with White Streak	NF	ACM	SL	32523-800-Galt-S12	16-Mar-09	0.5% Chrysotile
213A	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
213A	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
213A	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
213A	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
214	Gymnasium	Floor	Wood	-	-	Non-ACM	-	-	-	-
214	Gymnasium	Wall	Concrete	-	-	Non-ACM	-	-	-	-
214	Gymnasium	Ceiling	Wood Baton	-	-	Non-ACM	-	-	-	-
214	Gymnasium	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
214A	Storage	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
214A	Storage	Wall	Concrete	-	-	Non-ACM	-	-	-	-
214A	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
214A	Storage	Wall	Concrete	-	-	Non-ACM	-	-	-	-
214A	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
214B	Gymnasium	Floor	Wood	-	-	Non-ACM	-	-	-	-
214B	Gymnasium	Wall	Concrete	-	-	Non-ACM	-	-	-	-
214B	Gymnasium	Ceiling	Wood Baton	-	-	Non-ACM	-	-	-	-
214B	Gymnasium	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
215	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
215	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
215	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
215	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
215	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
215	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
215A	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
215A	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
215A	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
217	Changeroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
217	Changeroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
217	Changeroom	Ceiling	2"x4" Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
217	Changeroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
217	Changeroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
217	Changeroom	Ducting	Expansion Joints	-	NF	ACM	VC	-	-	-
218	Classroom	Floor	9"x9" Vinyl Floor Tile	Pink with White Fleck	NF	ACM	SL	32523-800-Galt-S10	16-Mar-09	1.3% Chrysotile
218	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
218	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
218	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
218	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
218	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
219	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
219	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
219	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
219	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
219	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
219	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
219A	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
219A	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
219A	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
219A	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
219A	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
219A	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
220	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
220	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
220	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
220	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
220	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
220	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
221	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
221	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
221	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
221	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
221	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
221	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
222	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
222	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
222	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
222	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
222	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
223	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
223	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
223	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
223	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
223	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
223	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
224	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
224	Classroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
224	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
224	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
224	Classroom	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
224	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
225	Weight Room	Floor	12"x12" Vinyl Floor Tile	Beige/Grey Fleck (Post 2007)	-	Non-ACM	-	-	-	-
225	Weight Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
225	Weight Room	Wall	Stone	-	-	Non-ACM	-	-	-	-
225	Weight Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
225	Weight Room	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
226	Office	Floor	12"x12" Vinyl Floor Tile	Beige/Grey Fleck (Post 2007)	-	Non-ACM	-	-	-	-
226	Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
226	Office	Wall	Stone	-	-	Non-ACM	-	-	-	-
226	Office	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
227	Weight Room	Floor	12"x12" Vinyl Floor Tile	Beige/Grey Fleck (Post 2007)	-	Non-ACM	-	-	-	-
227	Weight Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
227	Weight Room	Wall	Stone	-	-	Non-ACM	-	-	-	-
227	Weight Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
227	Weight Room	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
228	Fitness Room	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
228	Fitness Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
228	Fitness Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
228	Fitness Room	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
230	Gymnasium	Floor	Wood	-	-	Non-ACM	-	-	-	-
230	Gymnasium	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
230	Gymnasium	Ceiling	Steel Deck	-	-	Non-ACM	-	-	-	-
230	Gymnasium	Piping	Pipe Fitting	Fibreglass	-	Non-ACM	-	-	-	-
230A	Storage	Floor	12"x12" Vinyl Floor Tile	Brown with Dense Fleck	-	Non-ACM	HM	32523-800-Galt-S06	16-Mar-09	ND
230A	Storage	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
230A	Storage	Ceiling	Streel Deck	-	-	Non-ACM	-	-	-	-
230B	Storage	Floor	12"x12" Vinyl Floor Tile	Brown (Post 2008)	-	Non-ACM	-	-	-	-
230B	Storage	Wall	Concrete	-	-	Non-ACM	-	-	-	-
230B	Storage	Ceiling	Steel Deck	-	-	Non-ACM	-	-	-	-
250	Tassie Hall	Wall	Carpet	-	-	Non-ACM	-	-	-	-
250	Tassie Hall	Wall	Concrete	-	-	Non-ACM	-	-	-	-
250	Tassie Hall	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
250	Tassie Hall	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	SL	GCI-250-1x1ACT	20-Mar-07	ND
251	Tassie Hall Stage	Floor	Wood	-	-	Non-ACM	-	-	-	-
251	Tassie Hall Stage	Wall	Concrete	-	-	Non-ACM	-	-	-	-
251	Tassie Hall Stage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
251	Tassie Hall Stage	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	SL	GCI-250-1x1ACT	20-Mar-07	ND
251	Tassie Hall Stage	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
251	Tassie Hall Stage	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
251A	Dressing Room	Floor	Carpet	-	-	Non-ACM	-	-	-	-
251A	Dressing Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
251A	Dressing Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
251A	Dressing Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
251A	Dressing Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
251B	Dressing Room	Floor	Carpet	-	-	Non-ACM	-	-	-	-
251B	Dressing Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
251B	Dressing Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
251B	Dressing Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
251B	Dressing Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
252	Storage	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
252	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
252A	Lobby	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
252A	Lobby	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
252A	Lobby	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
253	Staff Lounge	Floor	Wood	-	-	Non-ACM	-	-	-	-
253	Staff Lounge	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
253	Staff Lounge	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
253	Staff Lounge	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
253	Staff Lounge	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
253A	Lobby	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
253A	Lobby	Wall	Drywall	-	-	Non-ACM	HM	GCI-203-DWC-05	20-Mar-07	ND
253A	Lobby	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
253B	Washroom	Floor	Vinyl Sheet Flooring	Smokey Cloud	-	Non-ACM	HM	32523-800-Galt-S16	16-Mar-09	ND
253B	Washroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-205-DWC-06	20-Mar-07	ND
253B	Washroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-258-WP-04	20-Mar-07	ND
253B	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
254	Staff Room	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
254	Staff Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
254	Staff Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
254	Staff Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
254	Staff Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
254	Staff Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
256	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
256	Washroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-203-DWC-05	20-Mar-07	ND
256	Washroom	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-203-DWC-05	20-Mar-07	ND
257	Washroom	Floor	Vinyl Sheet Flooring	Smokey Cloud	-	Non-ACM	HM	32523-800-Galt-S16	16-Mar-09	ND
257	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
257	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
258	Washroom	Floor	Vinyl Sheet Flooring	Smokey Cloud	-	Non-ACM	HM	32523-800-Galt-S16	16-Mar-09	ND
258	Washroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-205-DWC-06	20-Mar-07	ND
258	Washroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-258-WP-04	20-Mar-07	ND
258	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
259	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
259	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
259	Washroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-259-DWC-07	20-Mar-07	ND
259	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
259	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
260	Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
260	Office	Floor	12"x12" Vinyl Floor Tile	Brown with Dense Fleck	-	Non-ACM	HM	32523-800-Galt-S06	16-Mar-09	ND
260	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
260	Office	Ceiling	2'x2' Ceiling Tile	Textured	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
260	Office	Ceiling	2'x2' Ceiling Tile	Thin Long Fissure	NF	ACM	HM	32523-800-Galt-S14	16-Mar-09	0.5% Amosite, 1.2% Chrysotile
260	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
260	Office	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
260A	Exam Room	Floor	Carpet	-	-	Non-ACM	-	-	-	-
260A	Exam Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
260A	Exam Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
260A	Exam Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
260B	Exam Room	Floor	Carpet	-	-	Non-ACM	-	-	-	-
260B	Exam Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
260B	Exam Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
260B	Exam Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
261	Storage	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
261	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
261	Storage	Ceiling	2'x2' Ceiling Tile	Short Fissure Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
262	First Aid	Floor	Carpet	-	-	Non-ACM	-	-	-	-
262	Nurse	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
262	First Aid	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
262	First Aid	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
262	First Aid	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
263	Exam Room	Floor	Carpet	-	-	Non-ACM	-	-	-	-
263	Exam Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
263	Exam Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
263	Exam Room	Ceiling	2'x2' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
264	Coffee	Floor	Vinyl Sheet Flooring	Light Yellow Cobblestone	-	Non-ACM	SL	32523-800-Galt-S13	16-Mar-09	ND
264	Coffee	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
264	Coffee	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
264	Coffee	Ceiling	2'x2' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
265	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
265	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
265	Washroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
265	Washroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
265	Washroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
266A	Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
266A	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
266A	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
266A	Office	Ceiling	2'x2' Ceiling Tile	Long Thin Fissure	NF	ACM	HM	32523-800-Galt-S14	16-Mar-09	0.5% Amosite, 1.2% Chrysotile
266B	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
266B	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
266B	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
266B	Office	Ceiling	2'x2' Ceiling Tile	Long Thin Fissure	NF	ACM	HM	32523-800-Galt-S14	16-Mar-09	0.5% Amosite, 1.2% Chrysotile
266C	Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
266C	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
266C	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
266C	Office	Ceiling	2'x2' Ceiling Tile	Long Thin Fissure	NF	ACM	HM	32523-800-Galt-S14	16-Mar-09	0.5% Amosite, 1.2% Chrysotile
266C	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile

School Name

Galt Collegiate Institute

Date Built:

Original: 1853

Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986

Legend:

HM - Homogenous Material - homogeneous with previously sampled material
SL - Sample Location - Material Sampled
VC - Visually Confirmed - Material not sampled, deemed ACM
NF - Non-Friable
F- Friable

Notes:

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.

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
266C	Office	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
266D	Classroom	Floor	Carpet	-	-	Non-ACM	-	-	-	-
266D	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
266D	Classroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
266D	Classroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
266D	Classroom	Ceiling	2'x2' Ceiling Tile	Long Thin Fissure	NF	ACM	HM	32523-800-Galt-S14	16-Mar-09	0.5% Amosite, 1.2% Chrysotile
266E	Classroom	Floor	Carpet	-	-	Non-ACM	-	-	-	-
266E	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
266E	Classroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
266E	Classroom	Ceiling	2'x2' Ceiling Tile	Long Thin Fissure	NF	ACM	HM	32523-800-Galt-S14	16-Mar-09	0.5% Amosite, 1.2% Chrysotile
267	Classroom	Floor	Carpet	-	-	Non-ACM	-	-	-	-
267	Classroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
267	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
267	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
267	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
267	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
268A	Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
268A	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
268A	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
268A	Office	Ceiling	2'x2' Ceiling Tile	Long Thin Fissure	NF	ACM	HM	32523-800-Galt-S14	16-Mar-09	0.5% Amosite, 1.2% Chrysotile
268B	Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
268B	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
268B	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
268B	Office	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
268B	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
268B	Office	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
268C	Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
268C	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
268C	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
268C	Office	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
268C	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
268C	Office	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
269	Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
269	Office	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
269	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
269	Office	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
269	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
269	Office	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
269A	Meeting Room	Floor	Carpet	-	-	Non-ACM	-	-	-	-
269A	Meeting Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
269A	Meeting Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
270	Changeroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
270	Changeroom	Wall	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
270	Changeroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
270	Changeroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
270A	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
270A	Washroom	Wall	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
270A	Washroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
270A	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
270B	Instructors	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
270B	Instructors	Wall	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
270B	Instructors	Wall	Concrete	-	-	Non-ACM	-	-	-	-
270B	Instructors	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
270C	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
270C	Washroom	Wall	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
270C	Washroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
270C	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
270D	Stairwell	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
270D	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
270D	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
270D	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-208-CP-01	20-Mar-07	ND
271	Changeroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
271	Changeroom	Wall	Ceramic Tile	-	-	Non-ACM	-	-	-	-
271	Changeroom	Ceiling	Hard Texture Coat	-	NF	ACM	HM	S03	5-Aug-15	1.3% Chrysotile
271	Changeroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
271	Changeroom	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
271A	Instructors	Floor	9"x9" Vinyl Floor Tile	Beige with Thick Brown Streaks	NF	ACM	SL	32523-800-Galt-S15	16-Mar-09	1.1% Chrysotile
271A	Instructors	Wall	Concrete	-	-	Non-ACM	-	-	-	-
271A	Instructors	Ceiling	Hard Texture Coat	-	NF	ACM	HM	S03	5-Aug-15	1.3% Chrysotile
271A	Instructors	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
271B	Shower	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
271B	Shower	Wall	Ceramic Tile	-	-	Non-ACM	-	-	-	-
271B	Shower	Ceiling	Hard Texture Coat	-	NF	ACM	HM	S03	5-Aug-15	1.3% Chrysotile
271C	Washroom	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
271C	Washroom	Wall	Ceramic Tile	-	-	Non-ACM	-	-	-	-
271C	Washroom	Ceiling	Hard Texture Coat	-	NF	ACM	HM	S03	5-Aug-15	1.3% Chrysotile
271D	Access	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
271D	Access	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
271D	Access	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
272	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
272	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
272	Washroom	Ceiling	2'x4' Ceiling Tile	Plain (Post 2007)	-	Non-ACM	-	-	-	-
273	Washroom	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
273	Washroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
273	Washroom	Wall	Ceramic	-	-	Non-ACM	-	-	-	-
273	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
273	Washroom	Ceiling	Hard Texture Coat	-	NF	ACM	HM	S03	5-Aug-15	1.3% Chrysotile
274	Washroom	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
274	Washroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
274	Washroom	Wall	Ceramic	-	-	Non-ACM	-	-	-	-
274	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-275-CP-05	20-Mar-07	ND
274	Washroom	Ceiling	Hard Texture Coat	-	NF	ACM	SL	S03	5-Aug-15	1.3% Chrysotile
275	Washroom	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
275	Washroom	Wall	Concrete	-	-	Non-ACM	-	-	-	-
275	Washroom	Wall	Ceramic	-	-	Non-ACM	-	-	-	-
275	Washroom	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-275-CP-05	20-Mar-07	ND
275	Washroom	Ceiling	Hard Texture Coat	-	NF	ACM	HM	S03	5-Aug-15	1.3% Chrysotile
276	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
276	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
276	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
276A	Shower	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
276A	Shower	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
276A	Shower	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
276B	Shower	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
276B	Shower	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
276B	Shower	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
276C	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
276C	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
276C	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
277	Instructors Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
277	Instructors Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
277	Instructors Office	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
277A	Instructors Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
277A	Instructors Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
277A	Instructors Office	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
277B	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
277B	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
277B	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
277C	Mechanical Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-
277C	Mechanical Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
277C	Mechanical Room	Ceiling	Steel Deck	-	-	Non-ACM	-	-	-	-
277C	Mechanical Room	Piping	Pipe Fittings	Fibreglass	-	Non-ACM	-	-	-	-
278	Changeroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
278	Changeroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
278	Changeroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
278A	Shower	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
278A	Shower	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
278A	Shower	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
278B	Changeroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
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Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
278B	Changeroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
278B	Changeroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
278C	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
278C	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
278C	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
279	Instructors Office	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
279	Instructors Office	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
279	Instructors Office	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
279A	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
279A	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
279A	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
279B	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
279B	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
279B	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
279B	Washroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
279B	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
279B	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
901	Stairwell	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
901	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
901	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
903	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-
903	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
903	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
903	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
903	Stairwell	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
903	Stairwell	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
904	Stairwell	Not Inspected								
905	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
905	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
905	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-207-CP-03	20-Mar-07	ND
909	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-
909	Stairwell	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
909	Stairwell	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	S01ABC	6-May-15	ND
909	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
910	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
910	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND
910	Stairwell	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	GCI-910-CS-01,02,03	20-Mar-07	ND
911	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-
911	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
911	Stairwell	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
912	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
912	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
912	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-214B-CP-06	20-Mar-07	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
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Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
912	Stairwell	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
913	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
913	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
913	Stairwell	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
914	Stairwell	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
914	Stairwell	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
914	Stairwell	Ceiling	Steel Deck	-	-	Non-ACM	-	-	-	-
915	Stairwell	Not Inspected								
916	Stairwell	Not Inspected								
952	Lobby	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
952	Lobby	Wall	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
952	Lobby	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
2085	Stairwell	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
2085	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
2085	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
8201	Corridor	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
8201	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
8201	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
8201	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8201	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
8202	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8202	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
8202	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
8203	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8203	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
8203	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
8204	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8204	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
8204	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
8205	Corridor	Floor	Wood	-	-	Non-ACM	-	-	-	-
8205	Corridor	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
8205	Corridor	Wall	Drywall	-	-	Non-ACM	HM	GCI-203-DWC-05	20-Mar-07	ND
8205	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8205	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-201-CP-02	20-Mar-07	ND
8205	Corridor	Pipe	Piping	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8205	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
8206	Stairwell	Not Inspected								
8206A	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8206A	Corridor	Floor	Drywall	-	-	Non-ACM	SL	GCI-8206A-DWC-01,02,03	20-Mar-07	ND
8206A	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
8206A	Corridor	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-8207-CP-04	20-Mar-07	ND
8206B	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8206B	Corridor	Wall	Concrete	-	-	Non-ACM	-	-	-	-

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
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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
8206B	Corridor	Wall	Plaster	-	-	Non-ACM	SL	GCI-214B-CP-06	20-Mar-07	ND
8206B	Corridor	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	SL	32523-800-Galt-S23	16-Mar-09	ND
8206B	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8206B	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
8207	Corridor	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
8207	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
8207	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8208	Corridor	Floor	Carpet	-	-	Non-ACM	-	-	-	-
8208	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
8208	Corridor	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
8208	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8208	Corridor	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
8209	Corridor	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
8209	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-314-CP-01	20-Mar-07	ND
8209	Corridor	Ceiling	2'x2' Ceiling Tile	Long Thin Fissure	NF	ACM	HM	32523-800-Galt-S14	16-Mar-09	0.5% Amosite, 1.2% Chrysotile
8209	Corridor	Ceiling	2'x2' Ceiling Tile	Short Fissure Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8210	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8210	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
8210	Corridor	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-8211-CS-01,02,03	20-Mar-07	ND
8211	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8211	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
8211	Corridor	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-8211-CS-01,02,03	20-Mar-07	ND
8212	Corridor	Floor	Vinyl Sheet Flooring	Beige Cobblestone	NF	ACM	HM	32523-800-Galt-S01ab	20-Mar-07	3.1 Chrysotile
8212	Corridor	Wall	Concrete	-	-	Non-ACM	-	-	-	-
8212	Corridor	Wall	Brick	-	-	Non-ACM	-	-	-	-
8212	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-208-CP-01	20-Mar-07	ND
8213	Corridor	Floor	Vinyl Sheet Flooring	Beige Cobblestone	NF	ACM	HM	32523-800-Galt-S01ab	20-Mar-07	3.1 Chrysotile
8213	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-208-WP-02	20-Mar-07	ND
8213	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-208-CP-01	20-Mar-07	ND
8214	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8214	Corridor	Floor	Drywall	-	-	Non-ACM	SL	GCI-8206A-DWC-01,02,03	20-Mar-07	ND
8214	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
8214	Corridor	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-8207-CP-04	20-Mar-07	ND
8214	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8214	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
8215	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8215	Corridor	Wall	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8215	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
8216	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8216	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8216	Corridor	Ceiling	2'x4' Ceiling Tile	Texture Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
8216	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8216	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile

School Name	Legend:	Notes:
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8216	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
8217	Corridor	Floor	Vinyl Sheet Flooring	Gold	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8217	Corridor	Floor	Leveling Compound	-	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8217	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8217	Corridor	Ceiling	2'x2' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	SL	GCI-8217,8218-2x2CT	20-Mar-07	ND
8218	Corridor	Floor	Vinyl Sheet Flooring	Gold	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8218	Corridor	Floor	Leveling Compound	-	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8218	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8218	Corridor	Ceiling	2'x2' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	SL	GCI-8217,8218-2x2CT	20-Mar-07	ND
8219	Corridor	Floor	Vinyl Sheet Flooring	Gold	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8219	Corridor	Floor	Leveling Compound	-	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8219	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8219	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
8220	Corridor	Floor	Vinyl Sheet Flooring	Gold	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8220	Corridor	Floor	Leveling Compound	-	-	Non-ACM	HM	32523-800-Galt-S20	16-Mar-09	ND
8220	Corridor	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
8220	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	S04	5-Aug-15	ND
8221	Corridor	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
8221	Corridor	Floor	Drywall	-	-	Non-ACM	SL	GCI-8206A-DWC-01,02,03	20-Mar-07	ND
8221	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-258-WP-04	20-Mar-07	ND
8221	Corridor	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-8207-CP-04	20-Mar-07	ND
8222	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8222	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
8222	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
8223	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8223	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
8223	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-351-WP-01,02	20-Mar-07	ND
Level 3										
301	Classroom	Floor	12"x12" Vinyl Floor Tile	Brown with Dark Brown Fleck	NF	ACM	SL	32523-800-Galt-S08	16-Mar-09	5.0% Chrysotile
301	Classroom	Floor	Leveling Compound	-	-	Non-ACM	SL	32523-800-Galt-S08	16-Mar-09	ND
301	Classroom	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
301	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-302-DWC-04,05,06	20-Mar-07	ND
301	Classroom	Ceiling	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
301	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
301A	Classroom	Floor	12"x12" Vinyl Floor Tile	Grey (Post 2007)	-	Non-ACM	-	-	-	-
301A	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
301A	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
301A	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
301A	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
301A	Classroom	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
302	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	S02	16-Mar-09	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
302	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-302-DWC-07,08,09	20-Mar-07	ND
302	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
302	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
302	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
302	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
302A	Storage	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	S02	16-Mar-09	ND
302A	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
302A	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
303	Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
303	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
303	Office	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
303	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
303	Office	Above Ceiling	Firespray	-	-	Non-ACM	SL	GCI-305-FS-01,02,03	20-Mar-07	ND
303A	Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
303A	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
303A	Office	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
303A	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
303A	Office	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
303A	Office	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
304	Prep Area	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
304	Prep Area	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
304	Prep Area	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
304	Prep Area	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
304	Prep Area	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
304A	Storage	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	S02	16-Mar-09	ND
304A	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
304A	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
305	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
305	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
305	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
305	Classroom	Ceiling	2'x4' Ceiling Tile	Long Fissure Random Pinhole	-	Non-ACM	SL	GCI-350-4x2CT	20-Mar-07	ND
306	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
306	Office	Wall	Hard Texture Coat	-	-	Non-ACM	HM	S03ABC	14-Nov-18	ND
306	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
306	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
306	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
306	Office	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
306A	Corridor	Floor	Wood	-	-	Non-ACM	-	-	-	-
306A	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
306A	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
306B	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
306B	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
306B	Washroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-302-DWC-07,08,09	20-Mar-07	ND
306B	Washroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
306C	Storage	Floor	Wood	-	-	Non-ACM	-	-	-	-
306C	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
306C	Storage	Wall	Hard Texture Coat	-	-	Non-ACM	SL	S03ABC	14-Nov-18	ND
306C	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
307	Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
307	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
307	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
307	Office	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
308	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
308	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
308	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
308	Classroom	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
308	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
308	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
309	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
309	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-311-CP-06	20-Mar-07	ND
309	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
309	Classroom	Ceiling	Plaster	-	-		SL	GCI-309-CP07	20-Mar-07	ND
309	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
309	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
310	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
310	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-310-WP-01	20-Mar-07	ND
310	Classroom	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-317-CP-03	20-Mar-07	ND
310	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
310	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
310	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
311	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
311	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-311-WP-06	20-Mar-07	ND
311	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
311	Classroom	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-311-CP-06	20-Mar-07	ND
311	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
311	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
312	Office	Floor	Wood	-	-	Non-ACM	-	-	-	-
312	Office	Wall	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
312	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
312	Office	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
312	Office	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
313	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
313	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-313-WP-03	20-Mar-07	ND
313	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
313	Classroom	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-313-CP-05	20-Mar-07	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
313	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
313	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
314	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
314	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-314-WP-05, 07	20-Mar-07	ND
314	Classroom	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-314-CP-01,02	20-Mar-07	ND
314	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
315	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
315	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-313-WP-03	20-Mar-07	ND
315	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
315	Classroom	Ceiling	Plaster		-	Non-ACM	HM	GCI-313-WP-03	20-Mar-07	ND
316	Custodial Office	Floor	Carpet	-	-	Non-ACM	-	-	-	-
316	Custodial Office	Wall	Plaster	-	-	Non-ACM	SL	GCI-356-WP-04	20-Mar-07	ND
316	Custodial Office	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-356-CP-01	20-Mar-07	ND
316A	Custodial Office	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
316A	Custodial Office	Wall	Plaster	-	-	Non-ACM	SL	GCI-356-WP-04	20-Mar-07	ND
316A	Custodial Office	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-356-CP-01	20-Mar-07	ND
317	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
317	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-317-WP-02	20-Mar-07	ND
317	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
317	Classroom	Ceiling	Plaster	-	-	Non-ACM	SL	GCI-317-CP-04	20-Mar-07	ND
317	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
317	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
317A	Corridor	Floor	Wood	-	-	Non-ACM	-	-	-	-
317A	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-313-WP-03	20-Mar-07	ND
317A	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
317A	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-313-WP-03	20-Mar-07	ND
318	Classroom	Floor	Carpet	-	-	Non-ACM	-	-	-	-
318	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-316-DWC-01,02,03	20-Mar-07	ND
318	Classroom	Wall	Brick	-	-	Non-ACM	-	-	-	-
318	Classroom	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
318	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
318	Classroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
318	Classroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
318A	Storage	Floor	12"x12" Vinyl Floor Tile	Grey Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
318A	Storage	Wall	Drywall	-	-	Non-ACM	HM	GCI-316-DWC-01,02,03	20-Mar-07	ND
318A	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
318A	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
350	Dressing Room	Floor	Carpet	-	-	Non-ACM	-	-	-	-
350	Dressing Room	Wall	Plaster	-	-	Non-ACM	SL	S01	20-Mar-15	ND
350	Dressing Room	Ceiling	Plaster	-	-	Non-ACM	HM	S01	20-Mar-15	ND
350	Dressing Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
350	Dressing Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
350A	Washroom	Floor	12"x12" Vinyl Floor Tile	Blue Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built: Original: 1853 Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		**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
350A	Washroom	Wall	Plaster	-	-	Non-ACM	SL	S01	20-Mar-15	ND
350A	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	S01	20-Mar-15	ND
350A	Washroom	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
350A	Washroom	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
351	Roof Space Access	Floor	Concrete	-	-	Non-ACM	-	-	-	-
351	Roof Space Access	Wall	Plaster	-	-	Non-ACM	SL	GCI-351-WP-01,02	20-Mar-07	ND
351	Roof Space Access	Wall	Fireproofing	-	-	Non-ACM	SL	S02	20-Mar-15	ND
351	Roof Space Access	Ceiling	Wood	-	-	Non-ACM	-	-	-	-
351	Roof Space Access	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	GCI-351-CS-01,02,03	20-Mar-07	ND
351	Roof Space Access	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
351	Roof Space Access	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
351A	Projector Room	Floor	Wood	-	-	Non-ACM	-	-	-	-
351A	Projector Room	Wall	Plaster	-	-	Non-ACM	HM	S01	20-Mar-15	ND
351A	Projector Room	Ceiling	Plaster	-	-	Non-ACM	HM	S01	20-Mar-15	ND
351B	Roof Space Access	Floor	Concrete	-	-	Non-ACM	-	-	-	-
351B	Roof Space Access	Wall	Plaster	-	-	Non-ACM	SL	GCI-351-WP-01,02	20-Mar-07	ND
351B	Roof Space Access	Wall	Fireproofing	-	-	Non-ACM	SL	S02	20-Mar-15	ND
351B	Roof Space Access	Ceiling	Wood	-	-	Non-ACM	-	-	-	-
351B	Roof Space Access	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	GCI-351-CS-01,02,03	20-Mar-07	ND
352	Custodial	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
352	Custodial	Wall	Plaster	-						
352	Custodial	Wall	Drywall	-	-	Non-ACM	HM	GCI-302-DWC-04,05,06	20-Mar-07	ND
352	Custodial	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
355	Storage	Floor	12"x12" Vinyl Floor Tile	Crème with Long Brown Streaks	-	Non-ACM	HM	32523-800-Galt-S09	16-Mar-09	ND
355	Storage	Wall	Hard Texture Coat	-	-	Non-ACM	HM	GCI-3rdFL-Stair-903-CS-01,02,03	20-Mar-07	ND
355	Storage	Ceiling	Wood	-	-	Non-ACM	-	-	-	-
355	Storage	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
357	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
357	Washroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
357	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
358	Mechanical Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-
358	Mechanical Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
358	Mechanical Room	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
358	Mechanical Room	Piping	Pipe Fittings	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
358	Mechanical Room	Piping	Pipe Insulation	-	F	ACM	HM	005 Straight Pipe Insulation, Boy's Washroom 505	26-Oct-90	25-50% Chrysotile
358	Mechanical Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
358	Mechanical Room	Ducting	Duct Expansion Joint	-	NF	ACM	VC	-	-	-
359	Mechanical Room	Floor	Concrete	-	-	Non-ACM	-	-	-	-
359	Mechanical Room	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
359	Mechanical Room	Ceiling	Concrete	-	-	Non-ACM	-	-	-	-
359	Mechanical Room	Piping	Pipe Fittings	Fibreglass	-	Non-ACM	-	-	-	-
901	Stairwell	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
901	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built:		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**
Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
901	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
901	Stairwell	Piping	Pipe Fittings	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
901	Stairwell	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
902	Emergency Exit Stairwell	Not Inspected								
903	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-
903	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
903	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
903	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-153-WP-01,02,03	20-Mar-07	ND
905	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
905	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
905	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
907	Stairwell	Floor	Vinyl Sheet Flooring	Beige Cobblestone	NF	ACM	HM	32523-800-Galt-S01a	16-Mar-09	3.1% Chrysotile
907	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
907	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
907	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
907	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
908	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-
908	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
908	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
909	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-
909	Stairwell	Wall	Hard Texture Coat	-	-	Non-ACM	SL	GCI-313-CP-05	20-Mar-07	ND
909	Stairwell	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
909	Stairwell	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	GCI-313-CP-05	20-Mar-07	ND
909	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-313-WP-03	20-Mar-07	ND
909	Stairwell	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
909	Stairwell	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
910	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
910	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
910	Stairwell	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	GCI-910-CS-01,02,03	20-Mar-07	ND
911	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-
911	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
911	Stairwell	Ceiling	Steel Deck	-	-	Non-ACM	-	-	-	-
914	Stairwell	Floor	Concrete	-	-	Non-ACM	-	-	-	-
914	Stairwell	Wall	Concrete	-	-	Non-ACM	-	-	-	-
914	Stairwell	Ceiling	Steel Deck	-	-	Non-ACM	-	-	-	-
8301	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8301	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
8301	Corridor	Ceiling	Hard Texture Coat	-	-	Non-ACM	HM	GCI-351-CS-01,02,03	20-Mar-07	ND
8301	Corridor	Ceiling	1'x1' Ceiling Tile	Medium and Small Pinhole (Cellulose)	-	Non-ACM	-	-	-	-
8302	Corridor	Floor	Vinyl Sheet Flooring	Beige Cobblestone	NF	ACM	HM	32523-800-Galt-S01a	16-Mar-09	3.1% Chrysotile
8302	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
8302	Corridor	Wall	Hard Texture Coat	-	-	Non-ACM	HM	GCI-351-CS-01,02,03	20-Mar-07	ND
8302	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8302	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8302	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-

	School Name		**Legend:**					**Notes:**			
	Galt Collegiate Institute		**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable					**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**			
	Date Built:							**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**			
	Original: 1853										
	Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986										

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
8304	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8304	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
8304	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
8304	Corridor	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	GCI-3rdFL-Stair-903-CS-01,02,03	20-Mar-07	ND
8304	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8304A	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
8304A	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
8304A	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8207-CP-04	20-Mar-07	ND
8304A	Corridor	Ceiling	Hard Texture Coat	-	-	Non-ACM	SL	GCI-3rdFL-Stair-903-CS-01,02,03	20-Mar-07	ND
8304A	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8305	Corridor	Floor	12"x12" Vinyl Floor Tile	Crème with Long Brown Streaks	-	Non-ACM	SL	32523-800-Galt-S09	16-Mar-09	ND
8305	Corridor	Wall	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
8305	Corridor	Wall	Hard Texture Coat	-	-	Non-ACM	HM	GCI-3rdFL-Stair-903-CS-01,02,03	20-Mar-07	ND
8305	Corridor	Ceiling	Plaster	-	NF	ACM	HM	S02	14-Sep-17	1% Chrysotile
8305	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8306	Corridor	Floor	12"x12" Vinyl Floor Tile	Light Beige Dense Fleck (Post 2007)	-	Non-ACM	-	-	-	-
8306	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-311-CP-06	20-Mar-07	ND
8306	Corridor	Wall	Concrete	-	-	Non-ACM	-	-	-	-
8306	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-311-CP-06	20-Mar-07	ND
8306	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8306	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
8307	Corridor	Floor	Vinyl Sheet Flooring	Beige Cobblestone	NF	ACM	HM	32523-800-Galt-S01a	16-Mar-09	3.1% Chrysotile
8307	Corridor	Floor	Mastic	-	-	Non-ACM	SL	32523-800-Galt-S01a	16-Mar-09	ND
8307	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-313-WP-03	20-Mar-07	ND
8307	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8307	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-313-WP-03	20-Mar-07	ND
8307	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8307	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
8308	Corridor	Floor	Wood	-	-	Non-ACM	-	-	-	-
8308	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-313-WP-03	20-Mar-07	ND
8308	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-313-WP-03	20-Mar-07	ND
8308	Corridor	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8308	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
8309	Corridor	Floor	Vinyl Sheet Flooring	Beige Cobblestone	NF	ACM	HM	32523-800-Galt-S01a	16-Mar-09	3.1% Chrysotile
8309	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-356-WP-04	20-Mar-07	ND
8309	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8309	Corridor	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
8309	Corridor	Piping	Pipe Fittings	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
8309	Corridor	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
Level 4										
401	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
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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
401	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-401-WP-06	20-Mar-07	ND
401	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-401-DWC-04	20-Mar-07	ND
401	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
401	Classroom	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-401-DWC-04	20-Mar-07	ND
401A	Storage	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
401A	Storage	Wall	Plaster	-	-	Non-ACM	SL	GCI-401A-WP-07	20-Mar-07	ND
401A	Storage	Wall	Texture Coat	-	-	Non-ACM	HM	S03ABC	14-Nov-18	ND
401A	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
401B	Storage	Floor	Wood	-	-	Non-ACM	-	-	-	-
401B	Storage	Wall	Plaster	-	-	Non-ACM	SL	GCI-401-WP-06	20-Mar-07	ND
401B	Storage	Wall	Drywall	-	-	Non-ACM	SL	GCI-401-DWC-04	20-Mar-07	ND
401B	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
401C	Storage	Floor	Wood	-	-	Non-ACM	-	-	-	-
401C	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
401C	Storage	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
401C	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
402	Classroom	Floor	12"x12" Vinyl Floor Tile	Dense Fleck (Post 2009)	-	Non-ACM	-	-	-	-
402	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
402	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
402A	Dark Room	Floor	Wood	-	-	Non-ACM	-	-	-	-
402A	Dark Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
402A	Dark Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-401-DWC-04	20-Mar-07	ND
402A	Dark Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
402A	Dark Room	Piping	Pipe Fitting	Parged Cement	F	ACM	HM	003 Typical Elbow, Boiler Room	26-Oct-90	50-75% Chrysotile
402A	Dark Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
402AB	Dark Room	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	S02ABC	16-Mar-09	ND
402AB	Dark Room	Wall	Drywall	-	-	Non-ACM	HM	GCI-401-DWC-04	20-Mar-07	ND
402AB	Dark Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
402AB	Dark Room	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
402AC	Classroom	Floor	12"x12" Vinyl Floor Tile	Dense Fleck (Post 2009)	-	Non-ACM	-	-	-	-
402AC	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
402AC	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
403	Art Prep Room	Floor	12"x12" Vinyl Floor Tile	Beige with Brown and White Fleck	NF	ACM	HM	32523-800-Galt-S03	16-Mar-09	2.3% Chrysotile
403	Art Prep Room	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
403	Art Prep Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
403	Art Prep Room	Piping	Transite Pipe	-	NF	ACM	VC	-	-	-
403	Art Prep Room	Piping	Pipe Insulation	Fibreglass	-	Non-ACM	-	-	-	-
403A	Kiln Room	Floor	12"x12" Vinyl Floor Tile	Beige with Brown and White Fleck	NF	ACM	HM	32523-800-Galt-S03	16-Mar-09	2.3% Chrysotile
403A	Kiln Room	Mastic	Mastic	-	-	Non-ACM	HM	32523-800-Galt-S03	16-Mar-09	ND
403A	Kiln Room	Floor	Brick	Refractory Brick	-	Non-ACM	-	-	-	-
403A	Kiln Room	Wall	Plaster	-	-	Non-ACM	SL	GCI-405-WP-04	20-Mar-07	ND
403A	Kiln Room	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
403A	Kiln Room	Ceiling	Transite Paneling	-	NF	ACM	VC	-	-	-

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
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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
404	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
404	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-404-WP-01,02,03	20-Mar-07	ND
404	Classroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-401-DWC-04	20-Mar-07	ND
404	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
404	Classroom	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-401-DWC-04	20-Mar-07	ND
405	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
405	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
405	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-405-DWC-03	20-Mar-07	ND
405	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
405	Classroom	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-405-DWC-03	20-Mar-07	ND
406	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
406	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
406	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
406A	Office	Floor	Wood	-	-	Non-ACM	-	-	-	-
406A	Office	Wall	Plaster	-	-	Non-ACM	SL	GCI-406A-WP-01	20-Mar-07	ND
406A	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
407	Classroom	Floor	12"x12" Vinyl Floor Tile	Brown with Dense Fleck	-	Non-ACM	SL	32523-800-Galt-S06	16-Mar-09	ND
407	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-407-WP-03	20-Mar-07	ND
407	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-407-DWC-03	20-Mar-07	ND
407	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
407A	Storage	Floor	12"x12" Vinyl Floor Tile	Brown with Dense Fleck	-	Non-ACM	HM	32523-800-Galt-S06	16-Mar-09	ND
407A	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-409-WP-04	20-Mar-07	ND
407A	Storage	Wall	Drywall	-	-	Non-ACM	HM	GCI-409-DWC-04	20-Mar-07	ND
407A	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
407B	Laundry	Floor	12"x12" Vinyl Floor Tile	Brown with Dense Fleck	-	Non-ACM	HM	32523-800-Galt-S06	16-Mar-09	ND
407B	Laundry	Wall	Plaster	-	-	Non-ACM	HM	GCI-409-WP-04	20-Mar-07	ND
407B	Laundry	Wall	Drywall	-	-	Non-ACM	HM	GCI-409-DWC-04	20-Mar-07	ND
407B	Laundry	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
407C	Kitchen	Floor	12"x12" Vinyl Floor Tile	Brown with Dense Fleck	-	Non-ACM	HM	32523-800-Galt-S06	16-Mar-09	ND
407C	Kitchen	Wall	Plaster	-	-	Non-ACM	HM	GCI-409-WP-04	20-Mar-07	ND
407C	Kitchen	Wall	Drywall	-	-	Non-ACM	HM	GCI-409-DWC-04	20-Mar-07	ND
407C	Kitchen	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
408	Classroom	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
408	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
408	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
408A	Storage	Floor	12"x12" Vinyl Floor Tile	Beige Dense Fleck	-	Non-ACM	HM	GCI-102-12x12FT	16-Mar-09	ND
408A	Storage	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
408A	Storage	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
409	Classroom	Floor	9"x9" Vinyl Floor Tile	Beige with Brown and White Fleck	NF	ACM	SL	32523-800-Galt-S07	16-Mar-09	2.8% Chrysotile
409	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-409-WP-04	20-Mar-07	ND
409	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-409-DWC-04	20-Mar-07	ND
409	Classroom	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
409	Classroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-409-WP-04	20-Mar-07	ND

School Name	Legend:	Notes:
Galt Collegiate Institute	**HM -** Homogenous Material - homogeneous with previously sampled material **SL** - Sample Location - Material Sampled **VC** - Visually Confirmed - Material not sampled, deemed ACM **NF** - Non-Friable **F**- Friable	**All quantities provided on Figures, if known. Refer to the Asbestos Audit Update Report for condition of ACM and recommended actions.**
Date Built: Original: 1853 Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		**Dates provided in Material Description/Room Description columns indicates date of installation/renovation and confirms the finishes as non-ACM.**

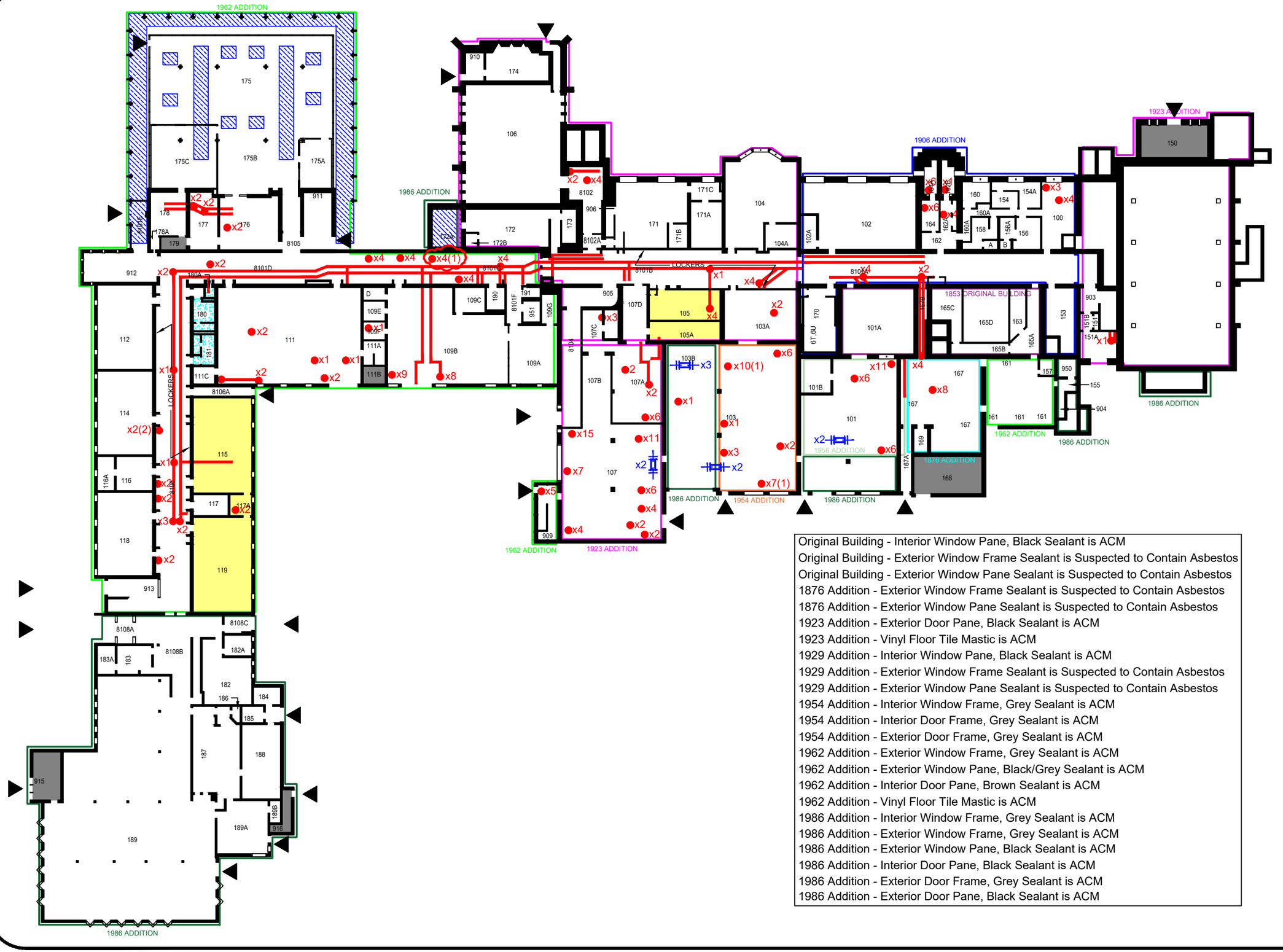
WRDSB Fixed Reference Number	Room Description	Inspected Item	Inspected Material	Material Description	Friability	Asbestos Classification	Sample / Identification Summary	Sample ID	Sample Date	% Asbestos & Fibre Type
409	Classroom	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-409-DWC-04	20-Mar-07	ND
410	Language	Floor	Carpet	-	-	Non-ACM	-	-	-	-
410	Language	Wall	Plaster	-	-	Non-ACM	SL	GCI-410-WP-02	20-Mar-07	ND
410	Language	Wall	Drywall	-	-	Non-ACM	SL	GCI-453-DWC-01,02,03	20-Mar-07	ND
410	Language	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
412	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
412	Classroom	Wall	Plaster	-	-	Non-ACM	HM	GCI-414-WP-07	20-Mar-07	ND
412	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-412-DWC-07	20-Mar-07	ND
412	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
412	Classroom	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
414	Classroom	Floor	Wood	-	-	Non-ACM	-	-	-	-
414	Classroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-414-WP-07	20-Mar-07	ND
414	Classroom	Wall	Drywall	-	-	Non-ACM	SL	GCI-414-DWC-06	20-Mar-07	ND
414	Classroom	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
414	Classroom	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
416	Office	Floor	Wood	-	-	Non-ACM	-	-	-	-
416	Office	Wall	Plaster	-	-	Non-ACM	SL	GCI-416-WP-06	20-Mar-07	ND
416	Office	Wall	Drywall	-	-	Non-ACM	SL	GCI-416-DWC-05	20-Mar-07	ND
416	Office	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
452	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
452	Washroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-452-WP-03	20-Mar-07	ND
452	Washroom	Wall	Drywall	-	-	Non-ACM	HM	GCI-405-DWC-03	20-Mar-07	ND
452	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
453	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
453	Washroom	Wall	Drywall	-	-	Non-ACM	-	-	-	-
453	Washroom	Wall	Plaster	-	-	Non-ACM	-	-	-	-
453	Washroom	Ceiling	2'x4' Ceiling Tile	Flat (Post 2007)	-	Non-ACM	-	-	-	-
454	Washroom	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
454	Washroom	Wall	Concrete Block	-	-	Non-ACM	-	-	-	-
454	Washroom	Wall	Plaster	-	-	Non-ACM	SL	GCI-454-WP-05	20-Mar-07	ND
454	Washroom	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-414-WP-07	20-Mar-07	ND
454	Washroom	Pyroblock	Pyroblock	-	-	Non-ACM	SL	GCI-454-PB	20-Mar-07	ND
455	Custodial	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
455	Custodial	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
455	Custodial	Wall	Drywall	-	-	Non-ACM	HM	GCI-401-DWC-04	20-Mar-07	ND
455	Custodial	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-401-DWC-04	20-Mar-07	ND
903	Stairwell	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-
903	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
903	Stairwell	Ceiling	Hard Texture Coat	-	-	Non-ACM	HM	GCI-172-HardStucco	20-Mar-07	ND
905	Stairwell	Floor	Terrazzo	-	-	Non-ACM	-	-	-	-
905	Stairwell	Wall	Plaster	-	-	Non-ACM	HM	GCI-409-WP-04	20-Mar-07	ND
905	Stairwell	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-409-WP-04	20-Mar-07	ND
8401	Corridor	Floor	Ceramic Tile	-	-	Non-ACM	-	-	-	-

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Original: 1853		
Addition(s): 1876, 1906, 1923, 1929, 1954, 1956, 1962, 1986		

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
8401	Corridor	Wall	Plaster	-	-	Non-ACM	SL	GCI-455-WP-07	20-Mar-07	ND
8401	Corridor	Wall	Drywall	-	-	Non-ACM	HM	GCI-401-DWC-04	20-Mar-07	ND
8401	Corridor	Ceiling	Plaster	-	-	Non-ACM	HM	GCI-8405-WP-05	20-Mar-07	ND
8401	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8404	Corridor	Floor	Vinyl Sheet Flooring	Beige Cobblestone	NF	ACM	SL	32523-800-Galt-S01a	16-Mar-09	3.1% Chrysotile
8404	Corridor	Wall	Plaster	-	-	Non-ACM	SL	GCI-8404N-WP-01, 02	20-Mar-07	ND
8404	Corridor	Wall	Drywall	-	-	Non-ACM	SL	GCI-8404N-DWC-01, 02	20-Mar-07	ND
8404	Corridor	Ceiling	2'x4' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
8404	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8405	Corridor	Floor	12"x12" Vinyl Floor Tile	Beige with Brown and White Fleck	NF	ACM	SL	32523-800-Galt-S03	16-Mar-09	2.3% Chrysotile
8405	Corridor	Wall	Plaster	-	-	Non-ACM	SL	GCI-8405-WP-05	20-Mar-07	ND
8405	Corridor	Wall	Drywall	-	-	Non-ACM	HM	GCI-401-DWC-04	20-Mar-07	ND
8405	Corridor	Wall	Hard Texture Coat	-	-	Non-ACM	HM	S03ABC	14-Nov-18	ND
8405	Corridor	Ceiling	2'x2' Ceiling Tile	Textured Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S23	16-Mar-09	ND
8406	Corridor	Floor	Wood	-	-	Non-ACM	-	-	-	-
8406	Corridor	Wall	Plaster	-	-	Non-ACM	HM	GCI-414-WP-07	20-Mar-07	ND
8406	Corridor	Wall	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
8406	Corridor	Ceiling	2'x4' Ceiling Tile	Short Fissure Random Pinhole	-	Non-ACM	HM	32523-800-Galt-S17	16-Mar-09	ND
8406	Corridor	Ceiling	Drywall	-	-	Non-ACM	HM	GCI-412-DWC-07	20-Mar-07	ND
Summary of Potential ACM Hidden or Not Assessed										
	Throughout Building	Not Inspected	Not Inspected	Wall Cavity Insulation						
	Throughout Building	Not Inspected	Not Inspected	Door Core Insulation						

Appendix B

Figures



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1962 Addition - Interior Door Pane, Brown Sealant is ACM
1962 Addition - Vinyl Floor Tile Mastic is ACM
1986 Addition - Interior Window Frame, Grey Sealant is ACM
1986 Addition - Exterior Window Frame, Grey Sealant is ACM
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1986 Addition - Interior Door Pane, Black Sealant is ACM
1986 Addition - Exterior Door Frame, Grey Sealant is ACM
1986 Addition - Exterior Door Pane, Black Sealant is ACM

NOTES:

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Legend

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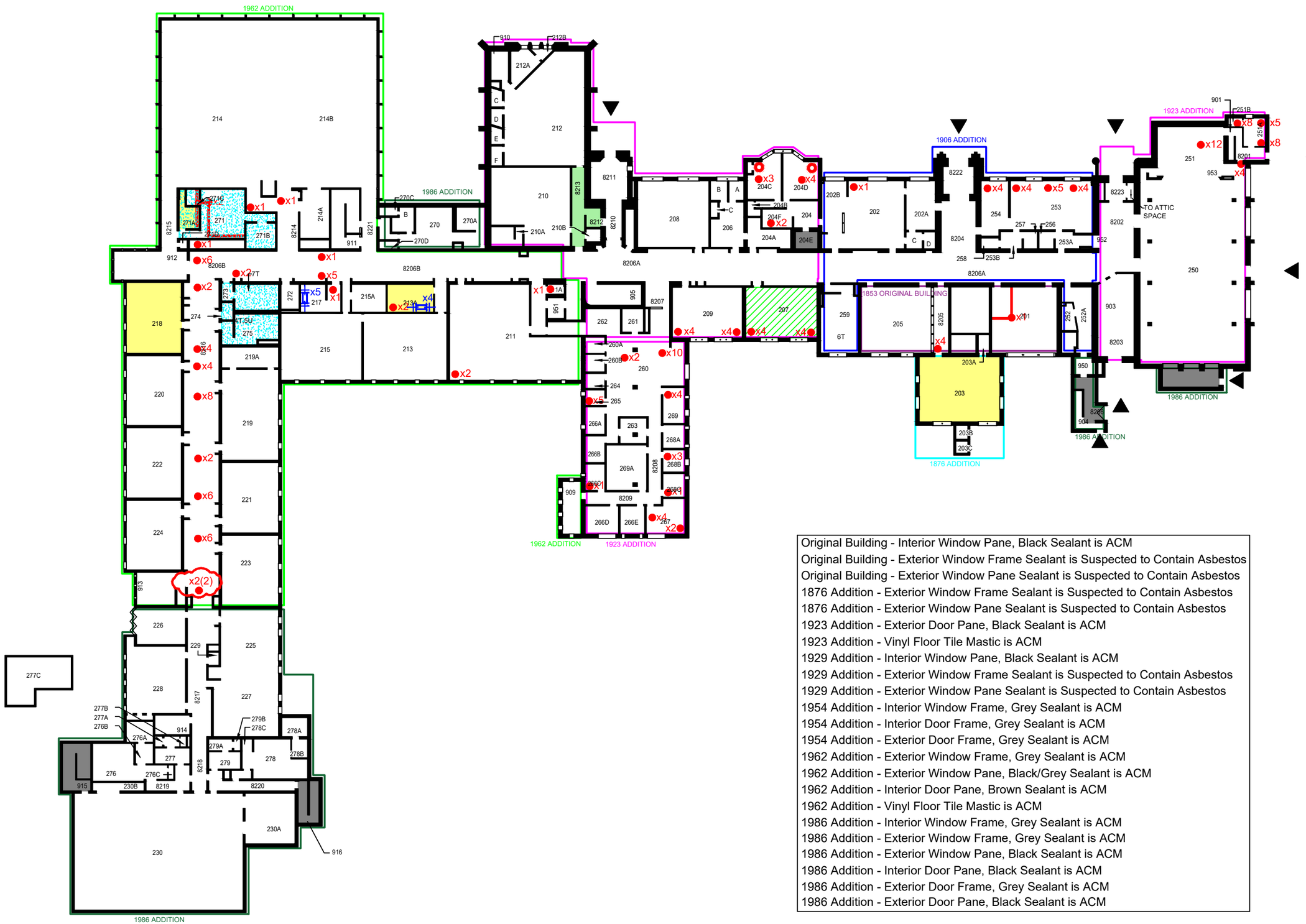
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PROJECT
2024 ASBESTOS AUDIT UPDATE

DRAWING
GALT COLLEGIATE INSTITUTE

FIRST FLOOR

Project Manager: P. Semeniuk	Date: JANUARY 2024
Design By: WRDSB	Project No.: 34532-944
Drawn By: S-P. Lemieux	Drawing No.: 1.0
Scale: N.T.S.	



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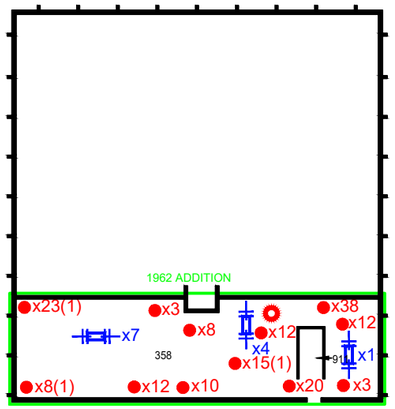
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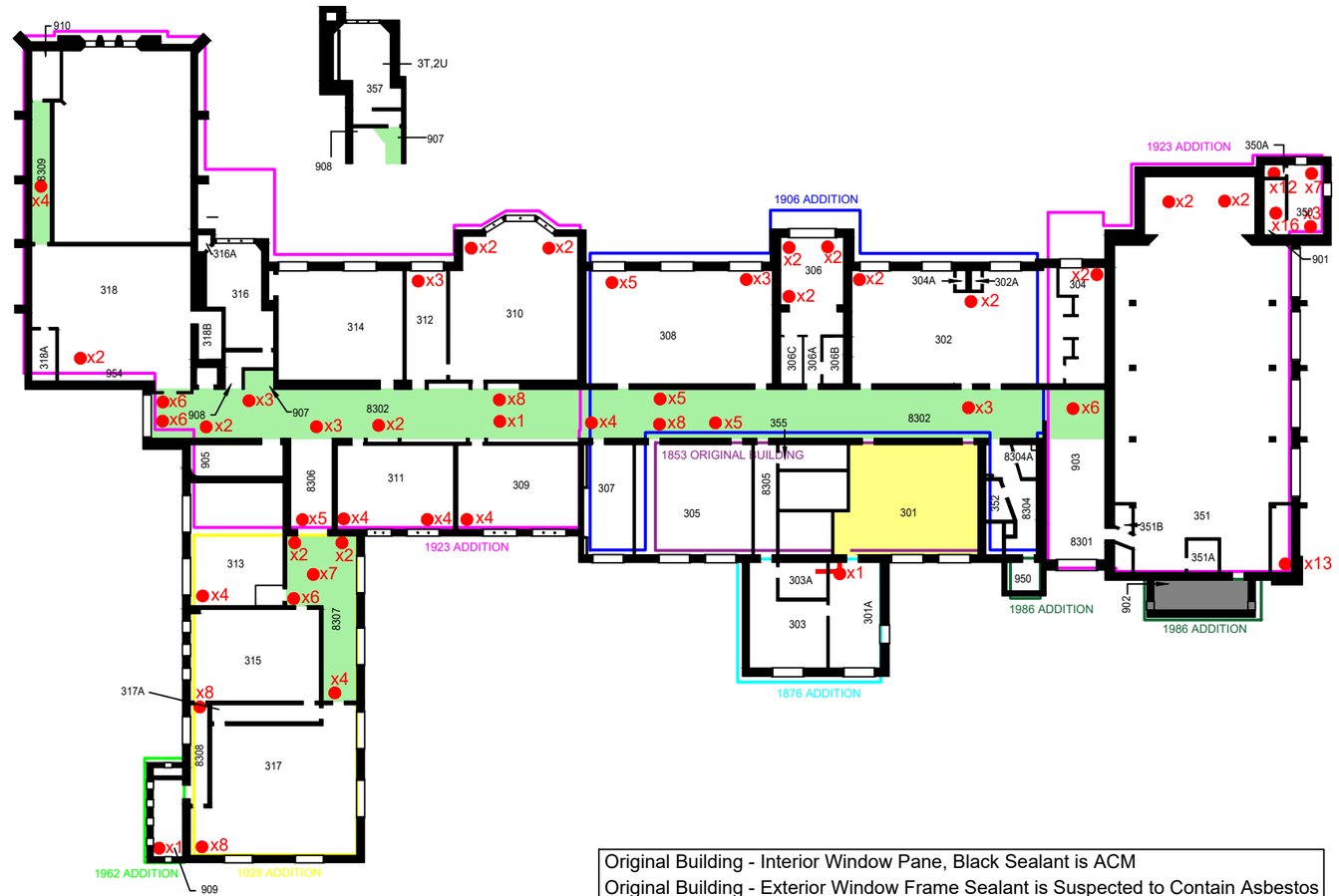
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2024 ASBESTOS AUDIT UPDATE

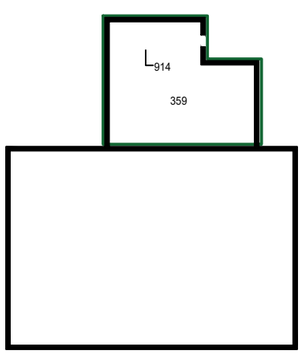
DRAWING
GALT COLLEGIATE INSTITUTE

SECOND FLOOR

Project Manager: P. Semeniuk	Date: JANUARY 2024
Design By: WRDSB	Project No.: 34532-944
Drawn By: S-P. Lemieux	Drawing No.: 2.0
Scale: N.T.S.	







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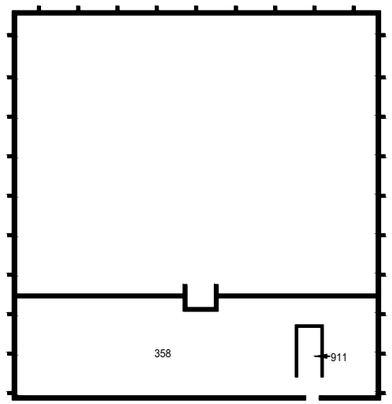
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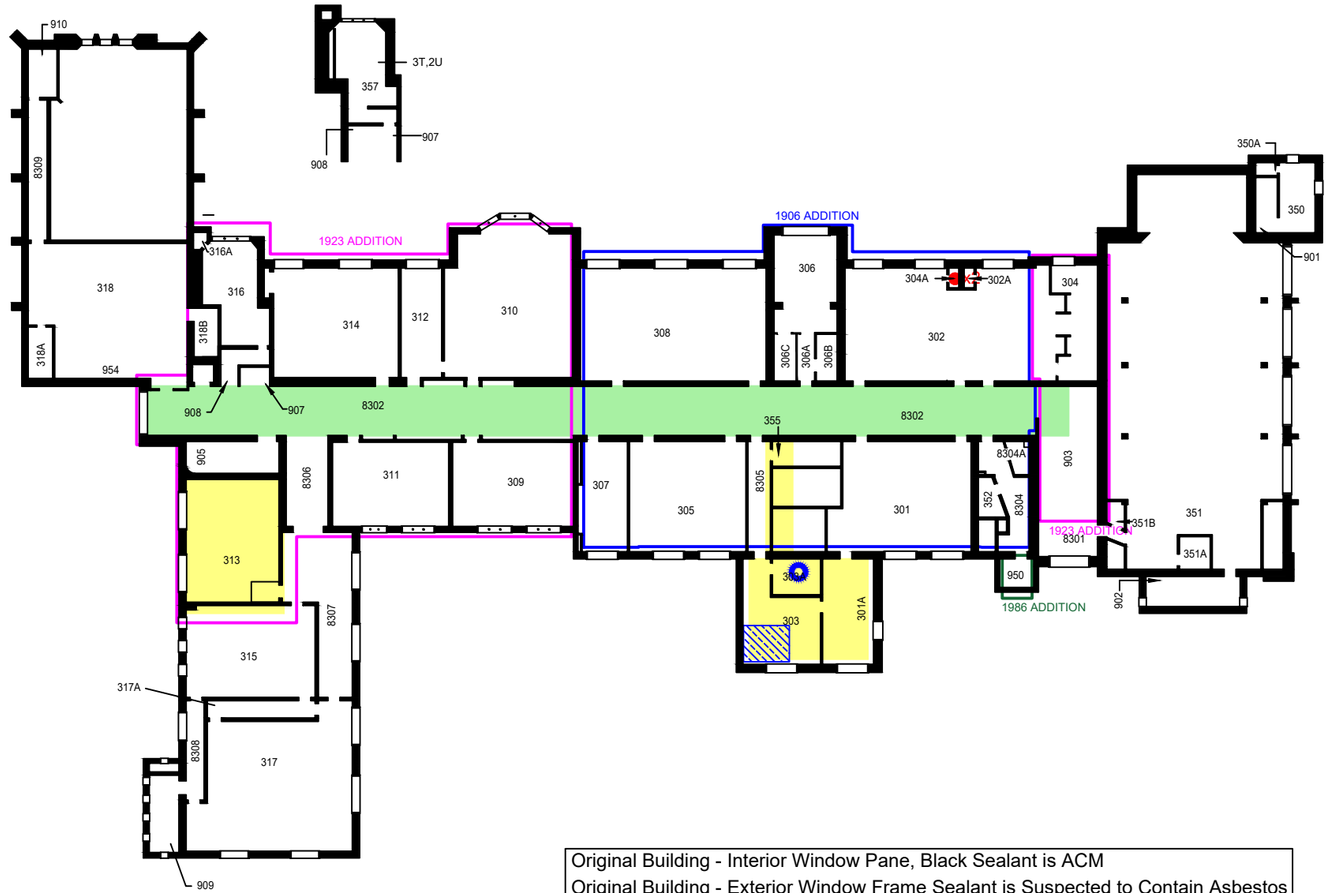
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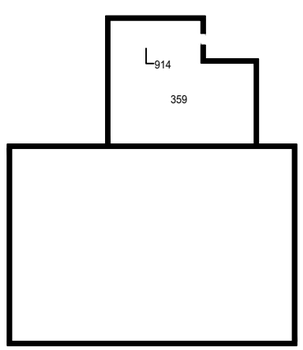
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GALT COLLEGIATE INSTITUTE

THIRD FLOOR

Project Manager: P. Semeniuk	Date: JANUARY 2024
Design By: WRDSB	Project No.: 34532-944
Drawn By: S-P. Lemieux	Drawing No.: 3.0
Scale: N.T.S.	







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PROJECT
2024 ASBESTOS AUDIT UPDATE

DRAWING
GALT COLLEGIATE INSTITUTE

FOURTH FLOOR

Project Manager: P. Semeniuk	Date: JANUARY 2024
Design By: WRDSB	Project No.: 34532-944
Drawn By: S-P. Lemieux	Drawing No.: 4.0
Scale: N.T.S.	

Appendix C

Tables

TABLE 1 - INTERNAL ABATEMENT MANAGEMENT						
Galt Collegiate Institute						
Material	**WRDSB Fixed Reference Number**	**Material Description**	**Approximate Quantity**	**Photograph - Context**	**Photograph - Detail**	**Required Action**
Asbestos Non-Friable	117A	9" x 9" Green Floor Tile and exposed mastic	Throughout			Repair/Removal in accordance with O. Reg. 278/05 as a Type 1 Operation
Asbestos Non-Friable	119	9" x 9" Green Floor Tile	2 Tiles			Monitor Annually
Abestos Friable	Throughout above ceiling	Pipe Fittings - Fittings Throughout Building are unjacketed and are or have the potential to Fail/Fall	Throughout ceiling space			It is recommended that unjacketed fittings be removed throughout the building, as they are failing and have a high potential to create a hazardous condition when this occurs. See Table 2 - Location 8101C for an example of a failed fitting with debris.
Asbestos Non-Friable	203	12"x12" Tan with Brown Floor Tile	<1m^2			Monitor Annually
Asbestos Non-Friable	8205	12"x12" Tan with Brown Floor Tile	<1m^2			Monitor Annually

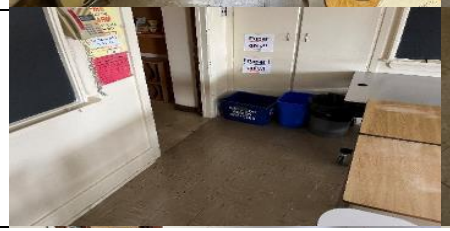
TABLE 1 - INTERNAL ABATEMENT MANAGEMENT						
Galt Collegiate Institute						
Material	**WRDSB Fixed Reference Number**	**Material Description**	**Approximate Quantity**	**Photograph - Context**	**Photograph - Detail**	**Required Action**
Asbestos Non-Friable	213A	Floor Tile Mastic	<1m^2			Repair/Removal in accordance with O. Reg. 278/05 as a Type 1 Operation
Asbestos Non-Friable	301	12"x12" Tan with Brown Floor Tile Tile is lifting cracking and failing throughout the room	Throughout			Removal in accordance with O. Reg. 278/05 as a Type 1 Operation
Asbestos Non-Friable	403A - kiln	Transite Panel	<0.5 m^2			Monitor Annually
Asbestos Non-Friable	403	12"x12" Beige with Brown Floor Tile	3 Tiles			Monitor Annually
Asbestos Non-Friable	409	9"x9" Beige with Brown Floor Tile	3 Tiles			Monitor Annually

TABLE 1 - INTERNAL ABATEMENT MANAGEMENT						
Galt Collegiate Institute						
Material	**WRDSB Fixed Reference Number**	**Material Description**	**Approximate Quantity**	**Photograph - Context**	**Photograph - Detail**	**Required Action**
Asbestos Non-Friable	8302	Vinyl Sheet Flooring - Beige Pebble Pattern	<1m^2			Monitor Annually
Asbestos Non-Friable	8307	Vinyl Sheet Flooring - Beige Pebble Pattern	<1m^2			Monitor Annually
Asbestos Non-Friable	8404	Vinyl Sheet Flooring - Beige Pebble Pattern	Throughout			Seal Seam in accordance with O. Reg. 278/05 as a Type 1 Operation
Asbestos Non-Friable	8404	Vinyl Sheet Flooring - Beige Pebble Pattern	Throughout			Monitor Annually
Asbestos Non-Friable	207	1' x 1' Ceiling Tiles	1 Loose Tile, Damaged Tiles (Above Drop Ceiling and at Window Sill)			Secure/Remove Loose Tile in accordance with O. Reg. 278/05 as a Type 1 Operation Monitor Remaining Tiles Annually

TABLE 1 - INTERNAL ABATEMENT MANAGEMENT						
Galt Collegiate Institute						
Material	**WRDSB Fixed Reference Number**	**Material Description**	**Approximate Quantity**	**Photograph - Context**	**Photograph - Detail**	**Required Action**
Asbestos Non-Friable	8213	Vinyl Sheet Flooring - Beige Pebble Pattern	<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.

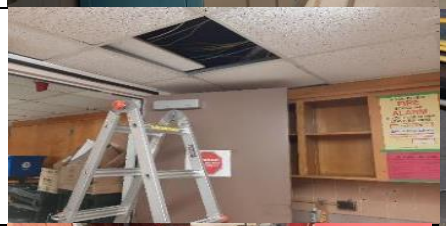
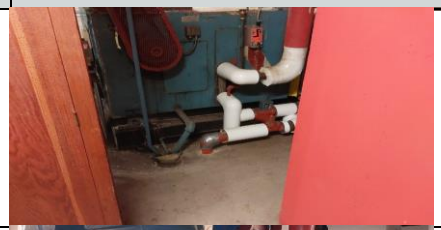
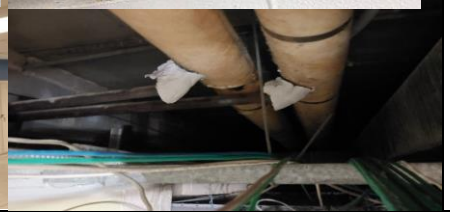
TABLE 2 - EXTERNAL ABATEMENT MANAGEMENT						
Galt Collegiate Institute						
Material	**WRDSB Fixed Reference Number**	**Material Description**	**Approximate Quantity**	**Photograph - Context**	**Photograph - Detail**	**Required Action**
Asbestos Friable	8101C	Fitting Debris on Ceiling Tiles	<1m^2			**Restrict all access above ceiling in Corridor 8101C and any adjacent corridors that connect to 8101C (8101D, 8106) above ceiling. Access shall only occur in accordance with O. Reg. 278/05 as a Type 2 Operation** Cleaning and Removal in accordance with O. Reg. 278/05 as a Type 2 Operation
Asbestos Friable	103	Insulation on Pipe Fitting	1			Removal in accordance with O. Reg. 278/05 as a Type 2 Operation **NOTE: Ensure an adequate approval inspection occurs following all asbestos abatement work**
Asbestos Friable	167	Insulation on Pipe Fitting	1			Removal in accordance with O. Reg. 278/05 as a Type 2 Operation
Asbestos Friable	177	Insulation Debris at Removed Pipe Fittings, NOTE: Concrete and Plaster Debris on Ceiling Tiles	<1m^2			Cleaning/Removal in accordance with O. Reg. 278/05 as a Type 2 Operation

TABLE 2 - EXTERNAL ABATEMENT MANAGEMENT

Galt Collegiate Institute

Material	WRDSB Fixed Reference Number	Material Description	Approximate Quantity	Photograph - Context	Photograph - Detail	Required Action
Asbestos Friable	358	Insulation Debris Below Removed Pipe Fittings at Site of Water Loss and Repairs. Assume debris may contaion asbestos due to location and fittings removed as part of work at locaiton	<1m^2			Cleaning/Removal in accordance with O. Reg. 278/05 as a Type 2 Operation **NOTE: Ensure an adequate approval inspection occurs following all asbestos abatement work**
Asbestos Friable	358	Incomplete or Unsecured Removal of Pipe Fittings	<1m^2			Cleaning/Removal in accordance with O. Reg. 278/05 as a Type 2 Operation **NOTE: Ensure an adequate approval inspection occurs following all asbestos abatement work**
Asbestos Friable	8214	Damaged Insulation on Pipe Fittings at ceiling opening	1			Replace Ceiling Tile, Cleaning/Removal in accordance with O. Reg. 278/05 as a Type 2 Operation
Asbestos Friable	8106	Insulation on Pipe Straights at fitting exposed and debris on celiing tiles	<1m			Cleaning/Removal in accordance with O. Reg. 278/05 as a Type 2 Operation

Notes:
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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 3: BULK ASBESTOS SAMPLING SUMMARY						
Sample #	**Location**	**Material Description**	**Material Description**	**Asbestos Content (%)**	**Fibre Type**	**Is Material ACM**
March 20, 2007 Asbestos Audit Update						
GCI-402-12x12FT	4021	12x12 Floor Tile	Beige with Tan and Grey	ND	-	No
GCI-108-12x12FT	1093	12x12 Floor Tile	Crème and Burgundy Fleck	ND	-	No
GCI-105A-9x9FT	**1041**	**9x9 Floor Tile**	**-**	**1**	**Chrysotile**	**Yes**
GCI-105A-12x12FT	**1041**	**12x12 Floor Tile**	**Beige with Brown and White Fleck**	**0.5**	**Chrysotile**	**Yes**
GCI-102-12x12FT	1080	12x12 Floor Tile	Beige Dense Fleck	ND	-	No
GCI-408-9x9FT	4029	9x9 Floor Tile	Brown with Dark Brown	ND	-	No
GCI-408-9x9FT-GRN	4029	9x9 Floor Tile	Green with White Streak	ND	-	No
GCI-356-12x12FT	3008	12x12 Floor Tile	-	ND	-	No
GCI-206A-12x12FT	2108	12x12 Floor Tile	Beige Dense Fleck	ND	-	No
GCI-305-12x12FT	3044	12x12 Floor Tile	Brown with Dark Brown Fleck	ND	-	No
GCI-301-12x12FT	3040			ND	-	No
GCI-301A-12x12FT	3036			ND	-	No
GCI-8205-12x12FT	**2072**	**12x12 Floor Tile**	**Brown with Dark Brown Fleck**	**1**	**Chrysotile**	**Yes**
GCI-115-9x9FT	1020	9x9 Floor Tile	Green with White Streak	0.3	Chrysotile	Yes
GCI-215-9x9FT	2040	9x9 Floor Tile	Light Yellow	0.2	Chrysotile	Yes
GCI-217-9x9FT	2038	9x9 Floor Tile	White with Green and Grey	0.1	Chrysotile	Yes
GCI-8108B,RAMP-12x12FT	1011	12x12 Floor Tile	Brown Dense Fleck	ND	-	No
GCI-305-FS-01	3041	Firespray	Firespray	ND	-	No
GCI-305-FS-02	3041			ND	-	No
GCI-305-FS-03	3041			ND	-	No
GCI-170-LF	1048	Linoleum Flooring	Beige Cobblestone (Gold)	ND	-	No
GCI-8404-LF	4006			ND	-	No
GCI-8101A-LF	1011			ND	-	No
GCI-189-LIN	1000			ND	-	No
GCI-906-LF	1086	Linoleum Flooring	Gold	ND	-	No
GCI-8217,8218-RLF	2009	Rolled Linoleum Flooring	Gold	ND	-	No
GCI-101-1x1ACT-RH	1050	1x1 Ceiling Tile	Random Hole	ND	-	No
GCI-101-1x1ACT-RPH	1050	1x1 Ceiling Tile	Random Pinhole	ND	-	No
GCI-906-1x1ACT	1087	1x1 Ceiling Tile	Random Pinhole	ND	-	No
GCI-212(PR1)-1x1ACT	2125	1x1 Ceiling Tile	Random Pinhole	ND	-	No
GCI-107D-1x1ACT-WHT	1042	1x1 Ceiling Tile	-	ND	-	No
GCI-107D-1x1ACT-TAN	1042	1x1 Ceiling Tile	-	ND	-	No
GCI-103A-1x1ACT	1046	1x1 Ceiling Tile	Medium and Small Pinhole	ND	-	No
GCI-165A-CT	1062	2x4 Ceiling Tile	Textured Pinhole	ND	-	No
GCI-8101A-4x2CT-SFPH	1011	2x4 Ceiling Tile	Short Fissure Random Pinhole	ND	-	No
GCI-304B-4x2CT	3020	2x4 Ceiling Tile	Long Fissure Random Pinhole	ND	-	No
GCI-305-4x2CT	3018	2x4 Ceiling Tile	Long Fissure Random Pinhole	ND	-	No
GCI-250-1x1ACT	2082	1x1 Ceiling Tile	Cellulose	ND	-	No
GCI-207-1x1ACT	**2068**	**1x1 Ceiling Tile**	**Patterned Pinhole**	**1**	**Amosite**	**Yes**
GCI-8217,8218-2x2CT	2009	2x2 Ceiling Tile	Textured Pinhole	ND	-	No
GCI-172-HardStucco-01	1089	Hard Stucco	Ceiling	ND	-	No
GCI-172-HardStucco-02				ND	-	No
GCI-172-HardStucco-03				ND	-	No
GCI-8206B-PARGE	2099	Parging	On Mechanical	ND	-	No
GCI-108-PARGE-01	1093	Parging	On Beam	ND	-	No
GCI-108-PARGE-02				ND	-	No
GCI-108-PARGE-03				ND	-	No
GCI-8211-CS-01	2113	Stucco	Ceiling	ND	-	No
GCI-8211-CS-02				ND	-	No
GCI-8211-CS-03				ND	-	No
GCI-910-CS-01	2130	Ceiling Stucco	Ceiling	ND	-	No
GCI-910-CS-02	2130			ND	-	No
GCI-910-CS-03	2130			ND	-	No
GCI-351-CS-01	3028	Ceiling Stucco	Ceiling	ND	-	No
GCI-351-CS-02	3028			ND	-	No
GCI-351-CS-03	3028			ND	-	No
GCI-3rdFL-Stair-903-CS-01	3031	Ceiling Stucco	Ceiling	ND	-	No
GCI-3rdFL-Stair-903-CS-02	3031			ND	-	No
GCI-3rdFL-Stair-903-CS-03	3031			ND	-	No
GCI-902-CS-01	3030	Ceiling Stucco	Ceiling	ND	-	No
GCI-902-CS-02	3030			ND	-	No
GCI-902-CS-03	3030			ND	-	No
GCI-189-CS-01	1000			ND	-	No
GCI-189-CS-02	1000			ND	-	No
GCI-189-CS-03	1000			ND	-	No
GCI-189-CS-04	1000			ND	-	No
GCI-189-CS-05	1000			ND	-	No

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY						
Sample #	**Location**	**Material Description**	**Material Description**	**Asbestos Content (%)**	**Fibre Type**	**Is Material ACM**
GCI-153-UCP-01	1060	Plaster	Upper Ceiling	ND	-	No
GCI-153-UCP-02				ND	-	No
GCI-153-UCP-03				ND	-	No
GCI-153-CP-01	1060	Plaster	Ceiling	ND	-	No
GCI-153-CP-02				ND	-	No
GCI-153-CP-03				ND	-	No
GCI-167-CP-01	1054	Plaster	Ceiling	ND	-	No
GCI-167-CP-02				ND	-	No
GCI-167-CP-03				ND	-	No
GCI-103A-CP-01	1046	Plaster	Ceiling	ND	-	No
GCI-103A-CP-02				ND	-	No
GCI-103A-CP-03				ND	-	No
GCI-174-CP-01	1095	Plaster	Ceiling	ND	-	No
GCI-174-CP-02				ND	-	No
GCI-174-CP-03				ND	-	No
GCI-208-CP-01	2110	Plaster	Ceiling	ND	-	No
GCI-201-CP-02	2076			ND	-	No
GCI-207-CP-03	2069			ND	-	No
GCI-8207-CP-04	2087			ND	-	No
GCI-275-CP-05	2031			ND	-	No
GCI-214B-CP-06	2036			ND	-	No
GCI-8101B-CP-01	1108	Plaster	Ceiling	ND	-	No
GCI-8101B-CP-02	1108			ND	-	No
GCI-8101B-CP-03	1108			ND	-	No
GCI-8101B-CP-04	1108			ND	-	No
GCI-314-CP-01	3012	Plaster	Ceiling	ND	-	No
GCI-314-CP-02	3012			ND	-	No
GCI-310-CP-03	3014			ND	-	No
GCI-317-CP-04	3052			ND	-	No
GCI-313-CP-05	3049			ND	-	No
GCI-311-CP-06	3047			ND	-	No
GCI-309-CP-07	3046			ND	-	No
GCI-356-CP-01	3008	Plaster	Ceiling	ND	-	No
GCI-106-WP-01	1092	Plaster	Wall	ND	-	No
GCI-106-WP-02	1092			ND	-	No
GCI-106-WP-03	1092			ND	-	No
GCI-153-WP-01	1060	Plaster	Wall	ND	-	No
GCI-153-WP-02	1060			ND	-	No
GCI-153-WP-03	1060			ND	-	No
GCI-8103-WP-01	1094	Plaster	Wall	ND	-	No
GCI-8103-WP-02	1094			ND	-	No
GCI-8103-WP-03	1094			ND	-	No
GCI-404-WP-01	4024	Plaster	Wall	ND	-	No
GCI-404-WP-02	4024			ND	-	No
GCI-404-WP-03	4024			ND	-	No
GCI-8404N-WP-01	4006	Plaster	Wall	ND	-	No
GCI-8404N-WP-02	4006			ND	-	No
GCI-407-WP-03	4001			ND	-	No
GCI-409-WP-04	4000			ND	-	No
GCI-454-WP-05	4033			ND	-	No
GCI-416-WP-06	4034			ND	-	No
GCI-414-WP-07	4032			ND	-	No
GCI-406A-WP-01	4025	Plaster	Wall	ND	-	No
GCI-410-WP-02	4030			ND	-	No
GCI-452-WP-03	4007			ND	-	No
GCI-405-WP-04	4008			ND	-	No
GCI-8405-WP-05	4015			ND	-	No
GCI-401-WP-06	4016			ND	-	No
GCI-455-WP-07	4019			ND	-	No
GCI-310-WP-01	3014	Plaster	Wall	ND	-	No
GCI-317-WP-02	3052			ND	-	No
GCI-313-WP-03	3049			ND	-	No
GCI-356-WP-04	3008			ND	-	No
GCI-314-WP-05	3012			ND	-	No
GCI-311-WP-06	3047			ND	-	No
GCI-314-WP-07	3012			ND	-	No

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY						
Sample #	**Location**	**Material Description**	**Material Description**	**Asbestos Content (%)**	**Fibre Type**	**Is Material ACM**
GCI-8206A-WP-01	2036	Plaster	Wall	ND	-	No
GCI-208-WP-02	2110			ND	-	No
GCI-202-WP-03	2099			ND	-	No
GCI-258-WP-04	2092			ND	-	No
GCI-201-WP-05	2076			ND	-	No
GCI-205-WP-06	2071			ND	-	No
GCI-207-WP-07	2069			ND	-	No
GCI-8101B-WP-01	1108	Plaster	Wall	ND	-	No
GCI-8101B-WP-02	1108			ND	-	No
GCI-8101B-WP-03	1108			ND	-	No
GCI-8101B-WP-04	1108			ND	-	No
GCI-351-WP-01	3028	Plaster	Wall	ND	-	No
GCI-351-WP-02	3028	Plaster	Wall	ND	-	No
GCI-401A-WP-07	4014	Plaster	Wall	ND	-	No
GCI-8101B-PI	1108	Pipe Insulation	On Straight	ND	-	No
GCI-152-PI	1067	Pipe Insulation	On Straight	ND	-	No
GCI-454-PB	4033	Pyro Block	-	ND	-	No
GCI-BR-VERM	**Boiler Room Assume Throughout**	**Vermiculite**	**Ceiling Patch**	**5**	**Chrysotile**	**Yes**
GCI-109A-DWC-01	1037	Drywall Joint Compound	Wall	ND	-	No
GCI-109A-DWC-02			Wall	ND	-	No
GCI-109A-DWC-03			Wall	ND	-	No
GCI-8103-DWC-01	1094	Drywall Joint Compound	Wall	ND	-	No
GCI-8103-DWC-02	1094		Wall	ND	-	No
GCI-8103-DWC-03	1094		Wall	ND	-	No
GCI-453-DWC-01	4037	Drywall Joint Compound	Wall	ND	-	No
GCI-453-DWC-02	4037		Wall	ND	-	No
GCI-453-DWC-03	4037		Wall	ND	-	No
GCI-316-DWC-01	3006	Drywall Joint Compound	Wall	ND	-	No
GCI-316-DWC-02	3006		Wall	ND	-	No
GCI-316-DWC-03	3006		Wall	ND	-	No
GCI-8206A-DWC-01	2036	Drywall Joint Compound	Wall	ND	-	No
GCI-8206A-DWC-02	2036			ND	-	No
GCI-8206A-DWC-03	2036			ND	-	No
GCI-202-DWC-04	2099			ND	-	No
GCI-203-DWC-05	2072			ND	-	No
GCI-205-DWC-06	2071			ND	-	No
GCI-259-DWC-07	2070			ND	-	No
GCI-8404N-DWC-01	4006	Drywall Joint Compound	Wall	ND	-	No
GCI-8404N-DWC-02	4006			ND	-	No
GCI-407-DWC-03	4001			ND	-	No
GCI-409-DWC-04	4000			ND	-	No
GCI-416-DWC-05	4034			ND	-	No
GCI-414-DWC-06	4032			ND	-	No
GCI-412-DWC-07	4031			ND	-	No
GCI-405-DWC-03	4008	Drywall Joint Compound		ND	-	No
GCI-401-DWC-04	4016	Drywall Joint Compound		ND	-	No
GCI-301-DWC-04	3036	Drywall Joint Compound	Wall	ND	-	No
GCI-301-DWC-05	3036		Wall	ND	-	No
GCI-301-DWC-06	3036		Wall	ND	-	No
GCI-302-DWC-07	3020	Drywall Joint Compound	Wall	ND	-	No
GCI-302-DWC-08	3020		Wall	ND	-	No
GCI-302-DWC-09	3020		Wall	ND	-	No
March 16, 2009 Asbestos Audit Update						
32523-800-Galt-S01a	**4006**	**Vinyl sheet flooring**	**Beige Cobblestone (Gold)**	**ND**	**-**	**No**
32523-800-Galt-S01b				**3.1 (flooring) ND (mastic)**	**Chrysotile -**	**Yes**
32523-800-Galt-S02a	4021	12"x12" Floor Tile	Beige Dense Fleck	ND	-	No
32523-800-Galt-S02b				ND	-	No
32523-800-Galt-S02c				ND	-	No
32523-800-Galt-S03a	**4015**	**12"x12" Floor Tile**	**Beige with Brown and White Fleck**	**2.3 (tile) ND (mastic)**	**Chrysotile -**	**Yes**
32523-800-Galt-S03b				**ND (tile) ND (mastic)**	**- -**	**No**
32523-800-Galt-S03c				**ND (tile) ND (mastic)**	**- -**	**No**
32523-800-Galt-S04a	4029	9"x9" Floor Tile	Brown with Dark Brown	ND	-	No
32523-800-Galt-S04b				ND	-	No
32523-800-Galt-S05a	4029	9"x9" Floor Tile	Green with White Streak	ND	-	No
32523-800-Galt-S05b				ND	-	No
32523-800-Galt-S06a	4001	12"x12" Floor Tile	Brown Dense Fleck	ND (tile) ND (mastic)	- -	No
32523-800-Galt-S06b				ND (tile) ND (mastic)	- -	No

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY						
Sample #	**Location**	**Material Description**	**Material Description**	**Asbestos Content (%)**	**Fibre Type**	**Is Material ACM**
32523-800-Galt-S06c				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S07a	**4000**	**9"x9" Floor Tile**	**Beige with Brown and White Fleck**	**2.8 (tile) 0.5 (mastic)**	**Chrysotile Chrysotile**	**Yes**
32523-800-Galt-S07b				**NA (tile) Trace (mastic)**	**- Chrysotile**	**Yes**
32523-800-Galt-S07c				**NA (tile) Trace (mastic)**	**- Chrysotile**	**Yes**
32523-800-Galt-S08a	**3036**	**12"x12" Floor Tile**	**Brown with Dark Brown Fleck**	**5.0 (tile) ND (mastic) ND (leveling compound)**	**Chrysotile - -**	**Yes**
32523-800-Galt-S08b				**ND (mastic) ND (leveling compound)**	**- -**	**No**
32523-800-Galt-S08c				**ND (mastic)**	**-**	**No**
32523-800-Galt-S09a	3043	12"x12" Floor Tile	Crème with Long Brown Streaks	ND (tile) ND (mastic)	- -	No
32523-800-Galt-S09b				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S09c				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S10a	**2029**	**9"x9" Floor Tile**	**Pink with White Fleck**	**1.3**	**Chrysotile**	**Yes**
32523-800-Galt-S10b				**NA**	**-**	**No**
32523-800-Galt-S10c				**NA**	**-**	**No**
32523-800-Galt-S11a	**2038**	**9"x9" Floor Tile**	**White with Green and Grey**	**1.3**	**Chrysotile**	**Yes**
32523-800-Galt-S11b				**NA**	**-**	**No**
32523-800-Galt-S11c				**ND (mastic)**	**-**	**No**
32523-800-Galt-S12a	**2042**	**9"x9" Floor Tile**	**Grey with White Streak**	**0.5 (tile) ND (mastic)**	**Chrysotile -**	**Yes**
32523-800-Galt-S12b				**Trace**	**Chrysotile**	**Yes**
32523-800-Galt-S12c				**Trace**	**Chrysotile**	**Yes**
32523-800-Galt-S13a	2051	Vinyl Sheet Flooring	Light Yellow Cobblestone	ND (tile) ND (mastic)	- -	No
32523-800-Galt-S13b				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S13c				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S14a	**2053**	**2'x2' Ceiling Tile**	**Long Thin Fissure**	**0.5 (tile) 1.2 (mastic)**	**Amosite Chrysotile**	**Yes**
32523-800-Galt-S14b				**NA**	**-**	**No**
32523-800-Galt-S14c				**NA**	**-**	**No**
32523-800-Galt-S15a	**2138**	**9"x9" Floor Tile**	**Beige with Thick Brown Streaks**	**1.1 (tile) ND (mastic)**	**Chrysotile -**	**Yes**
32523-800-Galt-S15b				**NA**	**-**	**No**
32523-800-Galt-S15c				**ND (mastic)**	**-**	**No**
32523-800-Galt-S16a	1038	Vinyl sheet flooring	Smokey Cloud	ND (tile) ND (mastic)	- -	No
32523-800-Galt-S16b				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S16c				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S17a	1067	2'x4' Ceiling Tile	Short Fissure Random Pinhole	ND	-	No
32523-800-Galt-S17b				ND	-	No
32523-800-Galt-S17c				ND	-	No
32523-800-Galt-S18a	**1015**	**9"x9" Floor Tile**	**Green with White Streak**	**1.3 (tile) ND (mastic) ND (leveling compound)**	**Chrysotile - -**	**Yes**
32523-800-Galt-S18b				**NA**	**-**	**No**
32523-800-Galt-S18c				**NA**	**-**	**No**
32523-800-Galt-S19a	1016	12"x12" Floor Tile	White with Brown Fleck	ND (tile) ND (caulk)	- -	No
32523-800-Galt-S19b				ND (tile) ND (caulk) ND (caulk)	- - -	No
32523-800-Galt-S19c				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S20a	1048	Vinyl sheet flooring	Gold	ND (tile) ND (mastic) ND (leveling compound)	- - -	No
32523-800-Galt-S20b				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S20c				ND (tile)	-	No
32523-800-Galt-S21a	1067	12"x12" Floor Tile	White with Grey and Blue Fleck	ND (tile) ND (mastic)	- -	No
32523-800-Galt-S21b				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S21c				ND (tile) ND (mastic)	- -	No
32523-800-Galt-S22a	**2037**	**9"x9" Floor Tile**	**Light Yellow**	**1.2 (tile) ND (mastic)**	**Chrysotile -**	**Yes**
32523-800-Galt-S22b				**NA (tile) ND (mastic)**	**- -**	**No**
32523-800-Galt-S22c				**NA (tile) ND (mastic)**	**- -**	**No**
32523-800-Galt-S23a	2036	2'x4' Ceiling Tile	Textured Pinhole	ND	-	No
32523-800-Galt-S23b				ND	-	No
32523-800-Galt-S23c				ND	-	No
November 16, 2012 Additional Sampling						

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY						
Sample #	**Location**	**Material Description**	**Material Description**	**Asbestos Content (%)**	**Fibre Type**	**Is Material ACM**
S01A	2082	Plaster	Plaster	Layer 1: ND	-	No
				Layer 2: ND	-	No
S01B				Layer 1: ND	-	No
				Layer 2: ND	-	No
S01C				Layer 1: ND	-	No
				Layer 2: ND	-	No
S02A	2083	Plaster	Plaster	ND	-	No
S02B				ND	-	No
S02C				ND	-	No
June 14, 2013 Library Sampling						
S01A	1104	Flooring Mastic	Brown	ND	-	No
S01B				ND	-	No
S01C				ND	-	No
S02A	1104	Flooring Mastic	Black	ND	-	No
S02B				ND	-	No
S02C				ND	-	No
S02A	2083	Ramp Floor Tile	-	ND (Tile) ND (Mastic)	-	No
S02B				ND (Tile) ND (Mastic)	-	No
S02C				ND (Tile) ND (Mastic)	-	No
March 20, 2015 Asbestos Audit Update						
S01A	3024	Plaster	Plaster	ND (Skim Coat) ND (plaster)	- -	No
S01B				ND (Skim Coat) ND (plaster)	- -	No
S01C				ND (Skim Coat) ND (plaster)	- -	No
S02A	3028	Firespray	Firespray	ND	-	No
S02B				ND	-	No
S02C				ND	-	No
S03A	1011	Vinyl Sheet Flooring	Beige Pebble	ND	-	No
S03B			Beige Pebble	ND	-	No
S03C			Beige Pebble	ND	-	No
S04A	1000	Vinyl Sheet Flooring	Red	ND	-	No
S04B			Red	ND	-	No
S04C			Red	ND	-	No
S05A	1011	Vinyl Sheet Flooring	Salmon/Pink	ND	-	No
S05B				ND	-	No
S05C				ND	-	No
S06A	1011	Texture Coat	Texture Coat	ND	-	No
S06B				ND	-	No
S06C				ND	-	No
S06D				ND	-	No
S06E				ND	-	No
S07A	1000	Ceiling Tile	Dense Pinhole	ND	-	No
S07B				ND	-	No
S07C				ND	-	No
S08A	1001	12"x12" Vinyl Floor Tile	Beige with Grey and Peach	ND (Floor Tile) ND (mastic)	- -	No
S08B				ND (Floor Tile) ND (mastic)	- -	No
S08C				ND (Floor Tile) ND (mastic)	- -	No
May 6, 2015 Asbestos Audit Update						
S01A	2067	Hard Texture Coat	Hard Texture Coat	ND	-	No
S01B	2067	Hard Texture Coat	Hard Texture Coat	ND	-	No
S01C	2067	Hard Texture Coat	Hard Texture Coat	ND	-	No
August 5, 2015 Sampling						
S01A	2051	Drywall Joint Compound	Drywall Joint Compound	ND	-	No
S01B	2053			ND	-	No
S01C	2064			ND	-	No

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY						
Sample #	**Location**	**Material Description**	**Material Description**	**Asbestos Content (%)**	**Fibre Type**	**Is Material ACM**
S02A	2052	Plaster	Plaster	ND	-	No
S02B				ND	-	No
S02C				ND	-	No
S03A	**2031**	**Hard Texture Coat**	**Hard Texture Coat**	**1.3**	**Chrysotile**	**Yes**
S03B				**NA**	**-**	**Yes**
S03C				**NA**	**-**	**Yes**
S04A	2010	Plaster	Plaster	ND	-	No
S04B	2011			ND	-	No
S04C	2011			ND	-	No
S05A	1011	Drywall Joint Compound	Drywall Joint Compound	ND	-	No
S05B	1003			ND	-	No
S05C	1003			ND	-	No
S06A	1020	Drywall Joint Compound	Drywall Joint Compound	ND	-	No
S06B	1020			ND	-	No
S06C	1104			ND	-	No
September 14, 2017 Additional Sampling						
S01A	1064	Plaster	Skim Coat	Layer 1: ND	-	No
S01B				Later 1: ND	-	No
				Layer 2: ND	-	No
S01C				Layer 1: ND	-	No
S02A	**1064**	**Plaster**	**Grey Layer on Lattice**	Layer 1: ND	-	No
				Layer 2: ND	-	No
S02B				Layer 1: ND	-	No
				Layer 2: ND	-	No
S02C				Layer 1: ND	-	No
				Layer 2: 1	**Chrysotile**	**Yes**
June 28, 2018 Asbestos Audit Update						
S01A	**-**	**Interior Window Frame - Grey Sealant (1986 Addition)**	**Interior Window Frame - Grey Sealant (1986 Addition)**	**0.5**	**Chrysotile**	**Yes**
S01B	**-**			**NA**	**-**	**Yes**
S01C	**-**			**NA**	**-**	**Yes**
S02A	**-**	**Interior Door Pane - Black Sealant (1986 Addition)**	**Interior Door Pane - Black Sealant (1986 Addition)**	**8**	**Chrysotile**	**Yes**
S02B	**-**			**NA**	**-**	**Yes**
S02C	**-**			**NA**	**-**	**Yes**
S03A	**-**	**Exterior Door Frame - Grey Sealant (1986 Addition)**	**Exterior Door Frame - Grey Sealant (1986 Addition)**	**1**	**Chrysotile**	**Yes**
S03B	**-**			**NA**	**-**	**Yes**
S03C	**-**			**NA**	**-**	**Yes**
S04A	**-**	**Interior Door Pane - Brown Sealant (1962 Addition)**	**Interior Door Pane - Brown Sealant (1962 Addition)**	**10**	**Chrysotile**	**Yes**
S04B	**-**			**NA**	**-**	**Yes**
S04C	**-**			**NA**	**-**	**Yes**
S05A	1027	Plaster (1962 Addition)	Plaster (1962 Addition)	ND	-	No
S05B				ND	-	No
S05C	1023			ND	-	No
S05D				ND	-	No
S06A	-	Interior Door Frame - Beige Sealant (1962 Addition)	Interior Door Frame - Beige Sealant (1962 Addition)	ND	-	No
S06B	-			ND	-	No
S06C	-			ND	-	No
S07A	**-**	**Exterior Window Frame - Grey Sealant (1962 Addition)**	**Exterior Window Frame - Grey Sealant (1962 Addition)**	**1**	**Chrysotile**	**Yes**
S07B	**-**			**NA**	**-**	**Yes**
S07C	**-**			**NA**	**-**	**Yes**
S08A	**-**	**Exterior Window Pane - Black/Grey Sealant (1962 Addition)**	**Exterior Window Pane - Black/Grey Sealant (1962 Addition)**	**10**	**Chrysotile**	**Yes**
S08B	**-**			**NA**	**-**	**Yes**
S08C	**-**			**NA**	**-**	**Yes**
S09A	-	Interior Door Pane - Grey Sealant (1923 Addition)	Interior Door Pane - Grey Sealant (1923 Addition)	ND	-	No
S09B	-			ND	-	No
S09C	-			ND	-	No
S10A	-	Interior Door Pane - Grey Sealant (1923 Addition)	Interior Door Pane - Grey Sealant (1923 Addition)	ND	-	No
S10B	-			ND	-	No
S10C	-			ND	-	No
S11A	-	Interior Window Frame - Grey Sealant (1923 Addition)	Interior Window Frame - Grey Sealant (1923 Addition)	ND	-	No
S11B	-			ND	-	No
S11C	-			ND	-	No
S12A	-	Exterior Door Frame - Beige Sealant (1923 Addition)	Exterior Door Frame - Beige Sealant (1923 Addition)	ND	-	No
S12B	-			ND	-	No
S12C	-			ND	-	No
S13A	**-**	**Exterior Door Pane - Black Sealant (1923 Addition)**	**Exterior Door Pane - Black Sealant (1923 Addition)**	**0.5**	**Chrysotile**	**Yes**
S13B	**-**			**NA**	**-**	**Yes**
S13C	**-**			**NA**	**-**	**Yes**

TABLE 3: BULK ASBESTOS SAMPLING SUMMARY

Sample #	Location	Material Description	Material Description	Asbestos Content (%)	Fibre Type	Is Material ACM
S14A	-	Exterior Door Pane - Black Sealant (1906 Addition)	Exterior Door Pane - Black Sealant (1906 Addition)	ND	-	No
S14B	-			ND	-	No
S14C	-			ND	-	No
S15A	-	Interior Door Frame - White Sealant (1906 Addition)	Interior Door Frame - White Sealant (1906 Addition)	ND	-	No
S15B	-			ND	-	No
S15C	-			ND	-	No
S16A	-	Interior Window Frame - Beige Sealant (1906 Addition)	Interior Window Frame - Beige Sealant (1906 Addition)	ND	-	No
S16B	-			ND	-	No
S16C	-			ND	-	No
S17A	1045	Drywall Joint Compound (1954 Addition)	Drywall Joint Compound (1954 Addition)	ND	-	No
S17B				ND	-	No
S17C				ND	-	No
S18A	1045	Plaster (1954 Addition)	Plaster (1954 Addition)	ND	-	No
S18B				ND	-	No
S18C				ND	-	No
S19A	**-**	**Interior Window Frame - Grey Sealant (1954 Addition)**	**Interior Window Frame - Grey Sealant (1954 Addition)**	**1**	**Chrysotile**	**Yes**
S19B	**-**			**NA**	**-**	**Yes**
S19C	**-**			**NA**	**-**	**Yes**
S20A	-	Exterior Window Pane - Black Sealant (1954 Addition)	Exterior Window Pane - Black Sealant (1954 Addition)	ND	-	No
S20B	-			ND	-	No
S20C	-			ND	-	No
S21A	**-**	**Exterior Door Frame - Grey Sealant (1954 Addition)**	**Exterior Door Frame - Grey Sealant (1954 Addition)**	**1**	**Chrysotile**	**Yes**
S21B	**-**			**NA**	**-**	**Yes**
S21C	**-**			**NA**	**-**	**Yes**
S22A	1050	Drywall Joint Compound (1956 Addition)	Drywall Joint Compound (1956 Addition)	ND	-	No
S22B				ND	-	No
S22C				ND	-	No
S23A	**-**	**Interior Window Pane - Black Sealant (1853 Original Building)**	**Interior Window Pane - Black Sealant (1853 Original Building)**	**5**	**Chrysotile**	**Yes**
S23B	**-**			**NA**	**-**	**Yes**
S23C	**-**			**NA**	**-**	**Yes**
S24A	2072	Vinyl Floor Tile Mastic (1876 Addition)	Vinyl Floor Tile Mastic (1876 Addition)	ND	-	No
S24B				ND	-	No
S24C				ND	-	No
S25A	1054	Drywall Joint Compound (1976 Addition)	Drywall Joint Compound (1976 Addition)	ND	-	No
S25B				ND	-	No
S25C				ND	-	No
S26A	**-**	**Interior Window Pane - Black Sealant (1929 Addition)**	**Interior Window Pane - Black Sealant (1929 Addition)**	**8**	**Chrysotile**	**Yes**
S26B	**-**			**NA**	**-**	**Yes**
S26C	**-**			**NA**	**-**	**Yes**
S27A	-	Interior Window Pane - Black Sealant (1929 Addition)	Interior Window Pane - Black Sealant (1929 Addition)	ND	-	No
S27B	-			ND	-	No
S27C	-			ND	-	No
S28A	3051	Vinyl Floor Tile Mastic (1929 Addition)	Vinyl Floor Tile Mastic (1929 Addition)	ND	-	No
S28B				ND	-	No
S28C				ND	-	No
S29A	3054	Drywall Joint Compound (1929 Addition)	Drywall Joint Compound (1929 Addition)	ND	-	No
S29B				ND	-	No
S29C				ND	-	No
November 14, 2018 Additional Sampling						
S01A	212C	1x1 Ceiling Tile	Random Pinhole	ND	-	No
		Mastic on 1x1 Ceiling Tile	Mastic	ND	-	No
S01B		1x1 Ceiling Tile	Random Pinhole	ND	-	No
		Mastic on 1x1 Ceiling Tile	Mastic	ND	-	No
S01C		1x1 Ceiling Tile	Random Pinhole	ND	-	No
		Mastic on 1x1 Ceiling Tile	Mastic	ND	-	No
S02A	101	Mastic on 1x1 Ceiling Tile Medium Fissure and Small Pinhole	Mastic	ND	-	No
S02B				ND	-	No
S02C				ND	-	No
S03A	306C	Hard Texture Coat	Walls	ND	-	No
S03B				ND	-	No
S03C				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.

Appendix 01 35 43B– Lead Report

Waterloo Region
District School Board

51 Ardelt Avenue, Kitchener, ON N2C 2R5
Tel: 519-570-0003, Fax: 519 576-0478
FACILITY SERVICES

November 25, 2024

RE: Paint and Coatings bulk Sampling – Letter of Findings
Galt Collegiate Institute, 200 Water Street North, Cambridge, Ontario
Project-Specific Work Areas – Corridor/Fixed Reference No. 8214

1. INTRODUCTION

Paint and coatings samples were collected for lead content analysis within Galt Collegiate Institute, specifically, Corridor/Fixed Reference No. 8214. The samples were collected from surfaces within the project-specific location and submitted to ALS Environmental for the determination of lead content.

The extent of our paint sample collection and assessment area is outlined on the floor plan attached in Appendix A.

2. METHODOLOGY

An assessment for lead in paint was conducted by retrieving paint chip samples from representative surfaces within the area assessed that were deemed to have a potential to be disturbed as part of the planned renovation activities. The condition of painted surfaces from which samples were taken were also visually assessed for signs of deterioration such as cracking, chipping, flaking, bubbling and deterioration due to friction. Based on the degree and extent of deterioration, the conditions of these surfaces were assessed as good, fair, or poor.

The number of paint chip samples retrieved for analysis was based on surface colours observed. Samples were not retrieved from paint finishes with limited application. All paint chip samples were retrieved by scraping the paint down to the base material substrate to ensure collection of all layers of paint. Additional care was taken to avoid collection of the underlying substrate to reduce analytical substrate matrix interference.

Upon completion of our assessment, a paint chip sample was submitted to ALS Environmental for the determination of lead content. Analysis was conducted by the laboratory following the EPA Method 6010. Result of analysis was reported by the laboratory in micrograms per gram (µg/g).

3. RESULTS

Results of analysis for the determination of lead content are summarized in Table 1, below. The Laboratory Certificate of Analysis is included as Appendix B.

TABLE 1: Summary of Lead-in-Paint Analytical Results

Sample No.	Location	Surface	Paint Colour	Condition	Lead Conc. (µg/g)	EACC Classification
Sa1	Corridor/FR#8214	Throughout	White	Good	13.6	'*De Minimis*' Level of Lead

Note: 1 mg/kg = 1 µg/g

4. CONCLUSIONS

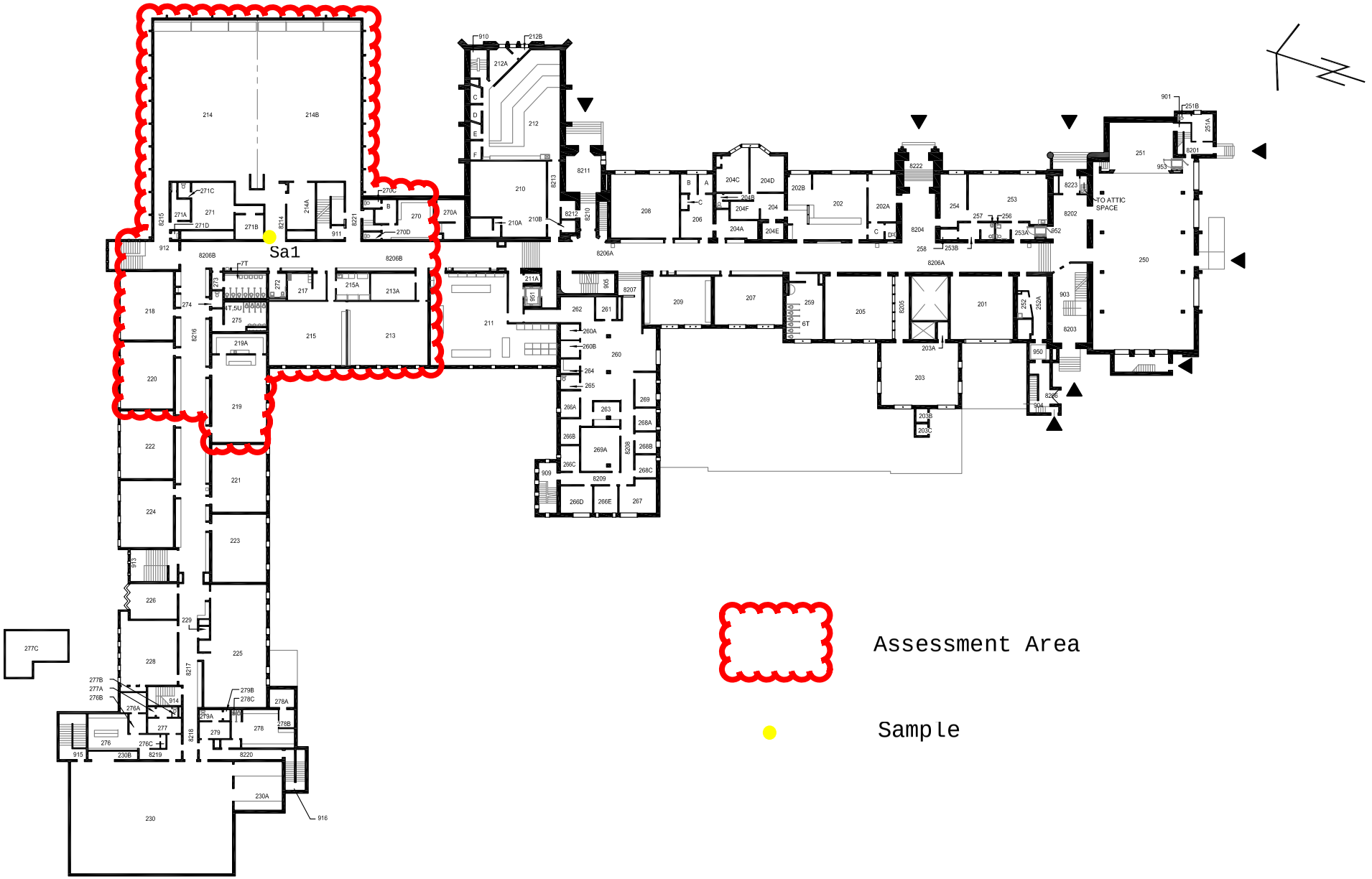
'*De* Minimis' Level of Lead in Paint

The paint sample, Sa1, collected from the painted white surfaces observed throughout Corridor/Fixed Reference No. 8214, which was representative of the work area, in entirety, was determined to have a lead content below 1,000 µg/g Lead by Weight, which is considered a "*de minimis*" level of lead in paint as per the October 2014 Environmental Abatement Council of Canada (EACC) publication, "Lead Guideline for Construction, Renovation, Maintenance or Repair" (herein after referred to as the "EACC Lead Guideline").

Prepared by:

Jeff Cull
Environmental Officer
jeff_cull@wrdsb.ca

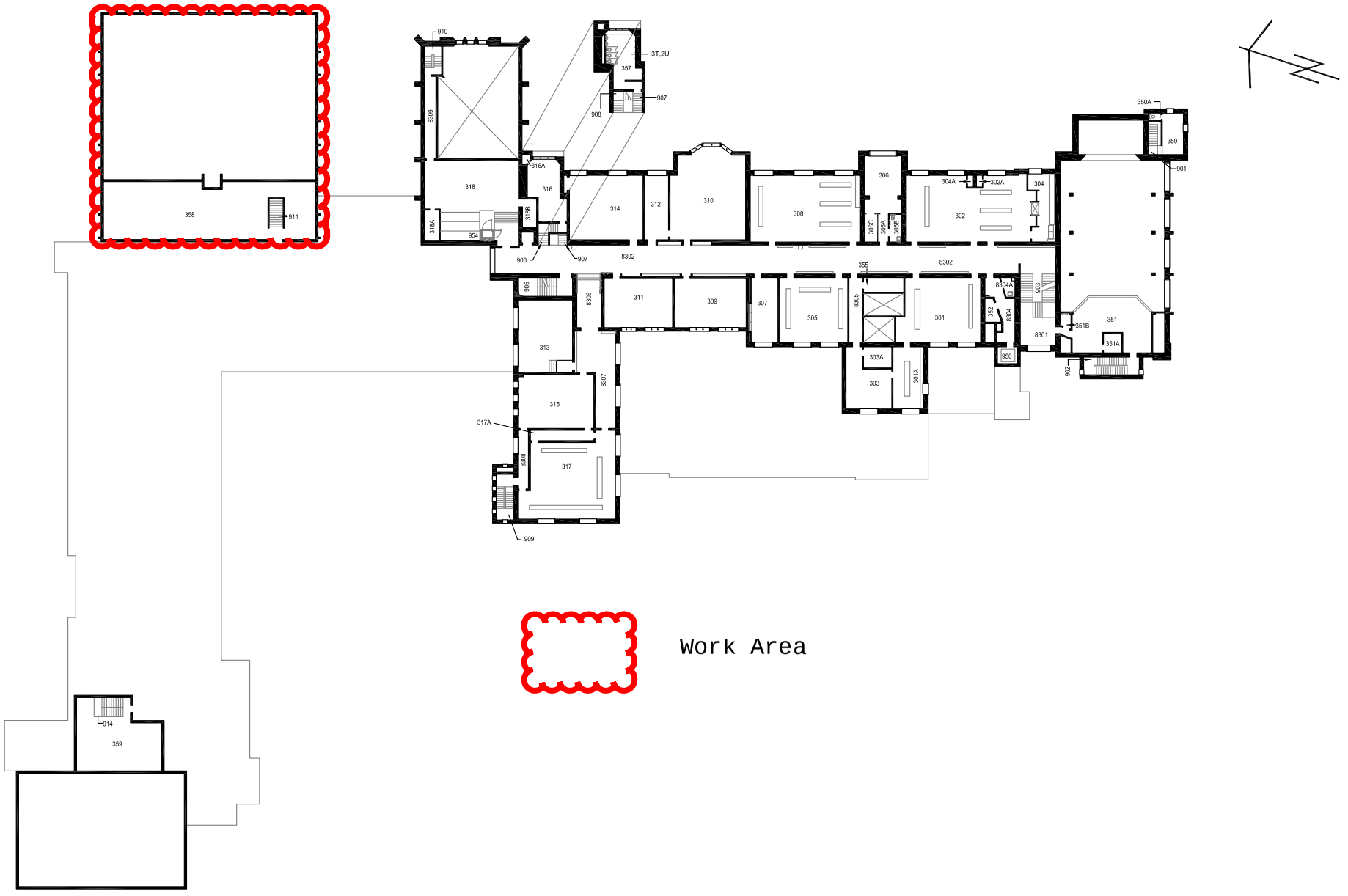
Appendix A
Extent of Assessment Area & Paint Sample Locations



FIXED REFERENCE ROOM NUMBERS

0 5 10 20 30 50 70 FT

WATERLOO REGION DISTRICT SCHOOL BOARD			
PROJECT:	GALT COLLEGIATE INSTITUTE - CAMBRIDGE		
TITLE:	SECOND LEVEL FLOOR PLAN - FIXED REFERENCE ROOM NUMBERS		
Date: FEB 2024	Drawn by: ADO	Appr.:	
Prev. Rev: APR 2023 ADO	Scale: 1" = 60'-0"	Dwg.No: 4 OF 6	



FIXED REFERENCE ROOM NUMBERS

WATERLOO REGION DISTRICT SCHOOL BOARD			
PROJECT: GALT COLLEGIATE INSTITUTE - CAMBRIDGE			
TITLE: THIRD LEVEL FLOOR PLAN - FIXED REFERENCE ROOM NUMBERS			
Date: APR 2023	Drawn by: ADO	Appr.:	
Prev. Rev: OCT 2022 ADO	Scale: 1" = 60'-0"	Dwg.No: 5 OF 6	

Appendix B
Laboratory Certificate of Analysis

ALS Canada Ltd.

right solutions.
right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **WT2434586**	Page	: 1 of 2
Client	: **Waterloo Region District School Board**	Laboratory	: ALS Environmental - Waterloo
Contact	: Jeff Cull	Account Manager	: Candice Hunter
Address	: 51 Ardelt Avenue Kitchener ON Canada N2C 2E1	Address	: 60 Northland Road, Unit 1 Waterloo ON Canada N2V 2B8
Telephone	: 519 502 8343	Telephone	: +1 519 886 6910
Project	: GCI SUMMER RENO 2025	Date Samples Received	: 20-Nov-2024 14:50
PO	: ----	Date Analysis Commenced	: 21-Nov-2024
C-O-C number	: ----	Issue Date	: 21-Nov-2024 13:45
Sampler	: JC		
Site	: ----		
Quote number	: Non - Regulated Standing SOA		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Greg Pokocky	Manager - Inorganics	Metals, Waterloo, Ontario

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.
Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Unit	*Description*
mg/kg	milligrams per kilogram

>: greater than.
<: less than.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

<1 or Not Detected with LOR of 1 equals Zero (0).

Analytical Results

WT2434586-001

Sub-Matrix:**Paint Chips**
(Matrix: **Soil/Solid**)

Client sample ID: Sa1
Client sampling date / time: 18-Nov-2024

Analyte	*CAS Number*	*Result*	*LOR*	*Unit*	*Method/Lab*	*Prep Date*	*Analysis Date*	*QCLot*
Metals								
Lead	7439-92-1	13.6	5.0	mg/kg	E494.Pb/WT	21-Nov-2024	21-Nov-2024	1776687

Please refer to the General Comments section for an explanation of any result qualifiers detected.

SOL-321

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 14 - VM

Page 1 of 1

Report To		Report Format / Distribution	Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)
Company:	Waterloo Region District School Board	Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)	R ☐ Regular (Standard TAT if re
Contact:	Jeff Cull	Quality Control (QC) Report with Report ☑ Yes ☐ No	P ☐ Priority (2-4 bus. days if re
Address:	51 Ardelt Ave, Kitchener ON, N2C 3R5	☐ Criteria on Report - provide details below if box checked	E ☑ Emergency (1-2 bus. days
		Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	E2 ☐ Same day or weekend eme
Phone:	519-502-8343	Email 1 or Fax JEFF_CULL@WRDSB.CA	Specify Date Required for E2,E
		Email 2	
Invoice To	Same as Report To ☑ Yes ☐ No	**Invoice Distribution**	Indicate Filtered (F), Preser
	Copy of Invoice with Report ☐ Yes ☑ No	Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax FINANCE-AP@WRDSB.CA	
Contact:		Email 2	

Environmental Division
Waterloo
Work Order Reference
WT2434586

Telephone : +1 519 886 6910

Project Information		Oil and Gas Required Fields (client use)	
ALS Quote #:		Approver ID:	Cost Center:
Job #:	GCI Summer Reno 2025	GL Account:	Routing Code:
PO / AFE:		Activity Code:	
LSD:		Location:	

ALS Lab Work Order # (lab use only) WT2434586 | **ALS Contact:** CH | **Sampler:** JC

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Lead Content (Lab)	Paint Sample	Number of Containers
	Sa1	18-Nov-24	PM	Solid	X		1

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ Yes ☐ No

Are samples for human drinking water use? ☐ Yes ☐ No

Special Instructions / Specify Criteria to add on report (client Use)

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ | SIF Observations Yes ☐ No ☐

Ice packs Yes ☐ No ☐ | Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
				20.1	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
JEFF CULL	NOV 20 2024	1:06 PM					NOV 20 2024	1450

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0326e v09 Front/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

Appendix C
Site Photographs

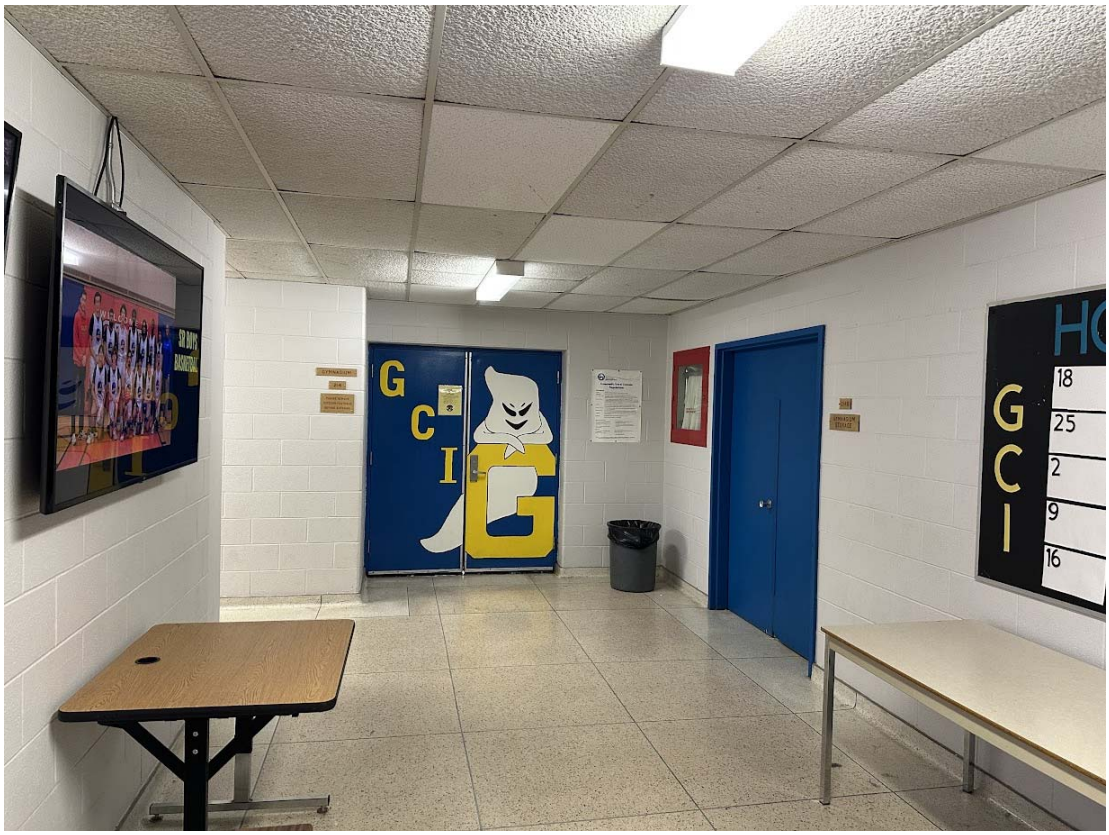


Photo 1: Corridor/Fixed Reference No. 8214

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 Engineering Companies – Canada, 130 Albert Street, Suite 420, 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, UA 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 Avenuse, 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 9101Quincy, 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, IL60062-2096; URL: http://www.ul.com.

END OF 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 the cost of additional review and correction.

.3 If such Work is found in accordance with Contract Documents, The owner will pay the cost of review and replacement.

1.5. INDEPENDENT INSPECTION AGENCIES

.1 Independent Inspection and Testing Agencies will be engaged by Contractor for the 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 the full degree of defect. Correct defects and irregularities as advised by the Consultant at no cost to the 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 the 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 the 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 & BACKFILL

.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 the 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 than three site visits.

.2 Test within 16 hours from time called to do so by the 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 250m^2 or less, and 1 additional check for each additional 250m^2 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 the Paving Contractor. At completion of the paving project, inform the 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 the 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 the 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 a thermographic scan of the 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 the 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 the 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.

END OF 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 the Consultant's approval.

.3 Salvage and assist in recycling products for potential reuse wherever possible.

.4 Remove temporary facilities from the site when directed by the Consultant.

1.3. DEWATERING

.1 Provide temporary drainage and pumping facilities to keep excavations and the site free from standing water. Provide necessary pumps (including spare pumps) and temporary drainage for keeping the Work free of water throughout the 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 the 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 a safe working environment.

.4 Maintain temperatures of minimum:

.1 10 degrees C in areas where construction is in progress, until takeover by the 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 the atmosphere of occupied areas.

.3 Dispose of exhaust materials in a 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 the 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 the 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 the 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 the 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 a 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 the 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 the 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 email access and a printer on site.

END OF 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 the site when directed by the 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 1800mm 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 the 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 stairwells, 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 the 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 the 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 Coordinate 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 the 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 the 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 the site and contents of the 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 the 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 the open. Locate stored materials and equipment to facilitate prompt inspection.

.3 Store packaged materials and equipment undamaged, in their original wrappings or containers, with manufacturer'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 the 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 the 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

01 54 00 – Materials and Equipment

1.0 GENERAL

1.1. RELATED SECTIONS

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

1.2. PRODUCT AND MATERIAL QUALITY

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

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

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

.4 Current Material Safety Data Sheets shall be on file with the successful Contractor and shall be provided to the Board contact upon request, within twenty-four (24) hours.

.5 Material safety data sheets are not required for products currently WHMIS exempt.

1.3. EQUIPMENT/TOOL MATERIALS STORAGE, HANDLING, AND PROTECTION

.1 Handle and store products in a manner to prevent damage, adulterations, deterioration, and soiling, and in accordance with manufacturer’s instructions.

.2 Store packaged or bundled products in original and undamaged condition, with manufacturer’s seals and labels intact.

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

.4 Provide and maintain tools, equipment and materials in a clean and orderly condition. Board tools, ladders, lifts, power cords, flashlights etc. are not to be used.

.5 Materials are to be stored in a manner to cause the least interference with WorK activities.

.6 The Contractor shall determine with the Board contact, prior to ordering materials, those locations that are suitable for receiving and storage of materials and equipment.

.7 All materials and equipment shall be kept in a secure area, at Contractor's expense, or removed from the job site when Work is not actually in progress.

.8 Vehicles, trailers or other similar apparatus may not be stored or parked overnight at site without written authorization from Board contact. Written requests are to be forwarded directly to the Board contact.

.9 Approval for parking does not imply any liability or responsibility for safe keeping by the Board.

.10 The Contractor may use the existing electrical and water services, as required, for the Work, and the costs of these services shall be borne by the Board.

1.4. WORKMANSHIP

.1 Workmanship shall be the best quality, executed by Workers experienced and skilled in the respective duties for which they are employed. Immediately notify the Consultant if required Work is such as to make it impractical to produce required results.

.2 Do not employ any unfit persons or anyone unskilled in their required duties.

.3 Decisions as to the quality or fitness of Workmanship in cases of dispute rest solely with the Board contact, whose decision is final.

.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.

.5 The Contractor shall make their own arrangements for emergency treatment of accidents.

.6 Any accidents shall be reported immediately to the Board contact.

.7 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 Subcontractors.

.8 The Contractor shall supply constant on-site supervision in the form of a Project Superintendent. The Project Superintendent shall have within their authority to negotiate minor changes regarding scheduling, manpower and equipment.

1.5. MANUFACTURER'S INSTRUCTIONS

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

1.6. TOOLS OF THE TRADE

.1 The Board will not pay the Awarded Bidder a fee for tools and equipment that are considered "tools of the trade" that are required to perform the work in this Tender or any change orders.

1.7. EXISTING EQUIPMENT

.1 Contractor shall demolish and dispose of all existing equipment specified to be removed and or replaced including obsolete services not being reused. The Board shall have first rights of refusal on all demolished equipment and or parts and the Contractor shall provide a minimum of (5) working days notice prior to disposal of the equipment, parts, or equipment and set aside same in a suitable location to be recovered by Board technicians.

END OF 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 the 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 the building.

1.4. AVAILABILITY

.1 Immediately upon receipt of the Board's Purchase Order, review Product delivery requirements and anticipate foreseeable supply delays for any items.

.2 Immediately upon receipt of the Board's 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 Subcontractors shall identify in writing any delivery issues within 14 days of receiving the Contractor's 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 the 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 the 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 disturbance to the owner.

.2 Protect, relocate or maintain existing active services. When services are encountered, cap off in a 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 reinstallation 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 the Consultant if there is interference. Install as directed by the 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 the Consultant.

END OF 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 NOT APPLICABLE.

1.4. QUALIFICATIONS OF SURVEYOR

.1 NOT APPLICABLE.

1.5. SURVEY REFERENCE POINTS

.1 NOT APPLICABLE.

1.6. SURVEY REQUIREMENTS

.1 NOT APPLICABLE.

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 the 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 the area of Work and notify the Consultant of findings.

.2 Remove abandoned service lines running through existing and new structures. Cap or seal lines at cut-off points as directed by the 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

01 73 30 – Execution and Cutting and Patching

1.0 GENERAL

1.1. 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.

1.2. 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.

1.3. 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 the Consultant before proceeding.

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

2.0 PRODUCTS

2.1. MATERIALS

.1 Primary Products: Those required for original installation.

.2 Product Substitution: For any proposed change in materials, submit a request for substitution described in Section 01 33 00.

3.0 EXECUTION

3.1. 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.

3.2. PREPARATION

.1 Provide temporary supports to ensure structural integrity of the Work. Provide devices and methods to protect other portions of the Project from damage.

.2 Provide protection from elements for areas which may be exposed by uncovering work.

.3 Maintain excavations free of water.

3.3. 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 a masonry saw or core drill. Pneumatic tools are 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 the 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 the party responsible thereof.

.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.

3.4. 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 the nearest intersection or natural break. For an assembly, refinish the 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 a distance of 1.5m under normal lighting.

END OF 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 them from premises at the 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 a waste container at the end of each working day.

.3 Vacuum clean interior areas prior to the 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 the 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 the 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 affected by construction final exterior cleaning operations shall be performed by the General Contractor or competent Subcontractor. Contractor's "broom cleaning" only is not acceptable.

.2 Final exterior cleaning shall include:

- .1 broom clean and wash exterior walkways, 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

01 78 10 – Closeout Submittals and Requirements

1.0 GENERAL

1.1. RELATED SECTIONS

.1 Section 01 78 10 – WRDSB Warranty Card, Appendix 00 41 13A

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 the 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 them to the Consultant for review.
.2 Copy will be returned to the contractor with the Consultant's comments.

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

.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 numbers for such subcontractors as Plumbing, Electrical, Sprinklers, Fire System, Heating, etc.

.2 Specified warranties for contractor, each subcontractor and supplier.

.3 WRDSB Project Asset and Warranty Card, Appendix 00 41 13A

.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 a copy of the 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 a 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 the 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 the 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 the contractor with the Consultant's comments.

.4 Revise content of documents as required prior to final submission.

.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 the 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 a signed receipt from the Owner's Representative for delivered materials and include a 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 the 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 NOT APPLICABLE.

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 the 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

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 a 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 the 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 the 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 the 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 the 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 subcontractors 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 the satisfaction of the Consultant.

END OF 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 a 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 a 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 a 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 the 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

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 - General Requirements.

1.2 Related Sections

.1 Section 01 35 43 – Hazardous Materials
.2 Section 01 35 43A - Asbestos Audit Report.

1.3 Existing Conditions

.1 Assume responsibility for demolition of structures in the condition they are at time notified of award of contract.
.2 Inspect adjacent existing rooms and buildings to extent possible to ensure that its condition and stability is recorded in a manner suitable for evaluation of possible damage caused by work of this Section.

1.4 Designated Substances

.1 Designated Substances to be removed prior to demolition by qualified trades following all regulatory requirements.

1.5 Work Included

.1 Refer to Demolition Drawings for extent and scope of demolition work.

1.6 Protection

.1 Demolition work shall be performed with adequate care being taken to prevent damage to surrounding work or material which is to remain the property of the Owner.
.2 Prevent movement, settlement or damage of adjacent structures, services, existing elements to remain. Provide bracing, shoring, underpinning, as required. Make good all damage caused by demolition.
.3 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.
.4 Prevent debris from blocking surface drainage system and mechanical and electrical systems which must remain in operation.
.5 Provide protection from elements for all interior parts affected by demolition.
.6 Fires and burning of waste or materials are not permitted.
.7 Do not bury waste or materials on site.
.8 Do not dispose of waste or volatile materials such as: mineral spirits, oil, petroleum based lubricants, or toxic cleaning solutions into watercourses, storm or sanitary sewers. Ensure proper disposal procedures are maintained throughout project.
.9 Do not pump water containing suspended materials into watercourses, storm or sanitary sewers, or onto adjacent properties.
.10 Control disposal or runoff of water containing suspended materials or other harmful substances in accordance with local authorities.
.11 Protect trees, plants and foliage on site and adjacent properties where indicated.
.12 Prevent extraneous materials from contaminating air beyond application area, by providing temporary enclosures during demolition work.
.13 Cover or wet down dry materials to prevent blowing dust and debris. Control dust on all temporary roads.

1.7 Scheduling of Work

.1 Demolition of structure and appurtenances as indicated on the Drawings is to be undertaken at times and dates as directed by the Consultant or as otherwise listed in this Specification.
.2 Cooperation with subcontractors is necessary to prevent delays.

1.8 Subcontractor Qualifications

.1 Execute the work of this Section by a subcontractor who has adequate plant, equipment and skilled tradespeople to perform the work expeditiously and who is known to have been responsible for similar satisfactory work.
.2 Performance of all demolition work shall be in accordance with all regulations under the Ministry of Labour, including the Occupational Health and Safety Act, Ministry of the Environment and the Ontario Building Code.

PART 2 - PRODUCTS

2.1 Equipment

.1 Equipment and heavy machinery to meet or exceed all applicable emission requirements.
.2 Leave machinery running only while in use, except where extreme temperatures prohibit shutting machinery down.

PART 3 - EXECUTION

3.1 Examination

.1 Before commencing any demolition, ensure thorough examination of the site and work to be demolished so that all possible factors concerning demolition are investigated and that the following are known:
  .1 Methods and means available for materials handling, disposal, storage and transportation.
  .2 Construction of structures to be demolished.

3.2 Preparation

.1 Install protection consisting of barricades, signs and substantial constructions to provide physical protection.
.2 Erect shoring and other structures to prevent collapse, settlement and movement.
.3 Post danger signs. Barricade all access by unauthorized persons to areas in which demolition is in progress.
.4 Re-route electrical and mechanical services entering/ leaving the building and which are to be reconnected. Post warning signs and erect barricades on electrical lines and equipment which may remain energized to serve parts of the buildings during period of demolition. Refer to Drawings.
.5 Do not disrupt active or energized utilities traversing premises.
.6 Employ rodent and vermin control and comply with health regulations during any such control procedures.

3.3 General

.1 Perform all demolition under the direction of a competent foreman at all times.
.2 Water down debris frequently to prevent the spread of dust.
.3 Provide for complete and safe access at all times to areas adjacent to demolition work.

3.4 Demolition

.1 Demolish complete structures as indicated and remove existing equipments and services as indicated. Carefully review Architectural, Structural, Mechanical and Electrical Drawings for specific requirements for demolition. **Contractors are required to view prior to Bidding.**
.2 Carefully remove materials and equipment, and store, protect, and reinstall in building, using qualified tradesmen those items designated in the specifications or on Drawings to be reinstalled.
.3 Carefully remove materials and equipment to be retained by the Owner as indicated on Drawings. Refer also to Mechanical and Electrical Sections of the Specifications and Drawings for equipment to be handed over to the Owner.
.4 At the end of each day's work, leave work in a safe condition so that no part is in danger of collapse or falling.
.5 Demolish masonry and concrete walls in small sections. Carefully remove and lower structural framing and other heavy or large objects.
.6 Stockpile materials in a location within the Project Area which will not impede demolition activity. Eliminate double handling where possible.
.7 Selling or burning of materials on site is not permitted.

3.5 Disposal

.1 Unless otherwise specified in this Section, remove completely from the site, all debris resulting from demolition.
.2 Designate an area on site for the separation and storage of waste materials. Allow enough space for multiple bins.
.3 At a minimum, provide storage bins onsite for concrete, metal, wood, cardboard, plastic, gypsum board and mixed waste. Land clearing debris, asphalt and concrete can be stockpiled onsite, for further processing.
.4 Remove debris daily, or as it accumulates. Do not overload trucks, take means to prevent spillage.
.5 Remove contaminated or dangerous materials from site and dispose of in a safe manner to minimize danger on site or at any time during disposal.

3.6 Clean Up

.1 Upon completion of work, remove debris, trim surfaces and leave work site clean.
.2 Use only cleaning solutions and procedures which are not harmful to health, are not injurious to plants, and do not endanger wildlife, adjacent watercourses or ground water.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 Related Sections

.1 Section 04 05 12 – Masonry Mortar and Grout.
.2 Section 04 05 23 – Masonry Accessories.
.3 Section 04 22 00 – Concrete Unit Masonry.
.4 Section 07 92 00 – Joint Sealing.

1.3 References

.1 Canadian Standards Association (CSA)
  .1 CSA A179-14, Mortar and Grout for Unit Masonry.
  .2 CSA-A371-14, Masonry Construction for Buildings.

1.4 Samples

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit samples:
  .1 Two of each type of masonry unit specified.
  .2 One of each type of masonry accessory specified.
  .3 One of each type of masonry reinforcement, tie and connector proposed for use.
  .4 As required for testing purposes.

1.5 Test Reports

.1 Submit laboratory test reports certifying compliance of masonry units and mortar ingredients with specification requirements.

1.6 Delivery, Storage and Handling

.1 Deliver, store, handle and protect materials in accordance with Section 01 60 00 - Basic Product Requirements.
.2 Deliver materials to job site in dry condition.
.3 Keep materials dry until use except where wetting of bricks is specified.
.4 Store under waterproof cover on pallets or plank platforms held off ground by means of plank or timber skids.
.5 Note that there are restrictions for the new floors with respect to the type of equipment used to move materials and the weight of the materials being moved. Refer to Structural Drawings for additional details.

1.7 Environmental Requirements

.1 Cold weather requirements:
  .1 Supplement Clause 6.7.2 of CSA A371-14 with following requirements:
    .1 Maintain temperature of mortar between 5°C and 50°C until batch is used.
  .2 When air temperature is below 5ºC the requirements for masonry construction shall be in accordance with CSA A371-14 Section 6.7.2.
  .3 Maintain dry beds for masonry and use dry masonry units only. Do not wet masonry units in cold weather.
  .4 Completed masonry or sections not being worked on shall be protected in accordance with CSA A371-14 Section 6.7.3.

.2 Hot weather requirements to be in accordance with Clause 6.7.4 of a CSA A371-14:
.1 Protect freshly laid masonry from drying too rapidly, by means of waterproof, non-staining coverings.
.2 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until masonry work is completed and protected by flashings or other permanent construction.

1.8 Protection

.1 Keep masonry dry using waterproof, non-staining coverings that extend over walls and down sides sufficient to protect walls from wind driven rain, until masonry work is completed and protected by flashings or other permanent construction.
.2 Protect masonry and other work from marking and other damage. Protect completed work from mortar droppings. Use non-staining coverings.
.3 Provide temporary bracing of masonry work during and after erection until permanent lateral support is in place.

PART 2 - PRODUCTS

2.1 Materials

.1 Masonry materials are specified in related Sections indicated in 1.2.

PART 3 - EXECUTION

3.1 Installation

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

3.2 Construction

.1 Exposed masonry
.1 Remove chipped, cracked, and otherwise damaged units in exposed masonry and replace with undamaged units.
.2 Exposed block masonry to be reviewed upon application of first coat of paint.
.2 Jointing
.1 Allow joints to set just enough to remove excess water, then tool with round jointer to provide smooth, joints true to line, compressed, uniformly concave joints where concave joints are indicated.
.2 Rake joints uniformly to 6mm depth and compress with square tool to provide smooth, compressed, raked joints of uniform depth where raked joints are indicated.
.3 Strike flush all joints concealed in walls and in walls to receive gypsum board, plaster, tile, insulation, stucco, or other applied material except paint or similar thin finish coating.
.3 Joining of work
.1 Where necessary to temporarily stop horizontal runs of masonry, and in building corners:
.1 Step-back masonry diagonally to lowest course previously laid.
.2 Do not “tooth” new masonry.
.3 Fill in adjacent courses before heights of stepped masonry reach 1200mm.

.4 Cutting
- .1 Cut out for electrical switches, outlet boxes, and other recessed or built-in objects.
- .2 Make cuts straight, clean, and free from uneven edges.

.5 Building-In
- .1 Build in items required to be built into masonry.
- .2 Prevent displacement of built-in items during construction. Check plumb, location and alignment frequently, as work progresses.
- .3 Brace door jambs to maintain plumb. Fill spaces between jambs and masonry with mortar.

.6 Wetting of bricks
- .1 Except in cold weather, wet bricks having an initial rate of absorption exceeding 1 g/minute/1000 mm²: wet to uniform degree of saturation, 3 to 24 hours before laying, and do not lay until surface dry.
- .2 Wet tops of walls built of bricks qualifying for wetting, when recommencing work on such walls.

.7 Support of loads
- .1 Use concrete of strength(s) indicated in Section 03 30 00 - Cast-in-Place Concrete, where concrete fill is used in lieu of solid units.
- .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 or grout; keep paper 25mm back from faces of units.

.8 Provision for movement
- .1 Except for walls designated as shear walls on the Structural Drawings, where no space for movement is to be provided;
  - .1 Leave 3mm space below shelf angles.
  - .2 Leave 6mm space between top of non-load bearing walls and partitions and structural elements. Do not use wedges.
- .2 Build masonry to tie in with stabilizers, with provision for vertical movement.

.9 Loose steel lintels
- .1 Install loose steel lintels at all openings greater than one masonry unit length. Centre over opening width; provide 200mm bearing each side.

.10 Control joints
- .1 Except for walls designated as shear walls on the Structural Drawings, where no control joints are to be provided:
  - .1 Construct continuous control joints as indicated, and:
    - .1 at intersections of interior block walls with exterior block walls.
    - .2 at locations between walls on foundations and walls on thickened slabs
    - .3 over window and door jambs.
- .2 Block reinforcement to be continuous at exterior control joints and at intersections of interior block walls with exterior bock walls, non-continuous at interior control joints.
- .3 Rake joints full height 10mm x 20mm and caulk to Section 07 92 00.

.11 Penetration of masonry
- .1 Fill voids of masonry to within 19mm of structural members, pipes, ducts and conduit that penetrate masonry walls and partitions, unless otherwise indicated.
- .2 Keep masonry units similarly clear of such penetrations.
- .3 Finish mortar smooth at face of masonry.
- .4 Pack remainder of annular void surrounding penetrating items with fire separation packing to within 12.7mm of face of masonry. Install sealant to maintain fire ratings where required.

.12 Adjustment and cleaning
- .1 Patch damaged masonry walls which have been rejected.
- .2 Point all holes in mortar joints except weepholes.
- .3 Point all voids in concrete unit masonry faces.
- .4 Cut out defective mortar joints to a minimum depth of 13mm and repoint.
- .5 Wash down and brush masonry to remove mortar and stains. Use only detergents, or proprietary masonry cleaners as recommended by masonry manufacturer.

3.3 Site Tolerances

.1 Tolerances CSA A371-14 apply:
- .1 Clause 6.2 for surfaces and lines;
- .2 Clause 7.1.2.2. for bed joints below the first course of masonry;
- .3 Clause 13.2.2. for width of air space in cavity and veneer systems.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 - General Requirements.

1.2 Related Sections

.1 Section 04 05 10 – Common Work Results for Masonry.

1.3 References

.1 Canadian Standards Association (CSA)
  .1 CSA A179-14, Mortar and Grout for Unit Masonry.

PART 2 - PRODUCTS

2.1 Materials

.1 Use same brands of materials and source of aggregate for entire project.
.2 Mortar and grout: CSA A179-14.
.3 Dirt resistant additives: Aluminum tristrearate, calcium strearate or ammonium stearate.
.4 Use aggregate passing 1.18mm sieve where 6mm thick joints are indicated.
.5 All mortar to be prepared based on property specifications, as per CSA A179.
.6 Mortar for exterior masonry above grade:
  .1 Loadbearing: Type S.
  .2 Non-loadbearing: Type N.
  .3 Parapet walls, chimneys, unprotected walls: Type S.
.7 Mortar for interior masonry:
  .1 Loadbearing: Type S.
  .2 Non-loadbearing: Type N.
.8 The following applies regardless of mortar types and uses specified above:
  .1 Mortar for grouted reinforced masonry: Type S.
  .2 Mortar for pointing: Type S.
.9 Non-staining mortar: use non-staining masonry cement for cementitious portion of specified mortar type.
.10 Type S mortar should be proportioned to meet the property specification minimum strength requirements but be less strength than the block strength of 20 MPa.

2.2 Mixes

.1 Colour and admixtures: Mix grout to semi-fluid consistency.
.2 Pointing mortar: Prehydrate pointing mortar by mixing ingredients dry, then mix again adding just enough water to produce damp unworkable mix that will retain its form when pressed into ball. Allow to stand for not less than 1 hour nor more than 2 hours then remix with sufficient water to produce mortar of proper consistency for pointing.

PART 3 - EXECUTION

3.1 Construction

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

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 Related Sections

.1 Section 04 05 10 – Common Work Results for Masonry.
.2 Section 04 05 12 – Masonry Mortar and Grout.

1.3 References

.1 A165 Series-04 CSA Standard on Concrete Masonry Units.

PART 2 - PRODUCTS

2.1 Materials

.1 Standard concrete block units (CB): to CSA CAN3-A165.1 standards.
.1 Classification: H/15/A /M.
.2 Size: imperial.

PART 3 – EXECUTION

3.1 Installation

.1 Concrete block units.
.1 Bond: running.
.2 Coursing height: 200mm +/- for one block and one joint.
.3 Jointing: concave where exposed or where paint or other finish coating is specified.
.2 When patching/ repairing openings in existing walls below finished ceiling height, tooth-in concrete block using salvage block where possible or imperial block, **so that are no cut blocks left as a result of the repair. Match existing mortar joints, both in level and size.**

3.2 Cleaning

.1 Allow mortar droppings on masonry to partially dry then remove by means of trowel, followed by rubbing lightly with small piece of block and finally by brushing.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 - General Requirements.

1.2 Related Sections

.1 Structural Steel – refer to Structural Drawings.
.2 Section 09 91 00 – Painting.

1.3 Quality Assurance

.1 Sub-contractor Qualifications
  .1 Provide metal fabrications specified in this Section only by a fabricator who has adequate plant, equipment and skilled tradesmen to fabricate and install metal fabrications of the highest quality.
  .2 Welder Qualifications
    .1 Weld structural components as follows:
      .1 Steel to conform to requirements of CSA Standard W59 and by a fabricator fully certified by the Canadian Welding Bureau to conditions of CSA Standard W47.1 and W55.3.
      .2 Aluminum; by a fabricator fully certified by the Canadian Welding Bureau to requirements of CSA Standard W47.2.

1.4 Requirements of Regulatory Agencies

.1 Metal fabrications which function to resist forces imposed by dead and live loads shall conform to requirements of jurisdictional authorities.
.2 Submit shop drawings stamped and sealed by a professional Engineer registered in the Province of Ontario to authorities when requested.

1.5 References

.1 American Society for Testing and Materials (ASTM)
  .1 ASTM A53/ A53M – 18, Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated Welded and Seamless.
  .2 ASTM A269/ a269M – 15a(2019), Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service.
  .3 ASTM A307 – 14e1, Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength.
  .4 ASTM A780/ A780M – 09(2015), Standard Practice for Repair of damaged Hot Dip Coatings.
.2 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-1.40-97, Anti-corrosive Structural Steel Alkyd Primer.
  .2 CAN/CGSB-1.108-M89, Bituminous Solvent Type Paint.
  .3 CAN/CGSB-1.181-99, Ready-Mixed, Organic Zinc-rich coating.
.3 Canadian Standards Association (CSA)
  .1 CAN/CSA-G40.20/G40.21-98, General Requirements for Rolled or Welded Structural Quality Steel.
  .2 CAN/CSA-G164-M92(R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  .3 CAN/CSA-S16-01 (R2007), Limit States Design of Steel Structures.
  .4 CSA W47.1-09 (R2014), Certification of Companies for Fusion Welding of Steel Structures.
  .5 CSA W55.3-08 (R2018), Resistance Welding Qualification Code for Fabricators of Structural Members used in Buildings.

.6 CSA W59 - 2018, Welded Steel Construction.

1.6 Shop Drawings

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Indicate materials, core thicknesses, finishes, connections, joints, method of anchorage, number of anchors, supports, reinforcement, details and accessories.

1.7 Delivery, Storage and Handling

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 - Basic Product Requirements.
.2 Label, tag or otherwise mark metal fabrications supplied for installation by other sections to indicate their function, location in building and shop drawing designation.
.3 Protect metal fabrications from damage during delivery, storage and handling. Protect prime painted and galvanized surfaces from damage.
.4 Cover exposed surfaces of stainless steel or prefinished metal which does not receive site finishing, with protective coatings or wrappings, prior to shipping to job site. Use materials recommended by finishers or manufacturers of metals, to ensure that method is sufficiently protective, easily removed and harmless to the finish.
.5 Leave protective covering in place until final cleaning of building. Provide instructions for removal of protective covering.

PART 2 - PRODUCTS

2.1 Materials

.1 Include all materials, products, accessories and supplementary parts necessary to complete assembly and installation of metal fabrications specified in this Section.
.2 Incorporate only metals that are free from defects which impair strength or durability or which are visible.
.3 Install only new materials of best quality and free from rust, waves and buckles, that are clean, straight with sharply defined profiles conforming to requirements of the following standards and specifications:
  .1 Steel sections and plates: to CAN/CSA-G40.20/G40.21, Grade 300W.
  .2 Hollow Structural Sections: to CAN/CSA G40.21, Grade 350W.
  .3 Welding materials: to CSA W59-M1998.
  .4 Bolts and anchor bolts: to ASTM A 307.
  .5 Galvanizing: hot dipped galvanizing with zinc coating of 600 g/m2 to CAN/CSA-G164.
  .6 Stainless steel: To ASTM A 269. Type 304 (18-8), seamless with No. 4 finish.
  .7 Aluminum extrusions: Aluminum Association alloy AA6063-T5 anodizing quality.
  .8 Shop coat primer: to CAN/CGSB-1.40.
  .9 Galvanized primer: zinc-rich, ready mix to CAN/CGSB-1-181.
  .10 Bituminous paint: to CAN/CGSB-1.108.
  .11 Grout: non-shrink, non-metallic, flowable, 15 MPa at 24 hours.

2.2 Fabrication

.1 Fabricate work specified in this Section with machinery and tools specifically designed for the intended manufacturing processes and by skilled tradesmen.
.2 Fabricate work with materials, component sizes, metal gauges, reinforcing, anchors and fastenings of adequate strength to withstand intended use and within allowable design factors imposed by jurisdictional authorities.
.3 Fabricate work square, straight and accurate to required size, with joints closely fitted and properly secured.

.4 Incorporate means for fastening of other installations secured to metal fabrications. Pre-punch holes in members to allow for installation of mechanical and/ or electrical items.
.5 Ensure that metal fabrications will remain free of warping, buckling, opening of joints and seams, distortion and permanent deformation.
.6 Provide for differential movement within assemblies and at junctions of assemblies with surrounding construction.
.7 Cleanly and smoothly finish exposed edges of materials including holes. Machine or grind components to ensure level bearings.
.8 Cap open ends of sections exposed to view, such as pipes, channels, angles and other similar members.

2.3 Assembly

.1 Where possible, fit and shop assemble work, ready for erection.
.2 Accurately cut, machine and fit joints, corners, copes and mitres so that junctions between components fit together tightly and in true planes.
.3 Conceal fastenings from view unless otherwise indicated on Drawings.
.4 Weld all connections where possible; bolt where not possible and cut off bolts flush with nuts. Countersink bolt heads and provide method to prevent loosening of nuts.
.5 Use self-tapping shakeproof countersunk flat headed screws on items requiring assembly by screws or as indicated on Drawings.
.6 Weld joints tight, flush and in true planes with base metals. Ensure exposed welds are continuous for length of each joint. File or grind exposed welds smooth and flush where exposed to view.

2.4 Galvanizing

.1 After fabrication galvanize all exterior work unless noted otherwise.
.2 Fabricate items to be galvanized as recommended in Appendix A and B of CSA G164.
.3 Hot dip galvanize assemblies following their fabrication except where impossible.
.4 Paint galvanized surfaces that are cut, welded or threaded with zinc rich paint to ensure a minimum coating thickness of 0.102mm, immediately following damage to galvanized protection. Prepare and repair surfaces to meet specified requirements of ASTM A780.

2.5 Isolation Coating

.1 Isolate aluminum from following components, by means of bituminous paint:
  .1 Dissimilar metals except stainless steel, zinc or white bronze of small area.
  .2 Concrete, mortar and masonry.
  .3 Wood.

PART 3 - EXECUTION

3.1 Installation

.1 Install metal fabrications plumb, true, square, straight, level and accurately and tightly fitted together and to surrounding construction.
.2 Provide suitable means of anchorage acceptable to the Consultant such as anchor bolts, bolts with washers and nuts, lag screws, expansion shields, toggles, straps, sleeves, brackets, clips and other items necessary for secure installation as required by loading and jurisdictional authorities.
.3 Make field connections with bolts to CAN/CSA-S16.1 or weld in accordance with CSA W59.
.4 Exposed fastening devices to match finish and be compatible with material through which they pass.

.5 Attach metal fabrications to masonry with lead plugs and galvanized steel or other corrosion resistant fastenings to support load with a safety factor of three (3).
.6 Grout metal posts, pickets, balusters, etc. in metal sleeves cast into concrete with sulphur, molten lead or quick setting anchor cement, unless detailed otherwise. Fabricate sleeves to 150mm minimum depth.
.7 Countersink pilot holes provided for wood screws where wood is attached to metal fabrications.
.8 Insulate between dissimilar metals; or between metal and masonry or concrete with bituminous paint to prevent electrolysis.
.9 Caulk to Section 07 92 10 - Joint Sealing between components installed by this Section to seal joints against passage of air, water or both.
.10 Hand items over for casting into concrete or building into masonry to appropriate trades together with setting templates.

3.2 Adjustment and Cleaning

.1 After installation, touch-up primed surfaces that are burnt, scratched or otherwise damaged with prime paint to match shop coat.
.2 Repair areas of bare metal and welds on galvanized surfaces with zinc rich paint.
.3 Do not field paint when air temperature is below 7°C.
.4 Remove damaged, dented, defaced, defectively finished or tool marked components and replace with new.
.5 Refinish shop applied finishes in field only with prior approval from Consultant.
.6 Clean off dirt on surfaces resulting from installation.

3.3 Schedule of Metal Fabrications

.1 General
.1 Ensure that all Drawings and Specification sections including those for structural, mechanical and electrical work are consulted to establish the limits of metal fabrication installations included in this Section.
.2 Angle Lintels
.1 Refer to Structural Drawings.
.3 Welding Booths
.1 Provide welding booths to details on Drawings.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 Related Sections

.1 Miscellaneous wood blocking, furring – Divisions 06, 07, 09, 10.

1.3 References

.1 Canadian Standards Association (CSA)
- .1 CSA B111, Wire Nails, Spikes and Staples.
- .2 CAN/CSA-G164-M, Hot Dip Galvanizing of Irregularly Shaped Articles.
- .3 CSA O121-M, Douglas Fir Plywood.
- .4 CAN/CSA-O141, Softwood Lumber.
- .5 CSA O151-M, Canadian Softwood Plywood.
- .6 CAN/CSA-O325.0, Construction Sheathing.

.2 National Lumber Grades Authority (NLGA)
- .1 Standard Grading Rules for Canadian Lumber.

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.
.3 Plywood, OSB and wood based composite panel construction sheathing identification: by grademark in accordance with applicable CSA standards.

PART 2 - PRODUCTS

2.1 Lumber Material

.1 Lumber: unless specified otherwise, SPF species softwood, S4S, moisture content 19% or less in accordance with following standards:
- .1 CAN/CSA O141.
- .2 NLGA Standard Grading Rules for Canadian Lumber.

.2 Furring, blocking, nailing strips, grounds, rough bucks, cants, curbs, fascia backing and sleepers:
- .1 S2S.
- .2 Board sizes: "Standard" or better grade.
- .3 Dimension sizes: "Standard" light framing or better grade.

2.2 Panel Materials

.1 Panel standards: type, grade and thickness as indicated, in accordance with following standards:
- .1 Douglas fir plywood (DFP): to CSA O121, standard construction, exterior grade.
- .2 Canadian softwood plywood (CSP): to CSA O151, standard construction.
- .3 Poplar plywood (PP): to CSA O153, standard construction.
- .4 Waferboard and strandboard: to CAN3-O437.

2.3 Pressure Treated Lumber and Plywood

.1 Pressure treated lumber: to CSA O80.1 - "Preservative Treatment of all Timber Products by Pressure Processes".

2.4 Fasteners

.1 Nails, spikes and staples: to CSA B111.
.2 Bolts: 12.7mm diameter unless indicated otherwise, complete with nuts and washers.
.3 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.
.4 Galvanizing: to CSA G164, use galvanized fasteners for exterior work, interior highly humid areas, and pressure-preservative treated lumber.

2.5 Accessories

.1 Polyethylene film: to CAN 2-51.33 Type 1, 0.15mm thickness.

2.6 Wood Preservative

.1 Surface applied wood preservative: copper naphthenate or 5% pentachlorophenol solution, water repellant preservative.

PART 3 - EXECUTION

3.1 Preparation

.1 Treat surfaces of material 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 Re-treat surfaces exposed by cutting, trimming or boring with liberal brush application of preservative before installation.
.4 Treat material as indicated as follows:
  .1 Wood cants, fascia backing, curbs, nailers, sleepers on roof deck.
  .2 Wood furring for on outside surface of exterior masonry and concrete walls.

3.2 Installation

.1 Comply with requirements of NBC, supplemented by the following paragraphs.
.2 Install furring and blocking as required to space-out and support casework, cabinets, wall and ceiling finishes, facings, fascia, soffit, siding, washroom accessories and other work as required. Install required provisions for fastening located and secured to suit site conditions, and adequate for intended support.
.3 Align and plumb faces of furring and blocking to tolerance of 1:600.
.4 Install rough bucks, nailers and linings to rough openings as required to provide backing for frames and other work.
.5 Except when indicated otherwise, use material at least 38mm thick and secured with 9mm bolts located within 300mm from ends of members and uniformly spaced at 1200mm between.

3.3 Erection

.1 Frame, anchor, fasten, tie and brace members to provide necessary strength and rigidity.
.2 Countersink bolts where necessary to provide clearance for other work.

3.4 Schedules

.1 Provide electrical equipment backboards for mounting electrical equipment as indicated. Use 19mm thick plywood on 19mm x 38mm furring around perimeter and at maximum 300mm intermediate. Paint before installation.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 Related Sections

.1 Section 07 26 00 – Vapour Retarders.

1.3 References

.1 American Society for Testing and Materials (ASTM)
  .1 ASTM E96/ E96M -16, Test Methods for Water Vapor Transmission of Materials.
  .2 ASTM C726-17, Standard Specification for Mineral Fiber Roof Insulation Board.
.2 Canadian Gas Association (CGA)
  .1 CAN/CGA-B149.1-15, Natural Gas Installation Code.
  .2 CAN/CGA-B149.2-15, Propane Installation Code.
.3 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB 51.11-92, Rigid Insulation.
.4 Underwriters Laboratories of Canada (ULC)
  .1 CAN/ULC-S701-11, Thermal Insulation, Polystyrene, Boards and Pipe Coverings.
  .2 CAN/ULC-S702-14, Thermal Insulation, Mineral Fibre, for Buildings.

PART 2 - PRODUCTS

2.1 Insulation

.1 Rigid cellular polystytrene; cavity wall insulation: to CAN/ULC-S701-05, type 3:
  .1 Acceptable material
    .1 Styrofoam Brand CavityMate Plus XPS Ultra by Dupont.
    .2 Foamular NGX C-200 by Owens Corning Canada Inc.

2.2 Adhesive

.1 Adhesive: as recommended by manufacturer for fully adhered application.

PART 3 - EXECUTION

3.1 General

.1 Install materials in accordance with manufacturer’s installation instructions.

3.2 Examination

.1 Examine substrates and immediately inform Consultant in writing of defects.
.2 Take measurements of the Place of Work to ensure that work is fabricated to fit structure, surrounding construction, around obstructions and projections in place, or as indicated; and to suit locations of services.
.3 Verify that backup construction is aligned for proper installation of Work before commencing erection.

3.3 Installation - General

.1 Surfaces to receive insulation shall be dry and free of dew, frost, voids, loose material, oil, grease, asphalt curing compounds and other matter detrimental to bond of adhesive. Adhesive shall be compatible with all substrate materials.

.2 Apply adhesives and install insulation in accordance with manufacturer's printed recommendations. Apply at rate as required to prevent displacement of insulation boards during construction operations.

.3 Butt joints tightly and offset vertical and horizontal joints in multi-layer applications to form an unbroken thermal envelope. Use only insulation boards free from chipped or broken edges. Use largest possible dimensions to reduce number of joints.

.4 Apply insulation to ensure total and complete coverage of surfaces indicated to be insulated, and in direct contact with such surfaces. Unless otherwise specified, apply insulation in single layer of thickness indicated.

.5 Ensure integrity and continuity of insulation at juncture with different types of materials and seal in an acceptable manner.

.6 Do not enclose insulation until it has been reviewed and accepted by Consultant.

3.4 Above Grade Insulation

.1 Secure rigid insulation boards to substrate at rate of 6 each per 610mm x 1220mm board minimum, with corrosion resistant mechanical fasteners complete with 25mm plastic washers.

.2 Apply rigid insulation at through-wall flashings as indicated on Drawings and as follows:

.1 Over through-wall flashings at grade, prior to application of sprayed foam insulation.

.2 Under elevated through-wall flashings, full thickness of cavity.

.3 Over elevated through-wall flashings, prior to application of sprayed foam insulation.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 References

.1 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-51.34-M86, Vapour Barrier, Polyethylene Sheet, for Use in Building Construction.
.2 Canadian Standards Association (CSA)
  .1 CAN/CSA-ISO 9001, Requirements for Quality Assurance, Parts 1, 2 and 3.

1.3 Submittals

.1 Submit proof of manufacturer's CCMC Listing and listing number to Consultant.
.2 Manufacturer's Instructions: Provide to indicate special handling criteria, installation sequence, and cleaning procedures.

1.4 Product Data

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit WHMIS MSDS - Material Safety Data Sheets in accordance with Section 01 33 00 - Submittal Procedures.
.3 Submit product data sheets for sheet vapour retarders. Include:
  .1 Product characteristics.
  .2 Performance criteria.
  .3 Limitations.

1.5 Mock-Ups

.1 Submit mock-ups in accordance with Section 01 33 00 – Submittal Procedures.
.2 Construct mock-up of sheet vapour barrier installation including one lap joint, one inside corner and at one electrical box. Mock-up may be part of finished work.
.3 Allow 24 hours for inspection of mock-up by Consultant before proceeding with vapour barrier work.

PART 2 - PRODUCTS

2.1 Sheet Vapour Barrier

.1 Polyethylene film: to CAN/CGSB-51.34, 0.15mm thick, except under slabs on grade, as Specified under Section 03 30 00.

2.2 Accessories

.1 Joint sealing tape: air resistant pressure sensitive adhesive tape, type recommended by vapour barrier manufacturer, 50mm wide for lap joints and perimeter seals, 25mm wide elsewhere.

.2 Sealant: To Section 07 92 10 - Joint Sealing.
.3 Staples: minimum 6mm leg.
.4 Moulded box vapour barrier: factory-moulded polyethylene box for use with recessed electric switch and outlet device boxes.

PART 3 - EXECUTION

3.1 Installation

.1 Ensure services are installed and inspected prior to installation of retarder.
.2 Install sheet vapour retarder on warm side of exterior wall and ceiling assemblies prior to installation of gypsum board to form continuous retarder.
.3 Use sheets of largest practical size to minimize joints.
.4 Inspect for continuity. Repair punctures and tears with sealing tape before work is concealed.

3.2 Exterior Surface Openings

.1 Cut sheet vapour retarder to form openings and ensure material is lapped and sealed to frame.

3.3 Perimeter Seals

.1 Seal perimeter of sheet vapour barrier as follows:
  .1 Apply continuous bead of sealant to substrate at perimeter of sheets.
  .2 Lap sheet over sealant and press into sealant bead.
  .3 Install staples through lapped sheets at sealant bead into wood substrate.
  .4 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.4 Lap Joint Seals

.1 Seal lap joints of sheet vapour barrier as follows:
  .1 Attach first sheet to substrate.
  .2 Apply continuous bead of sealant over solid backing at joint.
  .3 Lap adjoining sheet minimum 150mm and press into sealant bead.
  .4 Install staples through lapped sheets at sealant bead into wood substrate.
  .5 Ensure that no gaps exist in sealant bead. Smooth out folds and ripples occurring in sheet over sealant.

3.5 Electrical Boxes

.1 Seal electrical switch and outlet device boxes that penetrate vapour barrier as follows:
  .1 Install moulded box vapour barrier.
  .2 Apply sealant to seal edges of flange to main vapour barrier and seal wiring penetrations through box cover.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 Section Includes

.1 Materials and installation methods providing primary air/ vapour barrier materials and assemblies.
.2 Air/ vapour barrier materials to provide continuous seal between components of building envelope and building penetrations.

1.3 Related Sections

.1 Section 07 21 13 – Board Insulation.
.2 Section 07 26 00 – Vapour Retarders
.3 Section 07 92 10 – Joint Sealing.

1.4 References

.1 Canadian Construction Documents Committee
  .1 CCDC 2 - Stipulated Price Contract.
.2 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-19.13M-M87, Sealing Compound, One Component, Elastomeric Chemical Curing.
  .2 CAN/CGSB-19.18M-M87, Sealing Compound, One Component, Silicone Base Solvent Curing.
  .3 CAN/CGSB-19.24M-M90, Multi-Component, Chemical Curing Sealing Compound.
  .4 CGSB 19-GP-14M-12, Sealing Compound, One Component, Butyl-Polyisobutylene Polymer Base, Solvent Curing.
.3 NBCC 2015; Part 5 - Environmental Separation
.4 Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification.

1.5 Submittals

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
  .1 Provide drawings of special joint conditions.
.2 Submit manufacturer's product data sheets in accordance with Section 01 33 00 - Submittal Procedures.
.3 Submit manufacturer's installation instructions in accordance with Section 01 33 00 - Submittal Procedures.

1.6 Quality Assurance

.1 Perform Work in accordance with Sealant and Waterproofer's Institute - Sealant and Caulking Guide Specification requirements for materials and installation.
.2 Perform Work in accordance with National Air Barrier Association - Professional Contractor Quality Assurance Program and requirements for materials and installation.
.3 Maintain one copy of documents on site.

1.7 Qualifications

.1 Applicator: Company specializing in performing work of this Section with experience in the installation of air/vapour barrier systems. Completed installation must be approved by the material manufacturer.

1.8 Mock-Up

.1 Construct typical exterior wall panel, 5m long by 5m wide, incorporating window, frame and sill, insulation, building corner condition, junction with roof system; illustrating materials interface and seals.
.2 Locate where directed.
.3 Mock-up may remain as part of the Work.
.4 Allow 24 hours for inspection of mock-up by Consultant before proceeding with air/vapour barrier Work.

1.9 Delivery, Storage and Handling

.1 Deliver, store and handle materials in accordance with Section 01 61 00 - Basic Product Requirements.
.2 Deliver, store and handle materials in accordance with manufacturer's written instructions.
.3 Clean spills and leave area as it was prior to spill.

1.10 Project Environmental Requirements

.1 Maintain temperature and humidity recommended by materials manufactures before, during and after installation.

1.11 Sequencing

.1 Sequence work to permit installation of materials in conjunction with related materials and seals.
.2 Schedule installation of air barriers to coincide with the application of insulation as closely as possible. Avoid leaving air barriers exposed for long periods of time.

1.12 Warranty

.1 Provide a three year warranty under provisions of Section 01 78 00 - Closeout Submittals.
.2 Warranty: Include coverage of installed sealant and sheet materials which fail to achieve air tight and watertight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 - PRODUCTS

2.1 Membrane Air Barrier

.1 Sheet membrane: 40 mil self-adhering membrane air barrier consisting of SBS rubberized asphalt compound cross laminated to a polyethylene film.
  .1 When air and/or surface temperature is above 0°C; "Blueskin SA" by Bakor, "Sealtight Air-Shield" by W.R. Meadows of Canada, "PERM-A-BARRIER" by Grace Construction Products and "Sopraseal Stick 1100" by Soprema are acceptable products.

.2 When air and/or surface temperature drops below 0°C use low temperature products, "Blueskin SA LT" by Bakor, "PERM-A-BARRIER Low Temperature Membrane" by Grace Construction Products or "Sopraseal Stick 1100 Winter Grade" by Soprema.

.3 Install in widths to suit wall condition and to minimize joints.

.2 Lap adhesive; single component rubberized mastic as recommended by manufacturer.

.3 Primer; as recommended by manufacturer.

2.2 Sealants

.1 Sealants in accordance with Section 07 92 10 - Joint Sealing.

2.3 Accessories

.1 Thinner and cleaner for Sheet Seal: As recommended by sheet material manufacturer.

PART 3 - EXECUTION

3.1 Examination

.1 Verify that surfaces and conditions are ready to accept the Work of this Section.

.2 Ensure all surfaces are clean, dry, sound, smooth, continuous and comply with air barrier manufacturer's requirements.

.3 Report any unsatisfactory conditions to the Consultant in writing.

.4 Do not start work until deficiencies have been corrected. Commencement of Work implies acceptance of conditions.

3.2 Preparation

.1 Remove loose or foreign matter which might impair adhesion of materials.

.2 Ensure all substrates are clean of oil or excess dust; all masonry joints struck flush, and open joints filled; and all concrete surfaces free of large voids, spalled areas or sharp protrusions.

.3 Ensure all substrates are free of surface moisture prior to application of self-adhesive membrane and primer.

.4 Ensure metal closures are free of sharp edges and burrs.

.5 Fill voids in masonry substrate smaller than 6mm with a trowel application of liquid air barrier. Voids larger than 6mm to be covered by sheet seal.

.6 Prime substrate surfaces to receive sheet seal in accordance with manufacturer's instructions.

3.3 Membrane Air Barrier Installation

.1 Install materials in accordance with manufacturer's instructions. Ensure flashing materials are consistent with manufacturer’s recommendations for temperature range expected during installation.

.2 Do not install sheet membrane air barrier materials when air and/or surface temperatures drop below -10°C.

.3 Install sheet membrane air barriers only in dry, fair weather when there is no threat of precipitation.

.4 Prime all surfaces to receive membrane air barriers just prior to application of membrane in strict accordance with manufacturers instructions. Reprime surfaces if contaminated with dust.

.5 Secure sheet seal to masonry and concrete materials. Ensure that all primed surface receive membrane in same day. Lap joints 50mm minimum and seal with mastic. Position lap seal over firm bearing.
.6 Press membrane firmly into place by means of a hand roller with sufficient pressure to ensure continuous and intimate contact with substrate. Take care to avoid blisters, wrinkles, or folds in membrane.
.7 Apply sheet seal over exterior surfaces/voids, lapping masonry by a minimum of 100mm.
.8 Apply sheet seals over wall infill areas.
.9 Install sheet seal around all window, door openings, canopies/ overhangs and mechanical and electrical openings and other protrusions or wall penetrations in masonry walls.
.10 Install sheet seal at all parapet details to bridge roofing air barrier and exterior wall air barrier.
.11 Install sheet seal to bridge over all exposed steel in exterior masonry walls.

3.4 Protection of Work

.1 Protect finished Work in accordance with Section 01 61 00 - Product Requirements.
.2 Do not permit adjacent work to damage work of this Section.
.3 Ensure finished Work is protected from climatic conditions.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 Related Sections

.1 Section 04 22 00 – Concrete Unit Masonry.
.2 Section 07 21 13 – Board Insulation.
.3 Section 07 27 10 – Air Barriers.
.4 Section 07 62 00 – Sheet Metal Flashing and Trim.
.5 Section 07 92 10 – Joint Sealing.

1.3 References

.1 American Society for Testing and Materials (ASTM)
  .1 ASTM A446/ A446 - 93, Specification for Steel Sheet, Zinc-Coated (Galvanized) by the Hot-Dip Process, General Requirements.
  .2 ASTM A525 - 93, Specification for Steel Sheet Zinc Coated (Galvanized) by the Hot Dipped Process, General Requirements.
  .3 ASTM A780/ A780M – 09 (2015), Standard Practice for Repair of Damaged Hot-Dip Coatings.
.2 Canadian General Standards Board (CGSB)
  .1 CGSB Specification 19-GP-5M, Sealing Compound, One Component, Acrylic Base, Solvent Curing.
  .2 CAN/CGSB-19.24-M90, Sealing Compound, Multi-Component, Chemical CurinG.
.3 Canadian Standards Association (CSA)
  .1 CSA Standard G 164-M92 (R2003), Hot Dip Galvanizing of Irregularly Shaped Articles.
  .2 CAN/CSA-S136-16, Cold Formed Steel Structural Members.
.4 Meet specified requirements of CAN/CSA-S136-M89, Cold Formed Steel Structural Members and requirements of applicable jurisdictional authorities for each preformed metal system.
.5 Requirements specified in this Section are intended to modify, supplement, or clarify specifications contained in CAN/CSA-S136-16.
.6 Recommendations contained in Standard Specifications and Technical Bulletins of the Canadian Sheet Steel Building Institute for materials and performance of system will establish minimum standards for work not specified in CAN/CSA-S136-16, by jurisdictional authorities, or in this Section.

1.4 Quality Assurance

.1 Mock-Up
  .1 Construct a 1200mm x 1200mm mock-up of total preformed metal siding system.
  .2 Include all components and examples of all mitred corners.
  .3 Allow 24 hours for inspection of mock-up by Consultant before proceeding with preformed metal siding work.

1.5 Samples

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit duplicate 300mm 300mm samples of siding material, of colour and profile specified.

1.6 Shop Drawings

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Indicate dimensions, profiles, attachment methods, schedule of wall elevations, trim and closure pieces, and related work.

1.7 Delivery, Storage and Handling

.1 Package materials to protect finished surfaces of sliding from staining and marring.
.2 Store materials flat at site under protection to prevent staining from the ground or from collection of water on material, or both; and secured against wind damage.
.3 Store insulation and adhesives in dry areas, heated as required to prevent damage to adhesives.

1.8 Warranty

.1 Extended Warranty
.1 Warranty contained in GC 12.3 is, with respect to Section 07 46 13, extended from two (2) years to five (5) years. Without restricting generality of warranty, defects shall include leaking, failure to stay in place under expansion, lifting, deformation, deterioration, etc.
.2 Contractor hereby warrants that system is suitable for use in this type of installation.

PART 2 - PRODUCTS

2.1 Siding System

.1 Siding system shall be one system, applied to vertical surfaces.
.2 System shall consist of exterior preformed metal skin on galvanized framing and shall include all flashings, trims and closures.

2.2 Materials

.1 Metals
.1 Steel: to meet specified requirements of ASTM A446, Grade A.
.2 Galvanizing
.1 Zinc Coated Sheet: To meet specified requirements of ASTM Specification A525, zinc coating designation Z275.
.2 Accessories and Hardware: Zinc coating to meet specified requirements of CSA G 164, including Appendix A.
.2 Finishes
.1 Precoated Metal: Two coats of acrylic enamel, each baked, applied by a continuous sheet steel coating plant.
.1 WeatherX™ coating system, as provided with VicWest products.
.2 Pre-coat 8000 Series.
.2 Exterior Sheet: 0.025mm thick on exposed face, 0.00075mm thick on unexposed face.
.3 Colour: To be selected by Consultant from manufacturer's full stock colour range.
.3 Preformed Metal Siding
.1 Precoated and preformed metal wall cladding panels with base metal thickness of 0.76mm;
.1 AD-300 profile.

.4 Miscellaneous Framing, Flashings and Exposed Trim

.1 Girts and Subgirts: Minimum 0.12mm thick zinc coated in depths and configurations noted on the Drawings; clip and girt system, separated by cork gasket as required and shall be designed to accommodate expansion and contraction, dynamic movements and design load requirements.

.1 Approved product: Enviroclip, as manufactured by Ontario Panelization, or approved alternate.

.2 Closures: Minimum 0.76mm thick galvanized sheet steel where not exposed to view.

.3 Flashings and Exposed Trim: Minimum 0.46 thick precoated sheet steel in colour to match siding, where exposed to view.

.5 Membrane Flashings

.1 Sheet Membrane: 40 mil self-adhering membrane flashing consisting of SBS rubberized asphalt compound cross laminated to a polyethylene film.

.1 When air and/or surface temperature is above 0°C; "Blueskin SA" by Bakor, "Sealtight Air-Shield" by W.R. Meadows of Canada, "PERM-A-BARRIER" by Grace Construction Products and Sopraseal Stick 1100 by Soprema are acceptable products.

.2 When air and/or surface temperature drops below 0°C use low temperature products, "Blueskin SA LT" by Bakor, "PERM-A-BARRIER Low Temperature Membrane" by Grace Construction Products or "Sopraseal Stick 1100 Winter Grade" by Soprema.

.3 Install in width to suit wall thickness.

.2 Lap adhesive: single component rubberized mastic as recommended by manufacturer.

.3 Primer: as recommended by manufacturer.

.6 Sealant

.1 Acrylic Solvent Release, One Part Sealant: To meet specified requirements of CGSB Specification 19-GP-5.

.2 Two Part Polysulphide Sealant: To meet specified requirements of CAN/CGSB-19.24-M90.

.3 Polybutene Compound: To meet fabricator's recommendations.

2.3 Accessories

.1 Exposed trim: inside corners, outside corners, cap strip, drip cap, undersill trim, starter strip and window/door trim of same material, as cladding, with fastener holes pre-punched.

2.4 Fasteners

.1 Self-drilling, Type 304 stainless steel.

.2 Head finish:

.1 Type 304 stainless steel

.2 Pre-painted metal, in colour to match prefinished metal panels in exposed locations.

.3 Dissimilar materials to be separated/ isolated.

2.5 Fabrication

.1 Roll form profiled panels and other shapes unless impossible because of special design. Use other forming methods only with approval.

.2 Form metal panels with bends sharp and true.

.3 Fabricate to conform to shop drawings and to allow for structural movements within the systems.

.4 Fabricate systems for use with concealed fasteners wherever possible. Where exposed fasteners are required use fasteners with coloured screw heads to match siding colour.
.5 Fabricate miscellaneous framing members of specified materials as required to support metal siding.
.6 Fabricate systems to prevent entry of water into building and from collection within system assembly and to prevent infiltration of air through system.
.7 Join intersecting parts together to provide tight, accurately fitted joints with adjoining surfaces in true planes.
.8 Fabricate system to conform to requirements of reference standards specified.
.9 Cooperate with applicable Sections to ensure required coordination for installations specified in this Section in conjunction with masonry, structural steel framing, metal deck, sprayed foam insulation, air barriers, membrane roofing, sheet metal work, drywall and steel studs and similar installations by other Sections.

PART 3 - EXECUTION

3.1 Examination

.1 Take site measurements to ensure that fabrications are provided to fit structure; surrounding construction; around obstructions and projections in place or as shown on Drawings and to suit locations of services.
.2 Verify backup and support construction is aligned for proper installation of preformed metal system before commencing erection of metal siding.
.3 Before proceeding with application, ensure that:
  .1 Metal support is constructed smoothly, in true planes and to match whatever is the is the design intent.
  .2 Edges of metal are supported to prevent deflection.
  .3 Adjacent construction and installation of other work to be incorporated is complete.
  .4 Work which penetrates system has been installed.

3.2 Erection of Preformed Metal

.1 Erect systems complete with flashings forming part of system, sub-girts, clips, fasteners, closures and caulking to meet same design criteria as specified for fabrication.
.2 Cut and flash system penetrations.
.3 Erect panels in straight lines that are true, level and plumb.
.4 Provide for differential thermal and structural movement between systems and structure as well as between elements of system.
.5 Attach systems to supporting structure and to other siding components with fasteners of the same material and colour as the exterior panels except where other materials are approved.
.6 Install cap flashings, drip flashings, internal flashings, copings, closures and corners, of same material and finish as cladding, brake formed to shape. Close all flute ends.
.7 Seal joints within system watertight.
.8 Caulk between preformed metal specified in this Section and installations of other Sections to meet requirements of Section 07 92 10 and to provide a watertight installation.
.9 Fasteners: concealed fasteners.
.10 Apply a continuous bead of sealant to the face of the supports at the top and bottom of the girts and perimeter of openings.
.11 Erect systems by its fabricator or approved agent.

3.3 Metal Cladding Installation Tolerances

.1 Maintain the following installation tolerances:
  .1 Maximum variation from plane or location shown on reviewed shop drawings: 20mm/ 10m of length and up to 30mm/ 10m maximum.
  .2 Maximum offset from true alignment between two adjacent members abutting end to end, in line: 1mm.

3.4 Adjustment and Cleaning

.1 After erection, touch up galvanized coatings removed or damaged during erection.
.2 Remove damaged, dented, defaced, defectively finished or tool marked components and replace with new.
.3 Refinish shop applied finishes in field only with written approval from Consultant.
.4 Clean of dirt resulting from erection from surfaces exposed to view.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 References

.1 Underwriters Laboratories of Canada (ULC)
  .1 CAN/ULC-S101-14.
  .2 CAN/ULC-S102-10.

1.3 Test Reports

.1 Submit product data including certified copies of test reports verifying fireproofing applied to substrate as constructed on project will meet or exceed requirements of Specification.
.2 Submit test results in accordance with CAN/ULC-S101 for fire endurance and CAN/ULC-S102 for surface burning characteristics.
.3 For assemblies not tested and rated, submit proposals based on related designs using accepted fireproofing design criteria.

1.4 Samples

.1 Submit samples in accordance with Section 01 33 00 – Submittal Procedures.
.2 Submit applicable U.L.C. Design Numbers for all conditions required on this project, including applicable acceptance information from U.L.C. for the materials specified. Proof of total compliance rests with the fireproofing applicator.

1.5 Mock Up

.1 Apply fireproofing to approximately 10m² area of surface to be treated.
.2 Allow 24 hours for inspection of mock-up by Consultant before proceeding with fireproofing work.

1.6 Protection

.1 At outdoor temperatures less than 5°C, ensure that a 5°C air and substrate temperature is maintained during and for 24 hours after application. Ensure that natural ventilation to properly dry the fireproofing during and subsequent to its application is provided. In enclosed areas lacking openings for natural ventilation, ensure that interior air is circulated and exhausted to the outside.
.2 Provide temporary enclosures to prevent spray from contaminating air beyond application area.
.3 Protect adjacent surfaces and equipment from damage by overspray, fall-out, and dusting of fireproofing materials.

PART 2 - PRODUCTS

2.1 Intumescent Coatings for Steel:

.1 Intumescent Fire-Resistive Coating: Manufacturer's standard, factory-mixed multicomponent system consisting of intumescent water-based base coat, and topcoat, and conforming to indicated fire-resistance design.
.2 Base (Intumescent) Coat: AD Firefilm III by A/D Fire Protection Systems.
  .1 Hardness, Durometer Shore D: 72
  .2 Bond Strength – Adhesion/Cohesion: ASTM E736, 862 kPa.
  .3 Cohesion/Adhesion: ASTM D4541-862 kPa.
  .4 Density: 1.42 g/cu cm.
  .5 Compressive Strength: ASTM E761-5.2 MPa.
  .6 Surface Burning Characteristics: CAN/ULC-S102.
    .1 Classification for Flame Spread/Smoke Developed: 15/35
.3 Thickness: As required for fire resistance design, measured according to requirements of fire-resistance design.
.4 Primer: Of type recommended by coating Manufacturer.
.5 Decorative Top Coat: Manufacturer's standard VOC compliant acrylic formulation of type to suit application as recommended by coating manufacturer; A/D Colorcoat by A/D Fire Protection Systems.
.6 Finish:
  .1 Colour: Colour and gloss level as selected by Consultant.
  .2 Texture: Provide smooth texture, as approved by Consultant.

PART 3 - EXECUTION

3.1 Preparation

.1 Substrate shall be free of material, which would impair bond.
.2 Verify that painted substrates are compatible and have suitable bonding characteristics to receive fireproofing.
.3 Remove incompatible materials.
.4 Ensure that items required to penetrate fireproofing are placed before installation of fireproofing.
.5 Ensure that ducts, piping, equipment, or other items which would interfere with application of fireproofing are not positioned until fireproofing work is completed.

3.2 Application (Intumescent Coating)

.1 Apply primer, mastic fireproofing and topcoat in accordance with manufacturer's written instructions for mixing materials, application procedures, and types of equipment used to mix and apply fire-resistive material, as applicable to particular conditions of installation and as required to achieve fire-resistance ratings indicated.
.2 Apply coating materials that are identical to products tested as specified and substantiated by test reports, for thickness, primers, topcoats, finishing, and other materials and procedures affecting fireproofing work.
.3 Airless spray apply coatings to greatest extent possible. Apply coatings by brush or roller in accordance with manufacturer's instructions
.4 Finished surfaces exposed to view to be uniform in colour and texture, sound, free of runs, lumps, sags or contaminants, and without telegraphing of previous coats.

.5 Sand material between coats in accordance with manufacture recommendations to achieve smooth texture finish in accordance with approved mock-up.

3.4 Patching

.1 Patch damage to fireproofing caused by testing or by other trades, including attachment of partition framing, before fireproofing is concealed, or if exposed, before final inspection.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 Related Work

.1 Fire stopping and smoke seals within mechanical assemblies (i.e. inside ducts, dampers) and electrical assemblies (i.e. inside cable trays) are specified in Division 21 through 28 respectively.

1.3 References

.1 Underwriter's Laboratories of Canada (ULC)
  .1 ULC-S115-05, Fire Test of Firestop Systems.

1.4 Samples

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit duplicate 300mm x 300mm samples showing actual firestop material proposed for project.

1.5 Shop Drawings

.1 Submit shop drawings in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit shop drawings to show proposed material, reinforcement, anchorage, fastenings and method of installation. Construction details should accurately reflect actual job conditions.

1.6 Product Data

.1 Submit product data in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit manufacturer's product data for materials and prefabricated devices, providing descriptions are sufficient for identification at job site. Include manufacturer's printed instructions for installation.

PART 2 - PRODUCTS

2.1 Materials

.1 Fire stopping and smoke seal systems: in accordance with ULC-S115.
  .1 Asbestos-free materials and systems capable of maintaining an effective barrier against flame, smoke and gases in compliance with requirements of ULC-S115 and not to exceed opening sizes for which they are intended.
  .2 Firestop system rating: as indicated on Drawings for each condition.
.2 Service penetration assemblies: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No.40 U19.
.3 Service penetration firestop components: certified by ULC in accordance with ULC-S115 and listed in ULC Guide No.40 U19.13 and ULC Guide No.40 U19.15 under the Label Service of ULC.
.4 Fire-resistance rating of installed fire stopping assembly in accordance with NBC.

.5 Fire stopping and smoke seals at openings intended for ease of re-entry such as cables: elastomeric seal.
.6 Fire stopping and smoke seals at openings around penetrations for pipes, ductwork and other mechanical items requiring sound and vibration control: elastomeric seal.
.7 Primers: to manufacturer's recommendation for specific material, substrate, and end use.
.8 Water (if applicable): potable, clean and free from injurious amounts of deleterious substances.
.9 Damming and backup materials, supports and anchoring devices: to manufacturer's recommendations, and in accordance with tested assembly being installed as acceptable to authorities having jurisdiction.
.10 Sealants for vertical joints: non-sagging.

PART 3 - EXECUTION

3.1 Preparation

.1 Examine sizes and conditions of voids to be filled to establish correct thicknesses and installation of materials. Ensure that substrates and surfaces are clean, dry and frost free.
.2 Prepare surfaces in contact with fire stopping materials and smoke seals to manufacturer's instructions.
.3 Maintain insulation around pipes and ducts penetrating fire separation.
.4 Mask where necessary to avoid spillage and over coating onto adjoining surfaces; remove stains on adjacent surfaces.

3.2 Installation

.1 Install fire stopping and smoke seal material and components in accordance with ULC certification and manufacturer's instructions.
.2 Seal holes or voids made by through penetrations, poke-through termination devices, and unpenetrated openings or joints to ensure continuity and integrity of fire separation are maintained.
.3 Provide temporary forming as required and remove forming only after materials have gained sufficient strength and after initial curing.
.4 Tool or trowel exposed surfaces to a neat finish.
.5 Remove excess compound promptly as work progresses and upon completion.

3.3 Inspection

.1 Notify Consultant when ready for inspection and prior to concealing or enclosing firestopping materials and service penetration assemblies.

3.4 Schedule

.1 Firestop and smoke seal at:
  .1 Penetrations through fire-resistance rated masonry, concrete, and gypsum board partitions and walls.
  .2 Top of fire-resistance rated masonry and gypsum board partitions.
  .3 Intersection of fire-resistance rated masonry and gypsum board partitions.
  .4 Control and sway joints in fire-resistance rated masonry and gypsum board partitions and walls.
  .5 Penetrations through fire-resistance rated floor slabs, ceilings and roofs.
  .6 Openings and sleeves installed for future use through fire separations.
  .7 Around mechanical and electrical assemblies penetrating fire separations.

.8 Rigid ducts: greater than 129 cm²: fire stopping to consist of bead of fire stopping material between retaining angle and fire separation and between retaining angle and duct, on each side of fire separation.

3.5 Clean Up

.1 Remove excess materials and debris and clean adjacent surfaces immediately after application.
.2 Remove temporary dams after initial set of firestopping and smoke seal materials.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 - General Requirements.

1.2 References

.1 CAN/CGSB-19.1-M87, Putty, Linseed Oil Type.
.2 CAN/CGSB-19.2-M87, Glazing Compound, Nonhardening, Modified Oil Type.
.3 CGSB 19-GP-5M-76, Sealing Compound, One Component, Acrylic Base, Solvent Curing.
.4 CAN/CGSB-19.6-M87, Caulking Compound, Oil Base.
.5 CAN/CGSB-19.13-M87, Sealing Compound, One-component, Elastomeric, Chemical Curing.
.6 CGSB 19-GP-14M-76, Sealing Compound, One Component, Butyl-polyisobutylene Polymer Base, Solvent Curing.
.7 CAN/CGSB-19.17-M90, One-Component Acrylic Emulsion Base Sealing Compound.
.8 CAN/CGSB-19.18-M87, Sealing Compound, One Component, Silicone Base, Solvent Curing.
.9 CAN/CGSB-19.20-M87, Cold-applied Sealing Compound, Aviation Fuel-resistant.
.10 CAN/CGSB-19.21-M87, Sealing and Bedding Compound Acoustical.
.11 CAN/CGSB-19.22-M89, Mildew Resistant, Sealing Compound for Tubs and Tiles.
.12 CAN/CGSB-19.24-M90, Multi-component, Chemical Curing Sealing Compound.

1.3 Samples

.1 Submit samples in accordance with General Requirements.
.2 Submit duplicate samples of each type of material and colour.

1.4 Mock-up

.1 Construct mock-up in accordance with General Requirements.
.2 Construct mock-up to show location, size, shape and depth of joint s complete with back-up material, primer, caulking and sealant. Mock-up may be part of finished work.
.3 Allow 24 hours for inspection of mock-up by Consultant before proceeding with sealant work.

1.5 Delivery, Storage and Handling

.1 Deliver, handle, store and protect materials in accordance with General Requirements.
.2 Deliver and store materials in original wrappings and containers with manufacturer's seals and labels, intact. Protect from freezing, moisture, water and contact with ground or floor.

1.6 Environmental and Safety Requirements

.1 Comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling, storage, and disposal of hazardous materials; and regarding labelling and provision of material safety data sheets acceptable to Labour Canada.
.2 Conform to manufacturer's recommended temperatures, relative humidity, and substrate moisture content for application and curing of sealants including special conditions governing use.

PART 2 - PRODUCTS

2.1 Sealant Materials

.1 Sealants and caulking compounds must:
  .1 meet or exceed all applicable governmental and industrial safety and performance standards; and
  .2 be manufactured and transported in such a manner that all steps of the process, including the disposal of waste products arising there from, will meet the requirements of all applicable governmental acts, by laws and regulations including, for facilities located in Canada, the fisheries Act and the Canadian Environmental Protection Act (CEPA).

.2 Sealant and caulking compounds must not be formulated or manufactured with: aromatic solvents, fibrous talc or asbestos, formaldehyde, halogenated solvents, mercury, lead, cadmium, hexavalent chromium, barium or their compounds, except barium sulfate.

.3 Sealant and caulking compounds must not contain a total of volatile organic compounds (VOCs) in excess of 5% by weight as calculated from records of the amounts of constituents used to make the product.

.4 Sealant and caulking compounds must be accompanied by detailed instructions for proper application so as to minimize health concerns and maximize performance, and information describing proper disposal methods.

.5 Caulking that emits strong odours, contains toxic chemicals or is not certified as mould resistant shall not be used in air handling units.

.6 When low toxicity caulks are not possible, confine usage to areas which off gas to the exterior, are contained behind air barriers, or are applied several months before occupancy to maximize off-gas time.

.7 The manufacturing process must adhere to Lifecycle Assessment Standards as per ISO 14040/14041 LCA Standards (to be published by 1998), CSA Z760-94 LCA Standards.

.8 Sealants acceptable for use on this project must be listed on CGSB Qualified Products List issued by CGSB Qualification Board for Joint Sealants. Where sealants are qualified with primers use only these primers.

2.2 Sealant Material Designations

.1 Urethanes One Part.
  .1 Non-Sag to CAN/CGSB-19.13, Type 2, colour as selected by Consultant.

.2 Silicones One Part.
  .1 To CAN/CGSB-19.22 (Mildew resistant).

.3 Acrylic Latex One Part.
  .1 To CAN/CGSB-19.17.

.4 Acoustical Sealant.
  .1 To CAN/CGSB-19.21.

.5 Preformed Compressible and Non-Compressible back-up materials.
  .1 Polyethylene, Urethane, Neoprene or Vinyl Foam.
    .1 Extruded closed cell foam backer rod.
    .2 Size: oversize 30 to 50 %.
  .2 Bond Breaker Tape.
    .1 Polyethylene bond breaker tape which will not bond to sealant.

2.3 Sealant Selection

.1 Exterior: Urethane.

.2 Interior control and expansion joints: Silicone.

.3 Perimeters of interior frames and millwork: Acrylic Latex.

.4 Perimeter of bath fixtures (e.g. sinks, tubs, urinals, stools, waterclosets, basins, vanities): Sealant type: Mildew Resistant Silicone.
.5 Exposed interior control joints in drywall: Acrylic Latex.
.6 Perimeter of walls to ensure continuity of sound proofing: Acoustical.

2.4 Joint Cleaner

.1 Non-corrosive and non-staining type, compatible with joint forming materials and sealant recommended by sealant manufacturer.
.2 Primer: as recommended by manufacturer.

PART 3 - EXECUTION

3.1 Protection

.1 Protect installed work of other trades from staining or contamination.

3.2 Preparation of Joint Surfaces

.1 Examine joint sizes and conditions to establish correct depth to width relationship for installation of backup materials and sealants; depth ration ½ of joint width with minimum width and depth of 6mm, maximum width 12mm
.2 Clean bonding joint surfaces of harmful matter substances including dust, rust, oil grease, and other matter which may impair work.
.3 Do not apply sealants to joint surfaces treated with sealer, curing compound, water repellent, or other coatings unless tests have been performed to ensure compatibility of materials. Remove coatings as required.
.4 Ensure joint surfaces are dry and frost free.
.5 Prepare surfaces in accordance with manufacturer's directions.

3.3 Priming

.1 Where necessary to prevent staining, mask adjacent surfaces prior to priming and caulking.
.2 Prime sides of joints in accordance with sealant manufacturer's instructions immediately prior to caulking.

3.4 Backup Material

.1 Apply bond breaker tape where required to manufacturer's instructions.
.2 Install joint filler to achieve correct joint depth and shape, with approximately 30% compression.

3.5 Mixing

.1 Mix materials in strict accordance with sealant manufacturer's instructions.

3.6 Application

.1 Sealant.
  .1 Apply sealant in accordance with manufacturer's written instructions.
  .2 Mask edges of joint where irregular surface or sensitive joint border exists to provide neat joint.

.3 Apply sealant in continuous beads.
.4 Apply sealant using gun with proper size nozzle.
.5 Use sufficient pressure to fill voids and joints solid.
.6 Form surface of sealant with full bead, smooth, free from ridges, wrinkles, sags, air pockets, embedded impurities.
.7 Tool exposed surfaces before skinning begins to give slightly concave shape.
.8 Remove excess compound promptly as work progresses and upon completion.

.2 Curing.
.1 Cure sealants in accordance with sealant manufacturer's instructions.
.2 Do not cover up sealants until proper curing has taken place.
.3 Cleanup.
.1 Clean adjacent surfaces immediately and leave work neat and clean.
.2 Remove excess and droppings, using recommended cleaners as work progresses.
.3 Remove masking tape after initial set of sealant.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 Related Sections

.1 Section 07 92 10 – Joint Sealing.
.2 Section 09 22 16 – Non-Structural Metal Framing.
.3 Section 09 22 27 – Acoustical Suspension.
.4 Section 09 91 10 – Painting.
.5 Mechanical – refer to Mechanical Drawings.
.6 Electrical – refer to Electrical Drawings.

1.3 References

.1 Aluminum Association
  .1 Designation for Aluminum Finishes.
.2 American Society for Testing and Materials (ASTM)
  .1 ASTM C36, Specification for Gypsum Wallboard.
  .2 ASTM C79, Specification for Gypsum Sheathing Board.
  .3 ASTM C442, Specification for Gypsum Backing Board and Coreboard.
  .4 ASTM C475, Specification for Joint Compound and Joint Tape for Finishing Gypsum Board.
  .5 ASTM C514, Specification for Nails for the Application of Gypsum Board.
  .6 ASTM C557, Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing.
  .7 ASTM C630, Specification for Water-Resistant Gypsum Backing Board.
  .8 ASTM C840, Specification for Application and Finishing of Gypsum Board.
  .9 ASTM C931/931, Specification for Exterior Gypsum Soffit Board.
  .10 ASTM C954, Specification for Steel Drill Screws for the Application of Gypsum Board.
  .11 ASTM C960, Specification for Predecorated Gypsum Board.
  .12 ASTM C1002, Specification for Steel Drill Screws for the Application of Gypsum Board or Metal Plaster Bases.
  .13 ASTM C1047, Specification for Accessories for Gypsum Wallboard and Gypsum Veneer Base.
  .14 ASTM C1280, Specification for Application of Gypsum Sheathing Board.
  .15 ASTM C1177, Specification for Glass Mat Gypsum Substrate for Use as Sheathing.
  .16 ASTM C1178, Specification for Glass Mat Water-Resistant Gypsum Backing Board.
.3 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-51.34-M, Vapour Barrier, Polyethylene Sheet for Use in Building Construction.
  .2 CAN/CGSB-71.25-M, Adhesive, for Bonding Drywall to Wood Framing and Metal Studs.
.4 Underwriters Laboratories of Canada (ULC)
  .1 CAN/ULC-S102, Building Materials and Assemblies, Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies.
.5 Gypsum Association (GA)
  .1 GA-216, Application and Finishing of Gypsum Board.
  .2 GA-600, Fire Resistance Design Manual.

1.4 Samples

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit 300mm long samples of corner and casing beads and reveals.

1.5 Site Environmental Requirements

.1 Maintain temperature minimum 15°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.

1.6 Quality Assurance

.1 Subcontractor executing the Work of this Section shall have adequate plant, equipment and skilled tradesmen to provide installations of work of this type and quality indicated and specified.
.2 Single source responsibility: Obtain gypsum board products from single manufacturer, or from manufacturers recommended by prime manufacturer of gypsum boards.
.3 Fire resistance rating: Where gypsum board systems with fire resistance ratings are indicated or required, provide materials and installations that are identical with those of applicable assemblies tested by fire testing laboratories acceptable to authorities having jurisdiction.

PART 2 - PRODUCTS

2.1 Materials

.1 Fire resistant board (GB): Type X to ULC Guide No. 40 U18.23, thickness as noted on drawings, 1220mm wide x maximum practical length, ends square cut, edges tapered, glass mat faced, water resistant treated core.
.2 Glass mat wall board (GB): to ASTM C1177 regular, 15.9mm thick, 1220mm wide x maximum practical length, ends square cut, edges tapered, glass mat faced, water resistant treated core.
.3 Impact resistant glass mat wall board (GB): to ASTM C1177 regular, 15.9mm thick, 1220mm wide x maximum practical length, ends square cut, edges tapered, glass mat faced, water resistant treated core.
.4 Metal furring runners, hangers, tie wires, inserts, anchors: to ASTM C841.
.5 Drywall furring channels: 0.5mm core thickness galvanized steel channels for screw attachment of gypsum board.
.6 Resilient clips drywall furring: 0.5mm base steel thickness galvanized steel for resilient attachment of gypsum board.
.7 Steel drill screws: to ASTM C1002.
.8 Stud adhesive: to CAN/CGSB-71.25 ASTM C557.
.9 Laminating compound: as recommended by manufacturer, asbestos-free.
.10 Casing beads, corner beads, control joints and edge trim: to ASTM C1047, Zinc metal, zinc-coated by electrolytic process, 0.5mm base thickness, perforated flanges, one piece length per location.
.11 Reveal joints: rigid PVC, sizes as indicated on Drawings.
    .1 Acceptable manufacturer:
        .1 Trimtex, or approved alternate.
.12 Sealants: in accordance with Section 07 92 10 - Joint Sealers.
.13 Acoustic sealant: Refer to Section 07 92 10.
.14 Polyethylene: to CAN/CGSB-51.34, Type 2.

.15 Insulating strip: rubberized, moisture resistant, 3mm thick closed cell neoprene strip, 12mm wide, with self sticking permanent adhesive on one face, lengths as required.
.16 Joint reinforcement tape: 50mm wide, glass fibre mesh.
.17 Joint compound: to ASTM C475, asbestos-free.

PART 3 - EXECUTION

3.1 Erection

.1 Do application and finishing of gypsum board in accordance with ASTM C840 except where specified otherwise.
.2 Erect hangers and runner channels for suspended gypsum board ceilings in accordance with ASTM C840 except where specified otherwise.
.3 Support light fixtures by providing additional ceiling suspension hangers within 150mm of each corner and at maximum 600mm around perimeter of fixture.
.4 Install work level to tolerance of 1:1200.
.5 Frame with furring channels, perimeter of openings for access panels, light fixtures, diffusers, grilles, etc.
.6 Install furring channels parallel to, and at exact locations of steel stud partition header track.
.7 Furr for gypsum board faced vertical bulkheads within and at termination of ceilings.
.8 Furr above suspended ceilings for gypsum board fire and sound stops and to form plenum areas as indicated.
.9 Install wall furring for gypsum board wall finishes in accordance with ASTM C840, except where specified otherwise.
.10 Furr openings and around built-in equipment, cabinets, access panels, on four sides. Extend furring into reveals. Check clearances with equipment suppliers.
.11 Furr duct shafts, beams, columns, pipes and exposed services where indicated.
.12 Erect drywall resilient furring transversely across studs, spaced maximum 600mm o.c. and not more than 150mm from ceiling/wall juncture. Secure to each support with 25mm drywall screw.
.13 Install 150mm continuous strip of 12.7mm gypsum board along base of partitions where resilient furring installed.

3.2 Application

.1 Do not apply gypsum board until bucks, anchors, blocking, electrical and mechanical work are approved.
.2 Apply single layer gypsum board to metal furring or framing using screw fasteners. Maximum spacing of screws 300mm o.c.
.3 Apply single layer gypsum board to concrete/ concrete block surfaces, where indicated, using laminating adhesive.
.4 Apply impact resistant glass mat wall board on all vertical surfaces.
.5 Apply glass mat board on all other surfaces.
.6 Apply 12mm 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, etc., in partitions where perimeter sealed with acoustic sealant.

3.3 Installation

.1 Erect accessories straight, plumb or level, rigid and at proper plane. Use full length pieces where practical. Make joints tight, accurately aligned and rigidly secured. Mitre and fit corners accurately, free from rough edges. Secure at 150mm oc.
.2 Install casing beads around perimeter of suspended ceilings.

.3 Install casing beads where gypsum board butts against surfaces having no trim concealing junction and where indicated. Seal joints with sealant.
.4 Install insulating strips continuously at edges of gypsum board and casing beads abutting metal window and exterior door frames, to provide thermal break.
.5 Construct control joints of preformed units set in gypsum board facing and supported independently on both sides of joint.
.6 Provide continuous polyethylene dust barrier behind and across control joints.
.7 Locate control joints where indicated on Drawings, at changes in substrate construction, **and** at approximate 10m spacing on long corridor runs and at approximate 15m spacing on ceilings. **Submit layout of control joints to Consultant for approval prior to commencement of the Work of this Section.**
.8 Install control joints straight and true.
.9 Install access doors to electrical and mechanical fixtures specified in respective Sections.
.1 Rigidly secure frames to furring or framing systems.
.10 Finish face panel joints and internal angles with joint system consisting of joint compound, joint tape and taping compound installed according to manufacturer's directions and feathered out onto panel faces.
.11 Finish corner beads, control joints and trim as required with two coats of joint compound and one coat of taping compound, feathered out onto panel faces.
.12 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.
.13 Sand lightly to remove burred edges and other imperfections. Avoid sanding adjacent surface of board.
.14 Completed installation to be smooth, level, plumb, free from waves and other defects and ready for surface finish.
.15 Mix joint compound slightly thinner than for joint taping.
.16 Where required by surface imperfections, apply thin coat to entire surface using trowel or drywall broad knife to fill surface texture differences, variations or tool marks.
.17 Allow skim coat to dry completely.
.18 Remove ridges by light sanding or wiping with damp cloth.

3.4 Fire Dampers

.1 Refer to Mechanical Drawings for locations of fire dampers.
.2 Coordinate opening sizes for dampers to ULC clearance requirements.
.3 Line openings for dampers with type X board prior to damper installation.

3.5 Cleaning

.1 Clean adjacent surfaces and remove excess materials, droppings and debris.
.2 Protect unfinished work.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 Related Sections

.1 Section 07 92 10 – Joint Sealing.
.2 Section 09 21 16 – Gypsum Board Assemblies.

1.3 References

.1 American Society for Testing and Materials (ASTM)
  .1 ASTM C645 - 14e1, Standard Specification for Nonstructural Steel Framing Members.
  .2 ASTM C754 - 18, Standard Specification for Installation of Steel Framing Members to Receive Screw-Attached Gypsum Panel Products.
.2 CAN/CGSB-19.21-M87, Sealing and Bedding Compound Acoustical.

PART 2 - PRODUCTS

2.1 Materials

.1 Non-load bearing channel stud framing: to ASTM C645, stud size as indicated on drawings, roll formed with minimum base steel thickness 0.455mm of hot dipped galvanized steel sheet, for screw attachment of gypsum board. Knock-out service holes at 460mm centres. **For walls over 3000mm in height, minimum base steel thickness to be 0.836mm.**
.2 Floor and ceiling tracks: to ASTM C645, in widths to suit stud sizes, 32mm flange height.
.3 Metal channel stiffener: 19mm x 9.5mm size, 1.4mm thick cold rolled steel, coated with rust inhibitive coating.
.4 Acoustical sealant: to CAN/CGSB-19.21. Refer also to Section 07 92 00.
.5 Insulating strip: rubberized, moisture resistant 3mm thick foam strip, 12mm wide, with self sticking adhesive on one face, lengths as required.

PART 3 - EXECUTION

3.1 Erection

.1 Align partition tracks at floor and ceiling and secure at 600mm o.c. maximum. Allow for 20mm deflection of floor and roof slabs.
.2 Install dampproof course under stud shoe tracks of partitions on slabs on grade.
.3 Place studs vertically at 400mm 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.
.4 Erect metal studding to tolerance of 1:1000.
.5 Attach studs to bottom and ceiling track using screws.

.6 Co-ordinate simultaneous erection of studs with installation of service lines. When erecting studs ensure web openings are aligned.

.7 Co-ordinate erection of studs with installation of door/ window frames and special supports or anchorage for work specified in other Sections.

.8 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.

.9 Install heavy gauge single jamb studs at openings.

.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 Provide 40mm stud or furring channel secured between studs for attachment of fixtures behind lavatory basins, toilet and bathroom accessories, and other fixtures including grab bars and towel rails, attached to steel stud partitions.

.13 Install steel studs or furring channel between studs for attaching electrical and other boxes.

.14 Extend **all** partitions to underside of structural deck.

.15 Maintain clearance under beams and structural slabs to avoid transmission of structural loads to studs. Use 50mm leg ceiling deflection tracks, with 75mm leg top track within. Attach studs to 75mm track.

.16 Install continuous insulating strips to isolate studs from uninsulated surfaces.

.17 Install two continuous beads of acoustical sealant under studs and tracks around perimeter of **all** partitions.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 - General Requirements.

1.2 Related Sections

.1 Section 09 21 16 – Gypsum Board Assemblies.
.2 Section 09 51 13 – Acoustical Ceilings.
.3 Divisions 21-23 – Mechanical: Trim for recessed mechanical fixtures.
.4 Divisions 26-28 – Electrical: Trim for recessed electrical fixtures.

1.3 References

.1 ASTM C635/ C635M - 17, Specifications for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings.
.2 ASTM C636 / C636M - 13, Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels.

1.4 Design Requirements

.1 Maximum deflection: 1/360th of span to ASTM C635 deflection test.

1.5 Extra Materials

.1 Provide maintenance materials of acoustic tile ceiling panels in accordance with Section 01 78 00 - Closeout Submittals.
.2 Provide 2% of each colour, pattern and type ceiling tile required for this project for maintenance use.
.3 Extra materials to be from same production run as installed materials.
.4 Clearly identify each container of ceiling tile.
.5 Deliver to site, upon completion of the work of this section.
.6 Store where directed by Consultant.

PART 2 - PRODUCTS

2.1 Materials

.1 Intermediate duty system to ASTM C 635.
.2 Basic materials for suspension system: commercial quality cold rolled steel zinc-coated.
.3 Suspension system: fire rated, for acoustical ceilings, made up as follows:
  .1 main tees:
    .1 0.53mm thick cold rolled steel, double web, with rectangular bulb section at least 43mm high. Fabricate with punched cross tee holes at not greater than 150mm o.c. and hanger wire holes at 50mm o.c. Exposed flange shall be 23.8mm wide cold rolled steel.
  .2 cross tees:
    .1 double web design with rectangular bulb, web extending to form a positive interlock with main tees, lower flange extended and offset to provide a flush intersection.
  .3 Exposed tee bar grid components: die cut, shop painted satin sheen white.

.4 Suspension system: non fire rated for gypsum board ceilings, made up as follows:
  .1 main beams:
    .1 0.53mm thick cold rolled steel, double web, with peaked roof top bulb at least 42.8mm high. Fabricate with punched cross tee holes at not greater than 150mm o.c. and hanger wire holes at 50mm o.c. Flange shall be 38mm wide knurled cold rolled steel.
  .2 cross tees:
    .1 double web design with peaked roof top bulb 38mm high, web extending to form a positive interlock with main tees. Flange shall be 38mm wide knurled cold rolled steel.
.5 Hanger wire: galvanized soft annealed steel wire.
  .1 3.6mm diameter to support max. weight of 110 kg/hanger.
  .2 2.6mm diameter to support max. weight of 68 kg/hanger.
  .3 galvanized annealed steel rod: 4.8mm diameter to support max. weight of 250kg/ hanger.
.6 Hanger inserts: purpose made.
.7 Accessories: splices, clips, wire ties, retainers, and angle wall moulding.

PART 3 - EXECUTION

3.1 Installation

.1 Installation: in accordance with ASTM C636 except where specified otherwise.
.2 Install suspension system to manufacturer's instructions and Certification Organizations tested design requirements.
.3 Install fire rated gid system in ceilings requiring a fire rating, as noted on Drawings.
.4 Do not erect ceiling suspension system until work above ceiling has been inspected by Consultant.
.5 Secure hangers to overhead structure. Do not use fasteners that will fracture structural members.
.6 Install hangers spaced at maximum 1200mm centres and within 150mm from ends of main tees.
.7 Lay out centre line of ceiling both ways, to provide balanced borders at room perimeter with border units not less than 50% of standard unit width if no reflected ceiling plan is provided.
.8 Ensure suspension system is co-ordinated with location of related components.
.9 Install wall moulding and trim to provide correct ceiling height.
.10 Completed suspension system to support super-imposed loads, such as lighting fixtures diffusers, grilles and speakers.
.11 Support at light fixtures and diffusers with additional ceiling suspension hangers within 150mm of each corner and at maximum 600mm around perimeter of fixtures.
.12 Interlock cross member 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.

3.2 Cleaning

.1 Touch up scratches, abrasions, voids and other defects in painted surfaces.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 - General Requirements.

1.2 Related Sections

.1 Section 09 21 16 – Gypsum Board Assemblies.
.2 Section 09 22 27 – Acoustical Suspension.
.3 Divisions 21-23 – Mechanical.
.4 Divisions 26-28 – Electrical.

1.3 Samples

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit duplicate full size samples of acoustical units.

1.4 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.

1.5 Extra Materials

.1 Provide extra materials of acoustic units in accordance with Section 01 78 00 - Closeout Submittals.
.2 Provide acoustical units amounting to 2% of gross ceiling area for each pattern and type required for project.
.3 Extra materials to be from same production run as installed materials.
.4 Clearly identify each type of acoustic unit, including colour and texture.
.5 Deliver to Owner, upon completion of the work of this section.
.6 Store as directed on site.

PART 2 - PRODUCTS

2.1 Materials

.1 Acoustic Units for suspended ceiling system:
  .1 ACT; Minaboard, Cortega Fireguard, white, square edge, 610mm x 1220mm x 15.9mm, by Armstrong World Industries, Product Number 1823.
  .2 Acceptable Alternatives: CertainTeed, or Canadian Gypsum Company Limited; to match specified products.

PART 3 - EXECUTION

3.1 Examination

.1 Do not install acoustical panels and tiles until work above ceiling has been inspected by Consultant.

3.2 Installation

.1 Install acoustical panels in ceiling suspension system.

3.3 Application

.1 Install acoustical units parallel to building lines with edge unit not less than 50% of unit width. Refer to Reflected Ceiling Plans.
.2 Remove damaged and badly marked units and replace with new unmarked material.
.3 Install components to form a level ceiling with all parts flush and true, parallel to the module lines and the pattern shown. Install panels in level, uniform plane free from twist, warp, dents and flush, without gaps. Fit border units neatly against abutting surfaces.
.4 Scribe acoustic units to fit adjacent work. Butt joints tight, terminate edges with moulding.
.5 Install retention clips at each panel as indicated in Room finish Schedule. Adapt installation to provide ceiling access where required for services.

3.4 Interface with Other Work

.1 Co-ordinate 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 Cleaning

.1 After installation, clean and touch up minor surface defects on acoustical tile.
.2 Remove damaged and badly marked units and replace with new unmarked material.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 - General Requirements.

1.2 Related Sections

.1 Divisions 20-23 and 26-28: Floor access covers.

1.3 References

.1 American Society for Testing and Materials (ASTM)
  .1 ASTM F 1066- 95a, Specification for Vinyl Composition Floor tile.
.2 Canadian General Standards Board (CGSB)
  .1 CAN/CGSB-25.20- 95, Surface Sealer for Floors.

1.4 Samples

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit duplicate tile in size specified, 300mm long base, nosing, treads, edge strips.

1.5 Closeout Submittals

.1 Provide maintenance data for resilient flooring for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

1.6 Environmental Requirements

.1 Maintain air temperature and structural base temperature at flooring installation area above 20°C for 48 hours before, during and for 48 hours after installation.

1.7 Extra Materials

.1 Provide maintenance materials of resilient tile flooring, base and adhesive in accordance with Section 01 78 00 - Closeout Submittals.
.2 Provide 2% of each colour, pattern and type flooring material required for this project for maintenance use.
.3 Extra materials to be from same production run as installed materials.
.4 Clearly identify each container of floor tile and each container of adhesive.
.5 Deliver to site, upon completion of the work of this section.
.6 Store where directed by Consultant.

PART 2 - PRODUCTS

2.1 Materials

.1 Floor Patch
  .1 Portland cement-based compound that has a minimal resistance to compression of 246 kg/cm^2 (3,500 lbs/sq. in.) to fill, smooth or level subfloor imperfections.

.2 Resilient Sheet Flooring (RSF): to ASTM F 1913, 2000mm wide x 25000mm long roll, 2mm thickness homogenous sheet vinyl flooring, in standard colour selected by Consultant.
  .1 IQ OPTIMA as manufactured by Tarkett.
  .2 SPHERA ELEMENT, as manufactured by Forbo.
  .3 MIPOLAM AFFINITY, as manufactured by Gerflor.
  .4 PALETTONE, as manufactured by Polyflor.

.3 Rubber Wall Base (RB): to ASTM F1861, nominal thickness: 3mm (0.125") min. thickness; thermoset rubber (TS), coved, standard toe; height of new locations; 100mm high, existing locations to be reviewed for heights to ensure coverage of old base line, 150mm high (RB1). Colour: As selected by Consultant from manufacturer's complete range.
  .1 PINNACLE as manufactured by Roppe.
  .2 BASEWORKS as manufactured by Tarkett.
  .3 OPTIMUM EDGE as manufactured by Mannington.

.4 Primers and adhesives: waterproof, recommended by flooring manufacturer for specific material on applicable substrate, above, at or below grade.

.5 Sub-floor filler and leveller: white premix latex requiring water only to produce cementitious paste as recommended by flooring manufacturer for use with their product.

.6 Metal edge strips: aluminum extruded, smooth, polished with lip to extend under floor finish, shoulder flush with top of adjacent floor finish.

.7 Reducer strips: wheelchair accessible rubber reducer strips by Johnsonite. Colour to be selected.

.8 Sealer: type as recommended by flooring manufacturer.

.9 Wax: type as recommended by flooring manufacturer.

PART 3 - EXECUTION

3.1 Examination

.1 Examine the subfloor before installation to ensure that the surface is clean, dry, smooth, structurally sound, and free from foreign substances, powder, scaling that may adversely affect adhesion or cause discoloration. Furthermore, ensure that the subfloor is free of paint, varnish, adhesive, oil, grease, solvent including treatment compounds, sealers and curing compounds that may adversely affect adhesion or alter the appearance or durability of the flooring.

.2 Slabs that have been either using a curing agent or a sealer will have to be treated to ensure that the adhesion has not been impaired.

.3 Measure the humidity and pH levels in the concrete in compliance with the following standards before installation:
  .1 ASTM F2170, Relative Humidity (RH) test using in situ probes. The maximum allowable reading is 85% RH.
  .2 ASTM F710, pH levels (test procedure 5.3.1). Preferred readings between 8 & 11.
  .3 The ASTM test frequency recommendation is 3 tests for the first 92.9 sq. m and one test for each additional 92.9 sq. m.

.4 Submit test results to Consultant in writing.

.5 Report and rectify all unsatisfactory conditions. Do not start flooring installation until all rectifications have been completed.

3.2 Preparation

.1 Mechanically remove all surface contaminants such as paint, varnish, adhesive, oil, grease, solvent as well as various other products such as treatment compounds.

.2 Clean floor of dust, mold, mildew, alkaline salts, and other foreign material. Vacuum substrate.
.3 Level all rough surfaces and fill cracks and marks with floor patch as specified. Trowel and float to leave a smooth, flat hard surface.
.4 Ensure Moisture, Relative Humidity and pH tests have all been conducted and measurements meet manufacturer's recommendations.
.5 In case of doubt, test the adhesion on the concrete subfloor or other surface that will be covered by the flooring. Do the test using the specified flooring and recommended adhesive.
.6 Where floor substrate flatness and levelness tolerances do not meet minimum requirements to begin installation, prepare substrate in accordance with NFCA Floor Covering Reference Manual.

3.3 Application: Sheet Flooring

.1 Provide a high ventilation rate, with maximum outside air, during installation, and for 48 to 72 hours after installation. If possible, vent directly to the outside. Do not let contaminated air recirculate through a district or whole building air distribution system. Maintain extra ventilation for at least one month following building occupation.
.2 Apply adhesive uniformly using recommended trowel. Do not spread more adhesive than can be covered by flooring before initial set takes place.
.3 Lay flooring to produce a minimum number of seams. Border widths to be minimum 1/3 width of full material.
.4 Run sheets in direction of traffic. Double cut sheet joints and heat weld joints according to manufacturer's written instructions.
.5 As installation progresses, and after installation roll flooring with 45kg minimum roller to ensure full adhesion.
.6 Cut flooring neatly around fixed objects.
.7 Install flooring in pan type floor access covers. Maintain floor pattern.
.8 Continue flooring over areas which will be under built-in furniture.
.9 Terminate flooring at centreline of door in openings where adjacent floor finish or colour is dissimilar.
.10 Refer to Drawings for patterns/ insets. Patterns may include up to four different colours.
.11 Install metal edge strips at unprotected or exposed edges where flooring terminates.

3.4 Base Application

.1 Lay out base to keep number of joints at minimum. Base joints at maximum length available or at internal or premoulded corners.
.2 Clean substrate and prime with one coat of adhesive.
.3 Apply adhesive to back of base.
.4 Set base against wall and floor surfaces tightly by using 3 kg hand roller.
.5 Install straight and level to variation of 1:1000.
.6 Scribe and fit to door frames and other obstructions.
.7 Cope internal corners. Use premoulded corner units for right angle external corners. Use formed straight base material for external corners of other angles, minimum 300 mm each leg.

3.5 Initial Cleaning and Waxing

.1 Remove excess adhesive from floor, base and wall surfaces with products and procedures recommended by manufacturer, without damage.
.2 Clean, seal and wax floor and base surface to flooring manufacturer's instructions.

3.6 Protection of Finished Work

.1 Protect new floors from time of final set of adhesive to after initial waxing until final waxing to final inspection.

.2 Prohibit traffic on floor for 48 hours after installation.

END OF SECTION

PART 1 - GENERAL

1.1 General

.1 Conform to Division 01 – General Requirements.

1.2 Related Sections

.1 Section 04 22 00 – Concrete Unit Masonry.
.2 Section 05 50 00 – Metal Fabrications.
.3 Section 09 21 16 – Gypsum Board Assemblies.
.4 Divisions 21-23/ 26-28: Mechanical and Electrical.

1.3 References

.1 American Society for Testing and Materials (ASTM)

.1 ASTM D 3960 – 05(2013), Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
.2 Canadian General Standards Board (CGSB)
.1 CAN/CGSB-1.36-97, General Purpose Interior Varnish.
.2 CAN/CGSB-1.38-2000, Interior Enamel Undercoater.
.3 CAN/CGSB-1.100-99, Interior Latex Type, Flat Paint.
.4 CAN/CGSB-1.119-2000, Primer-Sealer, Wall, Interior Latex Type.
.5 CAN/CGSB-1.145-97, Solvent-Based Pigmented Stain.
.6 CAN/CGSB-1.146-99, Cold Curing, Gloss Epoxy Coating.
.7 CAN/CGSB-1.150-M91, Clear Lacquer for Wood Furniture.
.8 CAN/CGSB-1.165-2004, Cold Curing Epoxy Primer.
.9 CAN/CGSB-1.188-2004, Emulsion Type Filler Masonry Block.
.10 CAN/CGSB-1.195-99, Interior Semigloss Latex Paint.
.11 CAN/CGSB-1.198-2001, Cementitious Primer (for Galvanized Surfaces).
.12 CAN/CGSB-1.209-2003, Low Sheen Latex Interior Paint.
.13 CAN/CGSB-85.10-99, Shop Painting Structural Steel.
.3 Master Painters Institute (MPI).
.1 Architectural Painting Specification Manual.
.4 Canadian Standards Association (CSA)
.1 CSA Z760-94 (R2001), Life Cycle Assessment.
.5 Society for protective Coatings (SSPC).
.1 SSPC Painting Manual.

1.4 Description

.1 Read carefully all other Sections of the Specifications to determine the extent of prime and finish coats applied by other Sections.
.2 See Mechanical Divisions 21-23 and Electrical Division 26-28 for instructions on painting work to be done by Section 09 91 10 on surface provided by those Divisions.
.3 Gloss range: paint and varnish textures are specified by their gloss type, which is defined by the dried film sheen factor. Refer to:
.1 MPI Painting Specification Manual - GLOSSARY OF TERMS to determine Sheen Factor for various gloss types.
.2 Locations A: Vest./ Corridors/ Stairs/ Washrooms/ Custodial/ Storage Areas
(1) block - MPI Gloss Level 7 (high gloss)
(2) gypsum board - MPI Gloss Level 3 (eggshell)
(3) doors/ frames - MPI Gloss Level 5 (semi gloss)
(4) wood - MPI Gloss level 5 (semi gloss)

.3 Locations B: Remaining Areas
(1) block - MPI Gloss Level 5 (semi gloss)
(2) gypsum board - MPI Gloss Level 3 (eggshell)
(3) doors/ frames - MPI Gloss Level 5 (semi gloss)
(4) wood - MPI Gloss level 5 (semi gloss)

1.5 Product Data

.1 Submit product data in accordance with Section 01 33 00 – Submittal Procedures.
.2 Submit full records of all products used. List each product in relation to finish formula and include the following:
.1 Finish formula designation.
.2 Product type and use.
.3 CGSB number.
.4 Manufacturer's product number.
.5 Colour numbers.
.6 Manufacturer's Material Safety Data Sheets (MSDS).
.7 Maximum VOC classification.
.3 Submit manufacturer's application instructions for each product specified.

1.6 Samples

.1 Submit samples in accordance with Section 01 33 00 - Submittal Procedures.
.2 Submit duplicate 300mm x 200mm sample panels of each paint, stain, clear coating, formula, type, colour, and texture specified.
.3 Submit full range of available colours where colour availability is restricted.
.4 Use 3mm plate steel for finishes over metal surfaces. Use 12.5mm maple plywood for finishes over wood surfaces. Use 12.5mm gypsum board for finishes over gypsum board and other smooth surfaces.

1.7 Quality Assurance

.1 Retain purchase orders, invoices and other documents to prove that all materials utilized in this contract meet requirements of the specifications. Produce documents when requested by Consultant.
.2 Standard of Acceptance:
.1 Walls: No defects visible from a distance of 1000mm at 90º to surface.
.2 Ceilings: No defects visible from floor at 45º to surface when viewed using final lighting source.
.3 Final coat to exhibit uniformity of colour and uniformity of sheen across full surface area.

1.8 Delivery, Storage and Handling

.1 Deliver, store, handle and protect materials in accordance with Section 01 61 00 – Basic Product Requirements.
.2 Deliver and store materials in original containers, sealed, with labels intact.
.3 Indicate on containers or wrappings:
.1 Manufacturer's name and address.
.2 Type of paint.
.3 Compliance with applicable standard.
.4 Colour number in accordance with established colour schedule.
.4 Remove damaged, opened and rejected materials from site.
.5 Provide and maintain dry, temperature controlled, secure storage.
.6 Observe manufacturer's recommendations for storage and handling.
.7 Store materials and supplies away from heat generating devices.
.8 Store materials and equipment in a well ventilated area with temperature range 7 - 30°C.

.9 Store temperature sensitive products above minimum temperature as recommended by manufacturer.
.10 Keep areas used for storage, cleaning and preparation, clean and orderly to approval of Consultant. After completion of operations, return areas to clean condition to approval of Consultant.
.11 Remove only in quantities required for same day use.
.12 Fire Safety Requirements:
.1 Store oily rags, waste products, empty containers and materials subject to spontaneous combustion in ULC approved, sealed containers and remove from site on a daily basis.
.2 Handle, store, use and dispose of flammable and combustible materials in accordance with the National Fire Code of Canada.

1.9 Environmental Requirements

.1 Safety: comply with requirements of Workplace Hazardous Materials Information System (WHMIS) regarding use, handling storage, and disposal of hazardous materials.
.2 Apply paint finishes only when temperature at location of installation can be satisfactorily maintained within manufacturer's recommendations.
.3 Substrate and ambient temperature must be within limits prescribed in paint standard and by manufacturer to approval of Consultant.
.4 Maintain minimum substrate and ambient air temperature of 7°C for latex paints. Maximum relative humidity 85%. Maintain supplemental heating until paint has cured sufficiently.
.5 Provide temporary heating where permanent facilities are not available to maintain minimum recommended temperatures.
.6 Apply paint finish only in areas where dust is no longer being generated by related construction operations such that airborne particles will not affect the quality of the finished surface.
.7 Apply paint only when surface to be painted is dry, properly cured and adequately prepared.
.8 Provide minimum 270 lx on surfaces to be painted.

1.10 Extra Materials

.1 Submit maintenance materials in accordance with Section 01 78 00 – Closeout Submittals.
.2 Submit one - four litre can of each type and colour of finish coating. Identify colour and paint type in relation to established colour schedule and finish formula.
.3 Deliver to Site and store where directed.

PART 2 - PRODUCTS

2.1 Paint Materials

.1 Qualified products: only paint materials listed on the MPI Qualified Products List are acceptable for use on this project.
.2 Qualified products: only varnish, stain, enamel, lacquer and filler materials listed on the MPI Approved Product Lists are acceptable for use on this project producing a flame spread rating of less 150.
.3 Paint materials for each coating formula to be products of a single manufacturer.
.4 Low odour products: Whenever possible, select products exhibiting low odour characteristics.

2.2 Paint Colours

.1 Colours will be selected by Consultant. Note: There will be up to 6 different colours used.
.2 Perform **all** colour tinting operations prior to delivery of paint to site.
.3 Second coat in a three coat system to be tinted slightly lighter colour than top coat to show visible difference between coats.

2.3 Paint Finishes - INTERIOR

.1 Concrete Horizontal Surfaces – Three component, Zero VOC epoxy coating.
  .1 One coat; approved PPG High Performance Coatings, Megaseal HSPC.
  .2 Two coats: approved PPG High Performance Coatings, Megaseal HDSL, Zero VOC; colour: Grey.
.2 Concrete and Lightweight Block - Locations A – INT 4.2J Epoxy – Modified Latex, Interior, MPI Gloss Level 5 (semi-gloss)
  .1 Two coats MPI #4; spray applied and back rolled to fill **all** pin holes, and as required by block texture.
  .2 Two coats MPI #215; approved Devoe Coatings Tru-Glaze WB 4426 waterborne.
.3 Concrete and Lightweight Block - Locations B – INT 4.2D Latex, Interior, High Performance Architectural, MPI Gloss Level 5 (semi-gloss)
  .1 Two coats MPI #4; spray applied and back rolled to fill **all** pin holes, and as required by block texture.
  .2 Two coats MPI #153; Interior, Acrylic #13210.
.4 Gypsum Drywall – walls below 2400mm above finish floor – INT 9.2B Latex, Interior, High Performance Architectural, MPI Gloss Level 3 (eggshell)
  .1 One coat MPI #50; Interior, Latex #59113
  .2 Two coats MPI #153; Interior, Acrylic #13210.
.5 Gypsum Drywall – walls above 2400mm above finish floor/ bulkheads/ ceilings – INT 9.2M Latex, Interior, Institutional, Low Odour/ VOC, MPI Gloss Level 1 (flat)
  .1 One coat MPI #149; Interior, Latex #59113
  .2 Two coats MPI #143; Interior, Acrylic #59111.
.6 Plaster – RIN 9.2B; MPI Maintenance Repainting Manual; MPI Gloss Level 5 (semi-gloss)
  .1 One coat MPI #137; approved Dulux Gripper #60000
  .2 Two coats MPI #54; approved Dulux Diamond, Interior #13210
.7 Metal (Ferrous) – INT 5.1B – Light Industrial Coating, Interior, Water Based, MPI Gloss Level 5 (semi-gloss)
  .1 One coat MPI #107; approved – Pitt-Tech Int/Ext DTM Industrial #90-712
  .2 Two coats MPI #153; approved – Dulux Diamond Interior Acrylic #13210.
.8 Wood – Opaque Finish (P) – INT 6.3A – Latex High Performance Architectural, MPI Gloss Level 5 (semi-gloss)
  .1 One coat primer; MPI #39; approved – Dulux Gripper #60000
  .2 Two coats MPI #141; approved – Dulux Diamond Interior Acrylic #13210.
.9 Exposed Insulated Pipes and Ductwork – INT 10.1A – Latex, Interior, Institutional, Low Odour/ VOC, MPI Gloss Level 1 (flat)
  .1 One coat MPI #149; Interior, Latex #59113
  .2 Two coats MPI # 143; Interior Acrylic #59111
.10 Interior Copper and Aluminum (Mill Finish) – INT 5.4M - Latex, Interior, High Performance Architectural, MPI Gloss Level 5 (semi gloss)
  .1 One coat MPI #95; approved Devoe Devguard #4630, Low VOC
  .2 Two coats MPI #153; approved DULUX Diamond, Interior, Acrylic #13210
.11 High Temperature Pipe and Fittings – INT 5.2 - Heat Resistant Enamel, 205°C (400°F)
  .1 Two coats MPI #21; approved Devoe HT-4H High Temperature Silicone Acrylic.

PART 3 - EXECUTION

3.1 General

.1 Perform all painting operations in accordance with CAN/CGSB-85.100 except where specified otherwise.
.2 Perform all painting operations in accordance with MPI Painting Specifications Manual except where specified otherwise.
.3 Apply all paint materials in accordance with paint manufacturer's written application instructions.

3.2 Preparation

.1 Remove electrical cover plates, light fixtures, surface hardware on doors, door stops, bath accessories and all other surface mounted fittings and fastenings prior to undertaking any painting operations. Store for re-installation after painting is completed.
.2 Move and cover furniture and portable equipment as necessary to carry out painting operations. Replace as painting operations progress.
.3 As painting operations progress, place "WET PAINT" signs in occupied areas to approval of Consultant.

3.3 Protection

.1 Protect existing building surfaces not to be painted from paint spatters, markings and other damage. If damaged, clean and restore such surfaces as directed by Consultant.
.2 Cover or mask floors, windows and other ornamental hardware adjacent to areas being painted to prevent damage and to protect from paint drops and splatters. Use non-staining coverings.
.3 Protect items that are permanently attached such as Fire Labels on doors and frames.
.4 Protect factory finished products and equipment.
.5 Protect passing pedestrians, building occupants and the general public in and about the building.

3.4 Conditions of Work

.1 Investigate existing substrates for problems related to proper and complete preparation of surfaces to be painted. Report all damage, defects, unsatisfactory or unfavourable conditions before proceeding with work.
.2 Investigate moisture content of surfaces to be painted and report findings. Do not proceed with work until conditions fall within acceptable range as recommended by manufacturer.
.3 Maximum moisture content as follows:
    .1 Plaster and wallboard: 12%.
    .2 Masonry/Concrete: 12%.
    .3 Concrete Block/Brick: 12%.
    .4 Wood: 15%.

3.5 Cleaning

.1 Clean all surfaces to be painted as follows:
    .1 Remove all dust, dirt, and other surface debris by vacuuming, wiping with dry, clean cloths or compressed air.
    .2 Wash surfaces with solution of T.S.P. and clean warm water using a stiff bristle brush to remove dirt, oil and other surface contaminants.
    .3 Rinse scrubbed surfaces with clean water until foreign matter is flushed from surface.
    .4 Allow surfaces to drain completely and allow to dry thoroughly.
    .5 To prepare surfaces for water-based painting, water-based cleaners should be used in place of organic solvents.

.6 Use trigger operated spray nozzles for water hoses.
.7 Many water-based paints cannot be removed with water once dried. However, minimize the use of kerosene or any such organic solvents to clean up water-based paints.

.2 Prevent contamination of cleaned surfaces by salts, acids, alkalis, other corrosive chemicals, grease, oil and solvents before prime coat is applied and between applications of remaining coats. Apply primer, paint, or pre-treatment as soon as possible after cleaning and before deterioration occurs.

.3 Sand existing surfaces with intact, smooth, high gloss coatings to provide adequate adhesion for new finishes.

3.6 Surface Preparation

.1 Prepare new wood surfaces to CGSB 85-GP-1M.

.2 Where possible, prime all surfaces of new wood surfaces before installation. Use same primers as specified for exposed surfaces.

.3 Prepare previously painted wood surfaces to CGSB 85-GP-2M.
.1 Apply vinyl sealer to CAN/CGSB-1.126 over knots, pitch, sap and resinous areas.
.2 Apply wood filler to nail holes and cracks.
.3 Tint filler to match stains for stained woodwork.

.4 Prepare stucco, brick, concrete masonry and concrete surfaces to CGSB 85-GP-31M.

.5 Prepare concrete floors to CGSB 85-GP-32M. Prepare new concrete floor by acid etching. Rinse with clean water and thoroughly dry.

.6 Prepare plaster and wallboard surfaces to CGSB 85-GP-33M.

3.7 Surface Preparation - Metal

.1 Clean new metal surfaces to be painted by: removing rust, loose mill scale, welding slag, dirt, oil, grease and other foreign substances in accordance with the following:
.1 Solvent cleaning: SSPC-SP-1.
.2 Hand tool cleaning: SSPC-SP-2.
.3 Power tool cleaning: SSPC-SP-3.
.4 Commercial blast cleaning: SSPC-SP-6.
.5 Brush-off blast cleaning: SSPC-SP-7.

.2 Touch up shop primer to CGSB 85-GP-10M with primer as specified in applicable section. Touch-up to include cleaning and painting of field connections, welds, rivets, nuts, washers, bolts, and damaged or defective paint and rusted areas.

.3 Prepare galvanized steel and zinc coated steel surfaces to CGSB 85-GP-16M.

.4 Prepare copper and copper alloys surfaces to CGSB 85-GP-20M.

.5 Prepare new steel surfaces exposed normally to dry conditions to CGSB 85-GP-14M.

.6 Prepare previously painted steel surfaces exposed normally to dry conditions to CGSB 85-GP-15M.

.7 Prepare steel surfaces exposed to industrial environments to CGSB 85-GP-13M.

.8 Prepare steel surfaces exposed to water or high humidity levels to CGSB 85-GP-11M CGSB 85-GP-18M.

.9 Ductwork:
Wash thoroughly all ductwork to be exposed and painted in completed work with mineral spirits and wipe dry with completely clean cloths. Phosphatize galvanized metal surfaces using CGSB-31-GP-116 pretreatment or prime with galvanized metal primer.

.10 Do not apply paint until prepared surfaces have been accepted by Consultant.

3.8 Mixing Paint

.1 Mix ingredients in container before and during use and ensure breaking up of lumps, complete dispersion of settled pigment, and uniform composition.

.2 Thin paint for spraying according to manufacturer's instructions. If directions are not on container, obtain instructions in writing from manufacturer and provide copy of instructions to Consultant.

.3 Do not use kerosene or any such organic solvents to thin water-based paints.

3.9 Application

.1 Method of application to be as approved by Consultant. Apply paint by brushroller except where spraying is necessary to achieve acceptable finish. Conform to paint manufacturer's application instructions unless specified otherwise.
.2 Brush/ roller application.
  .1 Work paint into cracks, crevices and corners. Paint surfaces not accessible to brushes by spray, daubers or sheepskins.
  .2 Brush out runs and sags.
  .3 Remove runs, sags and brush marks from finished work and repaint.
.3 Spray application.
  .1 Provide 6mil poly dust curtains around rooms being sprayed to prevent transfer of paint and odour to other rooms.
  .2 Provide and maintain equipment that is suitable for intended purpose, capable of properly atomizing paint to be applied, and equipped with suitable pressure regulators and gauges.
  .3 Keep paint ingredients properly mixed in containers during paint application either by continuous mechanical agitation or by intermittent agitation as frequently as necessary.
  .4 Apply paint in a uniform layer, with overlapping at edges of spray pattern.
  .5 Brush out immediately all runs and sags.
  .6 Use brushes to work paint into cracks, crevices and places which are not adequately painted by spray.
.4 Use dipping, sheepskins or daubers only when no other method is practical in places of difficult access and only when specifically authorized by Consultant.
.5 Apply each coat of paint as a continuous film of uniform thickness. Repaint thin spots or bare areas before next coat of paint is applied.
.6 Allow surfaces to dry and properly cure after cleaning and between subsequent coats for minimum time period as recommended by manufacturer.
.7 Sand and dust between each coat to remove visible defects.
.8 Finish tops of cupboards, cabinets and projecting ledges, both above and below sight lines as specified for surrounding surfaces.
.9 Finish inside of cupboards and cabinets as specified for outside surfaces.
.10 Finish closets and alcoves as specified for adjoining rooms.
.11 Finish top, bottom, edges and cutouts of doors after fitting as specified for door surfaces.
.12 Apply final coat of paint after inspection and correction of deficiencies and installation of flooring have been completed.

3.10 Mechanical and Electrical Equipment

.1 In finished areas: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment. Colour and texture to match adjacent surfaces, except as noted otherwise.
.2 In boiler room, mechanical and electrical rooms: paint exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment.
.3 In other unfinished areas: leave exposed conduits, piping, hangers, ductwork and other mechanical and electrical equipment in original finish and touch up scratches and marks.
.4 Touch up scratches and marks on factory painted finishes and equipment with paint as supplied by manufacturer of equipment.
.5 Do not paint over nameplates.
.6 Keep sprinkler heads free of paint.
.7 Paint inside of ductwork where visible behind grilles, registers and diffusers with primer and one coat of matt black paint.
.8 Paint disconnect switches for fire alarm system and exit light systems in red enamel.
.9 Paint all fire protection piping red, unless directed otherwise.
.10 Paint all natural gas piping yellow, unless directed otherwise.

.11 Paint both sides and edges of backboards for telephone and electrical equipment before installation. Leave equipment in original finish except for touch-up as required, and paint conduits, mounting accessories and other unfinished items.

3.11 Field Quality Control

.1 Field inspection of painting operations to be carried out by independent inspection firm as designated by Consultant.
.2 Advise Consultant when each applied coating is ready for inspection. Do not proceed with subsequent coats until previous coat has been approved.
.3 Co-operate with inspection firm and provide access to all areas of the work.

3.12 Restoration

.1 Clean and re-install all hardware items that were removed before undertaken painting operations.
.2 Remove protective coverings and warning signs as soon as practical after operations cease.
.3 Remove paint splashings on exposed surfaces that were not painted. Remove smears and spatter immediately as operations progress, using compatible solvent.
.4 Protect freshly completed surfaces from paint droppings and dust to approval of Consultant. Avoid scuffing newly applied paint.
.5 Restore areas used for storage, cleaning, mixing and handling of paint to clean condition as approved by Consultant.

END OF SECTION

1. GENERAL

1.1 General Requirements

.1 This general division, Division 20 – Mechanical, applies to the following detailed divisions:

a. Division 21 – Fire Suppression
b. Division 22 – Plumbing
c. Division 23 – Heating, Ventilation and Air Conditioning
d. Division 25 – Integrated Automation

.2 Comply with the conditions of Division 0 and Division 1.

.3 Specifications and drawings form an integral part of the contract documents. Any item omitted from one but which is mentioned or reasonably implied in the other, shall be considered as properly and sufficiently specified and shall be included as part of the work.

.4 Maintain at site, one copy of the following:

a. Mechanical contract documents.
b. Reviewed shop drawings.
c. Supplementary instructions, Proposed Change and Change Orders.
d. Other modifications to Contract.
e. Field and laboratory test reports.
f. Approved mechanical permit drawings.
g. As-built drawings.
h. Drawing documents approved by any applicable authorities.

1.2 Cash Allowances

.1 Refer to Division 1 for cash allowance details.

1.3 Liability and Property Insurance

.1 Comply with the requirements of Division 0, Division 1 and Section GC 11.1 of CCDC 2 - 2020.

.2 This successful Trade is to maintain adequate insurance as specified by the Owner's Standard Form of Contract. This insurance is to firmly protect both this Trade and the Owner from public liability claims and property damage, and all claims under the Workers' Compensation Act. Evidence of insurance coverage shall be filed and approved.

.3 This Contractor shall assume all liability for and be responsible for loss of or damage to the Contractor's materials or equipment and for any materials delivered to the Contractor from whatever source to the site of the Work.

1.4 Workplace Safety and Insurance Board

.1 This Trade shall produce a Workplace Safety and Insurance Board Certificate of Clearance Form at each monthly progress draw and prior to final payment under the contract.

1.5 Subcontractors

.1 This Contractor shall provide a complete list of the names and addresses of the Subcontractors whom will be used for the Work. This Contractor shall incorporate all the terms and conditions of the Contract necessary for the purpose of performing the Work pursuant to the Contract into all sub-contract agreements. Nothing contained in the Contract shall create any contractual relationship between any Subcontractor and the Owner.

1.6 Indemnification Claims

.1 This Trade shall indemnify and save harmless the Owner and it's respective officers and agents from all claims relating to labour and material furnished or supplied in executing the contract, and from and against all claims, demands, losses, costs, damages, actions, suits or proceedings by whomsoever made, brought or prosecuted in any manner based upon, arising out of, relating to, occasioned by or attributable to the activities or omissions of this Trade or those for whom this Trade is at law responsible in performing the contract.

.2 Comply also with Section GC 12.1 of CCDC 2 - 2020.

1.7 Use of Electronic Files

.1 A waiver must be executed prior to release of any electronic documentation.

.2 Electronic documentation for release may consist of drawing files in formats such a Portable Document File (PDF), AutoCAD (dwg), Revit (rvt). Specifications, details, schedules, legends shall generally NOT be released.

.3 Electronic documents shall be used only for the specific use outlined in the waiver. The recipient may use this data for this purpose, at their own risk.

.4 Copyright and ownership of the data are not transferred to the recipient, or to any other party. The design professional and/or owner retain all rights to the data.

.5 Data delivered in electronic form may vary from those contained on paper copies of the documents. This information is not guaranteed to be accurate. The method of data transfer cannot be guaranteed to be error free, or compatible with the recipient's hardware, software, or systems. Contractors and subcontractors are not relieved of their normal responsibilities to independently check, coordinate, and verify information and dimensions, and to familiarize themselves thoroughly with the project. The documents may have been changed or amended by addendums, bulletins, RFI's, shop drawings, other documents, meetings, and understandings not represented on these files.

.6 The electronic files shall not be used as a substitute for the contract documents. The Author offers no warranty or guarantee, express, implied, or statutory as to the accuracy, reliability, suitability, completeness or fitness of this data for a particular purpose. The company in receipt of these files agrees, to the fullest extent permitted by law, to defend, indemnify, and hold the Author, their directors, officers, partners, employees, harmless from all losses, claims, liabilities, injuries, damages, and expenses, including attorneys' fees and costs of defense, arising out of the use, misuse, misapplication, or misinterpretation of this data.

.7 The recipient will not distribute the data to any other firm or individual, except the recipient's consultants or subcontractors.

1.8 Definitions

.1 "Provide" means to supply and install the products and services specified.

.2 "The Work" means the total construction required by the Contract Documents and includes all labour, Products and services.

.3 "Products" means all material, equipment and fixtures forming the completed Work as required by the Contract Documents.

1.9 Quality Assurance

.1 The physical properties, design, performance and characteristics of Products of this Division and their installation shall be as specified and in accordance with the applicable requirements and recommendations of the latest issue of all relevant regulations, including but not limited to:

a. National Fire Protection Association Codes
b. Canadian Standards Association (CSA)
c. American National Standards Institute (ANSI)
d. American Society for Testing and Materials (ASTM)
e. American Society of Mechanical Engineers (ASME)
f. Ontario Building Code (OBC)
g. Ontario Fire Code
h. Ontario Ministry of Labour Codes
i. Ontario Gas Utilization Code
j. Ontario Occupational Health and Safety Act
k. Technical Standards and Safety Authority (TSSA).
l. All Municipal regulations and any authorities having jurisdiction.

1.10 Intent

.1 Provide all products specified or shown in the contract documents complete with incidentals necessary for a complete operating installation. Provide all tools, instruments, equipment and labour required to do the work.

.2 The contract documents are not intended to enumerate each and every detail which may be necessary to furnish and install the complete system ready for operation. The bid price shall include all such details, and all associated labour and materials, to provide a complete and working system. The omission of any details in the contract documents shall not be a warrant for poor workmanship or the omission of such details.

.3 The final decision as to which trade provides required labour or materials rests solely with the Contractor. Where Work is assigned to specific Sections within this specification, it is to be used as a guide only to assist the Sub-Contractors with their coordination. Extra payments will not be considered based on a difference in interpretation of the contract documents as to which trade involved provides materials or labour for specific items of Work. The Consultant will not enter into such discussions.

.4 Wherever differences occur in the contract documents, the maximum conditions will govern and shall be allowed for in the bid price. The items to be incorporated will be at the option of the Consultant.

.5 All Work shall be carried out by qualified Trades and Sub-trades with established reputations for the type of work involved and performed to good industry standards.

.6 All Work shall conform to standards of excellence and good practice of the respective trades. Governing codes and regulations represent the minimum acceptable standards.

1.11 Examination of Site and Contract Documents

.1 It is the responsibility of this Trade to carefully review the drawings, specifications and other instructions and notify the Owner in writing of any errors, omissions and discrepancies prior to closing of tenders. This Trade shall abide by the decision given in writing. The work as shown is intended to be completed in all respects and that failure to notify the Owner of any discrepancies will not relieve this Trade of responsibility for completing the work as intended. In no case shall this Trade proceed in uncertainty.

.2 This Trade shall visit the building and become thoroughly familiar with all the existing mechanical systems and other conditions to be met in carrying out the work covered by these specifications prior to submitting the bid price. Arrangements for a site inspection may be made as described in Division 1.

.3 Examine all mechanical specification divisions and sections and all other related contract documents. The mechanical specification is to be read in conjunction with all other divisions and sections of the specification. In the event of conflict between documents, this specification shall govern.

.4 Mechanical drawings are not to be scaled. Refer to architectural drawings or verify dimensions on site.

1.12 Scope of Work

.1 Comply with the latest requirements of all relevant standards and codes of the authorities having jurisdiction. These standard codes and regulations constitute an integral part of these specifications. If the Contractor knowingly performs any work contrary to these laws and fails to notify the Consultant in writing and obtain their direction in writing, the Contractor shall be responsible for and shall correct any violations thereof and shall bear all costs, expense and damages attributable to the Contractor's failure to comply with the provisions of all such laws.

.2 Inform the Consultant in writing if modifications to the Work are requested by the authorities.

.3 Submit all required documentation to the authorities for their approval and comment before starting any Work. Provide all additional drawings, details or information as may be required.

.4 Supply Certified Mechanics and Apprentices in accordance with the latest Department of Labour Regulations.

.5 Supply and install all equipment and materials as specified and / or shown on the drawings and required to provide complete, properly functioning, mechanical systems fit to the

intended use. Provide all labour for the satisfactory completion of the work. Supply any miscellaneous equipment and materials not herein listed necessary for the proper installation and operation of the systems.

.6 General product requirements:

a. Provide only new products. Where a manufacturer is not specified provide products of high commercial standard and quality consistent with the standards of these specifications.
b. All products must bear the approval of the CSA or have special approval of the inspection authority having jurisdiction for their respective functions and environments.
c. Provide products of same manufacture for like applications unless noted otherwise.
d. All products must comply with all applicable energy efficiency codes.

.7 All deposits, levies or similar fees, if any, required for completion of the Mechanical Work shall be paid as follows. Apply for all necessary permits.

a. Unless otherwise indicated, fees required for the approval, registration and inspection of any portion of the mechanical system by any government agency, department or authority shall be included in the tender price. The Mechanical Contractor shall make all necessary arrangements with TSSA and provide all necessary documentation without extra cost as required for approval / inspection / registration of applicable mechanical systems, including the boiler system, compressed air system and any other equipment or materials subject to the requirements of O. Reg. 220/01 under the TSSA Act, 2000.
b. Fees required for approval and inspection of sprinkler system(s) shall be included in the bid price except that all fees required for review of system(s) by the insurance underwriters shall be paid by the Owner directly to the underwriter.

1.13 Acceptable Products

.1 Unless noted otherwise, the bid price may be based on the use of products equal to those specified herein. Where 'approved equals' are listed, only products from these manufacturers may be used in the bid price. Where approved equals are not listed, any manufacturer may be used in the bid price.

.2 Unless specifically stated otherwise, this project has been designed based on the first named manufacturer of each section or that specifically listed in the schedules. If this Trade chooses to use a manufacturer other than the first named manufacturer, it will be their responsibility to ensure that all equal and alternative equipment meets the mechanical specification, is similar in dimensions, stability, quality, weight, ease of maintenance, performance, etc. and that the equipment will fit into the space allocated. This Trade shall be responsible for preparing revised design drawings (if directed by the Consultant) and shall carry all costs required to accommodate the equal / alternative equipment INCLUDING ALL COSTS INCURRED BY OTHER TRADES. The Consultant reserves the right to approve or reject any alternate based upon his evaluation of the equipment proposed. If only one manufacturer is listed, then only that manufacturer shall be acceptable.

1.14 Contract Drawings

.1 The drawings show the approximate location for the equipment and materials throughout the building. The arrangement shown on the drawings is diagrammatic and approximate only. All Work shall be coordinated on site with the Work of other Divisions prior to installation. Unless otherwise indicated on the drawings, the elevation and exact plan location of services shall be determined by the Contractor.

.2 Items shown on the drawings but not specified or specified but not shown shall be included. Items necessary to provide a complete working system but not specified nor shown shall be included.

.3 Where any parts of the system and / or pieces of equipment are located by dimensions on the drawings, the dimensions shall be checked and verified in the field.

.4 Adjust the location of materials and / or equipment to accommodate structural conditions, other equipment / systems, etc. as directed without adjustment to contract price provided that the changes are requested before installation and they do not significantly affect the quantity of materials. Extra charges will not be accepted for adjustment of materials and / or equipment that are required due to the lack of proper site coordination.

1.15 Coordination

.1 Review the specifications and drawings of all divisions and become thoroughly acquainted with the Work.

.2 Coordinate the Work with all Divisions. Inform other Divisions of equipment locations, opening locations, sleeve locations, supports, connections, electrical data, piping / duct locations, etc. Coordinate to eliminate any unnecessary delays to any Work.

.3 All ductwork and piping shall be routed on site to clear other piping, ductwork, building structure, etc. Note that drawings are schematic in nature only and that all work must be coordinated on site and adjusted without extra cost.

.4 Before commencing any Work of this Division, inform the Consultant in writing of any detrimental factors affecting the Work.

1.16 Construction (Interference) Drawings

.1 Prepare construction drawings where required or where directed for proper coordination of the Work. Submit construction drawings prior to commencement of Work.

.2 Where directed by the General Contractor or Consultant, prepare fully dimensioned construction drawings of:

a. Products and services in mechanical rooms, service / ceiling spaces and other critical locations.
b. Pits, curbs, sills, equipment bases, anchors, inertia slabs, etc.
c. Sleeves and openings through structure.
d. Alternate / equal products and associated systems.

.3 Coordinate the Work with all other Divisions. Base drawings on reviewed shop drawings and indicate all details pertaining to access clearances, cleanouts, electrical / drain / water / ductwork connections, final piping / ductwork layouts, etc.

.4 Submit construction drawings to all Divisions. Construction drawings must be submitted electronically in editable Portable Document Format (.PDF) format. All construction drawings submitted for the complete project shall be in the same format.

.5 Construction drawings are prepared for construction and record purposes only and are not part of the contract documents or shop drawings.

1.17 Shop Drawings

.1 Refer to other Sections of this specification for equipment / fixtures requiring shop drawing submittal.

.2 Shop Drawings shall be submitted electronically in editable Portable Document Format (.PDF).

.3 The Consultant's review of shop drawings and manufacturer's specifications is general and is not intended to serve as the final check. It shall not relieve the Contractor from responsibility for errors.

.4 Equipment will not be accepted on site until approval of shop drawings. Do not proceed with work on any item for which shop drawing approval has not been given.

.5 Before submission, check all shop drawings for accuracy of details, dimensions, etc. Circulate shop drawings which affect the Work of other Divisions for their review and comments prior to submission to the Consultant. The Consultant will only review shop drawings bearing the Contractors stamp of approval.

.6 Any deviations whatsoever from items specified to that proposed on the Shop Drawings shall be clearly identified and listed in red ink on the front of the Shop Drawings.

.7 Indicate the manufacturer's estimated time of delivery, expressed in weeks after receipt of approved shop drawings. As more accurate delivery times become known, notify the Consultant and General Contractor. Equipment with long delivery dates that are critical for the progress of the work are to be followed closely by the Contractor. Submit their shop drawings as soon as possible, separating from other equipment and marking "Urgent" on the front page of the submission. Assume full responsibility for submission of shop drawings. Allow two (2) weeks for Consultants review.

.8 Submit shop drawings showing the following:

a. Project name
b. Project equipment number, manufacturer’s name and model number
c. Supplier’s name
d. Approval agencies
e. Shipping and working weight
f. Performance characteristics
g. Dimensions
h. Accurate wiring diagrams and electrical requirements for all electrical components.

i. Materials used in manufacture and type of finish
j. Time required to fabricate and deliver
k. All variations from tender documents
l. Applicable standards such as CSA, CGA, ULC, ANSI, ASTM, ASME, FM, etc.

.9 Drawings will be marked and action taken as follows:

Consultant's Markings	Action by Contractor
.1 Reviewed	Proceed with work.
.2 Reviewed as noted	Proceed in accordance with markings. Resubmit revised drawings for record.
.3 Revise and Resubmit	Submit revised drawings for review before proceeding.

.10 Shop drawings shall be submitted for all products (including all associated accessories, controls, etc.), including but not limited to:

a. Backflow prevention devices.
b. Boilers, burners and associated trim.
c. Boiler venting.
d. Pumps.
e. Expansion tanks.
f. Air / dirt separators.
g. Pot feeders / sidestream filters.
h. Water treatment including cleaning / treatment chemicals and dosage rates.
i. Hydronic heaters.
    i. Unit heaters.
j. Heating coils.
k. Indoor HVAC equipment (HV, HVAC and UV units).
l. Piping expansion compensation system including manufacturer drawings indicating calculated expansion and anchor reaction forces.
m. Grilles / diffusers.
n. Louvres.
o. Combination fire and smoke dampers.
p. Fans.
q. Outdoor heat pump / condensing units.
r. Building automation system including all components, wiring diagrams, sequences and points lists.
s. Firestopping systems.
t. Sprinkler systems, including:
    i. Design drawings and details (drawn to scale and showing the size / location of all system components including piping / fittings, sprinkler heads, valves, flow switches, etc.).
    ii. Calculations.
    iii. Sprinkler heads complete with guards.
    iv. Valves.
    v. Gauges.
    vi. Grooved joint couplings and fittings.

vii. Sprinklers shall be referred to on drawings, submittals and other documentation, by the sprinkler identification or model number as specifically published in the appropriate agency listing or approval. Trade names or other abbreviated designations shall not be allowed.

.11 For firestopping systems, shop drawings shall show construction conditions, relationships to adjoining construction, dimensions, description of materials and finishes, component connections, anchorage methods, hardware and installation procedures, plus the following:

a. Firestop design designation of testing and inspecting agency acceptable to the authorities having jurisdiction.
b. Documentation, including illustrations, from a qualified testing and inspection agency that is applicable to each firestop system configuration for construction and penetrating items. Factory or manufacturer furnished installation details are not acceptable in lieu of published documents by approved testing agencies.
c. Where conditions require modification of a qualified testing and inspecting agency's illustration to suit a particular firestop condition, submit illustration, with modifications marked, approved by the firestop system manufacturer's fire-protection Engineer.

1.18 Schedule

.1 Where specified in Division 0 or Division 1, all work shall be scheduled to meet the required project milestones.

.2 All work in existing facilities shall be performed at times to suit the Owner and must not interfere in any way with the carrying on of business.

.3 Extra charges for premium time labour shall be included in the tender price as required to comply with the construction schedule and the restrictions on when work will be permitted in the existing building. Allow for after hours, weekend and holiday labour requirements.

1.19 Extras and Credits

.1 For each change submit a complete itemized breakdown of labour and material costs, overhead and profit markup, and taxes.

.2 Only the net difference between an extra and a credit will subject to overhead and profit mark-up.

.3 Material shall be valued at current trade prices incorporating all discounts.

.4 Labour rates shall be valued at payroll cost plus a percentage mark-up for burden as stipulated in Division 0.

.5 Labour rates for extras and credits shall be identical.

.6 Approval must be obtained from the Consultant prior to work commencing. Refer to Division 0 for additional information.

1.20 Questions

.1 Questions pertaining to the work shall be submitted to the Consultant in writing in the form of a Request for Information (RFI).

.2 Allow for two weeks for RFI response from the Consultant. Claims for delay within this period will not be accepted.

1.21 Operation and Maintenance Manual

.1 Provide the complete manual in electronic PDF format on a suitably sized USB thumb drive.

.2 Make all corrections requested by the Consultant and resubmit all corrected copies for final approval.

.3 Include the following information in or with each manual.

a. Valves
   i. Complete list of all valves, strainers, backflow preventers, etc. indicating manufacturer, type, catalogue number, source of supply and maintenance data.

b. Instrumentation and Control
   i. Complete list of all gauges, thermometers, thermostats, sensors, control dampers / actuators, controllers and other instruments / control components indicating manufacturer, catalogue number, source of supply and maintenance data (where applicable).
   ii. Sequences and description of operation for each control system including all settings.
   iii. Schematic diagram for each control system complete with equipment / parts listing.
   iv. For additional requirements, refer to Division 25.

c. Reports
   i. Inspection reports from Authorities having Jurisdiction.
   ii. Sign-back of latest mechanical and electrical Site Review Report(s).
   iii. Backflow preventer test reports.
   iv. Air and water testing, adjusting and balancing (TAB) report.
   v. Pipe pressure test reports.

d. Miscellaneous
   i. Identify cover with “Operation and Maintenance Manual”.
   ii. Provide Letter of Guarantee from the date of substantial completion and the name, address and telephone number of the company providing the warranty.
   iii. Include index sheet.
   iv. Provide tabbed format.
   v. Provide list of all Subcontractors providing mechanical work, including address, telephone number and contact name.
   vi. Provide list of all main equipment suppliers, including address, telephone number and contact name.
   vii. Include name and address of closest service organization and spare parts source for each item of equipment.
   viii. Provide voltage and ampere rating for each item of electrical equipment.
   ix. For all equipment required to have shop drawing approval, include in each tabbed section the following manufacturers information:

1) Approved shop drawings.
2) Manufacturers installation manual.
3) Manufacturers operation and maintenance manual.
4) Manufacturers standard and / or extended warranty slips.
5) Manufacturers start-up sheets where available (completed by the Contractor).

x. Provide list of motors serving mechanical equipment, including:
1) Location of motor.
2) Name of unit served by motor.
3) Motor serial number, manufacturer.
4) Horsepower, voltage, full load current, service factor and rpm of motor (nameplate data), rating and catalogue number of motor starter thermal overload relays.

xi. Provide list of belts serving mechanical equipment, including quantity, size and identification number.

1.22 As-built Drawings

.1 Obtain and pay for one set of blueprints, for job use only, on which to record accurately all deviations from the contract drawings. At all times have these prints available for inspection at the site. At the completion of the project, these plans shall be converted to electronic AutoCAD (release 12 or later) drawing format. Electronic base plans shall be provided from the Consultant at no cost (all work relating to the modification of these plans to reflect as-built conditions shall be at the expense of the Contractor). Provide to the Owner one (1) complete set of drawings in both electronic format and hard copy (paper) full size plots.

.2 With all progress claims certify in writing that as-built drawings coincide with progress of the Work.

.3 Prepare record drawings showing the following:

a. Inverts of all services entering and leaving the building and at key reference points.
b. Dimensions of underground services in relation to building lines at key reference points of every run.
c. Dimensioned location of all services embedded in the structure.
d. Dimensioned location of all services left for future work.
e. All changes to the Work due to change orders.
f. All changes to the Work due to addendums.
g. All changes to the Work during construction.

.4 Provide one .PDF format copy of final as-built drawings to the Consultant for approval purposes. Make all changes directed prior to submission to the Owner.

.5 The Consultant shall provide, at no cost, AutoCAD drawing files incorporating Changes and Instructions.

1.23 Identification

.1 General:

a. All identification labels shall be easily and accurately readable from usual operating areas, plane of legend to be approximately at right angles to most convenient line of sight. Wording of all labels shall be approved by the Consultant prior to manufacture.
b. Identify the complete sprinkler systems to the standards listed above and as specified in section 21 05 00.
c. Verify all identification labels / tags on site with the maintenance staff and adjust as required to be consistent with the existing identification system. Update existing valve directories to accommodate the new work.
d. All mechanical equipment (including isolation / balancing valves, major components of the building automation system, etc.) requiring access for maintenance / adjustment and located above the acoustic tile ceiling shall be identified with 0.25" (6mm) diameter coloured markers with adhesive backing. Colour of markers shall be red.

.2 Pipe identification:

a. Identify pipe mains by means of pressure sensitive adhesive labels. Markers and flow arrows shall be in accordance with ANSI/ASME A13.1 latest edition. Identify medium by lettered legend and direction of flow by arrows. Provide labels as follows:
b. At intervals not greater than 50 ft (15 m), changes of direction, upstream of major manually / automatically operated control valves, at all branch pipe connections, behind all access doors and on both sides where pipes pass through walls. Use approximate spacing intervals of 25 ft (7.6 m) for all piping running through suspended ceiling spaces.
c. Labels shall be sized as follows (pipe diameter includes insulation where applicable):
    i. 0.75” (19 mm) to 1.25” (32 mm) piping:
        1) Minimum 8” (200 mm) long label with minimum 0.5” (13 mm) letter height.
    ii. 1.5” (38 mm) to 2” (50 mm) piping:
        1) Minimum 8” (200 mm) long label with minimum 0.75” (19 mm) letter height.
    iii. 2.5” (63 mm) and larger piping:
        1) Minimum 12” (300 mm) long label with minimum 1.25” (32 mm) letter height.
d. All identification labels shall be easily and accurately readable from usual operating areas, plane of legend to be approximately at right angles to most convenient line of sight.
e. Wording of all labels shall be approved by the Consultant prior to manufacture.
f. Optionally, piping may be identified using stencils and stencil marking ink. Location and sizing shall conform to pipe label specification. On insulated surfaces stencilling shall be done with black ink, on uninsulated pipe the ink shall be white. Ensure stencilling is performed in a neat, quality manner. Upon completion of project, turn over one complete set of stencils matching those used on the project to the building Owner.
g. Piping requiring identification is as follows:
    i. Domestic cold water.
    ii. Non-potable water.
    iii. Hot water heating supply / return.
    iv. Compressed air.
    v. All natural gas piping shall be identified according to Code and local authorities requirements and as follows:

1) Unless noted otherwise, all piping located on the interior of the building shall be provided with yellow labels having black lettering (minimum 0.25" (6mm) high) reading 'GAS' at intervals not exceeding 20'-0" (6.0m). In residential buildings / building areas, intervals shall not exceed 6'-0" (2.0m).
2) Where the distribution pressure is in excess of 14" (350mm) w.c., both the piping and the pressure shall be identified at the following locations:
   I Piping shall be identified at all isolation valves and at wall / ceiling / floor penetrations.
   II Identification labels shall read '5 POUND (35 KPA) PRESSURE GAS LINE'.
3) Piping running on the exterior of the building shall be painted to Gas Code requirements.

.3 Valve identification:

a. Valve identification shall consist of a 1.25" (32 mm) diameter brass tag with engraved black paint filled characters, secured to valve by a brass bead chain. Provide and mount for the Owner a typed valve directory in a black document type frame, listing valve number, location and service. Locate the framed directory in the main mechanical room and provide a master directory to be included in the Operation and Maintenance Manual. Individual fixture supply stops and radiation valves shall not be identified.

.4 Identification of equipment / systems shall be as follows:

a. Identification plates shall be engraved two-ply plastic, 0.125" (3 mm) thick, 1.0" (25 mm) high with 3/4" (19 mm) white characters on black background and length as required. Locate in a conspicuous location and secure with self-tapping sheet metal screws to equipment. All screws used outside shall be stainless steel. Nameplates which are not exposed to outdoor conditions may be secured with double sided adhesive tape. All starters shall be identified by the Electrical Trade.
b. All equipment with symbols included in drawing schedules or plans shall be identified to match symbols indicated.
c. The following items shall be tagged at installed location and keyed to a control wiring diagram. Diagram shall be included in the Operation and Maintenance Manual:
   i. All components of building automation systems.
d. For sprinkler and standpipe system identification requirements, refer to Division 21.
e. For additional requirements regarding refrigeration system identification, refer to Division 23.
f. Identification of all equipment / systems not listed above or on the drawings is not required for this project.

.5 Verify all identification labels / tags on site with the Owner / Consultant prior to installation and adjust as directed.

1.24 Cutting, Patching and Refinishing

.1 Provide cutting and patching of building assemblies to support own project work. Cutting and patching shall be performed by workers specialized in this type of work and capable of

performing to good commercial standards. All work shall be to the approval of the Architect / General Contractor.

.2 No cutting of the building envelope or structural elements shall be done without permission of the Architect.

.3 This Trade shall patch new openings in building assemblies and openings caused by the removal of existing work. Patching shall be done to maintain existing fire separations, sound transmission class ratings, vapour retarder performance, insulation values, etc. Patching of exterior wall openings shall include filling voids and annular spaces with Roxul (not pink) batt insulation and providing a watertight seal on both sides.

.4 Finishes damaged by cutting and patching by this Trade shall be made good by this Trade with materials and colours to match existing.

.5 This Trade shall cut and patch slab-on-grade floor. Flooring shall be refinished according to Architectural documents.

.6 Refer to Structural drawings for details regarding structural supports or lintels for applicable openings.

.7 Provide framing for openings in floors, walls (including metal and wood studs) and roofs according to Architectural / Structural requirements.

.8 Provide cutting, patching and refinishing of existing roof assembly according to Architectural requirements.

.9 Conduct a photo survey of existing conditions both inside and outside the building, including of the ceiling immediately below renovation work. Immediately notify the Architect / General Contractor if any resemblance of water leakage or damage is found.

.10 Protect the existing roofing system from damage at all times. Provide plywood work platforms / walkways as required.

.11 Where wall openings caused by the removal of thermostats, sensors, etc. are not covered by new wall finishes (refer to architectural drawings) or new thermostats, sensors, etc., provide stainless steel coverplates.

1.25 Concrete

.1 Concrete for housekeeping pads (where indicated on the drawings) shall be provided according to Structural requirements and shall be minimum 6” (152 mm). This Contractor shall provide all templates to ensure concrete work is adequate. Where housekeeping pads are not indicated, all floor mounted mechanical equipment shall be mounted directly on the floor slab.

.2 Provide concrete pavers for vertical discharge outdoor condensing units.

.3 Patching of concrete floors / walls shall utilize 25 MPa concrete having a smooth trowel finish. Thickness shall match that of the existing floor / wall.

.4 Provide, locate and set all anchor bolts required for mounting and anchoring mechanical equipment covered by this contract.

1.26 Cleaning

.1 New or affected equipment, fixtures, ductwork, piping, building finishes, building contents, etc. soiled by this Trade's work shall be cleaned to the satisfaction of the Consultant at job completion.

.2 At the completion of each day's work and at project completion, remove from the area of work all dirt, rubbish, surplus material and equipment associated with this Trade's systems installation and not required in the finished work.

.3 At project completion, replace all new / existing air filters which have been soiled by the work.

1.27 Existing Construction

.1 This Trade shall provide adequate protection to existing systems (all disciplines), pavement, curbs, walkways, sodding, shrubs, building construction, building contents, etc. throughout the project. This Trade shall be responsible for restoring to its original condition or replacing any removed or damaged item in connection with the work unless otherwise directed by the Consultant.

.2 Undertake all necessary measures required by this Trade's work to maintain adequate security of the existing building at all times.

.3 Any interruption of this Trades services to any part of the existing buildings shall come at a time agreeable to the Owner and Consultant.

1.28 Protection

.1 Where foreseeable damage of any description could result from this Trade's work, this Trade shall provide adequate protection of work previously completed, including work of others. This Trade will be responsible for restoring any damaged materials.

1.29 Demolition

.1 This Trade shall be responsible for revisions to and for the complete removal of this Trade's systems to permit the new work, all as shown on the drawings or described in the specification. This includes removal of materials from the site. All disposal costs shall be included in the bid price.

.2 Materials being removed shall become the property of the Owner unless shown otherwise, and if the Owner has no use for it, it shall be disposed of by this Trade. This Trade shall include in the bid price for the disposal of all materials. Note that the Owner shall have the first right of refusal for all demolished equipment.

.3 Demolished materials shall not be reused unless noted otherwise.

1.30 Asbestos

.1 Areas of work are expected to contain asbestos containing materials (ACM). Refer to asbestos audit and section 01 35 43 "Hazardous Materials" for appropriate protocols that must be followed regardless of whether abatement operations are being conducted or not.

.2 Include the cost of retaining an Owner-approved Sub-trade for the abatement of all ACM within 24" (600 mm) radius of any mechanical work.

1.31 Sleeves

.1 Provide sleeves for piping and ductwork as follows:

a. For all pipe and ductwork penetrations of concrete structures.
b. For all copper pipe penetrations of masonry and concrete structures where required to prevent direct contact of the structure with the copper piping. Sleeves are not required provided that direct contact of the structure is prevented and provided the openings comply with the firestop manufacturer's requirements (where applicable).
c. Where required for proper installation of pipe firestop systems.
d. Where required for proper installation of fire dampers.

.2 Pipe sleeves shall be as follows (Trade to choose desired type):

a. Schedule 40 steel.
b. Minimum 24 gauge galvanized steel with an integral flange to secure the sleeve to the formwork.
c. Where permitted by the local authority, factory fabricated, flanged, high density polyethylene with reinforced nail bosses.

.3 Ductwork sleeves shall be manufactured of galvanized sheet steel of at least the same gauge as ductwork penetrating wall and shall be reinforced so as not to be deformed by the placement of the concrete.

.4 Floor sleeves shall have a minimum 0.5" (13mm) lip on the upper side. All other sleeves shall be flush with adjacent surfaces.

.5 Unless otherwise directed, all sleeves and openings shall provide minimum 0.25" (6 mm) clear space to ductwork, pipe or insulation. Provide space for application of firestopping for all sleeves and openings according to the fire stop manufacturer's detailed installation drawings. For sleeves used with fire dampers, comply also with the fire damper manufacturer's requirements.

.6 Provide waterproof, fire retardant, non-hardening caulking between sleeves and building construction where required for a weathertight installation.

1.32 Firestopping

.1 Firestopping shall be 3M or approved equal fire stop sealant / devices, listed in the UL fire Resistance Directory under categories XHCR (firestop devices) and XHEZ (firestop systems) and of a type to suit construction type, penetrant type, annular space requirements and fire rating involved in each separate instance. Systems shall be symmetrical for wall applications and shall be asbestos free. Install according to manufacturer's detailed installation instructions.

.2 Modify firestop materials where required to be of the same manufacturer as that used by the General Contractor. Coordinate on site.

.3 Firestop systems shall comply with the required F, T and L ratings, as determined per ASTM E814 / ASTM E119 (as applicable). F ratings shall meet or exceed the fire-resistance ratings of the construction assembly. Firestop systems shall have the required flame spread and smoke developed ratings to suit the point of application and to comply with Code requirements.

.4 Provide components that are needed for fill materials and to comply with the manufacturer's detailed installation instructions. Use components specified by the manufacturer and approved by the qualified testing and inspection agency, including slag / rock-wool-fiber insulation, forming / damming / backing materials, fillers for sealants, substrate primers, collars / steel sleeves, etc.

.5 For firestop systems exposed to view, traffic, moisture and physical damage, provide products that after curing do not deteriorate when exposed to these conditions.

.6 Firestop systems shall be installed by an experienced installer who

a. Is qualified by having the necessary experience, staff and training to install the manufacturer's products.
b. Is acceptable to or licensed by the manufacturer or local authority.
c. Has established a record of successful in-service experience with firestop systems or completed a manufacturer's certified product installation training course.

.7 Deliver firestop system products to site in original, unopened containers or packages with intact and legible manufacturer's labels identifying product and manufacturer, date of manufacture, lot number, shelf life, qualified testing and inspection agency's classification marking, curing time and mixing instructions. Store and handle materials to prevent their deterioration or damage due to moisture, temperature changes, contaminants or other causes. Follow manufacturer's instructions.

.8 Verify the condition of the substrates and correct unsatisfactory conditions before installing firestop system products. Follow manufacturer's detailed installation instructions and comply with requirements for temperature and humidity conditions. Coordinate construction and sizing of sleeves, openings and penetrating items to ensure compliance with installation instructions.

.9 Upon project completion, the firestop manufacturer shall provide a letter certifying that all fire stop systems throughout the project have been installed according to their detailed installation instructions and Code requirements.

.10 Firestop devices for acid resistant piping shall be approved for use with fire retardant polypropylene pipe and fittings.

.11 Firestop devices for acid resistant piping shall be supplied by the acid resistant pipe manufacturer, HILTI firestop devices, UL and ULC approved for use with fire retardant polypropylene pipe and fittings.

1.33 Sound Packing

.1 Where pipes and ductwork pass through non-rated walls, pack around ductwork or pipe with mineral wool filler to reduce noise transmission.

1.34 Adhesives, Mastics and Sealants

.1 Adhesives, mastics and sealants as manufactured by Childers, Bakelite, 3M or equal and shall be recommended by the manufacturer for specific application. Application shall be in accordance with manufacturer's recommendations. All materials shall meet flame and smoke developed ratings listed above.

1.35 Cements and Primers

.1 All cements, primers, etc. shall be low volatile organic compound type, tested to meet the requirements of SCAQMD rule 1168, Test Method #316A (South Coast Air Quality Management District).

1.36 Pipe Escutcheons

.1 Provide proper chrome plated steel escutcheon plates for exposed uninsulated piping penetrating walls / floors / ceilings except where openings around piping have been filled to the approval of the Consultant.

.2 Pipe escutcheons shall be one-piece type with set screws for installation at plumbing fixtures.

.3 Unless noted otherwise, use chrome plated slit type with substantial hinges, positive latches and set screws. Size plates so that they are tight against the wall, floor or ceiling surface concerned; outside diameter to cover opening or sleeve and inside size to fit around finished pipe.

1.37 Access Doors for Walls and Ceilings

.1 Provide to the General Contractor for installation access doors of sizes as recommended by the manufacturer for all concealed mechanical equipment / components requiring accessibility for service and maintenance. These items should be grouped wherever possible in order to reduce the number of panels required.

.2 All doors shall be a minimum size of 8" x 8" (200 x 200mm) and a minimum size of 24" x 18" (600 x 450mm) where head and shoulders access is required unless otherwise noted. The exact size of all access doors shall be as recommended by the manufacturer to suit the application.

.3 Doors shall be manufactured by Acudor Acorn or equal and shall be of the following types (Contractor to choose applicable type):

a. Drywall & Block: UF-5000, prime coated steel, flush style door with wall frame and screwdriver operated cam lock.
b. Ceramic Tile and Shower / Washroom / Locker Room Areas: UF-5000-SS,#4 satin polish stainless steel door with wall frame and screwdriver operated cam lock.
c. Fire Rated Partitions: FB-5060, prime coated steel fire rated door, ULC-2.0 hour ‘B’ label with self closing key operated locking door.

1.38 Dissimilar Metals

.1 Separate dissimilar metals by means of gaskets or shims of approved material in order to prevent electrolytic action. Where piping of dissimilar metals is connected, use approved dielectric unions or flanges. A brass fitting or brass valve may also be used in making connections between copper and steel piping.

.2 Where supporting copper pipe, isolate pipe from hanger with electrolytic action tape or equivalent or use copper / plastic coated supports. Direct contact between copper piping and concrete, masonry or precast construction will not be permitted.

1.39 Installation Requirements

.1 Install equipment and services as follows:

a. Neatly following building lines and in such a manner as to permit free use of space and maximum headroom.
b. To allow free access for maintenance, adjustment and eventual replacement.
c. In accordance with the manufacturer's requirements.
d. Provide all supports, hangers and fasteners except as otherwise noted.
e. Do not support piping or ductwork from equipment.
f. Secure all products and services so as not to impose undue stresses on the structure or systems.
g. Cap off and seal all open ends of new / affected ductwork, venting, piping and conduits to prevent entrance of foreign matter.
h. Do not install piping in a location or manner which might result in freezing.
i. Layout and install piping, valves, fittings, cleanouts, etc. in conveniently accessible spaces to facilitate easy maintenance.
j. All exposed ductwork and piping shall present a neat appearance and located parallel to and centered between building structure, lights, etc.
k. Support of ductwork, piping, equipment, etc. from metal roof / floor deck will not be permitted except as otherwise noted.
l. Confirm the exact location of equipment connections, including equipment supplied under other Divisions. Adjust Work as required without extra cost.
m. Install metering and / or sensing devices to provide accurate and reliable sampling of quantities being measured. Install instruments to permit easy observation.
n. Provide suitable shielding and physical protection for all devices.
o. Do not use explosive activated tools.
p. Install all services capped for future to allow easy access for future tie-in.
q. Neatly install pipes and ducts which are to be concealed close to building structure so that the necessary furring can be kept as small as possible / suspended ceilings installed as high as possible. Special care shall be taken in the installation of the Work to see that it comes within the limits established by the finishes lines of all walls, floors, ceilings, etc.
r. Provide all sleeves for piping and ductwork.
s. Supply and locate in place all roof curbs and sleepers required for mechanical equipment.
t. Failure to comply with these requirements will render the Contractor responsible for the cost of all extra Work hereby required.

1.40 Superintendence

.1 Maintain at the job site at all times qualified personnel and supervisory staff with proven experience in construction, managing, testing and commissioning projects of comparable size, nature and complexity. Any individual deemed to be unsatisfactory by the Consultant shall be replaced.

.2 Provide full time supervision and inspection of the Work and be responsible for quality control.

1.41 Product Delivery and Installation

.1 Receive, unload, inspect, store and install all Products according to manufacturers recommendations and as herein specified.

.2 Handle equipment carefully to prevent damage, breaking, denting and scoring. Damaged units or damaged components shall not be installed. Replace damaged parts with new supplied by the manufacturer.

.3 If equipment is to be stored prior to installation, store in a clean, dry place. Protect from weather, dirt, fumes, water, physical damage, etc.

.4 Cover Products and take special precautions to prevent damage and entry of foreign material into any working parts and into piping or ductwork.

.5 Comply with the manufacturer's rigging and installation instructions for unloading and moving into final location.

.6 Level equipment according to manufacturer's requirements, and to permit proper condensate drainage where applicable.

.7 Assemble, install and start-up equipment according to manufacturer's requirements. Complete all manufacturer start-up literature (where applicable) and include in the Operation and Maintenance Manual.

.8 Provide adequate / manufacturer's required / Code required clearances to permit servicing and maintenance of equipment.

1.42 Start-up

.1 The Mechanical Contractor shall be responsible for adjusting, testing and start-up of all mechanical equipment supplied and / or installed under this contract.

.2 Before starting any mechanical systems, the following conditions shall be met:

a. Safety controls are installed and fully operational.
b. Qualified personnel employed by this Division are available and will operate the equipment and systems.
c. Air filters have been installed / cleaned.
d. Mechanical equipment rooms are broom clean.
e. Air supply and return ducts, equipment and plenums are clean.
f. Motor starters have been checked for correct size of thermal overload.
g. Control systems including thermostats have been tested for sequence of operation.

h. Pumps and fans have been checked for operation and rotation and have been adjusted.
i. Fluid systems have been flushed, cleaned and chemically treated.
j. Fire dampers and combination fire / smoke dampers are in the open position.
k. Duct access doors are in place.
l. Fuel supply systems are complete.
m. Pressure vessels have been inspected by the proper authorities and certificates have been received.
n. Pipe and duct insulation has been installed.
o. Systems subject to freezing conditions have been protected.
p. Lubricate all bearings.
q. Adjust and set all 'V' belt drives and drivers for proper alignment and tension.
r. Operate and test all motors and speed switches for correct wiring sequences.
s. Replace and clean all strainers.
t. Fasten all loose and rattling pieces of equipment.

.3 Follow start-up procedures as recommended by the manufacturer. Additional special start-up procedures may be specified elsewhere in this specification. Complete manufacturers start-up sheets (where available).

.4 The Contractor shall be responsible for all equipment during the start-up period and shall be responsible for any damage caused to equipment, personnel and building components and shall accept all liability for repairs and / or replacement at no cost to the Owner.

1.43 Manufacturer Certification

.1 Where directed by the Consultant, submit letters from the manufacturers of all equipment certifying that their technical representatives have inspected and tested their equipment and are satisfied with the methods of installation and operation.

.2 These letters shall state the names of persons present at testing, methods used, a list of functions performed and a list of equipment tested.

1.44 Equipment Supports

.1 Provide structural steel supports, braces, tie rods, etc. required to support and hang all mechanical equipment, ductwork, piping, etc. installed under the Mechanical contract except that structural roof support for roof mounted equipment / mechanical systems penetrating the roof deck shall be according to Division 5.

.2 Where structural bearings do not exist or inserts are not in suitable locations, suspend hangers from steel channels or angles. Provide supplementary structural members.

.3 Obtain approval before using vertical expansion shields. Use minimum two shields for each hanger.

.4 Do not suspend piping, ductwork or equipment from the metal roof / floor deck unless noted otherwise.

.5 Supports not supplied by equipment manufacturer shall be fabricated from structural steel meeting the requirements of Division 5. Support sizing shall be by the Mechanical Contractor

except that where directed by the Consultant, sizes shall be confirmed by the Structural Engineer (at no cost to the Contractor) and adjusted by the Contractor without extra cost.

1.45 Use of System for Construction

.1 The new or existing mechanical system(s) or any part thereof shall not be used during construction for construction purposes except that the Consultant may accept the principle of using mechanical equipment and / or systems for temporary heat during construction to expedite completion of the building, subject to the following conditions:

a. Written permission from the Consultant to use the mechanical systems for temporary heat has been obtained.
b. The conditions for start-up have been met and the following conditions are compiled with:
   i. The building is fully enclosed.
   ii. All equipment and systems subject to freezing are protected.
   iii. All systems are properly maintained and operated and equipment is lubricated by the Contractor.
   iv. Mechanical rooms are kept broom clean.
   v. Air filters for the relevant systems are installed in air handling units, inspected regularly and replaced as necessary by the Contractor.
   vi. Air filters are installed in all return air openings, inspected regularly and replaced as necessary by the Contractor.
   vii. Guarantees on any equipment or systems are not affected.
c. Where not permitted, the General Contractor shall provide all temporary heat for the building during the complete construction process.
d. Before handing the systems over to the Owners, comply with the following conditions:
   i. Bring all mechanical systems to as-new condition in operation and appearance.
   ii. Replace all filters in air handling units with new filters.
   iii. Clean all affected ductwork and equipment. Where directed by the Consultant, obtain the services of an independent duct cleaning company.

1.46 Flashings

.1 If piping and wiring is not indicated on drawings to penetrate roof assembly through a doghouse, it shall penetrate through the following roof flashing system:

a. Portals Plus extra tall Aluma-Flash complete with 0.60” aluminum base, 13” high and 14” diameter. 8” collard opening shall have two sealing rings to suit EPDM cap of type to suit services. All services to be secured to cap with stainless steel clamps.
b. Roof flashing system to be supplied by this Trade and installed by the General Contractor.

1.47 Excavating and Backfilling

.1 Provide excavation, removal, disposal, backfill and compaction of materials pertaining to work described in Mechanical specifications. Before commencing with work, investigate locations, arrangements and conditions of all previously installed / existing underground services.

.2 Granular material shall be compacted to 98% Standard Proctor Density and all native material shall be compacted to 95% Standard Proctor Density unless otherwise directed by the General Contractor. Grade bottom of trenches to maintain design slopes.

.3 In competent undisturbed soil, lay pipes directly on the soil and shape soil to fit the lower one-third segment of all pipes and pipe bells. Ensure even bearing along the barrels. Backfill trenches 6" (150 mm) on sides and 12" (300 mm) on top with machine compacted bedding sand or limestone screening. Backfill remainder of trench with granular B material machine compacted in 12" (300 mm) layers. Keep sides of trenches vertical to a minimum depth of 20" (500 mm) over pipe to maintain load within pipe design limits. Minimum width of trench shall be pipe diameter plus 18" to 24" (450 to 600 mm). For trenches excavated too deep, where rock, shale or other materials may cause damage to piping or have diameters larger than 1" (25 mm) and where required by manufacturer's installation requirements to prevent damage to piping, excavate to 6" (150 mm) below pipe and backfill with machine compacted bedding sand or limestone screening.

.4 Provide timber sheeting, bracing, shoring, guard rails, etc. as required to protect all persons having access to the site from excavations. All excavation work shall comply with the latest edition of the Occupational Health and Safety Act of Ontario. Keep all excavations free of water by providing pumps, hose, strainers, other apparatus, power, labour and maintenance as required.

1.48 Paint

.1 Provide paint for patching of existing / damaged finishes.

.2 Provide painting and finishing according to Architectural requirements, including painting of all exposed ductwork, uninsulated piping, convectors, cabinet heaters, etc. All painting of gas piping to meet Code requirements.

.3 Clean, wire brush and paint all exterior duct supports. Alternatively, galvanized supports may be used.

.4 Repaint or refinish all damaged factory applied finishes to equipment.

.5 All primers and paints shall be good quality commercial grade (Para or equal) to suit the application. Paint used outdoors shall be suitable for exterior use. Apply according to manufacturers recommendations. All painted surfaces shall have a minimum of one primer coat and two finish coats or as otherwise directed by Architectural requirements.

1.49 Field Review

.1 The Owner and Consultant shall have access to the site at all times for review of the Work during construction.

.2 Correct any deficiencies as they are reported during the performance of the Work.

.3 Final review shall be done when:

a. All reported deficiencies have been corrected.
b. All systems have been balanced, tested, commissioned and are operational.

c. The Owner has been instructed in the operation and maintenance of all equipment.
d. The balancing report has been submitted and reviewed.
e. The operating and maintenance manual(s) have been submitted and reviewed.
f. All tags, nameplates and identification labels are in place.
g. All mechanical systems have been cleaned to the satisfaction of the Consultant.
h. All certificates of approval provided by the local authorities have been submitted.
i. All specified spare parts and replacement parts have been provided.
j. All as-built drawings have been submitted and reviewed.

1.50 Inspection Certification

.1 Arrange for inspection of all work by the authorities having jurisdiction. Obtain unconditional certificates of approval, acceptance and compliance with rules and regulations for authorities having jurisdiction. The work will not be considered complete until such certificates have been delivered to the Owner.

.2 Attend promptly to any deficiencies reported. Request final review when the completed installation has been checked and all deficiencies have been rectified.

1.51 Testing, Cleaning and Flushing Systems

.1 Testing

a. Furnish all labour, materials, instruments, etc. necessary for all required tests.
b. All work shall be subject to inspection by the local building department inspectors and / or the Consultant. Provide a letter of certification when all pressure tests have been carried out in accordance with specifications, applicable codes and authorities having jurisdiction.
c. Do not insulate, backfill or conceal any piping / ductwork until testing is complete and systems have been approved. Before testing any piping, isolate all equipment which has an insufficient rating compared with the test pressure.
d. Repair all leaks to the inspection authority and / or the Consultant's approval. All leaks shall be repaired by remaking the joint.
e. Test hot water heating system piping at 1.5 times the system operating pressure or 125 Psig (860 Kpa), whichever is greater for a minimum 4 hour period.
f. Test domestic water (hot, cold and recirc), sanitary and vent piping according to Plumbing Code requirements and to the requirements of the local plumbing authority.
g. Test natural gas systems in accordance with Gas Code requirements.
h. Test fire protection systems in accordance with NFPA, local authorities and Owner's Underwriters requirements. All site service water piping shall be tested by the Site Service Contractor.
i. After piping systems have been tested and repaired, repeat tests.
j. Correct any cases of excessive surge pressure ('water hammer').
k. Test all new plumbing fixtures / trim for soundness, stability of support and correct operation.

.2 Cleaning and Flushing

a. Flush all new and affected existing domestic water piping (mains and branches) with clean water discharging to drain for a minimum period of eight hours (shorter period

where permitted by the Consultant). Where requested by the Consultant / local authority, provide a water quality / bacteria analysis prepared by an independent lab (the Mechanical Contractor shall include for all testing costs in the tender price). Should bacteria exist, inject Quatic Chemicals Q-CHLOR or approved equal cleaning agent into the water system at a rate of 20 lbs (9.1 Kg.) per 1000 USG (3785 L) and let sit for 24 hours. Flush completely, test for residual and flush again as necessary to remove all cleaning solution. Perform another water quality / bacteria analysis to verify that the system is clean and suitable for consumption. Include in the tender price for all Work associated with disinfecting piping and subsequent re-testing.

b. For closed water piping systems, flush all new and affected existing piping (mains and branches) with clean water discharging to drain for a sufficient time period to remove all pipe debris (minimum eight hours unless otherwise permitted by the Consultant). Fill system with clean water and recirculate for 24 hours, then drain, clean new and affected existing strainers, refill with clean water (provide specified chemical treatment where applicable) and put into service. Refer also to Section 15700.
c. Clean and chemically treat all hot water heating systems as specified in Division 23.
d. Protect equipment during system cleanout. Do not flush piping through equipment (including coils / boilers / tanks). Provide necessary temporary bypass piping.
e. During flushing and cleaning maintain all isolating and control valves in the open position.

1.52 Testing, Adjusting and Balancing

.1 Retain the services of an independent Balancing Trade to test, adjust and balance the systems and include for the provision of a balancing report. All work shall be performed in compliance to the requirements of the National Environmental Balancing Bureau (NEBB) or Associated Air Balance Council (AABC) and the Balancing Trade shall be certified with one of these agencies.

.2 The following is a list of the approved Balancing Trades whom may quote on the balancing of the systems:

a. Air Audit Inc., 110 Turnbull Court, Cambridge, Ontario, N1R 1K2, (519) 740-0871
b. Clark Balancing Ltd., 8094 Esquesing Line, Milton, Ontario, L9T 2X9, (905) 693-1518
c. Airwaso Canada Inc., 124-4096 Meadowbrook Drive, London, Ontario, N6L 1G4, (519) 652-4040
d. Dynamic Flow Balancing Ltd., 1200 Speers Road, Unit 36, Oakville, Ontario, L6L 2X4, (905) 338-0808
e. Air Velocities, 100 Premium Way, Mississauga, Ontario, L5B 1A2, (905) 279-4433
f. Flowset Balancing Ltd., 431 Willis Drive, Oakville, Ontario, L6L 4V6, (416) 410-9793

.3 Provide all necessary precision instruments, pressure gauges, manometers, thermometers, etc. for measuring and adjusting. Use instruments which are of correct scale and accurately calibrated.

.4 All balancing shall be done in a manner to minimize throttling losses and using speed adjustment to meet design flowrates. Final flowrates shall be within ten percent (10%) of specified value.

.5 Start balancing only when the work is essentially completed, including: installation of ceilings, doors, windows and other construction affecting testing and balancing; application of sealing, caulking and weatherstripping; normal operation of mechanical / electrical / control systems

affecting testing and balancing; thermal overload protection in place for electrical equipment; air filters clean and in place; ductwork systems clean of debris; correct fan rotation; fire and volume dampers in place and open; coil fins cleaned; all ductwork outlets installed and connected; access doors closed; ductwork installation complete; water systems flushed, filled and vented; correct pump rotation; proper strainer baskets clean and in place; service and balancing valves fully open; liquid treatment system operable.

.6 The Balancing Trade shall perform the following work in regards to air systems:

a. Test and adjust system / equipment for design air flows.
b. Equipment requiring air balancing shall be as follows:
    i. New exhaust fans having capacities greater than 150 cfm (70 l/s).
    ii. New indoor HVAC equipment (HV, HVAC and UV units).
c. Locations of systems measurements / adjustments shall include but not be limited to the following as appropriate:
    i. Each duct run-out (or grille / diffuser) having an indicated airflow on the drawings.
    ii. Make pitot tube traverse of main supply / return / exhaust duct to verify design airflows at equipment.
d. Measurements shall include but not be limited to the following as appropriate for systems / equipment / controls:
    i. Air velocity, flow rate, static pressures (including suction and discharge), ductwork cross-sectional area, RPM, electrical power (including full load amperes), voltage, sheave diameter / setting, belt quantity / size.
e. Test and adjust blower RPM to design requirements. All required pulleys shall be supplied / installed / adjusted by the Balancing Trade.
f. Adjust grilles and diffusers to obtain optimum air distribution patterns. Also adjust to suit the Consultant.
g. Verify control system operation and report on any installation problems observed. Physical changes in the control system, such as relocating sensors or calibrating controllers, are the responsibility of the Mechanical Trade. The Balancing Trade shall work closely with Mechanical Trade to identify and correct problems.

.7 Ductwork leakage testing:

a. Perform ductwork leakage testing for ductwork where static pressure exceeds 3” WC (0.75 kPa) and for all ductwork located outdoors in accordance with ASHRAE 90.1-2022. Perform leakage testing in accordance with procedures outlined in SMACNA and Associated Air Balance Council (AABC) recommendations. System static pressure shall be defined by the associated fan external static pressure.
b. Perform testing on representative sections of ductwork totaling no less than 25% of total installed duct area for each system being tested.
c. Repair and re-seal ductwork, and re-test system(s) as required such that measured leakage does not exceed the maximum permitted duct leakage for each system tested. Maximum permissible pressure shall be calculated for each system tested according to ASHRAE 90.1-2022.
d. Provide report of leakage testing result for submission to Consultant / Owner / Local Authority and include in closeout documentation. Indicate maximum permissible duct leakage for each system tested.

.8 The Balancing Trade shall perform the following work in regards to water systems:

a. Test and adjust system / equipment for design water flows.
b. Equipment requiring water balancing shall be as follows:
    i. New pumps.
    ii. New boilers.
    iii. Each convector / wallfin / cabinet heater / unit heater.
    iv. Each heating coil.
c. Locations of systems measurements / adjustments shall include but not be limited to the following as appropriate:
    i. Each circuit balancing valve.
d. Measurements to include but not limited to the following as appropriate for systems, equipment, components, controls:
    i. Flow rate, head pressure / pressure drop, temperature, RPM, electrical power (including full load amperes), voltage.
e. Measure the water temperature difference across the heat exchanger when pumps are operating at design flow rates and the system is operating at design temperatures.
f. Measure pump impeller size by measuring pump "dead head".
g. Fluid flow quantities shall be measured using the installed devices provided by Others.
h. The Balancing Trade shall not continue the water balancing if at any time hazardous conditions are observed. These conditions shall be reported before proceeding further.
i. The Balancing Trade shall apply any necessary correction factors to the indicated values to account for the density of the fluid flowing in the system.
j. If specified, pitot tube traverse shall be taken where required on the drawings, provided valved openings are properly installed.
k. Where circuit balancing valves are not installed or do not provide accurate flow indication, measure pump capacities by differential pressure measurements, amperage and brake horsepower method using the pump manufacturer's capacity curve.
l. Position all automatic control valves and balancing / isolation for full flow through equipment during initial pump adjustment.

.9 Upon balancing completion, the Balancing Trade shall submit the final system balancing report (TAB Report) to the Mechanical Trade for inclusion in the Operation and Maintenance Manual. One paper hard copy and one .PDF electronic copy is required. Report shall include index page, index tabs and shall be certified by the Balancing Trade. Handwritten data will not be accepted. Include types, size, manufacturer, serial numbers and dates of calibration of all instruments used. The format shall be in accordance with the Canadian AABC or NEBB Report Form and approved by the Consultant. In addition, the report shall include:

a. Project record drawings.
b. System schematics.
c. All measured / adjusted values (include initial and final readings).
d. All pertinent information regarding balanced equipment shall be listed, such as:
    i. Designation of equipment.
    ii. Manufacturer.
    iii. Type.
    iv. Size.
    v. Motor nameplate characteristics.

.10 During the system testing, adjusting and balancing, the Mechanical Trade shall fully demonstrate the operation of all controls. The Mechanical Trade shall be present during the testing, adjusting and balancing and make modifications as often as necessary to satisfy the Balancing Trade.

1.53 Commissioning

.1 The commissioning function involves:

a. Activation of all systems.
b. Calibration, testing and verification of all systems.
c. Demonstration and instruction to Owner's staff.

.2 Be responsible for commissioning of all work provided under this division and as further defined in this section.

.3 Supply the services of a trained specialist to thoroughly explain each mechanical system, its operation and its maintenance to the full satisfaction of the Consultant and Owner. Allow for one technician to spend one day for training for each system unless more time is indicated in the specifications for a particular system.

.4 Where requested by the Consultant, provide acceptance tests to demonstrate that the equipment and systems meet the specified requirements. Tests may be conducted as soon as conditions permit. Make all changes, adjustments or replacements required as the preliminary tests may indicate prior to final tests.

.5 Where requested by the Owner / Consultant, commissioning shall be video recorded by the Mechanical Contractor. Submit video thumb drive with close out documentation.

1.54 Substantial Performance Certificate

.1 Before the Contractor can make application for a Certificate of Substantial Performance the Mechanical Trade will be required to provide the following as detailed within this section:

a. Operating and maintenance manuals.
b. As-Built drawings.
c. Testing, adjusting and balancing.
d. Commissioning.
e. Training and Demonstrations.
f. All certificates of approval provided by the local authorities have been submitted.
g. Warranty cards.

1.55 Discount Pricing

.1 The Waterloo Region District School Board receives discount pricing from Noble Trade. This Trade is encouraged to contact Noble Trade for pricing on this project.

1.56 Warranty

.1 This Trade shall furnish a written guarantee stating that all work executed under this contract will be free from defects of workmanship and materials for a period of two (2) years from the

date of Ready-for-Takeover or as further defined in Division 1. The period shall in no way supplement any other warranty of a longer period.

.2 This Trade will at their own expense, repair and replace all such defective work and other work damaged thereby which fails or becomes defective during the term of the warranty provided that such failure is not caused by improper use.

.3 Repair all defects in a manner to prevent recurrence.

.4 Refer to the Division 1 specifications for additional warranty details.

.5 Include for completion of the WRDSB Project Warranty Card prior to Substantial Performance.

2. THERMAL INSULATION

2.1 General

.1 Work of this Section generally consists of the following:

a. All labour, materials, equipment, specialties, etc. required to furnish and completely install in a first class condition the following mechanical insulation systems:
   i. Plumbing:
      1) piping
      2) equipment
   ii. HVAC:
      1) piping (hot water heating / heat pump systems only. All refrigeration pipe insulation shall be supplied and installed by Division 23.)
      2) equipment
      3) ductwork (thermal insulation only. All acoustic insulation shall be supplied and installed by Division 23.)

.2 Submittals

a. Not required for this Section.

.3 Quality Assurance

a. All insulation shall be applied in general accordance with TIAC National Insulation Standards Manual, manufacturer's published instructions and requirements, and these specifications.
b. Work shall be carried out by a qualified Insulation Trade with an established reputation for this type of work.

.4 All insulation and components shall have maximum flame and smoke spread ratings of 25 and 50, respectively.

.5 General Installation Requirements:

a. Apply covering in a neat workmanlike manner so that finished job is uniform and smooth in finish.

b. Ensure that all piping (including valves and fittings), ductwork and equipment are dry and clean before applying covering.
c. Do not apply insulation until the items to be covered have been tested against leakage.
d. Butt joints firmly together. Stagger joints in multiple layer construction. All joints shall be taped unless noted otherwise.
e. Locate longitudinal seams so as to be invisible.
f. Cover all joints with self-sealing 3" (75mm) wide butt strips provided by the insulation manufacturer or vapour barrier tape.
g. Install pipe insulation continuous through barriers (walls, ceilings, floors, etc.).
h. Install duct insulation continuous through barriers (walls, ceilings, floors, etc.) except at fire dampers.
i. For domestic cold water (potable and non-potable) and cooling coil condensate as well as for all duct thermal insulation, maintain integrity of vapour barrier jacket over all insulation, taking special precaution at fittings, valves, strainers, etc. For these systems:
    i. Install insulation directly over pipes and not over hangers, supports, etc.
    ii. Protect pipe insulation with metal shields at all supports where such piping is 1.5" (38mm) NPS and larger. Shields shall be as follows:
        1) Shields shall be formed to fit the insulation and shall extend up to the centerline of the pipe. They shall be of the length specified for the insulation hanger inserts less 4” (100mm) to allow for vapour retarding butt joints on each side of the shields.
        2) Shield gauges shall be as follows:
            I 1.5" (38mm) to 3" (75mm) pipe: 20 gauge
            II 4" (100mm) to 5" (125mm) pipe: 16 gauge
            III 6" (150mm) and over pipe: 14 gauge
        3) Saddle widths shall be as follows:
            I 5" (125mm) pipe and smaller pipe: 4" (100mm)
            II 6" (150mm) and over pipe: 7" (175mm)
        4) Ensure duct and pipe insulation is not broken at supports, hangers and standing duct seams. Where required, provide vapour barrier tape to maintain the integrity of the vapour barrier jacket at these locations.
    iii. Finish insulation ends with self-sealing 3" (75mm) wide butt strips provided by the insulation manufacturer or vapour barrier tape.
j. Protect insulation as follows:
    i. Protect insulation passing through floors, walls and similar barriers to prevent damage.
    ii. Provide high density insulation inserts at all supports where insulation is protected by metal shields as follows (Trade to choose desired type):
        1) Johns Manville Thermo-12 Gold or approved equal calcium silicate, rigid, sectional pipe and block type.
        2) Koolphen K-block having a density to suit load, complete with vapour barrier all service jacket and factory applied metal shield.
        3) Insulation thickness shall match that of the adjacent insulation.
        4) Insert lengths shall be as follows:
            I 1.5” to 2.5” (38 to 63mm) pipe size: 10” (250mm) long
            II 3” to 6” (75 to 150mm) pipe size: 12” (300mm) long

5) For domestic cold water (potable and non-potable) and cooling coil condensate, inserts shall be provided with vapour retarder seals and / or coatings.
6) Install inserts as follows:
   I Install the high density insulation before installing the pipe insulation.
   II Install the pipe insulation.
   III Install the finish jacket where specified elsewhere.
   IV Install a metal saddle over the insulation / finish jacket.
7) When insulating vertical piping risers 3" (75mm) and larger, use insulation support rings fastened directly above the lowest pipe fitting, thereafter at 15'-0" (4500mm) centers and at each valve / flange. Insulate according to the Insulation Association of Canada National Insulation Standards, Fig. #9.

iii. Provide expansion and contraction joints in piping insulation for adequate movement without damage to insulation or finishes. Terminate single layer and each layer of multiple layer in straight cut at intervals recommended by manufacturer. Leave void of 1" (25mm) between terminations and pack with light density Fiberglas AF-300 Type 1.

k. Install insulation over equipment which may require service or replacement by maintenance staff (valves, backflow preventers, strainers, unions, flanges, etc.) to be easily removable or replaceable without damage to adjacent insulation (use only pre-fabricated type insulation).

l. Valves, strainers, unions, flanges, etc. which are 1" (25mm) and smaller in domestic water systems (potable and non-potable), and heating water systems are not required to be insulated. All valves on chilled water systems, or systems which operate at a temperature lower than 65°F (18°C), shall be insulated.

m. Existing pipe and duct insulation shall remain unchanged except that all existing insulation affected during installation of new work shall be repaired.

n. Where asbestos insulation has been removed to permit new connections, new fiberglass insulation shall be installed by this Trade.

2.2 Pipe Insulation

.1 Rigid Piping: Johns Manville Micro-Lok or approved equal, pre-moulded, glass fibre, rigid, sectional sleeve insulation with a K factor of 0.23 Btu-in/hr-ft^2-˚F (0.033 W/m-˚C) at a mean temperature of 75˚F (24˚C) and jacketed with a factory applied reinforced vapour retarder facing having a longitudinal acrylic adhesive closure system. Thickness and application shall be as specified below.

.2 Refrigerant Piping: Armacell AP Armaflex Tube unslit flexible elastomeric cellular pipe insulation or approved equal with a AK@ factor of 0.27 Btu-in/hr.-sq.ft.-deg.F (0.039 W/m.-deg.C) at a mean temperature of 75 deg. F. (24 deg. C.). All insulation and associated components shall have maximum flame spread and smoke developed ratings of 25 and 50 respectivelyThickness and application shall be as specified below.

.3 Valves and Fittings: Pre-formed fittings or mitred segments to match adjacent pipe insulation. Where insulation is to be provided with PVC covers, insulation may be revised to Johns Manville Microlite Standard Type 150 or approved equal formaldehyde-free, flexible glass fibre, blanket insulation with a K factor of 0.24 Btu-in/hr-ft^2-˚F (0.035 W/m-˚C) at a mean

temperature of 75˚F (24˚C) and a factory applied FSK vapour barrier facing having a 2" (50mm) stapling tab.

.4 Valve Bonnets and Victaulic Fittings:

a. Preferred Insulation Method:
   i. Provide over-sized straight run insulation at Victaulic fittings and over-sized T fittings at valve bonnets.
b. Alternate Insulation Method:
   i. This method may be used only where approved by the Consultant and where there is insufficient space for application of insulation according to the preferred method.
   ii. Provide Armacell AP Armaflex Sheet and Roll or approved equal, closed cell, fibre free, elastomeric foam with a thermal conductivity of 0.25 Btu-in/hr-ft^2-˚F (0.036 W/m-˚C) at a mean temperature of 75˚F (24˚C). Insulation shall be applied according to manufacturer's requirements and as follows:
      1) Use full coverage of Armaflex 520 adhesive on both mating surfaces (use low VOC type where specified under General Conditions).
      2) Finish insulation with two coats of WB Finish, white water-based latex enamel.
c. Insulation thickness shall match that of the adjacent insulation.

.5 Install rigid fiberglass type insulation according to manufacturer's requirements and as follows:

a. Apply the SSL II Positive Closure System smoothly and securely as per the manufacturer's requirements, ensuring all contacting surfaces are kept clean.
b. Apply insulation on valves, backflow preventers, strainers, unions, flanges, fittings, etc. prior to straight run insulation.
c. Insulation on fittings shall be cut in proper segments to provide a tight fit or pre-formed fittings shall be used. Insulation on valves, backflow preventers, strainers, unions, flanges, etc. shall be pre-formed type only.
d. All insulation for fittings shall be cut to suit the length of the body plus 2" (50mm) at each end.
e. Any void between the insulation on fittings, valves, backflow preventers, strainers, unions, flanges, etc. and the straight run insulation shall be filled with insulation segments cut to fit the gap.
f. If a continuous vapour barrier is specified, finish insulation ends with self-sealing 3" (75mm) wide butt strips provided by the insulation manufacturer or vapour barrier tape.

.6 Install flexible foam type insulation according to manufacturer's requirements and as follows:

a. Apply and press insulation firmly on the surface that is being insulated.
b. Insulation shall be neatly cut to fit snuggly around obstacles.
c. All butt joints shall be sealed using Armaflex 520 adhesive. Both surfaces to be joined shall be completely coated with adhesive and butted firmly together.
d. Apply the self-seal strip according to manufacturer's requirements. The ambient temperature shall be between 40 and 100˚F (4 and 38˚C).
e. Finish covering material is not required.

.7 Finish Covering for Insulation (Interior of Building):

a. Leave as All Service Jacket (ASJ) or FRK finish except as otherwise noted below.
b. All interior exposed pipe insulation shall be provided with PVC jacketing, Proto or approved equal as follows:
   i. Insulation located within suspended ceiling spaces, cabinet spaces and walls will not be considered exposed.
   ii. System shall consist of one piece and two piece pre-moulded high impact LoSMOKE PVC pipe and fitting covers with all required accessories, which include elbows, tees, valves, end caps, mechanical line couplings, specialty fittings, tank end panels, tack fasteners, tapes and specialty items. Jacket shall be bright high-gloss white colour.
   iii. Jacket shall have flame spread rating and smoke developed classification of 25 and 50, respectively.
   iv. Jacket shall not promote the growth of fungi or bacteria.
   v. Fiberglass insert shall not be provided.
   vi. Jacket shall be 0.02" (0.5mm) thick with standard one piece fitting cover.
   vii. Apply according to manufacturer's requirements and as follows:
      1) Apply on clean, dry surfaces.
      2) Do not apply jacket too tightly. Install slide joints and jacket to prevent cracks and puckering.
      3) Jacket shall be cut and rolled to fit the circumference of pipe plus a 2" (50mm) overlap.
      4) Apply PVC adhesive bead (Red Devil Inc. Celulon or approved equal, water based, clear) along longitudinal edge, approximately 1" (25mm) in from edge, and apply jacket over adhesive using firm pressure for attachment. Temporarily hold PVC jacket in place using masking tape until firmly attached.
      5) Provide PVC end caps at all insulation endpoints (caulked joints will not be permitted).
      6) Any corners or cracks shall be neatly finished with a white silicone caulking bead.
      7) Secure throats of fitting, valve, etc. covers by either tack fastening or taping (do not use tacks where a vapour barrier insulation system is specified). For insulation systems required to have a vapour barrier insulation, use Proto PVC tape with a minimum 2" (50mm) downward overlap.
c. Flexible foam insulation shall not be provided with a finish covering material.

.8 Finish Covering for Insulation (Exterior of Building):

a. All exterior pipe insulation shall be provided with 0.016" (0.40mm) stucco embossed aluminum jacketing as follows:
   i. The jacket shall be cut to fit the circumference of the insulation with a 2" (50mm) overlap.
   ii. Position all joints to shed water.
   iii. The longitudinal joint shall be secured with 0.5" (13mm) long #8 stainless steel screws installed at maximum 6" to 8" (150 to 200mm) centres except that screws will not be permitted for piping which is electrically heat traced. For piping equipped with electric heat trace cable, secure jacket with 0.5"

(13mm) wide by 0.020" (0.5mm) thick stainless steel banding installed as follows:
1) At maximum 18" (450mm) centres.
2) On either side of each transverse joint in the jacketing.

iv. Provide a safety edge for all exposed longitudinal edges.

v. End caps shall have a 0.125" (3.1mm) male bead to insert into the female end of the straight run jacket. The edge of the straight run jacket shall be hammered down over the end cap.

vi. The jacket at valve handles shall be neatly cut around the protrusion and the resulting opening shall be caulked.

vii. Provide aluminum jacketing elbow fitting covers as follows:
1) Jacket shall be 0.016" (0.40mm) minimum thickness.
2) Overlap with straight run jacket by minimum 2" (50mm) and position all joints to shed water.

viii. All unfinished edges, cut-outs, transverse joints, longitudinal joints, screws or other locations where water infiltration is possible shall be sealed with aluminum coloured silicone caulking. For jacket overlaps, the caulking shall be applied between the overlaps, 1" (25mm) from the edges.

.9 Pipe insulation thicknesses shall be as follows:

a. Copper Domestic Cold Water (potable and non-potable): 0.5" (13mm) with the following exceptions:
i. Make-up (cold) water piping downstream of pressure regulating valve (PRV) to heating water system shall be provided with 1" (25mm) insulation.

b. Metal Heating Water (Supply and Return):
i. Heating water piping 1.25" (32mm) and smaller shall be provided with 1.5" (38mm) insulation.
ii. Heating water piping 1.5" (38mm) and larger shall be provided with 2" (50mm) insulation.

c. Metal Cooling Coil Condensate: 0.5" (13mm).

d. Plastic Cooling Coil Condensate: No insulation required.

2.3 Duct Insulation (Interior of Building)

.1 Johns Manville Microlite XG Type 75 or approved equal formaldehyde-free, flexible glass fibre, blanket insulation with a K factor of 0.27 Btu-in/hr-ft^2-˚F (0.039 W/m-˚C) at a mean temperature of 75˚F (24˚C) and a factory applied FSK vapour barrier facing having a 2" (50mm) stapling tab. Provide as follows:

a. In concealed locations, where insulation is required on rectangular ductwork as indicated on drawings and as per below. Concealed locations include ceiling spaces (including suspended), bulkheads, walls, attics, etc.

b. In exposed locations, where insulation is required on round ductwork as indicated on drawings and as per below. Concealed locations include ceiling spaces (including suspended), bulkheads, cabinet spaces, walls, attics, etc.

c. Ductwork below attic insulation shall be provided with 1.5" (38mm) insulation unless otherwise noted.

d. Supply ductwork within or above attic insulation shall be provided with 3” (75mm) insulation. Thermal insulation will be required in addition to any acoustic insulation indicated on drawings.

e. Return, intake (outdoor air) and exhaust ductwork within or above attic insulation shall be provided with 1.5" (38mm) insulation. Thermal insulation will be required in addition to any acoustic insulation indicated on drawings.

.2 Johns Manville 800 Series Spin Glas or approved equal 3.0 lb/ft^3 (48.1 kg/m^3) density rigid board insulation with a K factor of 0.23 Btu-in/hr-ft^2-˚F (0.035 W/m-˚C) at a mean temperature of 75˚F (24˚C) and a factory applied FSK vapour barrier facing. Provide as follows:

a. In exposed locations, where insulation is required on rectangular ductwork as indicated on drawings and as per below. Exposed locations exclude ceiling spaces (including suspended), bulkheads, walls, attics, etc.
b. Ductwork shall be provided with 2" (50mm) insulation unless otherwise noted.

.3 Insulation fasteners shall be 12 gauge (2mm) zinc coated steel pins at 16" (400mm) to 18" (450mm) on center complete with minimum 1.5" (38mm) square plastic or zinc plated steel self-locking washers. Alternatively, use Continental spindle anchors held in place with Tac Two or approved equal adhesive at 16" (400mm) to 18" (450mm) on center.

.4 Insulation self-adhesive tape shall be MacTac Canada Ltd. or Venture Tape, ULC listed.

.5 Flexible insulation shall be applied as follows:

a. Cut to have a 3" (75mm) minimum overlap.
b. On round ductwork, provide one row of welded or glued on spindle anchored pins on top or side section at 12" (300mm) centers (length of pins shall suit ductwork). Proper washers shall be pressed on the pins and the ends of the pins cut before sealing with a piece of 4" (100mm) tape. On round ductwork 14" (350mm) and smaller, 0.5" (13mm) wide 20 gauge stainless steel banding may be used as an alternate to the anchoring pins (install bands at 12" (300mm) on center).
c. On rectangular ductwork, apply as specified for round ductwork where dimensions do not exceed 16" (400mm) in total on the four sides. On larger ductwork, the sides and bottom shall have stud welded pins or spindle anchored pins glued on at 16" (400mm) to 18" (450mm) on center.
d. All circumferential and longitudinal joints shall be stapled with outward clinching staples and taped with minimum 3" (75mm) wide RFFRK tape. All pin penetrations or punctures in facing shall also be taped. Note: for ducts to be used for heating only, the RFFRK facing can be eliminated.
e. All pin penetrations or punctures and all circumferential and longitudinal joints in jacket shall be sealed with a 4" (100mm) vapour barrier tape.
f. Refer also to manufacturer's requirements.

.6 Rigid insulation shall be applied as follows:

a. Cut to fit between standing seams and stiffeners.
b. Apply welded or glued on pins installed at maximum 18" (450mm) on center. Apply pins with reduced clearances where necessary to properly secure insulation.
c. Apply to top of duct first, with edges of insulation even with edges of ductwork.
d. Next apply to sides of duct by cutting board to cover the top edge of insulation and to be even with the bottom edge of the duct.
e. Next apply to bottom of duct by cutting board to be even with the outside edges of the side insulation.

f. Mechanical washers shall be applied as the board is being installed. Cut the remainder of the unnecessary pins.
g. At corner, joints and washers, a 4" (100mm) tape shall be used to seal all joints and maintain integrity of vapour barrier.
h. Where elbows occur, slit board at 1" (25mm) centers in a AV@ type cut where necessary to soften the board.
i. Provide drywall type metal corner beads on edges of insulation, secured in place with tape.
j. Insulation shall be wrapped tightly on the ductwork with all circumferential joints butted and longitudinal joints overlapped a minimum of 2" (50 mm). Adhere insulation to duct with 4" (100mm) wide strips of bonding adhesive, at 8" (200mm) o.c. For ducts over 24" (600mm) wide secure insulation to bottom of duct with mechanical fasteners at not more than 18" (450mm) o.c.
k. Refer also to manufacturer's requirements.

.7 All exposed insulation on ductwork shall be covered with PVC jacketing, Proto or approved equal as follows:

a. System shall consist of one piece and two piece pre-moulded high impact LoSMOKE PVC duct and fitting covers with all required accessories, which include elbows, tees, end caps, specialty fittings, tack fasteners, tapes and specialty items. Jacket shall be bright, high-gloss white colour.
b. Jacket shall have flame spread rating and smoke developed classification of 25 and 50, respectively.
c. Jacket shall not promote the growth of fungi or bacteria.
d. Jacket shall be 0.02" (0.5mm) thick with standard one piece fitting cover.
e. Apply according to manufacturer's requirements and as follows:
    i. Apply on clean, dry surfaces.
    ii. Do not apply jacket too tightly. Install slide joints and jacket to prevent cracks and puckering.
    iii. Jacket shall be cut and rolled to fit the circumference of pipe plus a 2" (50mm) overlap.
    iv. Apply PVC adhesive bead (Red Devil Inc. Celulon or approved equal, water based, clear) along longitudinal edge, approximately 1" (25mm) in from edge, and apply jacket over adhesive using firm pressure for attachment. Temporarily hold PVC jacket in place using masking tape until firmly attached.
    v. Provide PVC end caps at all insulation endpoints (caulked joints will not be permitted).
    vi. Any corners or cracks shall be neatly finished with a white silicone caulking bead.
    vii. Secure throats of fitting covers by taping. Use Proto PVC tape or equivalent with a minimum 2" (50mm) downward overlap.
    viii. Where jacket is specified on the drawings to be waterproof, use 0.10" (0.25mm) thick jacket with self-sealing lap tape as the first waterproof layer. Overlap ends 3" (75mm) and provide PVC tape. Caulk all openings with Celulon or approved equal. The second layer shall be 0.10" (0.25mm) thick jacket applied to the standards described above for non-waterproof applications. Install slide joints every 25'-0" (7.5m) and caulk shut all other seams, openings or end overlaps. Position all longitudinal joints to shed water.

f. Fiberglass insert shall not be provided.
g. Alternatively, where insulation is exposed on rectangular and round ductwork in all locations, provide canvas covering, S. Fattal Canvas Inc. Thermo-canvas classic or approved equal, ULC listed and labeled, roll form. Apply in a neat way by rolling the canvas around the circumference of the pipe. Hold in place with a lagging adhesive, Bakor 120-18 or equal. Complete the finish using a heavy coat brush and if necessary, or where directed by the Consultant, provide a second coat after 24 hours.

.8 Insulate strap hangers 4" (100mm) beyond insulated duct.

.9 Insulation shall be provided as indicated on drawings and as per the following:

a. Supply ductwork in unconditioned spaces (not air-conditioned) including ceiling spaces (not used as a return air plenum), bulkheads, walls, etc.
b. Supply, return, intake (outdoor air) and exhaust ductwork in attic space as per above.
c. First 8'-0" (2.4m) of exhaust ductwork on interior side of exterior wall, roof, attic, etc. penetrations.
d. Intake (outdoor air) ductwork located in interior of building.
e. Plenum (intake (outdoor air) and exhaust), including entire wall box, located in interior of building.

2.4 Acceptable Products List

.1 Insulation

a. Owens-Corning Fiberglas
b. Johns Manville
c. Manson
d. Knauf
e. CL4 FIRE
f. Firemaster
g. Paroc
h. Armstrong
i. Imcolock
j. Rubatex

3. ELECTRICAL

3.1 Electrical Wiring

.1 Unless noted otherwise, power wiring for mechanical equipment shall be provided according to the Electrical drawing and specifications. Provide all controls complete with all low voltage wiring (less than 50V) according to Mechanical drawings and specifications.

.2 Provide starters, overload protection and disconnects for mechanical equipment according to the Wiring for Equipment Schedule on Electrical drawings.

.3 Line and low voltage electrical work specified in the Mechanical drawings and specifications shall be done in accordance with and to the standards outlined in the electrical specification.

.4 Control wiring and transformers shall be class 1 or 2 as required by the Ontario Electrical Safety Code (OESC) to suit system operating voltages and currents.

.5 Control wiring shall be the shielded type and of a type as recommended by the manufacturer. Wiring running concealed shall not run in conduit unless otherwise required by the OESC. Take all necessary precautions to ensure electromagnetic interference from other wiring systems within the building does not affect the operation of the mechanical control systems.

.6 Where control wiring is installed in return air plenums, use wiring having maximum flame and smoke ratings of 25 and 50 respectively.

.7 Wiring sizes and transformer capacities shall be suitable to service all control equipment and to accommodate voltage drops in wiring systems.

.8 Control wiring shall run concealed in all locations (exposed wiring, conduit, wiremold, etc. not permitted). The following instances are exempt from this requirement:

a. In the following locations, wiring may run exposed on surface in conduit. Provide conduit where required.
   i. Wiring running on walls or ceilings in Mechanical / Electrical Rooms.
   ii. Wiring running on walls or ceilings in rooms with no suspended ceilings. Paint exposed conduit in stage to match architectural finishes.

b. Exposed control wiring will not be permitted (run in conduit as described above).

.9 Additional details regarding the electrical wiring are as follows:

a. Control transformers for Building Automation System / motorized dampers shall be supplied and wired by the Mechanical Contractor from power sources provided by the Electrical Contractor where indicated on the drawings. All low voltage wiring to the Building Automation System / motorized dampers shall be by the Mechanical Contractor.

b. Removal of all power / control wiring greater than 50V for demolished mechanical equipment shall be by the Electrical Contractor. Removal of control wiring less than 50V by the Mechanical Contractor.

c. For additional wiring requirements for the building automation systems, refer to Division 25.

END OF SECTION

1. GENERAL

1.1 General Requirements

.1 Refer to Division 20 – Mechanical.

2. FIRE PROTECTION - SPRINKLER SYSTEM

2.1 General

.1 This Work consists of the supply and installation of an approved hydraulically designed automatic sprinkler to serve the complete building.

.2 This Work shall include:

a. All design calculations, approved working drawings, installation, flushing and testing, certification and guarantee as generally outlined in these specifications.
b. All piping, valves, sprinkler heads, etc.
c. Include the costs for all permits, approvals, inspections, etc. except that all fees required for the review of the system by the Owner's Underwriter shall be paid by the Owner directly to the Underwriter.

.3 The working drawings and calculations shall be certified by a certified Professional Engineer licenced to practice in the Province of Ontario and carrying liability insurance. The Contractor shall be responsible for all certification costs.

.4 Upon completion of the Work, the Professional Engineer retained by the Sprinkler Contractor shall provide a letter indicating the design limitations of the system and certifying that the Work has been installed in conformance with all applicable Codes / Standards and governing authorities. This letter shall be provided in time to allow the issuance of the Building Code Compliance letter by MNE Engineering when directed by the Owner / General Contractor.

.5 The complete sprinkler system shall be approved by the Owner's Underwriter, the local Fire Department and the local Building Authority. Supply and install in accordance with NFPA 13, NFPA 20, OBC, Provincial Fire Marshall and all applicable Codes / Standards. This Contractor shall investigate and determine all compliance issues prior to submission of tender and carry all cost associated with any and all additional requirements as deemed necessary by the above Standards and/or Authorities.

.6 The general arrangement of the sprinkler system shall be as follows:

a. Modify existing sprinkler system as noted on the drawings and as required to accommodate the specified renovation work.

.7 Hazard Classification:

a. The system design shall be based on the "Hazard" classifications to suit NFPA, the Owners Underwriter and all applicable Codes and Standards. For additional details regarding the intended use of the building, refer to the mechanical / architectural drawings.

.8 The Sprinkler Contractor shall be responsible for obtaining all necessary information regarding the available water supply to the building prior to submitting the tender price. This shall include all static pressures and flow characteristics. Provide flow measurements where necessary. Adjust the design to suit this data without extra costs. Any utility fees for the flow test shall be included in the tender price.

.9 The specification and drawings are intended to be used as a guide only for the complete design and installation of the sprinkler system. All Work shall be complete in all respects whether or not all items are shown on the drawings or described in the specifications.

.10 Prior to submitting a tender price, the Sprinkler Contractor shall visit the site to determine the existing conditions and examine all Architectural, Structural, Mechanical and Electrical drawings. The Sprinkler Contractor shall ensure complete familiarity with all drawings and building construction / systems prior to submitting the tender price.

.11 Locations of all sprinkler system components, including piping and sprinkler heads, shall be coordinated on site so as not to interfere with the Work of other trades and to be compatible with the mechanical / electrical / structural / architectural layouts shown on the drawings. Design considerations shall include the following:

a. All piping shall run as follows:
   i. At maximum height below the building structure / ductwork (as applicable) and at the approximate level of plumbing systems piping.
b. Some, but not all, obstructions have been indicated on the drawings. Sprinkler protection shall be provided to accommodate all obstructions without extra cost. The full extent of obstructions shall be determined on site prior to submitting the tender price.

.12 No material shall be purchased nor shall any work be done until approval on the sprinkler drawings and calculations has been granted by the Consultant, Owner's Underwriter, local Building Authority and the local Fire Department. Any revisions to the working drawings after Owner's Underwriter and local Authorities approval or during construction shall be identified on the drawings and re-submitted for approval and record before proceeding with the Work.

.13 Flow / pressure switches, inspector test / drain assemblies and other equipment requiring regular service / access shall be installed in easily accessible locations.

.14 All equipment and controls shall have ULC or CSA approval.

2.2 Piping

.1 All piping, valves, fittings and associated materials and equipment shall be new and furnished and installed in accordance with Owner's Underwriter requirements and all applicable Codes and Standards.

.2 Sprinkler piping shall be ferrous to NFPA 13 specifications.

.3 Fittings and joints for all sprinkler lines shall be screwed, flanged or rolled grooved to NFPA 13 specifications.

.4 Additional requirements for rolled grooved piping shall be as follows:

a. The grooved piping shall be installed in accordance with the manufacturer's guidelines and recommendations. All grooved couplings, fittings, valves, and specialities shall be supplied by a single manufacturer. Grooving tools shall be supplied by the same manufacturer as the grooved components. The gasket style and elastomeric material (grade) shall be verified as suitable for the intended service as specified. Gaskets shall be molded and produced by the grooving system manufacturer. Grooved end shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove for proper gasket sealing.

b. Victaulic or approved equal fittings for roll or cut grooved steel piping systems shall be ULC listed and FM approved, ASTM A536 ductile iron, short radius, FireLock fittings or standard ductile iron or steel fittings designed to accept Victaulic couplings.

c. Victaulic or approved equal couplings shall consist of two ASTM A536 ductile iron housing, pressure-responsive, synthetic rubber gasket (FlushSeal design required for dry systems) and plated steel bolts and nuts.

i. Rigid Type: Housings shall be cast with offsetting, angle-pattern bolt pads to provide system rigidity and support and hanging in accordance with NFPA 13. Victaulic FireLock EZ Style 009 'Installation Ready' stab-on coupling (1 ¼" (32mm) to 4" (100mm)) and Victaulic FireLock Style 005 standard rigid coupling (5" (125mm) and Larger).

ii. Flexible Type: Use in seismic areas where required by NFPA 13. Victaulic Style 75 or 77.

iii. Victaulic flange adapters shall be ASTM A536 ductile iron, flat faced, designed for incorporating flanged components with ANSI Class 125 and 150 bolt-hole patterns to a grooved piping system. Victaulic Stayle 741 or 744.

.5 Hangers and riser clamps shall be ULC listed for fire protection and installed to NFPA 13 and OBC requirements. Where the building structure does not provide adequate support points, provide supplementary structural steelwork for pipe support.

2.3 Sprinkler Heads

.1 Provide spray type fusible sprinkler heads to NFPA 13 requirements, ULC listed for fire service and of types to suit application. Sprinkler heads in all cases to be of the proper degree of fusibility for the locations and hazards involved.

.2 General use sprinklers shall be Victaulic model V27, V36, V38 or approved equal UL listed, with frame of die cast brass, Teflon encapsulated Belleville spring seal, and frangible glass bulb. The bulbs shall be standard or quick response type with temperature rating to suit application. Provide additional specialty type heads to suit the requirements of this specification.

.3 Provide standard recessed pendant, concealed, upright and recessed horizontal sidewall sprinkler heads as required and as follows:

a. Except as otherwise noted, provide upright heads in all areas not having suspended ceilings.

b. Sidewall sprinkler heads may be used where desired and where required to suit the application. Heads shall be recessed type except that sprinklers not installed in finished walls may be exposed type.

.4 Sprinkler head finishes shall be as follows:

a. All upright heads shall be of natural bronze finish.
b. Exposed type sidewall heads shall be of natural bronze finish.

.5 Provide standard upright and sidewall sprinkler heads as required and approximately as indicated on the drawings. Final locations and types of all heads shall be approved by the Consultant.

.6 Provide sprinkler coverage below obstructions according to Code requirements, including ductwork and overhead doors.

.7 The sprinkler bulb protector must remain in place until the sprinkler is completely installed and before the system is placed in service. Remove bulb protectors carefully by hand after installation. Do not use any tools to remove bulb protectors.

2.4 Testing

.1 The Contractor shall furnish all pumps, gauges and other equipment necessary for tests.

.2 Where directed, all tests shall be made in the presence of the Consultant or authorized inspector.

.3 Any defects that develop during the tests shall be promptly remedied and the test re-made all to the complete satisfaction of the Inspector.

.4 All fire protection piping shall be tested to NFPA and Code requirements

.5 A report of the test and inspection shall be made to the local Authority and a request made for an approval of the entire installation.

END OF SECTION

1. GENERAL

1.1 General Requirements

.1 Refer to Division 20 – Mechanical.

2. PLUMBING AND DRAINAGE

2.1 Supports

.1 Provide all of the required pipe hangers and supports.

.2 Pipe and equipment supports shall be Taylor Walraven or approved equal of spacing and type as recommended by manufacturer, in accordance with Code requirements and in accordance with good commercial standards.

.3 Provide supports to secure pipes, prevent pipe vibration, maintain required grading, allow for expansion and contraction and produce a neat appearance. Design for strength and rigidity to suit loading and services, prevent undue stress to structural members and with provision for vertical adjustment after piping is erected.

.4 Clamp vertical pipes solidly at every other floor level (intervals not to exceed 25'-0" (7.6m)) in such a manner that expansion can take place in an upward direction.

.5 Anchor / support risers so that weight is not transferred to the underground piping / connected horizontal piping.

.6 Offset hanger pipe and structural attachments in such a manner that rod is vertical when piping is hot and is subject to tensile loading only.

.7 Adjust hanger rods to equalize load.

.8 For all piping systems specified to have insulation with a continuous vapour barrier, oversize pipe hangers and supports to accommodate insulation.

.9 Provide supplementary structural steelwork where structural bearings do not exist.

.10 Where supporting from open web steel joists, attach supports to the approval of the structural engineer and comply with the following:

a. For all piping, attach supports to the top angle iron section of joists only.
b. For piping 3" (75mm) and larger running parallel to joists, provide supplementary steelwork so that piping is supported from a minimum of two joists.
c. Support from panel points only.
d. Hanger spacing shall not exceed 10'-0" (3.0m).

.11 Special care shall be taken to ensure all plastic piping is supported according to the recommendations of the pipe manufacturer and as follows:

a. Piping shall be supported as close as practical to the change-of-direction fittings to eliminate torsional stress.

b. Sharp support or sharp edges shall not be used.

2.2 Domestic Water Piping

.1 Above Ground (Contractor to choose desired type):

a. 3" (75mm) and under: type "L" hard copper tubing with sweat wrought copper pressure type solder joint fittings. Alternatively, grooved piping and fittings may be used as specified elsewhere in this specification.

.2 Connections

a. Lead-free solder for Type L copper.

2.3 Sanitary Drain and Vent Piping

.1 Below Ground (Contractor to choose desired type):

a. 2" and under: type "L" hard copper with cast brass or wrought copper fittings.
b. Over 2": Cast iron with "MJ" fittings.
c. All sizes inside the building: ABS DWV or PVC-SDR-35 pipe with injection-molded socket fittings.

.2 Above Ground (Contractor to choose desired type):

a. 2" and under: type DWV hard drawn copper tube with cast brass alloy drainage fittings.
b. Over 2": Cast iron pipe with "MJ" fittings or DWV copper tubing with cast alloy drainage fittings.
c. All sizes: PVC DWV pipe with injection-molded socket fittings. Pipe shall be suitable for use in non-combustible building construction (IPEX System 15 or approved equal). For piping running through return air ceiling plenums, piping shall have a maximum smoke developed rating of 50 (IPEX System XFR 15-50 or approved equal).

.3 Connections:

a. 50-50 lead-tin solder for DWV copper.
b. Stainless steel screw clamps and elastomer sleeve for mechanical joint cast iron soil pipe, Bibby-Ste-Croix series 2000 or approved equal.
c. Solvent weld all socket fittings according to manufacturer's recommendations.
d. For PVC pipe using gasketed connections, use manufacturer approved PVC pipe lubricant.

.4 All piping shall conform to or be certified by the appropriate CSA standard according to OBC requirements.

.5 Un-insulated plastic piping will not be permitted to run exposed in any location. Use only copper or cast iron piping in these locations.

.6 Plastic piping will not be permitted for individual piping branches to floor drains which could receive discharge from hot water relief valves (to prevent pipe damage from extreme

temperatures of waste discharge). Use only copper or cast iron piping for these applications for a minimum distance of 15'-0" (4.5m) from the floor drain outlet.

2.4 Compressed Air Piping

.1 Schedule 40 black steel pipe to ASTM A53 Grade B with malleable iron screwed fittings Class 150 to ASTM A197 suitable for maximum operating pressures of 100 Psig (690 Kpa).

.2 Fittings shall be to the following as applicable:

a. Malleable iron screwed fittings, Class 150 to ANSI B16.3-1977.
b. Unions, malleable iron to ANSI B16.3-1977.
c. All fittings shall be long radius type.

.3 Connections shall be to the following as applicable:

a. Piping NPS 2" (50mm) and under, screwed.
b. For screwed piping connections, use dope or teflon tape (pipe thread taper to ANSI B2.1-1968).

.4 The system shall be registered by the Mechanical Contractor with the Ministry of Consumer and Commercial Relations Pressure Vessels Safety Branch / Technical Standards and Safety Authority (TSSA) prior to installation. All fees shall be billed included in the contract.

.5 Prior to purchase of any materials, the Contractor shall verify that all materials, fittings, installation methods, testing, etc. meet the approval of the local Inspector.

.6 All testing shall be done using two calibrated test gauges and the range of the gauges shall be twice the test pressure. The complete piping system shall be tested with air at 1.2 times the safety valve setting on the air compressor / 1.5 times the maximum working pressure (use larger pressure) for a minimum period of 4 hours or as directed by the Inspector. The test shall be made so as not to impose excessive pressure on all equipment not rated for the test pressure. Joints shall be checked with a soap and water solution where required and as directed.

.7 Provide suitably sized air water separators at all low points in the air system where water may accumulate.

.8 Slope all horizontal piping to drain to the compressor or manual blow-off as shown on the drawings. Slope with a minimum fall of 0.5" (13mm) in 10'-0" (3000mm) horizontal run. Where possible, install all piping without pockets where condensate may accumulate and if not possible, provide trap assemblies to remove all condensate.

.9 Make all branch pipe connections to top of mains.

2.5 Condensate Drains

.1 Boiler vent condensate drains / cooling coil condensate piping shall be CPVC Schedule 40 pipe, suitable for 180°F (82°C) maximum working temperature with socket fittings. Pipe to discharge to the sanitary drainage system as noted on the drawings.

.2 Solvent weld all plastic piping socket fittings according to manufacturer's recommendations.

.3 Provide trap seals on all cooling coil condensate piping according to manufacturer recommendations or equal 1.5 times the fan total pressure, whatever seal depth is higher.

2.6 Natural Gas Piping

.1 Piping shall be black steel schedule 40 to ASTM A53 or A106 with screwed malleable iron or steel fittings up to 2" (50mm) and welded fittings over 2" (50mm). All piping and fittings (including pipe thread tape) shall comply with the requirements of the latest issue of CSA B149.1.

.2 De-energize and re-energize all affected natural gas systems to permit the revisions indicated on the drawings. Re-light all existing natural gas equipment affected by the new Work.

.3 The gas distribution system shall be supplied, installed, tested and identified according to CSA International B149.1-00 Natural Gas And Propane Installation Code and local authority requirements. All outside piping shall be painted (identification banding not acceptable).

2.7 Plastic Piping

.1 Prior to installation of any plastic piping:

a. Obtain ULC approved installation instructions from the firestop manufacturer for all firestops throughout the complete project. Where ULC approved products cannot be obtained to suit all pipe configurations and building constructions, use copper or cast iron piping only.
b. Verify that the proposed types and locations of plastic piping are acceptable to the local authority and modify work as required without extra cost.
c. Above ground plastic domestic water piping may be used downstream of the premise backflow preventer only.
d. Where plastic domestic water piping is used, make all necessary arrangements with the plastic piping manufacturer's representative(s) to conduct an on-site instruction session. All mechanical personnel who are or will be working at the site shall attend this instruction session. The manufacturer's representative shall provide detailed installation instructions for all types of plastic pipe, including the following:
    i. Cleaning and glueing methods.
    ii. Pipe supports / support spacing.
    iii. Pipe firestopping.
    iv. Pipe separation requirements.
    v. Pipe anchoring / expansion requirements.
    vi. Proper solvent cementing procedure.

.2 Do not store plastic piping in direct sunlight.

.3 Special consideration shall be given to ensuring the pressure rating of the plastic piping system exceeds the maximum system operating pressure.

2.8 Sanitary Cleanouts

.1 Zurn or approved equal of the following types (Contractor to choose applicable type):

a. At the base of each vertical stack and rainwater leader, provide Z-1445 with dura coated cast iron body and gas and watertight ABS tapered thread plug.
b. In unfinished floor areas, provide ZXN-1612 with dura coated cast iron body, neoprene body sleeve, polished nickel bronze adjustable head and heavy duty scoriated top. For floor cleanouts in the Warehouse, provide ZN-1400-HD, adjustable floor cleanout with dura coated cast iron body, neoprene body sleeve, polished nickel bronze adjustable head and heavy duty cast iron scoriated top.
c. In piping systems not terminating through building finishes, provide compatible cleanout fittings as manufactured by the pipe manufacturer. Access doors shall be provided as specified elsewhere in the specification.

.2 Cleanouts have been indicated where desired in specific locations. In all other locations, provide cleanouts according to Ontario Building Code requirements and/or where directed by the local authority. Cleanouts shall be installed tight to walls where indicated on the drawings.

.3 Install floor cleanouts where shown on the drawings and where required with top edge flush or maximum 0.125" (3.1mm) below finished floor elevation.

2.9 Floor Drains

.1 Zurn or approved equal of the following types (Contractor to choose applicable type):

a. In unfinished concrete floor areas, provide ZX-211-A5-P complete with dura coated cast iron body, bottom outlet, adjustable with 5" (127mm) diameter 0.5" (13mm) thick cast iron heavy duty round strainer and trap primer connection.
b. Hub drains shall be provided where indicated on the drawing(s). Provide Z-400-S-P complete with dura coated cast iron body, 5" (127mm) diameter hub and trap primer connection.
c. Funnel floor drains shall be provided where indicated on the drawing(s) and installed next to equipment where only one (1) pipe has to relieve to drain. Unless noted otherwise, provide ZN-211-BE-P complete with dura coated cast iron body, bottom outlet, adjustable polished nickel bronze round strainer with round 4" (100mm) funnel and trap primer connection.
d. Funnel floor drains shall be provided where indicated on the drawing(s) and shall be installed next to equipment where more than one (1) pipe has to relieve to drain. Unless noted otherwise, provide ZN-211-BF-P complete with dura coated cast iron body, bottom outlet, adjustable polished nickel bronze round strainer with secured open throat oval funnel and trap primer connection.

.2 Install floor drains where shown on the drawings with top edge flush or maximum 0.125" (3.1mm) below finished floor elevation. Co-ordinate the exact location of all floor drains on site and adjust to suit the floor slopes as directed by the General Contractor.

2.10 Valves

.1 General

a. All valves shall have a pressure rating suitable for the system operating pressure. All valves shall meet MSS-SP-25, the manufactures name and pressure ratings are clearly marked on the body of the valve. Valves to meet current MSS specifications.
b. Similar valves shall be of the same manufacturer.

c. All valves supplied for this project shall have a current and valid Canadian Registration Number for the Province of Ontario with TSSA. Suppliers shall provide a copy of the Statutory Declaration for valves, stamped, signed and dated by TSSA as validation of the CRN registration. This shall be provided along with the shop drawing submittal package.
d. Provide stem extensions / extended necks as required to suit insulation thickness.
e. All domestic water valves shall be lead-free compliant containing less than 0.25% lead by weight copper alloy bodies. Valves to be certified to NSF 372: Use only original manufactured valves meeting ANSI, ASTM, ASME and applicable MSS standards.
f. Provide lead free paste when soldering lead free valves.

.2 Isolation Valves (Domestic Hot and Cold Water):

a. Sizes 0.5" (13mm) to 2" (50mm): 1034 kPa (150 psig) / 600 W.O.G., Brass Body to ASTM C49300 (Lead Free Brass), Full Port, PTFE Seats, Double “O” Ring, Stainless Steel Ball, Blowout Proof Stem, Lever Handle.
   i. Threaded valves: Kitz 858 or approved equal.
   ii. Soldered valves: Kitz 859 or approved equal.

.3 Check Valves (Domestic Hot and Cold Water):

a. Sizes 0.5" (13mm) to 2" (50mm): 860 kPa (125 psig) / 200 W.O.G. bronze body to ASTM C89530 (Lead Free Bronze), Screwed Cap C49300 (Lead Free Brass), Integral Seat, Bronze or PTFE Disk.
   i. Threaded valves: Kitz 822 or approved equal.
   ii. Soldered valves: Kitz 823 or approved equal.

.4 Isolation Valves (Natural Gas):

Sizes 0.25" (6mm) to 2" (50mm): MAS B3, Kitz 58, Toyo 5044A. 150PSIG/ 600WOG Rating, Brass body, Full port, TFE seats, Double O-Ring Design, or Teflon packing, Chrome plated solid Bronze ball, 3.16 Rating, CGA/CSA Approved, and Lever Handle.
a. Sizes 2.5” (63mm) and larger: Kitz 150 SCTDZM-N. Class 150 Flanged, Carbon Steel A216WCB Body, S.S. Ball & Stem, PTFE packing, Co-Polymer Hypatite seats, Locking Lever or Gear.
b. All exterior valves not located on the roof shall be complete with removable handles.
c. All valves shall be manufactured in accordance with International Fuel Gas Code, CGA 3.16, UL, CGA-B 149.M91 as revised.

.5 Isolation Valves (Compressed Air):

a. Sizes 2" (50mm) and under: Apollo 70-140 or approved equal, two piece bronze ball valve, blowout-proof stem, stainless steel ball and stem, mult-filled RPTFE seats, RPTFE seals / stem bearing, ASTM B584 bronze, high temperature MTFE stem packing, thermal relief ball design, 600 Psig (4135 Kpa) WOG cold non-shock.
b. Provide locking handle.

.6 Pressure Reducing Valves (Domestic Hot and Cold Water):

a. Sizes 2” (50mm) and under: Apollo 36LF series or approved equal complete with lead free bronze body and cover to ASTM B584, double union solder connections, internal

thermal expansion by-pass, pressure gauge with port, adjustable reduced pressure setting (10-35 psig (69-241 kPa)), integral stainless steel strainer, FDA grade Buna with polyester diaphragm, FDA grade EPDM seat disk, brass stem to ASTM B-16, stainless steel spring and FDA approved nitrile O-ring. Suitable for a maximum inlet pressure of 300 psig (2068 kPa) and for maximum temperatures of 180 deg. F. (82 deg. C.).

2.11 Backflow Preventers

.1 Reduced Pressure Backflow Preventers (Domestic Hot and Cold Water):

a. Sizes 2" (50mm) and under: Apollo RP4A/RPLF4A series or approved equal reduced pressure backflow preventer complete with bronze body and caps (C84400/LF C89836), bronze ball valve shut-offs and testcocks (C84400/LF C87800), 300 series stainless steel springs, reversible/removable chloramine-resistant silicone seat discs, nitrile and nylon diaphragm, glass-filled PPO check modules, chloramine-resistant EPDM O-ring, stainless steel ball valve handles, top accessed modular check valve cartridges with captured springs and replaceable seats, internal sensing passage,. Suitable for a maximum working pressure of 175 psig and for operating temperatures of 33°F to 180°F. Approved to ASSE 1013-2011, CSA B64.4, NSF/ANSI 61, NSF/ANSI 372, Federal Public Law 111-380, and AWWA C511. Approved by the Foundation for Cross-Connection Control and Hydraulic Research at the University of Southern California. Horizontal installation approved on 1/2" - 2" sizes. 5 year factory warranty.

b. Options:

i. Lead Free: Apollo RPLF4A series. Wetted surfaces shall contain no more than 0.25% lead by weighted average. Complies with Federal Public Law 111-380 and NSF/ANSI 372. ANSI 3rd party approved and listed.

ii. Y-Strainer: Factory furnished Y-strainer shipped loose for field installation upstream of the backflow preventer assembly.

iii. Union Ball Valves: Apollo union ball valve shut-offs for 3/4" - 2" sizes providing removable connections for ease of servicing and replacement of the backflow preventer assembly.

.2 Accessories:

a. Air Gap Drains: Apollo AGD4A series air gap drains. Constructed of ABS (1/2" - 2" sizes) with stainless steel fasteners. For use with 1/2" through 2" reduced pressure backflow preventer sizes.

2.12 Pressure Gauges

.1 Winters PCT or approved equal complete with 4.5" (113mm) white aluminum dial, acrylic lens, dual scale (imperial and metric - Psi / Kpa), bronze tube, brass socket, type 304 stainless steel case and adjustable pointer. Provide standard range so that operation is at midpoint of scale. Provide brass stop cock.

.2 Locate gauges so that they can be easily read from the floor.

2.13 Trap Seal Primers

.1 Traps and trap seal primers shall be provided for all floor drains / standing wastes according to OBC requirements (traps and primers not shown on drawings).

.2 Trap seal primer valves and distribution units shall be Precision Plumbing Products Inc. or approved equal. Provide model P-2 primer valve for one or two drains, Model P-1 primer valve for one to four drains. Primer valves to be installed with Precision Plumbing Products model DU-4 or DU-U distribution units or suitable fabricated header.

.3 Where desired by the Contractor, where directed by the local authority or where required to maintain a proper trap seal:

a. Provide Precision Plumbing Products Inc. model MPB-500-115V or approved equal electronic primer designed to serve one to four drains. The primer shall be 120-1-60 and shall be complete with model DU distribution unit, cabinet enclosure, circuit breaker, test switch, UL listed timer solenoid valve and plug-in power cord. The electrical assembly shall be listed to UL #73.
b. Provide Precision Plumbing Products Inc. series PTS or approved equal electronic primer designed to serve from 4 to 30 drains. The primer shall be 120-1-60 (hard wired) and shall be complete with atmospheric vacuum breaker, pre-set 24 hour clock, manual over-ride switch / test button, solenoid valve, 0.75" (19mm) FNPT connection calibrated manifold for equal water distribution and 0.5" (13mm) outlet compression fittings.

.4 Install units according to manufacturer's recommendations and as follows:

a. On an active domestic cold water main (1.5" (38mm) or smaller) where pressure fluctuations will ensure proper operation of the primer. The branch piping running to the primer shall connect to the top of the cold water main only (to prevent debris from entering the primer).
b. With a minimum elevation above the floor drain as directed by the manufacturer.
c. With an isolation valve immediately upstream of each primer.
d. For electric priming systems, all wiring from the 120V power sources shall be by This Contractor.120V power sources shall be provided by the Electrical Contractor where indicated on the HVAC drawings. These have been designated for use with the automatic temperature control / building automation systems but may also be used as a power source for trap seal primer valves.
e. Headers (where used): provide 0.5" (13mm) header piping and 0.5" (13mm) branch piping from header to each floor drain. Arrangement piping for equal water flowrates to all drains.
f. Electric primer panels shall be located to the approval of the Consultant.

.5 All under floor trap seal primer piping shall be polybutylene tubing having an SDR of 11 or less and all above ground piping shall be copper / PEX tubing. The minimum size of all trap seal piping shall be 0.5" (13mm).

2.14 Piping Installation Requirements

.1 Piping shall be installed according to good commercial standards and approximately as follows:

a. All piping running vertically shall run concealed in wall construction / furred enclosures unless noted otherwise on the drawings.
b. Use compression joints, unions, flanged or grooved joints in sufficient quantities to facilitate removal of equipment, fixtures, etc. without removal of long lengths of pipe.

c. Install eccentric reducers in horizontal piping to permit drainage and eliminate air pockets.
d. Where pipe sizes differ from connection sizes of equipment, install reducing fittings close to equipment. Reducing bushings are not permitted.
e. All valves and other pipe accessories shall match the associated pipe size unless noted otherwise.
f. Cut ends of pipes square, ream, clean scale and dirt and assemble without binding.
g. Install copper tubing so that it is not in contact with dissimilar metal and will not be kinked or collapsed.
h. Plug or cap pipe and fittings to keep out debris during construction.
i. Run buried drains minimum 8" (200 mm) clear below bottom of concrete slab unless not permitted by invert of building drain.
j. All piping shall be laid straight and in true alignment to the slopes of the pipe, as indicated on the drawings and / or as directed.
k. Install piping free from strains and with proper allowance and off-sets for thermal expansion and contraction.
l. Pipe bedding for exterior underground piping shall be according to applicable OPSD details.

.2 Piping shall be graded as follows:

a. Water Piping: Minimum 1/20" per foot (0.43mm/100mm) length. Insure all piping can be drained and provide drain valves at all low points.
b. Sanitary Drains: Minimum slopes as required by Code or as otherwise noted on the drawings.
c. Condensate Drains / Relief Piping: Minimum 2%.

.3 Keep all sanitary and water piping clear of outside walls, attic spaces and combustion air openings unless otherwise noted on the drawings / unless otherwise required by site conditions / unless otherwise approved by the Consultant. It is the responsibility of this Contractor to ensure that water lines in outside walls or attic spaces are run on warm side of building insulation and adequately covered with insulation. It is the responsibility of this Contractor to ensure that plumbing piping is installed so that freezing conditions within the pipe do not occur.

.4 Outside piping shall have the following minimum cover measured to the top of the pipe:

a. Sanitary: 3' - 0" (0.91 m)
b. Water: 6' - 0" (1.83 m)

.5 Where minimum cover cannot be achieved, insulate all piping according to the detail on the drawings. Where minimum cover cannot be achieved longitudinally centre over the pipe 3" (75mm) thick Plastispan H.D. below grade rigid insulation or approved equal with overlapping joints. Insulation width shall be 6'-5" (1925mm).

.6 Install a minimum of 24" (600mm) straight run piping between pipe elbows, valves, pumps or other fittings in recirculating water systems.

.7 Install check valves in horizontal or vertical upflow piping only. Locate minimum 8 pipe diameters downstream of pump outlets.

.8 All exposed drainage piping in utility and similar rooms shall be cast iron or copper only.

.9 Install plastic piping in accordance with manufacturers product data, including product technical bulletins, installation instructions and product carton instructions for installation.

2.15 Water Meters

.1 Neptune or approved equal model T-10 to AWWA Standard C700 operating on nutating disc, positive displacement principle and consisting of the following three main assemblies: register, a lead free high copper alloy maincase and nutating disc measuring chamber. Meters shall be complete with the following features / accessories:

a. Register:
   i. Magnetic drive, low torque registration.
   ii. Impact resistant register.
   iii. High resolution, low flow leak detection.
   iv. Bayonet style register mount.
   v. Tamperproof seal pin.
   vi. Can be mounted in one of four positions on the meter.
   vii. Provide units of measure to suit the Owner.
   viii. Provide TRICON/S remote reading register

b. Maincase:
   i. Lead free, NSF / ANSI 372 certified.
   ii. NSF / ANSI 61 certified, Annex F and Annex G compliant.
   iii. Lifetime guarantee.
   iv. Resists internal pressure stresses and external damage.
   v. Electrical grounding continuity.

c. Measuring Chamber:
   i. Positive displacement.
   ii. Floating chamber design is unaffected by meter position or in-line piping stresses.
   iii. Nutating disc measuring element utilizes corrosion-resistant materials throughout and a thrust roller to minimize wear

d. Magnetic drives, impact resistant registers and bayonet mount and tamperproof seal pins. The nutating disc measuring elements shall utilize floating chamber design, corrosion resistant materials throughout and a thrust roller to minimize wear. The roll seal register eliminates lens fogging, uses naturally lubricated molded gears and contains a low flow indicator for leak detection.

2.16 Draining Water Systems

.1 Drain and refill as applicable all existing water systems as required to permit revisions as indicated on the drawings.

2.17 Testing and Inspection

.1 Test drainage, vent and domestic water piping to Plumbing Code requirements. Test natural gas piping systems to Gas Code requirements. Repair all leaks to the inspection authority and / or the Consultant's approval.

.2 All leaks shall be repaired by remaking the joint. After piping systems have been tested and repaired, repeat tests.

.3 All equipment / devices which may be damaged by test pressures shall be isolated during testing procedures.

2.18 Cleaning and Flushing

.1 Flush and clean all new and existing affected piping in the following sequence:

a. Flush with potable water for a minimum time period of 30 minutes. During flushing and cleaning maintain all isolating valves in the open position. Remove faucet strainers during flushing and replace once flushing is complete.
b. Disinfect all new piping for three hours using a 200 ppm chlorine solution.
c. After disinfection, flush all new and affected existing piping with potable water for a minimum time period of 30 minutes.

.2 During flushing and cleaning maintain all isolating and control valves in the open position.

2.19 Approved Products List

.1 Pipe Hangers

a. Taylor Walraven
b. Crane
c. Unistrut
d. Myatt

.2 Valves and Strainers

a. Kitz
b. Crane
c. Watts
d. Toyo
e. M.A. Stewart
f. Apollo
g. Mueller
h. Victaulic

.3 Plumbing Specialties

a. Zurn
b. Ancon
c. Mifab
d. Jay R. Smith
e. Precision Plumbing Products

END OF SECTION

1. GENERAL

1.1 General Requirements

.1 Refer to Division 20 – Mechanical.

2. HOT WATER HEATING

2.1 Supports

.1 Provide all of the required pipe hangers and supports.

.2 Pipe and equipment supports shall be Taylor Walraven or approved equal of spacing and type as recommended by manufacturer, in accordance with Code requirements and in accordance with good commercial standards.

.3 Provide supports to secure pipes, prevent pipe vibration, maintain required grading, allow for expansion and contraction and produce a neat appearance. Design for strength and rigidity to suit loading and services, prevent undue stress to structural members and with provision for vertical adjustment after piping is erected.

.4 Clamp vertical pipes solidly at every other floor level (intervals not to exceed 25'(7.6m)) in such a manner that expansion can take place in an upward direction. Support piping independent of connected horizontal pipework.

.5 Offset hanger pipe and structural attachments in such a manner that rod is vertical when piping is hot and is subject to tensile loading only.

.6 Adjust hanger rods to equalize load.

.7 Provide supplementary structural steelwork where structural bearings do not exist.

.8 Where supporting from open web steel joists, attach supports to the approval of the structural engineer and comply with the following:

a. For all piping, attach supports to the top angle iron section of joists only.
b. For piping 3" (75mm) and larger running parallel to joists, provide supplementary steelwork so that piping is supported from a minimum of two joists.
c. Support from panel points only.
d. Hanger spacing shall not exceed 10'-0" (3.0m).

2.2 Hot Water Heating Piping

.1 Above Ground Metal Piping (Contractor to choose desired type):

a. Piping to NPS 12” (300mm): ERW or seamless schedule 40, Grade B black steel complying with ASTM A53 / A53M.
b. Piping to NPS 3" (75mm) may be type L hard copper complying with ASTM B88.
c. Fittings shall be to the following as applicable:
    i. Malleable iron screwed fittings, Class 150 to ASME B16.3.

ii. Steel pipe flanges and flanged fittings, Class 150 to ASME B16.5. Welding neck flanges shall be bored to match the same inside dimension as the attached pipe.
iii. Steel butt-welding fittings to ASME B16.9 and with the same wall thickness as the attached pipe.
iv. Malleable iron unions, Class 150 to ASME B16.3. Unions 2.5" (63mm) and larger shall be made with flanges.
v. Sweat wrought copper or cast brass soldered fittings for Type 'L' copper piping.
vi. All fittings shall be long radius type.
vii. Grooved pipe couplings and fittings may be used as specified elsewhere in this specification.

d. Connections shall be to the following as applicable:
i. Piping NPS 2" (50mm) and under: screwed or soldered.
1) For screwed piping connections, use teflon tape (pipe thread taper to ASME B2.1).
2) Where copper piping is used joints shall be 95-5 hard solder.
ii. Piping NPS 2.5" (63mm) and over:
1) Welded fittings to CSA W47.1
2) Flanged:
I Flanges shall be flat or raised face as required to match the mating flange.
II Nuts and bolts shall be carbon steel square head machine bolts and heavy hex head nuts, to ASME B18.2.1 and ASME B18.2.2.
III Gaskets shall be to ASME B16.21, ASME B16.20 or ASME A21.11 and shall be spirally wound type 316L stainless steel with non-asbestos filler material and carbon steel outer ring, 0.125" (3.1mm) thick, conforming to the flange face on which they are used.
3) Grooved pipe couplings and fittings may be used as specified elsewhere in this specification.

2.3 Relief Piping

.1 Piping shall be as specified for steel / copper hot water heating.

.2 Install relief valves where indicated / required and as follows:

a. Install in a vertical position only where directed by the manufacturer.
b. Do not install an isolation valve between the relief valve and the system, or in the discharge line.
c. Keep discharge line as short as possible and slope down in direction of flow. The pipe size shall match the outlet size on the valve.
d. The discharge line shall terminate plain, not threaded.
e. The discharge line shall have a maximum length of 30'-0" (9.1m) and shall have a maximum of 4 elbows.

2.4 Valves

.1 General

a. All valves shall have a pressure rating suitable for the system operating pressure.
b. Similar valves shall be of the same manufacturer.
c. All valves supplied for this project shall have a current and valid Canadian Registration Number for the Province of Ontario with TSSA. Suppliers shall provide a copy of the Statutory Declaration for valves, stamped, signed and dated by TSSA as validation of the CRN registration. This shall be provided along with the shop drawing submittal package.
d. Provide stem extensions / extended necks as required to suit insulation thickness.
e. Use only commercial grade valves meeting ANSI, ASTM, ASME and applicable MSS standards. Specification MSS-SP-80, MSS-SP-110, MSS-SP-70, 85, 71, MSS-SP-72, MSS-SP-67, API 602, API 598, API 609, API 600.

.2 All valves shall be to the following or approved equal:

a. Up to and including NPS 2" (50 mm):
   i. Isolation:
      1) Ball valve complete with 2 piece forged brass body, stainless steel trim, blowout proof stem, PTFE seats, maintenance free double o-ring stem seals and full port design. Valves shall be pressure rated to 150 WSP / 600 WOG and conform to MSS-SP 110 and certified to CSA.
         I Threaded valves: Kitz 68AMLL or approved equal.
         II Soldered valves: Kitz 869AMLL or approved equal.

b. NPS 2.5" (63 mm) and over:
   i. Isolation:
      1) American Valve 4000 ball valve or approved equal of the floating ball design, capable of bi-directional shut-off, complete with cast iron body having interior / exterior epoxy coating, PTFE infused solid cast iron ball, blow-out proof type 304 stainless steel stem, PTFE seats / body seals, PTFE stem steal, locking handle (full open / closed position), full port design and flanged ends. The handle length shall be adjustable / removable. Valves shall be pressure rated to 125 WSP / 200 WOG.
      2) Butterfly valve, 1380 KPA / 200WOG Rating. Butterfly valves shall be lugged type, Epoxy Coated Ductile iron body, with 2” extended neck to allow for insulation, stainless steel disc, PTFE (with EPDM backing) bonded seat, stainless steel stem with top and bottom bushings of dissimilar material. Valve shall have bubble tight shut-off to 200PSI when downstream flange is removed (Full dead-end service). Valves 150MM (6”) and smaller shall have locking lever operator, valves 200MM (8”) and larger shall have locking Manual Gear operator.
         I MAS L-D-4-S-PE-LH (Lever) or approved equal.
         II MAS L-D-4-S-PE-G (Gear) or approved equal.
   ii. Grooved end valves as described elsewhere in this specification.
c. Circuit Balancing Valves: Victaulic / IMI TA Hydronics valves for precise flow measurement, balancing, and positive shut-off. Each valve to be variable orifice, wye pattern, globe style with self-sealing EPDM measurement points, EPDM seat, and digital handles with locking hidden tamper-proof setting. Valves shall be selected based on flow requirement. Suitable for operating temperatures to 248°F (120°C).

i. ½" through 2": 400 psi, non-ferrous Ametal® DZR brass copper alloy body, EPDM O-ring seals. 4-turn digital readout handwheel for balancing, hidden memory feature with locking tamper-proof setting. Brass shall be ISO 6509 compliant. Victaulic / IMI TA Series 786H/787H/78KH. Install Victaulic Koil-Kits including Series 78Y strainer/ball valve/drain (or Series 78T ball valve/drain where strainer not required), with Series 78U union port fitting and coil hoses to complete terminal hookup.

ii. 2-1/2" through 16": 250 psi (flanged) or 350 psi (grooved) ASTM A536 ductile iron body, EPDM O-ring seals. Digital readout handwheel for balancing, hidden memory feature with locking tamper-proof setting. Bonnet, cone, and spindle shall be DZR brass (Ametal®) for ¾" through 6" sizes; bonnet and cone of ductile iron with Ametal® spindle for 8" through 12" sizes; and ductile iron bonnet with silicon-brass and gunmetal cone and Ametal® spindle for 14" and 16" sizes. Victaulic / IMI TA Series 788/789.

iii. Valves shall be installed as follows:

1) With flow in the direction fo the arrow on the valve body.
2) At least five pipe diameters downstream from any fitting.
3) At least 10 pipe diameters downstream from any pump.
4) Two pipe diameters upstream of any fitting.
5) With easy and unobstructed access to the valve handwheel and metering ports.
6) To prevent sediment build-up in the metering ports.

d. Suction guide / strainers shall be Taco SDG series or approved equal having the following features:

i. Ductile iron body / cover / integral straightening device.
ii. Bronze start-up strainer (16 mesh).
iii. Type 304 tainless steel permanent strainer.
iv. EPDM o-ring for cover.
v. Tapped suction gauge port.
vi. Blow-down connection.
vii. Adjustable foot support.
viii. 125 Psig (860 Kpa) ASME rating.
ix. 175 Psig (1205 Kpa) maximum working pressure at 150 deg. F. (65 deg. C.).
x. 300 deg. F. (150 deg. C.) maximum operating temperature at 140 Psig (965 Kpa).
xi. Grooved joint suction guide / strainers as described elsewhere in this specification.

e. Triple duty valves shall be Taco MPVG series or approved equal having the following features:

i. Valve functions: shut off, globe style flow control, non-slam check valve, flow metering valve.
ii. Right angle configuration.
iii. Ductile iron body.
iv. Bronze seat disc / gland.
v. Type 302 stainless steel spring.
vi. EPDM seat / body o-ring.
vii. Bronze / type 416 stainless steel stem.
viii. Asbestos free teflon impregnated aramid fiber stem packing.
ix. Memory indicator, pointer and scale.
x. Schrader valve metering connections.
xi. Drain connection.

xii. 125 Psig (860 Kpa) ASME rating.
xiii. 175 Psig (1205 Kpa) maximum working pressure at 150 deg. F. (65 deg. C.).
xiv. 300 deg. F. (150 deg. C.) maximum operating temperature at 140 Psig (965 Kpa).
xv. Grooved joint valves as described elsewhere in this specification.

f. Relief valves shall be Watts 174A / 740 series or approved equal having pressure setting and relieving capacity to suit application. Selection of valve shall be by the valve manufacturer.

g. Drain valves:
i. Two piece forged brass body, chrome plated ball, blowout proof stem, PTFE seats / seals, PP or brass cap and chain, full port design. Valves shall be pressure rated to 150 WSP / 600 WOG.
1) Threaded / hose valves: Kitz 68C or approved equal.
2) Threaded / hose valves: Toyo 5046A
3) Soldered / hose valves: Kitz 69C or approved equal.
ii. Provide tamper proof vacuum breaker.

2.5 Expansion Joints and Guides

.1 Expansion joints shall be as follows:

a. Pipe sizes 2 2" (63 mm); Senior Flexonics Series H compensators or approved equal having the following characteristics:
i. Stroke: 1.75" (44mm) compression, 0.24" (6mm) extension.
ii. Maximum operating temperature: 750 deg. F. (400 deg. C.).
iii. Maximum working pressure: 200 Psig (1380 Kpa).
iv. Test pressure: 300 Psig (2070 Kpa).
v. Fittings: welded or threaded to suit piping.
vi. Bellows: stainless steel.
vii. Shroud and fittings: steel

b. Pipe sizes 3" (75 mm) and over; Flexonics ring controller stainless steel bellows type or approved equal, pressure and temperature rating to suit point of installation, length to be sized by manufacturer to suit pipe movement.

.2 Provide compatible guides for all above units, Flexonics PGT series or approved equal. Locate the first guides within 4 pipe diameters on either side of the expansion joint and the second guides within 14 pipe diameters of the first guides.

.3 Provide shop drawings including floor plans prepared by the manufacturer / supplier indicating locations of compensators and anchors, calculated expansion and reaction force at anchors. Drawings shall bear the seal of a Professional Engineer licensed in the Province of Ontario.

.4 Anchor loads and connections to building structure shall be reviewed by the Structural Engineer prior to installation.

.5 Grooved end expansion joints as described elsewhere in this specification.

2.6 Strainers

.1 For sizes to 2" (50mm), Kitz 15 (threaded ends) / 16 (soldered ends) or approved equal Y-pattern type complete with cast bronze body, threaded brass cap with plug and type 304 stainless steel having 0.031" (0.8mm) perforations. Valves shall be pressure rated to 150 WSP / 300 WOG.

.2 For sizes 2.5" (63mm) and over, Kitz 80 or approved equal Y-pattern type complete with cast iron body / cover, bolted cover, blow-out plug, type 304 stainless steel having 0.031" (0.8mm) perforations, non-asbestos gasket and flanged ends. Valves shall be pressure rated to 150 WSP / 300 WOG. Provide drain valve with hose connection for blow-down connection.

.3 Grooved joint strainers as described elsewhere in this specification.

2.7 Grooved Piping

.1 As an alternate to the fittings / connections / valves specified above for piping 2.5" (63mm) and larger, grooved mechanical pipe couplings, fittings, valves and components manufactured by Victaulic or approved equal may be used.

.2 All grooved components shall be of one manufacturer and conform to local codes. Grooving tools shall be of the same manufacturer as the grooved components.

.3 Grooved couplings shall conform to (or meet the intent of) ASTM F-1476.

.4 Roll or cut grooved ends as appropriate to pipe material, wall thickness, pressures, size and method of joining. Pipe ends shall be grooved in accordance with Victaulic current listed standards conforming to ASME / AWWA C-606.

.5 Couplings 2" (50mm) through 24" (600mm):

a. Two coupling housings shall be cast of ductile iron.
b. Mechanical couplings shall be Victaulic style 107V 'installation ready' stab-on design or Victaulic Style W07 AGS design, providing system support and hanging requirements in accordance with ASME B31.1 and ASME B31.9. Victaulic Style Style 177 'installation ready' stab-on coupling, Style 77 or 75 standard coupling or Style W77 AGS design shall be installed at mechanical equipment / pump connections (a minimum of three flexible couplings shall be installed between the equipment / pump and the first rigid coupling).
    i. 107V Housings cast with torque-absorber and shift-limiting slant bolt pad design to provide piping system rigidity and support and hanging in accordance with ANSI B31.1 and B31.9, and to prevent mis-assembly due to overshift. Housings cast with alignment indicator notch for visual proper alignment to adjoining fitting. Basis of Design: Victaulic Installation-Ready™ Style 107V.
c. Provide Victaulic style 750 reducing couplings and Victaulic style 72 outlet couplings as required to suit piping installation.
d. Coupling fasteners (bolts, nuts, etc.) shall be zinc plated heat treated carbon steel track head conforming to physical properties of ASTM A-183 and A-449, minimum tensile strength of 110,000 Psi (758450 Kpa). All fasteners shall be provided by Victaulic.

.6 Flange adapters:

a. Vic-Flange adapter style 741 and W741 shall be used for connection to ASME class 125 / 150 flanged components. Style 743 shall be used for connection to ASME class 300 flanged components. Adapters shall be cast of ductile iron.
b. Number 41 / 45 flanged adapter nipples shall be used for connection to ASME class 125 / 150 flanged components. Nipples shall be of carbon steel , schedule 30 or 40, ASTM A-53, type E, F or S, Grade B. Class 125 flanges shall be cast iron to ASME B-16.1 and Class 150 flanges shall be carbon steel to ASME B-16.5.

.7 Fittings and coatings:

a. Fittings shall be full flow ductile iron, steel or factory segmentally welded type with grooves or shoulders designed to accept Victaulic stab-on, standard, or AGS grooved end couplings.
b. All fittings and couplings shall be provided with an alkyd enamel finish.

.8 Miscellaneous components:

a. Provide Vic-Let style 923 and Vic-O-Well style 924 for vent, drain, pressure, temperature, taps, etc.
b. Branch reductions on 2.5" through 8" (63 through 200mm) header piping shall be made with Victaulic hole cut products, style 920 / style 920N mechanical AT@ outlet with locating collar engaging into hole or style 72 outlet coupling for use in joining grooved pipe with a branch connection at the joint.
c. Dielectric Waterway: Fittings shall be a copper-silicon casting conforming to UNS C87850, and UL classified in accordance with ANSI / NSF-61 for potable water service. Fittings shall have threaded ends, grooved ends, or a combination. Victaulic Style 647.

.9 Gaskets:

a. Standard and AGS coupling gaskets shall be Grade E EPDM compound conforming to ASTM D-2000 designation 2CA615A25B24F17Z. Temperature operating range shall be -30 to 230 deg. F. (-34 to 110 deg. C.)
b. 'Installation Ready' stab-on coupling center-leg gasket with pipe stop to ensure proper groove engagement, alignment, and pipe insertion depth, shall be Grade 'EHP' EPDM compound conforming to ASTM D-2000 designation 2CA615A25B24F17Z. Temperature operating range shall be -30 to 250 deg. F. (-34 to 121 deg. C).

.10 Butterfly valves:

a. Up to 12" (300mm): Victaulic Vic-300 MasterSeal_, 300 Psig (2065 Kpa), grooved ends complete with ductile iron body coated with black enamel, electroless nickel coated ductile iron disc, offset from the stem centerline to provide continuous 360 degree seating, and memory stop, with pressure-responsive elastomer seat. Valves shall be capable of bi-directional shut-off and dead-end service at full rated pressure. Valve shall have lever handle, gear operator, or power actuator.
b. 14" (350mm) to 24" (600mm): victaulic Vic-300 AGS, 300 Psig (2065 Kpa), AGS grooved ends complete with ductile iron body and disc with PPS coating, two piece 14-4 PH stainless steel stem design and memory stop. Valves shall be capable of bi-directional shut-off and dead-end service at full rated pressure. Valve shall have gear operator or power actuator.

.11 Strainers:

a. Victaulic style 732 and W732 Vic-strainer, Y-type complete with ductile iron body, type 304 stainless steel cylindrical removable baskets, 300 Psig (2065 Kpa). Sizes 2.5" (63mm) and 3"(75mm) shall be complete with 1/16" (1.6mm) diameter perforations and 41% open area. Sizes 4" (100mm) to 12" (300mm) shall be complete with 1/8" (3.2mm) diameter perforations and 40% open area. Size 14" (350mm) to 24" (600mm) shall be complete with 4mm diameter perforations and 41% open area.
b. Victaulic Series 730 and W730 vic-strainers, T-type complete with ductile iron or carbon steel body, type 304 stainless steel cylindrical removable baskets, No 12, 6 or 4 mesh sizes, removable couplings and end cap or T-bolt hinged closure/cap for strainer maintenance. Up to 300 psig (2065 kPa).

.12 Suction diffuser:

a. Victaulic series 731-G and W731-I complete with ductile iron body with base support boss, grooved / flanged ends, 300 Psig (2065 Kpa). Sizes 3" (75mm) to 12" (300mm) shall have a type 304 stainless steel diffuser with 5/32" (4mm) diameter holes. The removable start-up prefilter shall be 20 mesh type 304 stainless steel screen. Provide connections for pressure measurement and drain and provide valve with hose connection for blowdown connection.

.13 Manufactured Vibration Isolation Pump Drops for Sizes 3” through 12”: Installation-Ready with grooved joints, orange enamel coating, with flexible couplings to accommodate vibration attenuation and stress relief, and pipe spool with thermometer and pressure ports. Assembly rated for working pressure to 300-psig (2068-kPa).

a. Discharge Pump Drop: Class 150 flange for pump connection, [base elbow for horizontal pump connection] [straight line with concentric reducer for vertical pump connections], tri-service valve assembly consisting of a spring-actuated check [Venturi-Check] valve and butterfly valve with offset stem for 360-degree circumferential seating. Victaulic Series 380.
b. Suction Pump Drop: Suction diffuser with stainless steel basket and diffuser and Class 150 flange for pump connection, butterfly valve with offset stem for 360-degree circumferential seating. Victaulic Series 381.
c. Suction Pump Drop: Class 150 flange for pump connection, Wye pattern strainer with stainless steel perforated metal basket, butterfly valve with offset stem for 360-degree circumferential seating. Victaulic Series 382.
d. Discharge CBV Pump Drop: Class 150 flange for pump connection, [base elbow for horizontal pump connection] [straight line with concentric reducer for vertical pump connections], spring-actuated check [Venturi-Check] valve and Series 789 circuit balancing valve. Victaulic Series 383.

.14 Triple duty valves:

a. Victaulic series Vic 300 Masterseal butterfly valve assembled with a Series 716 Vic-Check or Series 779 Venturi check valve, 300 Psig (2065 Kpa). Provide memory stop.
b. Assembly:
    i. Pipe ends shall be clean and free from indentations, projections and roll marks in the area from pipe end to groove for proper gasket sealing.

ii. The gasket style and elastomeric material (grade) shall be verified as suitable for the intended service.

.15 Expansion Joints:

a. Install victaulic in-line expansion joints in water piping systems that are installed in enclosures where pipe bends or loops cannot be applied:
   i. 3/4" (20mm) and Larger Sizes: combined of grooved end short nipples and flexible couplings joined in tandem to provide increased expansion. Joint movement and expansion capabilities determined by number of couplings/nipples used in the joint. Pressure rating dependent on size and style of flexible couplings used. Victaulic Style 155.
b. Provide shop drawings including floor plans prepared by the manufacturer / supplier indicating locations of compensators and anchors, calculated expansion and reaction force at anchors. Drawings shall bear the seal of a Professional Engineer licensed in the Province of Ontario.
c. Anchor loads and connections to building structure shall be reviewed by the Structural Engineer prior to installation.

.16 Installation:

a. Grooved joint piping systems shall be installed in accordance with the manufacturer's guidelines and recommendations.
b. All grooved couplings, fittings, valves, and specialities shall be supplied by a single manufacturer. Grooving tools shall be supplied by the same manufacturer as the grooved components.
c. The gasket style and elastomeric material (grade) shall be verified as suitable for the intended services as specified. Gaskets shall be molded and supplied by Victaulic or approved equal.
d. Grooved end shall be clean and free from indentations, projections, and roll marks in the area from pipe end to groove for proper gasket sealing.
e. A grooved joint manufacturer factory-trained field representative shall provide the on-site training to contractor's field personnel in the proper use of grooving tools and installation of grooved piping products.
f. A factory trained representative shall periodically review the product installation. Contractor shall remove and replace any improperly installed products.
g. Install the Victaulic Advanced Grooved System (AGS) or approved equal in accordance with the latest Victaulic installation instructions. Use grooving tools with AGS roll sets to groove the pipe. Follow grooved joint manufacturer’s guidelines for tool selection and operation. Coupling installation shall be complete when visual metal-to-metal contact is reached. AGS products shall not be installed with standard grooved end pipe or components. Installing AGS products in combination with standard grooved end products could result in joint separation and/or leakage.

2.8 Air Vents

.1 Automatic air vents shall be Taco model 400 Hy-Vent or approved equal. Install air vents and collecting chambers at high points of heating system, where indicated on the drawings and in all locations where air can be trapped including unit heaters and heating coils. Provide stop cock to facilitate removal of vent without draining the heating system.

.2 Convectors, cabinet heaters and other heating units fed from supply and return mains or branches that are located below radiation units shall be vented with a manual air vent. Manual vents shall be Taco model 417 or approved equal.

2.9 Flexible Connectors

.1 Flexible connectors shall be Kinetics Kinflex FTC or approved equal complete with the following:

a. Control rods.
b. 26" (0.66m) w.c. negative pressure rating.
c. 170 deg. F. (77 deg. C.) maximum allowable pressure at 225 Psig (1550 Kpa).
d. 225 deg. F. (107 deg. C.) maximum allowable temperature.
e. Mild steel flanges.
f. Hardened steel wire cord collar.
g. Neoprene body.
h. Nylon tire body cord.

2.10 Thermometers

.1 Winters 91T or approved equal, industrial variable angle type, complete with 9" (225mm) scale length, dual scale (imperial and metric - deg. F. / deg. C.), aluminum case, glass lens, cast aluminum bulb chamber with graphite fill and organic fluid. Provide standard range so that operation is at midpoint of scale and brass thermometer well complete with extension where installed through insulation.

.2 Locate thermometers so that they can be easily read from the floor.

2.11 Pressure Gauges

.1 Winters PCT or approved equal complete with 4.5" (113mm) white aluminum dial, acrylic lens, dual scale (imperial and metric - Psi / Kpa), bronze tube, brass socket, type 304 stainless steel case and adjustable pointer. Provide standard range so that operation is at midpoint of scale. Provide brass stop cock.

.2 Locate gauges so that they can be easily read from the floor.

2.12 Piping Installation Requirements

.1 Piping shall be installed according to good commercial standards and approximately as follows:

a. All piping running vertically shall run concealed in wall construction / furred enclosures unless noted otherwise on the drawings. Under no condition is any piping to be installed in concealed spaces in outside walls.
b. Use unions, flanged or grooved joints in sufficient quantities to facilitate removal of equipment without removal of long lengths of pipe.
c. Install eccentric reducers in horizontal piping to permit drainage and eliminate air pockets.
d. Where pipe sizes differ from connection sizes of equipment, install reducing fittings close to equipment. Reducing bushings are not permitted.

e. All valves and other pipe accessories shall match the associated pipe size unless noted otherwise.
f. Cut ends of pipes square, ream, clean scale / dirt and assemble without binding.
g. Install copper tubing so that it is not in contact with dissimilar metal and will not be kinked or collapsed.
h. Plug or cap pipe and fittings to keep out debris during construction.
i. All piping shall be laid straight and in true alignment to the slopes of the pipe, as indicated on the drawings and / or as directed.
j. Install piping free from strains and with proper allowance and off-sets for thermal expansion and contraction, with anchors placed as shown or required. Construct anchors of structural steel angles, channels or plates which are secured to pipe / structure to the approval of the Structural Engineer. Victaulic A10 / A10S Risers Anchors may be used with Victaulic riser piping. Provide compatible guides, Flexonics PGT series or approved equal, as noted on the drawings. Provide all branches running from risers or piping mains with three elbow swing joints at minimum 14" (350mm) spacing.
k. Slope piping up in direction of flow at a minimum rate of 1/20" per foot (0.43mm/100mm) length and provide drain at low points. The entire hot water heating system shall be capable of being drained.
l. Take heating branches off piping mains at 45 degrees looking up when feeding above and 45 degrees looking down when feeding below.
m. Provide all piping connections to all mechanical equipment with valves and unions located so that removal of equipment is possible without disconnecting more than a minimum amount of pipework, shutting down other pieces of equipment or draining the entire system.
n. Install a minimum of 14" (350mm) straight run piping between pipe elbows, valves, pumps or other fittings unless noted otherwise on the drawings.
o. Maintain minimum five pipe diameters of straight pipe on the inlet and outlet sides of pressure independent control / balancing valves.
p. Provide clearance for maintenance of equipment, valves and strainers.

2.13 Bladder Type Expansion Tank

.1 Replaceable bladder type expansion tanks shall have the following features:

a. Suitable for vertical mounting.
b. The design and fabrication shall be according to the ASME code for expansion vessels used to 240 degrees F. (115 degrees C.) and at 125 psi (862 kPa) maximum.
c. Heavy duty butyl rubber bladder, field removable for inspection and replacement.
d. The exterior finish shall be a rust inhibitor epoxy paint.
e. Air precharge tank to approximately 12 PSI (83 kPa) or to suit the initial fill pressure of the system.

.2 Tanks shall be Amtrol Extrol L series or approved equal. Refer to Equipment Schedule for model, accessories and performance requirements.

2.14 Air / Dirt Separator

.1 Taco 4900AD series or approved equal air and dirt separator constructed of steel, designed and fabricated per ASME Section VIII Division I with a maximum working pressure rating of 125

Psig (860 Kpa) at 270 deg. F. (132 deg. C.). The unit shall be provided with a hydrostatic test at the factory at 1.3 times the rated working pressure.

.2 Provide the following:

a. Flanged inlet / outlet connections.
b. Brass conical shaped air venting chamber designed to minimize system fluid form fouling the venting assembly.
c. Brass flushing cock located on the side of the separator to facilitate system fast-fill and removal of floating impurities from the air system interface within the separator.
d. Blowdown valve (provided by the unit manufacturer) on the bottom of the separator.
e. High surface pall rings to achieve optimal separation of gas and dirt.
f. Automatic air vent.

.3 Installation and start-up shall be according to manufacturer's recommendations.

.4 For model, accessories and performance requirements, refer to Equipment Schedule on the drawings.

2.15 Pumps

.1 Where listed in the Equipment Schedule, pumps shall be Taco 1900 series or approved equal having the following features / construction details:

a. Maximum operating pressure: 175 PSI (1200 Kpa).
b. Mechanical seal temperature rating: 250 deg. F. (121 deg. C.).
c. Cast iron casing.
d. Dynamically balanced stainless steel impeller.
e. Type 21 ceramic mechanical seal.
f. Pressure tappings to allow differential pressure readings across the pump.
g. Non-corrosive shaft sleeve.
h. NEMA standard 56 frame C face motor.
i. The complete pump shall have a hydrostatic and performance test before shipment.

.2 Where listed in the Equipment Schedule, pumps shall be Taco KV / KS series or approved equal having the following features / construction details:

a. Pump volute or casings shall be constructed of class 30 cast iron. The pump casing shall have equal suction and discharge ports. The pump casing shall be drilled and tapped for gauge ports at both the suction and discharge flanges and for drain port at the bottom of the casing. The pump shall be capable of being serviced without disturbing system piping.
b. The impeller shall be bronze and hydraulically balanced by the back impeller hub and balancing holes. The impeller shall be dynamically balanced and shall be fitted to the shaft with a key.
c. The pump cover shall be machined to provide a balance chamber from the close tolerance between the back impeller hub and the cover. For KS series pumps, the cover shall be fitted with a bronze throttle bushing. The cover shall be designed to provide maximum flexibility of mechanical shaft seals and flush glands.
d. The pump seal shall be EPT Ceramic rated to 250 deg. F. (121 deg. C.). The maximum operating pressure shall be 175 PSI (1200 KPa) unless noted otherwise. The pump

shall have a factory installed vent / flush line to insure removal of trapped air and mechanical seal cooling. The vent / flush line shall run from the seal chamber to the pump discharge.

e. The pump shall be coupled to a NEMA rated motor (JM motor for KV series) designed for continuous operation and readily removable for servicing.

f. For KV series pumps, the pump shall incorporate a dry shaft design to prevent the circulating fluid from contacting the shaft. The shaft shall be covered with a replaceable bronze shaft sleeve.

g. For KS series pumps, the pump shaft shall be of stainless steel and incorporate a suitable internal or external seal. The pump and motor shaft must be connected with circular keys capable of transmitting axial loads to the motor bearings. The motor shall be connected to the pump shaft through a high tensile aluminum split style coupling.

h. For KS series pumps, the design must permit easy replacement of the mechanical shaft seal without removal of the motor. Pump volute or casings shall be constructed of class 30 cast iron. The pump casing shall have equal suction and discharge ports. The pump casing shall be drilled and tapped for gauge ports at both the suction and discharge flanges and for drain port at the bottom of the casing. The pump shall be capable of being serviced without disturbing system piping.

.3 Where listed in the Equipment Schedule, pumps shall be Taco 2400 series or approved equal having the following features / construction details:

a. Maximum fluid temperature: 225 deg. F. (107 deg. C.).
b. Minimum fluid temperature: 40 degrees F (4 degrees C).
c. Maximum operating pressure: 150 PSI (1035 Kpa).
d. Cast iron casing.
e. Stainless steel face plate.
f. Aluminum motor housing.
g. 30% glass filled Noryl impeller with stainless steel inserts.
h. Stainless steel shaft.
i. Carbon / silicon-carbide mechanical seal.
j. Permanently sealed / lubricated ball type motor bearings.
k. EPDM o-ring / flange gaskets.
l. Open drip-proof, thermally protected, permanent split capacitor motor.
m. Suction and discharge pressure taps..

.4 Support piping at or near the pumps flanged connections. Ensure that pump body does not support piping or equipment.

.5 Check rotation and flow direction arrows.

.6 For model, accessories and performance requirements, refer to Equipment Schedule on the drawings.

2.16 Chemical Treatment

.1 General:

a. Provide a complete system of water treatment to control scale, corrosion suspended solids and micro-biological fouling. The program shall be administered by the chemical supply company who will provide on-site supervision.
b. All chemicals, test equipment and system administration required for the pre-operational cleaning of the piping systems and for the final treatment of the heating water shall be provided by the chemical supply company.
c. Make all necessary provisions in the piping system for the introduction of the cleaning / treatment chemicals.
d. Where indicated on the drawings, water filters shall be Quatic Chemicals model LMO20-3/4" or approved equal filter housing complete with cast iron head, carbon steel shell, 0.75 (19mm) connections, ethylene propylene shell o-rings, nickel plated steel brackets, hex nuts for cover, 0.25" (6mm) carbon steel drain plug, painted exterior and 175 Psig (1205 Kpa) working pressure at 200 deg. F. (93.3 deg. C.). Provide 20" (500mm) DOE membrane filter cartridge (the Mechanical Contractor shall provide two (2) spare filter cartridges to the Owner).

.2 Manufacturer:

a. Equipment, chemicals and all required supervision for chemical cleaning and final treatment shall be provided by Aquarian Chemicals only (phone # (905) 825-3711. Alternative suppliers will not be permitted.

.3 Submittals:

a. Provide log sheets and test reports as recommended by the manufacturer for inclusion into the Operation and Maintenance manuals.
b. Provide a copy of the recommended cleaning procedures and chemicals for approval by the Consultant. Once approved, provide a copy for the Mechanical Contractor=s use.

.4 Pot Feeder:

a. Supply and install by-pass feeder as indicted on the drawings. The chemical feeder shall be Neptune model VTF-2X4HP or approved equal bypass feeder, 2 USG (7.6L) capacity, four fitting type, 11 gauge steel construction with a working pressure of 300 psig (2070 kPa). Provide integral support bracket and cast iron cap with Buna N AO@ ring.

.5 Filter:

a. Provide a micron filter where indicated on the drawings.
b. Provide Pall LMO series filter or approved equal housing complete with cast iron head with painted exterior, type 316 stainless steel shell, connections to suit piping, ethylene propylene shell o-rings, FEP cover nut o-ring, stainless steel brackets, hex nuts for cover, 0.25" (6mm) type 316 stainless steel drain plug and 175 Psig (1205 Kpa) working pressure at 200 deg. F. (93.3 deg. C.). Provide 10" (250mm) DOE membrane filter cartridge (the Mechanical Contractor shall provide two (2) spare filter cartridges to the Owner).
c. Filter capacity shall be 2% of the system pump capacity. The Balancing Contractor shall adjust the balancing valve to 1% of the pump capacity. This flowrate shall be adjusted by the Chemical Supplier during the warranty period.

d. Provide six (6) spare sets of filter cartridges.

.6 Chemicals:

a. Cleaning and final treatment chemicals shall be suitable for use in a hot water heating system using the specified equipment and piping.
b. All chemicals shall be compatible and supplied by the Chemical Treatment Supplier only.
c. Provide sufficient cleaning chemicals to make the system clean.
d. Provide sufficient final treatment chemicals for two (2) years operation.

.7 Test Equipment:

a. Provide one set of test equipment.
b. Provide carrying case, reagents for chemicals and all specialized or supplementary equipment.

.8 Record Management:

a. Provide cards and card holder mounted on wall adjacent to the pot feeder.

.9 Installation:

a. Ensure adequate clearances to permit performance of serving and maintenance of equipment.
b. Install crosses at all changes in direction of chemical feed piping. Install plugs in all unused connections.
c. Make all necessary provisions in the piping system for the introduction of the cleaning / final treatment chemicals.
d. Co-ordinate chemical cleaning with the Mechanical Contractor.

.10 Water Treatment Services:

a. After the system is chemically cleaned, provide water treatment monitoring and consulting services for a period of two years after system start-up. This service shall include:
    i. Initial water analysis and treatment recommendations.
    ii. System start-up assistance.
    iii. Operating staff training.
    iv. Visit the building every seven days during period of operation and as required until the system stabilizes, and advise on treatment system performance.
    v. Provide necessary recording charts and log sheets for two years operation.
    vi. Provide necessary laboratory and technical assistance.
    vii. Instructions and advice to operating staff shall be clear, concise and in writing.
    viii. Check out the water treatment system on a regular basis and submit a written report to the Owner.

.11 Start-Up and Training:

a. Start-up water treatment systems in accordance with manufacturer=s instructions.
b. Start-up and training shall be provided by the Mechanical Contractor and the Chemical Treatment Supplier.
c. Prior to start-up, verify:
    i. Presence of test equipment, reagents, chemicals, details of specific tests to be performed, operating instructions.
    ii. Suitability of log book.
    iii. Currency and accuracy of initial water analysis.
    iv. Required quality of treated water.
d. Start-up procedures:
    i. Monitor performance continuously during start-up of all connected systems and until acceptance of the project.
    ii. Establish test and regeneration intervals.
    iii. Record on approved report forms all start-up procedures, test procedures, dates, times, quantities of chemicals added, raw water analysis, treated water analysis, test results, instrument readings, adjustments made, results obtained.
    iv. Visit project at specified intervals after start-up is satisfactorily completed to verify that performance remains as set during start-up (more often as required until system stabilizes at required level of performance).
    v. Advise the Consultant and the Board=s chemical treatment technician in writing on all matters regarding the installed water treatment system.
e. Start-up systems and perform tests in the presence of, to the approval of, using assistance of, assigned Operating / Maintenance personnel, including the Board=s chemical treatment technician.
f. Upon completion, furnish certificates confirming satisfactory installation and performance.
g. Reports shall include system schematics, test results, test certificates, raw and treated water analysis, design criterial and all other data required by the Consultant or the Board.

2.17 Draining and Refilling the Hot Water Heating System

.1 This Contractor shall be responsible for draining and refilling the heating system to permit revisions as noted on the drawings.

.2 All new and affected existing piping system (mains and branch piping) shall be flushed and cleaned as follows, in the specified order:

a. Flush using raw water to ensure removal of heavy debris and excessive oil or dirt.
b. During flushing, maintain all isolating and control valves in the open position.
c. Do not flush piping through equipment which could be damaged by pipe debris (coils, boilers, radiant heaters, etc.). Provide necessary bypass piping.
d. All strainers shall then be cleaned.
e. Clean with Quatic Chemicals Series 6002 neutral pH cleaner or approved equal. The cleaner shall be introduced into system at a dosage of 2 gallons per 100 gallons (9.0 litres per 455 litres) of water in the system and circulated for 24 hours at ambient temperature.
f. The complete system shall then be drained as quickly as possible using all available drain valves.
g. Immediately refilled with fresh water and circulate for a minimum of 60 minutes.

h. The complete system shall then be drained and refilled. If any foaminess or discolouration is still present, the system will require repeated draining and refilling. Ensure that all residual cleaner has been removed to the approval of the chemical treatment manufacturer.
i. Following cleaning / flushing procedures, clean strainers and immediately fill system.
j. Make all necessary provisions in the piping system for the introduction of the cleaning chemicals.

.3 Chemically treat the heating water according to the chemical treatment manufacturer's recommendations.

.4 Adjust PH levels according to water treatment supplier recommendations so that damage does not occur to the aluminium boilers.

2.18 Hydronic Heating Equipment

.1 General:

a. All heating units shall be Sigma or approved equal of the types listed in the Schedules on the drawings.
b. Provide for noiseless expansion of all components.
c. Radiation output and air / water operating temperatures shall be as indicated on the drawings.
d. Installation shall be in strict accordance with the manufacturer's recommendations.
e. All cabinets / enclosures shall be complete with primer finish suitable for field painting.

.2 Wallfin (enclosure only):

a. Enclosure:
i. The enclosure shall be of a type indicated on the drawings.
ii. Enclosures shall be manufactured from 16 gauge steel and finished with a primer finish suitable for field painting.
iii. The enclosure shall be suitable reinforced to withstand a loading of 150 pounds per linear foot (223 kg. / meter).
iv. The enclosure shall be continuous wall to wall or as shown on the drawings.
v. Panels shall have a 0.75" (19mm) return edge around the perimeter to provide rigidity.
vi. Covers shall be removable by hand without any tools.
vii. The top outlet of the enclosures shall have stamped louver grilles that extend the entire length of the panels.
viii. The inlet of the enclosure shall be open.
ix. Manufacturer shall provide all accessories (endcaps, trim pieces, corners, hanger strips, brackets, joiner pieces, etc.) for a complete installation.

.3 Unit Heaters:

a. Casing shall be constructed of minimum 18 gauge cold rolled steel and shall be complete with a factory mounted four way adjustable louvered diffuser and integral 3/8" (10mm) threaded hanger connections.

b. The copper-aluminum heating element shall consist of rippled aluminum fins mechanically bonded to 0.5 (13mm) copper tubes.
c. Headers shall be provided with steel MPT pipe connections located at the back of the unit.
d. The fan shall be aluminum blade type, factory dynamically and statically balanced, direct connected to the motor shaft and complete with a fan guard.
e. Motors shall incorporate sleeve bearings and automatic reset overload protection.

.4 Provide accessories as listed in the Schedule on the drawings.

2.19 Flow Switches

.1 Watts or approved equal model FS10-C complete with copper paddle. Paddle length shall suit pipe size and shall be trimmed as required.

.2 Install where indicated on the drawings. Install in horizontal pipe or in vertical pipe with upward water flow. Do not install in vertical piping where the water flow is downward. Maintain a straight run of at least five pipe diameters on each side of the switch (do not locate adjacent to valves, elbows, etc.).

2.20 Boilers / Burners

.1 Products:

a. Heating boilers shall be De Dietrich series GT 430 A series or approved equal using a natural gas forced draft power burner.
b. Boilers approved to ANSI Z21.13 CSA 4.9-2000 standards with minimum thermal efficiency of 85.2%. Combustion efficiency will not be accepted as boiler efficiency.
c. Boilers shall have no limit on inlet water temperatures, tempering of return water with supply water is not acceptable. Boiler and Burner package must have proven field verified track record for a period of three (3) years.
d. Boilers shall be constructed of eutectic cast iron sections manufactured in accordance with ASME requirements for low-pressure boilers and each section shall be permanently marked with the ASME symbol and the maximum allowable working pressures. The eutectic cast iron shall have a modulus of elasticity of 30% greater than other cast iron. Boilers and burners shall be ULC listed as a package
e. Boilers shall be of a (3) pass scotch type wet base, wetbacks design with optimized fins and cast iron turbulators to permit greater heat transfer. The forced draft burner shall be capable of firing the boilers pressurized combustion chamber assuring proper draft and positive ventilation. The burner shall be mounted to swing open either left or right on hinged mounting plate.
f. Boiler sections shall be surface ground to ensure smooth positive mating surfaces. Boiler sections shall be assembled with precision-machined bi-spherical push nipples pressed into mating machinery nipple port in the section. A gas tight seal with the use of a silicone thermo-cord sandwiched between sections prevents leakage of flue gases. The boiler shall be complete with a drain tapping and drain valve. Boilers shall be complete with full-swing doors that give access to all flue ways and combustion areas for easy maintenance and cleaning without burner removal.
g. The complete boiler including the bottom shall be insulated with a minimum thickness of four inches of reinforced fibreglass wool insulation, and shall be encased in a heavy gauge steel boiler jacket. This jacket shall be installed after system piping

has been connected to the boiler section assembly. Jacket will have removable panels to allow access to the boiler as required.

h. Water boiler trim shall include pressure gauge, temperature gauge, low water cut-off high limit control operating control, high fire control, and drain valve. Boiler pump shall be supplied by boiler supplier.

i. An ASME approved pressure relief valve shall be provided sized to exceed the boiler gross output capacity and shall be factory set to relieve pressure at PSI.

j. The boiler/burner shall be pre-wired to provide the following operation:
   i. Local - Remote switch on burner.
   ii. In Remote position burner shall be capable of being controlled from BMS (building Management System) – refer to control drawings for requirements.
   iii. In Local position burner shall operate independently from supplied controls.

k. Electrical supply to be 600 V, 60 Hz, 3Ph. All control circuits shall be 120 V, 60 Hz, 1 Ph. With all switches in the ungrounded leg. Fuse protection for the control circuit shall be provided. Burner shall be supplied by stepdown transformer for controls on burner.

l. The burner shall be FuelMaster or approved eqaul, Full Modulation, Sealed Combustion, with squirrel cage 3,450 rpm motor, and shall be factory tested and incorporated all necessary devices and controls to make a complete fuel burning system and bear the listing label of CSA.

m. The burner shall be designed for natural gas, sealed combustion, and be of the forced-draft pressure-atomizing type with min CO present in the products of combustion. The burner shall be provided with an integral motor-driven blower, stainless steel flame retention type combustion head and observation port, and a primary spark ignition assembly, and primary control. Burner shall come with pilot line.

n. Burner modulation must be done by Linkage-less means by use of independent actuation of fuel valve and air damper. (No mechanical linkage shall be used).

o. Main gas pressure regulator shall be vented to outside atmosphere, in accordance with local codes, approved automatically operated motorized safety gas shutoff valve, with proof of closure interlock switches, second automatically operated gas safety, manually operated gas shutoff valve located downstream of both automatic gas valves (to permit leakage testing of valves), test pressure tappings upstream and downstream of each valve and regulator, air damper with Linkage-less modulating control. A separate pilot gas cock, gas pressure regulator, solenoid valve shall be provided. The pilot will be spark ignited. Pressure regulators shall be suitable for 5 psig inlet gas pressure.

p. Gastrain shall be suitable for minimum 1 psig to maximum 2 psig gas pressure.

q. Provide venting for gastrain components even where not shown on floor plans drawings.

r. Boiler controls shall be housed in a factory pre-wired control cabinet –NEMA 4. The cabinet shall house combustion Safeguard Control to provide pre-purge, post-purge and burner sequencing, complete with UV scanner. Panel shall include, but not limited to, the following:
   i. All panel wiring with color-coded wire.
   ii. Motor starters with overload protection for blower motor.
   iii. On/off switch.
   iv. Low/auto switch.
   v. Firing rate potentiometer
   vi. Step Down Transformer for 120V output. With circuit fuse if power supply is 3 phase.

vii. Individual Pilot Lights with name plate to indicate: “Power on”, “Main fuel valve on” and “Flame Failure”
viii. Electronic safety combustion controls shall be supplied to monitor pilot and main flame. Detection will be means of a flame rod. The flame safeguard control shall provide pre and post purge, trial for ignition, energize main fuel circuit, interrupted type pilot and sequence operation.
ix. Manual restart of each burner shall be necessary in the event of a shutdown due to flame failure.
x. Burner shall come with Local/Remote switch to operate with remote enable/disable and modulating signal by BMS for 4-20 ma remote modulating signal to control burner firing rate.

.2 Installation:

a. Install boilers level and plumb on concrete pad. Arrange piping as to provide adequate clearance for service and operation. Pipe safety relief valves and drain valves to floor drain. Install thermometers and pressure gauges on supply and return piping no higher than 1800 mm above floor. Install relief valve sized to suit boiler input and located upstream of any shut-off valve. Conform to manufacturers installation instructions and piping schematic on drawings. Extend each gas pressure relief (full size) through roof and terminate with gooseneck and screen (where required).
b. Provide wiring between boiler controls mounted in piping, boiler control panel, and burner control panel.
c. Upon notification of completion of the installation, furnish the services of a field technician, to start the boiler and provide combustion tests over the operating range and issue report to the Consultant indicating system acceptance as installed.

2.21 Testing and Inspection

.1 Test hot water heating piping at 1.5 times the system operating pressure or 125 Psig (860 Kpa), whichever is greater for a minimum 4 hour period or as may be necessary to determine if there is leakage. Repair all leaks to the Consultants approval.

.2 All leaks shall be repaired by remaking the joint. After piping systems have been tested and repaired, repeat tests.

.3 All equipment / devices which may be damaged by test pressures shall be isolated during testing procedures.

.4 Lines containing check valves shall have the source of test pressure located on the upstream side.

2.22 Approved Products List

.1 Boilers

a. Viessmnann
b. Bosch (Buderus)

.2 Burners

a. Weishaupt
b. Power Flame

.3 Hydronic Heating Equipment

a. Engineered Air
b. Sigma
c. Rosemex
d. Kampmann

.4 Pumps

a. Taco
b. Armstrong
c. Xylem B&G
d. Grundfos
e. Wilo

.5 Expansion Tanks

a. Amtrol
b. Armstrong
c. Xylem B&G
d. Taco
e. Wessels

.6 Air Vents

a. Crane
b. Maid-O-Mist
c. Sparco
d. Watts
e. Taco
f. Armstrong

.7 Pipe Hangers

a. Taylor Walraven
b. Crane
c. Unistrut
d. Myatt

.8 Valves and Strainers

a. Kitz
b. Crane
c. Watts
d. Toyo
e. M.A. Stewart
f. Apollo
g. Mueller

h. Victaulic

.9 Pressure Gauges / Thermometers

a. Trerice
b. Dwyer
c. Baker
d. Taylor
e. Ashcroft
f. Winters

3. HEATING, VENTILATING AND AIR CONDITIONING

3.1 Ductwork

.1 All ductwork shall be G-60 galvanized steel unless noted otherwise, in accordance with ASTM A-653 and A-924. Thickness and fabrication shall be to ASHRAE and SMACNA standards.

.2 Where noted on the drawings, ductwork shall be type 304 stainless steel to ASTM A-240. Thickness and fabrication shall be to ASHRAE and SMACNA standards.

a. Where used for fume hood exhaust, ductwork shall comply with SMACNA Accepted Industry Practice for Industrial Duct Construction and shall be considered Class 5 application.
b. Where used for fume hood exhaust, ductwork shall be complete with welded seams and approved joining methods per SMACNA Accepted Industry Practice for Industrial Duct Construction.
c. Where used for fume hood exhaust, provide access doors to permit inspection and cleaning of entire duct system. Provide access doors according to SMACNA Accepted Industry Practice for Industrial Duct Construction and install on top or sides of ductwork only.
d. Where required by the Ontario Fire Code, fume hood exhaust ductwork shall comply with NFPA 91 Standard for Exhaust Systems for Air Conveying of Vapors, Gases, Mists, & Particulate Solids.

.3 Fittings and joints shall be fabricated and installed to ASHRAE and SMACNA standards. Proprietary duct joints as manufactured by Ductmate Canada Ltd. or approved equal may be used where desired by the Contractor.

.4 All exposed above ground circular ductwork shall be spiral type as follows:

a. Ductwork shall be constructed of Satin Coat steel.
b. Duct and fittings shall be constructed in accordance with the latest SMACNA HVAC Duct Construction Standard.
c. Straight Duct:
    i. The straight duct shall be constructed with an interlocking 4-ply helical seam that runs the complete length of the duct. The grooved seam shall be located entirely on the outside, resulting in a smooth interior for a low friction loss.
    ii. The straight duct shall be smooth type (corrugations / grooves to increase rigidity are not required).
d. Fittings:

i. Fittings shall be standing seam or pressed / stamped type.
ii. Fittings shall be '1.5D' type unless not possible due to space restrictions.

e. Straight duct sections and fittings shall utilize slip-joint connections. Provide couplings where joining straight duct sections. .

.5 Non-metallic flexible ductwork shall be Thermaflex S-LP or approved equal, non-collapsible woven and coated fibre glass fabric permanently bonded to a coated spring steel wire helix. Where flexible ductwork is connected to thermally insulated rigid ductwork, flexible ductwork shall be thermally insulated type, Thermaflex G-KM or approved equal. Flame and smoke developed ratings not to exceed 25 and 50 respectively. Ducts shall comply with ULC, NFPA and SMACNA standards.

.6 Maximum length of flexible ductwork shall be 5'-0" (1500mm).

.7 All duct runnouts shall have a diameter the same size as the diffuser neck size unless noted otherwise.

.8 All rectangular supply / return / exhaust ducts shall connect to main ducts complete with 45 degree entry. This shall include branches serving grilles mounted directly to the duct except that for grilles mounted to exposed spiral duct work a square entry is permitted.

.9 All supply / return / exhaust elbow fittings shall have a centreline radius equal to 1.5 times the duct width for rectangular ducts or 1.5 times the diameter for round ducts. Where absolutely not possible due to space constraints, a centreline radius of 1 times the width (or diameter) shall be permitted or square elbows complete with turning vanes shall be permitted.

.10 All supply, exhaust and return air ductwork shall be complete with sealed joints as follows:

a. Supply, return and exhaust ductwork shall be Seal Class A in accordance with ASHRAE 90.1-2022 and as defined in SMACNA standards (transverse joints / connections, longitudinal seams and duct wall penetrations made airtight with sealing compound).
b. Note that spiral ductwork having a sealing gasket requires no sealing compound.
c. Exposed ductwork shall be neatly sealed to the approval of the Consultant, without excess caulking.

.11 Provide waterproof ducts where indicated on the drawings. Form bottom of waterproof duct without longitudinal seams where possible. All seams, joints and connections shall be made water tight with sealing compound.

.12 Provide waterproof ducts for goosenecks and any other exposed exterior ductwork. All seams, joints and connections shall be made water tight with sealing compound.

.13 All exposed ductwork shall be manufactured from satin coat steel suitable for painting.

.14 Provide suitable sheet metal angle collar for ductwork running exposed through walls, ceilings or floors. Install collar tight against the wall, ceiling or floor and duct, sized to cover opening.

3.2 Turning Vanes

.1 Factory or shop fabricated single or double thickness to recommendations of SMACNA.

3.3 Supports

.1 All ducts and gas vents shall be adequately supported. Maximum size to be supported by a strap hanger shall be 36" (900mm) wide. All other ducts shall be supported by steel angles complete with threaded rods, locking nuts and washers. Threaded rods shall be sized according to the recommendations of Taylor Walraven to suit the application. Hanger spacing shall comply with SMACNA standards and Gas Code requirements.

.2 Ducts cannot in any location be supported from the furring or ceiling construction. Also, ducts having areas greater than 1.0 sq. ft. (0.1 sq. m.) cannot in any location be supported from the metal floor / roof deck. Smaller ducts which are permitted to be supported from the metal floor / roof deck shall be fastened to the sides (not bottom) of the flutes and shall be attached with a minimum #10 size screw.

.3 Exterior duct supports shall be as follows:

a. Advanced Support Products model SS2000D or approved equal support assembly consisting of the following:
   i. Base
      1) 17" (425mm) circular type constructed of injected molded polypropylene with minimum 1.58 sq. ft. (0.15 sq. m.) of bottom surface area.
      2) 3" (75mm) high with molded insert for square tubing and two threaded rod couplings molded in.
      3) Provide protection pad compatible with roofing system.
   ii. Frame
      1) Pre-galvanized zinc coated or hot dip galvanized 12 gauge channel, 1.625"x1.625" (40.6x40.6mm).
      2) Frame shall be adjustable in height and shall have a width to suit the ductwork.
      3) Provide all required hardware for a complete installation including corner brackets, bolts, nuts, etc. All hardware shall be pre-galvanized zinc coated or hot dip galvanized.

b. The duct supports shall be installed according to the manufacturer's recommendations and as follows:
   i. The support frame shall be installed tight to the sides / bottom of the duct and mechanically fastened to the duct.
   ii. The duct thermal insulation shall be butted tight to the support frame and insulation shall also be packed into the channel of the frame.

.4 All pipe and equipment supports shall be as follows:

a. Supports shall be Taylor Walraven or approved equal of spacing and type as recommended by manufacturer, in accordance with Code requirements and in accordance with good commercial standards.

b. Provide supports to secure pipes / equipment, prevent pipe vibration, maintain required grading, allow for expansion and contraction and produce a neat appearance. Design for strength and rigidity to suit loading and services, prevent undue stress to structural members and with provision for vertical adjustment after piping is erected.

c. Offset hanger pipe and structural attachments in such a manner that rod is vertical when piping is at operating temperature and is subject to tensile loading only.
d. Adjust hanger rods to equalize load.
e. Provide supplementary structural steelwork where structural bearings do not exist.
f. Where supporting from open web steel joists, attach supports to the approval of the structural engineer and comply with the following:
    i. Attach supports to the top angle iron section of joists only.
    ii. Support from panel points only.

.5 Supports for exposed spiral ductwork shall consist of a steel rod centered over the duct and attached to a continuous band around the duct (sheet metal strips will not be permitted in place of steel rod support).

3.4 Roof Curbs

.1 Provide curbs for roof mounted exhaust fans, goosenecks, etc.

.2 Roof curbs shall be galvanized steel with wood nailer strip, turndown flange and shall be capable of supporting the entire unit weight. Curbs may be bolted together on site where required for ease of transporting to site.

.3 Provide a closed cell curb gasket with adhesive on one side to seal between the ductwork / roof mounted equipment and the top of curb.

.4 Suitably secure curbs to the roof deck and level according to manufacturer's recommendations. The sides of curbs shall be insulated on the exterior with insulation of the same type and having the same thickness as the new / existing roof insulation.

3.5 Duct Access Doors

.1 Provide duct mounted access doors to service all mechanical equipment requiring maintenance access (including fire dampers, motorized dampers, heating coils, etc.). Provide doors on one or both sides of device as required to permit full service / cleaning. Doors shall be Nailor-Hart series 0800 or approved equal, insulated sandwich construction complete with sheet metal angle frame, 1" (25mm) thick insulation, gaskets and camlocks. Sizing to manufacturer's recommendations to suit application.

3.6 Duct Sealant

.1 Interior duct sealant shall be Bakor Duck-Seal or approved equal having a maximum flame and smoke rating of 25 and 50 respectively. Exterior duct sealant shall be Bakor 530-09 or approved equal having a maximum flame and smoke rating of 25 and 50 respectively.

3.7 Refrigeration Piping

.1 General

a. Submittals:
    i. Submit product data sheets for all products specified in of this specification, except for pipe and fittings.

ii. Submit in shop drawing form, a schematic piping diagram for each refrigerant piping system indicating pipe size, slopes, valves, traps and piping specialties. Piping schematic must be reviewed, approved and signed by the refrigeration equipment manufacturer prior to being submitted to the consultant for review.

iii. Submit details from the equipment supplier outlining proper installation and startup.

b. Regulatory Compliance and Quality Assurance:

i. Installing Contractor must be TSSA certified and shall register all projects sized at 5 tons or greater for air conditioning application.

ii. A copy of the TSSA registration shall be submitted to the mechanical consultant of record.

iii. All components of a refrigeration piping system must have a Canadian Registration Number or CSA certification acceptable to TSSA.

iv. All systems shall display appropriate Ozone Depletion Prevention (ODP) tags prior to commissioning. Manufacturer shall not commission any system not displaying proper ODP tag.

v. Pressure relief valves shall be installed in pairs (two valves per refrigeration circuit) using a purpose built "Y" fitting similar or equal to Superior Products model 3155W. Relief valve assembly must be complete with an integrated ball valve. Assembly shall be supplied and installed on both the liquid and suction line, or liquid and discharge line as per drawing details. Pressure relief valves shall be individually isolated to allow for maintenance and replacement every five years as mandated by the code (refer to CSA B52 section 8.4.2).

c. Special Considerations for VRF Refrigerant Piping Systems

i. Refrigerant piping contractors must be trained and certified by VRF equipment supplier. Proof of training certification must be made available upon request.

ii. There shall be minimal use of refrigeration specialties (filter driers, accumulators, receivers, check valves, etc.) in the VRF piping system. Refer and follow Manufacturer's recommendations in this regard.

iii. As noted above, pressure relief valves shall be 650 PSI rated and installed in pairs (two valves per circuit).

iv. Y style piping joints and headers provided by the manufacturer shall be used to ensure proper refrigerant balance and flow for optimum system capacity and performance.

v. T style joints and/or joints provided by the installing contractor, or Y joints not purchased from the manufacturer are not acceptable.

vi. Approved R-410a flaring block, and approved torque wrenches, both available from VRF manufacturer, shall be used for all flare connections.

vii. Refrigerant piping shall be insulated according to Division 20.

viii. Pipe clamps shall fasten around the piping insulation. Pipe clamps that compress the copper directly shall be installed a minimum of 36" away from RefNet joints, and shall be loosely tightened to allow for copper expansion.

ix. Contractor shall provide VRF manufacturer with all actual pipe lengths installed for calculation of refrigerant charge. Refrigerant piping contractor shall supply and charge VRF system with required quantity of R-410a prior to VRF manufacturer commissioning. Refrigerant charging shall be done in the liquid state.

.2 Products

a. Pipe, Fittings and Joints:

i. Copper Tubing:

1) Provide hard drawn copper piping of air conditioning / refrigerant grade ASTM B280. Soft annealed copper tubing not permitted.

2) All joints shall be brazed. Joints and fittings for brazed joint shall be wrought-copper or forged-brass sweat fittings. Cast sweat-type joints and fittings shall not be allowed for brazed joints. Brass or bronze adapters for brazed tubing may be used for connecting tubing to flanges and to threaded ends of valves and equipment.

3) Brazing Filler Metal:

I Filler metal shall be type BAg-5 with AWS Type 3 flux, except Type BCuP-5 or BCuP-6 may be used for brazing copper-to-copper joints.

II Brazing rods for all joints shall be 15% Lucas Milhaupt “sil-Fos”.

b. Valves:

i. Valves shall be designed, manufactured, and tested specifically for refrigerant service. Valve bodies shall be of brass, bronze, steel, or ductile iron construction. Valves 25 mm (1 inch) and smaller shall have brazed or socket welded connections. Valves larger than 25 mm (1 inch) shall have butt welded end connections. Threaded end connections shall not be used, except in pilot pressure or gauge lines where maintenance disassembly is required and welded flanges cannot be used. Internal parts shall be removable for inspection or replacement without applying heat or breaking pipe connections. Valve stems exposed to the atmosphere shall be stainless steel or corrosion resistant metal plated carbon steel. Direction of flow shall be legibly and permanently indicated on the valve body. Purge, charge and receiver valves shall be of manufacturer's standard configuration.

ii. Refrigerant access valves and hose connections shall be in accordance with ARI 720.

iii. Isolation valves shall be installed where shown on the schematics. Isolation valves shall be bi-flow self-seating with operating pressures up to 650 PSI. Valves shall be complete with brass schrader connections located on the valve body only.

iv. Check Valves shall be Mueller Industries Inc. “Checkmaster” straight through type for valves 6.4mm to 16 mm (1/4” to 5/8”) diameter, globe type for valves 22mm (7/8”) diameter and larger, each complete with extended tubing for brazing connections, and as follows:

1) Straight through type check valves are to be complete with a machined brass gasketed body, phosphor bronze spring, and neoprene seat.

2) Globe type check valves are to be complete with a cast bronze body, forged brass cap, phosphor bronze spring, Teflon seat disc, and neoprene O-ring seal.

v. Liquid Solenoid Valves

1) Ball type valves as specified above, each in accordance with ARI 760 and be suitable for continuous duty with applied voltages 15 percent under and 5 percent over nominal rated voltage at maximum and minimum encountered pressure and temperature service

conditions, direct-acting or pilot-operating type, moisture-proof, UL approved, totally encapsulated or encapsulated and metal jacketed as required. Valves shall have an operating pressure differential suitable for the refrigerant used.

vi. Expansion Valves

1) Valve shall be the diaphragm and spring-loaded type with external equalizers, and bulb and capillary tubing. Valve shall be equipped with an external superheat adjustment along with a seal cap. Internal equalizers may be utilized where flowing refrigerant pressure drop between outlet of the valve and inlet to the evaporator coil is negligible and pressure drop across the evaporator is less than the pressure difference corresponding to 1°C (2°F) of saturated suction temperature at evaporator conditions. Pilot-operated valves shall have a characterized plug to provide required modulating control.

2) Electronic expansion valves shall be brass body, needle valve with floating needle and machined seat, stepper motor drive.

vii. Safety Relief Valves

1) As noted in Section 1.2.5 of Regulatory Compliance, pressure relief valves shall be installed in pairs (two valves per circuit). Suction lines shall be rated at 350 PSI and liquid at 650 PSI or liquid and discharge lines at 650 PSI respectively.

viii. Evaporator Pressure Regulators, Direct-Acting

1) Valve shall include a diaphragm/spring assembly, external pressure adjustment with seal cap, and pressure gauge port. Valve shall maintain a constant inlet pressure by balancing inlet pressure on diaphragm against an adjustable spring load. Pressure drop at system design load shall not exceed the pressure difference corresponding to a 1°C (2°F) change in saturated refrigerant temperature at evaporator operating suction temperature. Spring shall be selected for indicated maximum allowable suction pressure range.

ix. Refrigerant access valves and hose connections shall be in accordance with ARI 720.

c. Piping Accessories:

i. Filter Driers

1) Sizes 15 mm (5/8 inch) and larger shall be the full flow, replaceable core type. Sizes 15 mm (1/2 inch) and smaller shall be the sealed type. Cores shall be of suitable desiccant that will not plug, cake, dust, channel, or break down, and shall remove water, acid, and foreign material from the refrigerant. Filter driers shall be constructed so that none of the desiccant will pass into the refrigerant lines. Minimum bursting pressure shall be 10.3 MPa (1,500 psi).

ii. Discharge Line Oil Separator

1) Discharge line oil separator shall be provided in the discharge line from each compressor. Oil return line shall be connected to the compressor as recommended by the compressor manufacturer.

iii. Accumulator

1) Accumulators shall be provided in the suction line to protect the compressor from liquid refrigerant damage. Accumulator shall be

CUL listed under the required operating pressures and must be installed as close to the compressor as possible.

iv. Refrigerant Moisture and Liquid Indicators

1) Indicators shall be single or double port, ULC listed. Body shall be copper or brass with flared or soldered ends. Sight glass shall have color coded paper moisture indicator with removable element cartridge and plastic cap. Maximum working pressure shall be kPa (500 psig). Maximum working temperature shall be 93.3 Deg. C. (200 Deg. F.).

v. Pressure and Vacuum Gauges

1) Gauges shall conform to ASME B40.100 and shall be provided with throttling type needle valve or a pulsation dampener and shut-off valve. Gauge shall be a minimum of 85 mm (3-1/2 inches) in diameter with a range from 0 kPa (0 psig) to approximately 1.5 times the maximum system working pressure. Each gauge range shall be selected so that at normal operating pressure, the needle is within the middle-third of the range.

vi. Insulation

1) Liquid, suction and hot gas lines shall be individually insulated. All indoor and outdoor refrigerant lines shall be insulated according to Division 20. Outdoor refrigerant piping insulation shall be equipped with cladding according to Division 20.

.3 Execution

a. Consider the piping shown on the Drawings as diagrammatic, for clearness in indicating the general runs and connections and that the piping may, or may not, in all parts be shown in the true position. This does not relieve the responsibility of the Contractor for the proper erection of the systems of piping in every respect suitable for the work intended.

b. Install all piping in the best workmanlike manner and in accordance with the best practices of the trade. Piping shall be pitched 13mm (½ inch) for every 3000mm (10 feet) of length in the direction of flow to ensure adequate oil drainage. Open ends of refrigerant lines or equipment shall be properly capped or plugged during installation to keep moisture, dirt, or other foreign material out of the system. Piping shall remain capped until installation. Equipment piping shall be in accordance with the equipment manufacturer's recommendations and the contract drawings.

c. Pipe supports shall be a maximum of six feet apart. Pipe clamps shall fasten around the piping.

d. Installation shall be in accordance with CSA B52 and ASME B31.5 Mechanical Refrigeration Code guidelines.

e. Safety pressure relief valves shall be field supplied and installed in the piping as per TSSA mandate and Section 7 of CSA B52 code. All pressure relief valves and brazed joints shall be suitably sized.

f. Nitrogen purging / sweeping shall be used when brazing and welding to minimize oxidization.

g. Isolation valves shall be installed where shown on the schematics or where indicated on manufacturer installation requirements.

h. Piping supports and guides using steel, reinforced polytetrafluoroethylene (PTFE) or graphite slides shall be provided where required to allow longitudinal pipe movement. Lateral restraints shall be provided as required. Slide materials shall be

suitable for the system operating temperatures, atmospheric conditions, and bearing loads encountered.

i. Anchors shall be provided wherever necessary or indicated to localize expansion or to prevent undue strain on piping. Anchors shall consist of heavy steel collars with lugs and bolts for clamping and attaching anchor braces, unless otherwise indicated. Anchor braces shall be installed in the most effective manner to secure the desired results using turnbuckles where required. Supports, anchors, or stays shall not be attached where they will injure the structure or adjacent construction during installation or by the weight of expansion of the pipeline. Where pipe and conduit penetrations of vapor barrier sealed surfaces occur, these items shall be anchored immediately adjacent to each penetrated surface, to provide essentially zero movement within penetration seal.

j. The Contractor shall, at all times during the installation and testing of the refrigeration system, take steps to prevent the release of refrigerants into the atmosphere.

k. Pipe shall be cut accurately to measurements established at the jobsite, and worked into place without springing or forcing, completely clearing all windows, doors, and other openings. Pipe or tubing shall be cut square, shall have burrs removed by reaming, and shall permit free expansion and contraction without causing damage to the building structure, pipe, joints, or hangers.

l. Layout and install piping, valves, and fittings to facilitate easy maintenance. Do not locate any valves, couplings, or flanged/union connections directly above electrical panels, motor starters or MCC's.

m. Ensure that all pipe brazing is done by TSSA certified workers.

n. A liquid line filter dryer shall be provided on each refrigerant circuit located such that all liquid refrigerant passes through a filter dryer. Dryers shall be sized in accordance with the manufacturer's recommendations for the system in which it is installed.

o. A moisture indicating sight glass shall be installed in all refrigerant circuits down stream of all filter dryers and where indicated. Site glasses shall be full line size.

p. Mount and fasten piping running on roof on the following:

    i. Roof Top Blox or approved equal model RTB-01 having the following features / accessories:

        1) Black UV stabilized high density polyethylene, 0.1" (2.5mm) to 0.135" (3.4mm) wall thickness.
        2) Base material shall be 1" (25mm) thick by 25 lb. density Type 3 closed cell extruded polystyrene foam.
        3) Supports shall have end-to-end interlocking capability.
        4) Load bearing capability up to 450 lbs. (205 Kg.). For loads over 250 lbs. (115 Kg.), provide model STR-04 galvanized slotted steel strut channel.
        5) Screw indents to guide fastening screws into internal engineered thread gripping feature.
        6) Top surface easily adapts to all types of piping clamps, clips, slotted strut and 0.375" (9.4mm) or 0.5" (13mm) treaded rod.
        7) All pipe fastening and height adjustments shall be done from the top side only.
        8) Provide all accessories required for mounting of piping, including (where applicable) model XTB-02 height extension, model ROD-03 zinc plated extension rods, model STR-04 galvanized slotted steel strut channel, etc
        9) All supports shall have the capability to fasten pipe clamps.

10) Provide galvanized pipe clamps / fasteners at all supports for pipe attachment. Clamps shall be one size larger than the pipe.
11) Refer also the detail on the drawings.

q. Supply miscellaneous piping accessories specified above as required by and install according to manufacturer installation requirements.

3.8 Flexible Duct Connections

.1 Unless noted otherwise, duct connections to rooftop units, exhaust fans, heat / energy recovery ventilators and make-up air units shall be made using flexible duct connections, Duro-Dyne "Super Metal-Fab" or approved equal having the following features:

a. 24 gauge (0.7mm) galvanized steel frame.
b. Each frame shall be 3" (75mm) wide and the fabric shall be 6" (150mm) wide.
c. Seams: Grip Loc
d. Fabric: woven fiberglass complete with a neoprene coating, -40 to 200 deg. F. (-40 to 82 deg. C.) continuous operating temperatures.
e. Suitable for pressures from -10" wc. to 15" wc. (-2.5 to 3.7 Kpa) with no tearing or visible separation.
f. Airtight and waterproof.
g. Designed to meet NFPA 701, 90A and 90B.

.2 Flexible duct connections are not required to serve the following equipment:

a. Fans having capacities less than 150 CFM (70 L/S).

3.9 Combination Fire / Smoke Dampers

.1 Combination fire/smoke dampers shall be Nailor series 1270 series or approved equal constructed as follows:

a. Frame shall be constructed of 16 gauge galvanized steel hat channel with mitered corners reinforced with die-formed corner gussets for strength.
b. Blades shall be of triple-vee design, 16 gauge galvanized steel, on 5.5" (138mm) centers and shall be parallel configuration.
c. Blade axles shall be 0.5" (13mm) diameter plated steel, double bolted at each end of blade to ensure positive locking connection. Hex or square friction-fit or press-fit axles are not acceptable.
d. Bearings shall be self-lubricating oilite bronze type.
e. Blade linkage shall be zero-maintenance, concealed in frame, out of airstream.
f. Jamb seals shall be compression type stainless steel. Blade seals shall be silicone.

.2 Dampers shall meet the requirements of NFPA 90A, 92A and 92B and shall be classified by UL and labeled as a 1.5 hour fire damper under UL 555 and as a Class II Leakage Rated smoke damper under UL555S at an elevated temperature of 350 deg. F. (177 deg. C.).

.3 Dampers shall be qualified for use in dynamic or static Smoke Control Systems.

.4 Dampers shall be supplied with factory installed sleeves (optional field supplied sleeves may be supplied where desired by the Contractor) of minimum 16" (400mm) length, to be field verified by Contractor to suit the wall thickness. Sleeves shall be caulked to UL requirements

and shall be 20 gauge through 84" (2100mm) wide, and 18 gauge above 84" (2100mm) wide. Provide type A, B or C sleeve to suit installation.

.5 A Belimo or approved equal 120 volt actuator (power open, spring close) shall be installed by the damper manufacturer in the factory and shall have been tested and classified under UL555S with the damper at an elevated temperature of 350 deg. F. (177 deg. C.). Actuators shall incorporate an OEM internal spring return mechanism. External after-market spring mechanisms are not acceptable. Damper and actuator assembly shall be factory cycled a minimum of three times to ensure correct operation.

.6 Each damper shall be equipped with a UL Classified heat responsive device that will cause the damper to close in a controlled manner and lock in a closed position by means of an over center / knee lock linkage, when the duct temperature reaches 165 deg. F. (74 deg. C.). Closure devices that cause instantaneous closure are not acceptable.

3.10 Motorized Dampers

.1 For dampers not exposed to outdoor conditions, Tamco series 1000 or approved equal, opposed blade action having the following features:

a. Extruded aluminum damper frame shall be 4" (100mm) deep and not less than .080" (2.03mm) thickness.
b. Blades shall be of extruded aluminum profiles and complete with EPDM gaskets secured in an integral slot within the extrusion.
c. Frame seals shall be of extruded TPE.
d. Linkage hardware shall be installed in the frame side and shall be constructed of aluminum and corrosion-resistant, zinc-plated steel, complete with cup-point trunnion screws for slip-proof grip.
e. Bearings shall be composed of a celcon inner bearing fixed to a 7/16" (11.1mm) aluminum hexagon blade pin, rotating within a polycarbonate outer bearing inserted in the frame.
f. Based on a 48"x48" (1200x1200mm) damper, air leakage shall not exceed 10.3 CFM/sq. ft. (52 L/S/ sq. m.) against 4" (1 Kpa) w.c. differential static pressure.
g. The pressure drop through a fully open damper shall not exceed .02" (.004 Kpa) w.c. at 1000 FPM (5.08 m/s).
h. Dampers shall be made to the sizes indicated on the drawings without blanking off free area.
i. Mounting type shall be flanged to duct, installed in duct or square to round type as applicable.

.2 For dampers exposed to outdoor conditions, Tamco series 9000 BF or approved equal, opposed blade action having the following features:

a. Extruded aluminum damper frame shall be 4" (100mm) deep, not less than .080" (2.03mm) thickness, with mounting flanges on both sides of the frame.
b. The entire frame shall be thermally broken by means of polyurethane resin pockets complete with thermal cuts.
c. Blades shall be of extruded aluminum profiles, internally insulated with expanded polyurethane foam and shall be thermally broken. The complete blade shall have an insulating factor of R-2.29 and a temperature index of 55.

d. Blade and frame seals shall be of extruded silicone, for reduced air leakage at colder temperatures. Blade and frame seals shall be secured in an integral slot within the aluminum extrusions and shall be mechanically fastened to prevent shrinkage and movement over the life of the damper.
e. Bearings shall be composed of a celcon inner bearing fixed to a 7/16" (11.1mm) aluminum hexagon blade pivot pin, rotating within a polycarbonate outer bearing inserted in the frame.
f. An adjustable 7/16" (11.1mm) hexagonal drive rod, u-bolt fastener, and hexagonal retaining nuts shall be zinc-plated steel.
g. Aluminum and corrosion-resistant zinc plated steel linkage hardware shall be installed in the frame side, complete with cup-point trunnion screws for a slip-proof grip.
h. Dampers shall be designed for operation in temperatures ranging from -40 deg. F. (-40 deg. C.) to 212 deg. F. (100 deg. C.).
i. Dampers shall be leakage Class 1A at 1" w.c. (0.25 Kpa) static pressure differential. Standard air leakage data shall be certified under the AMCA Certified Ratings Program.
j. Dampers shall be opposed blade action.
k. Dampers shall be made to the sizes indicated on the drawings without blanking off free area. Mounting type shall be Aflanged to duct@ only.
l. Dampers shall be installed according to the manufacturers installation guidelines.

3.11 Manual Dampers

.1 For round ductwork 20" (500mm) diameter and less, provide single blade butterfly dampers, Nailor model 1890 or approved equal. Dampers shall be constructed and configured to the recommendations of SMACNA. Provide the following construction features:

i. 22 guage (0.86mm) galvanized steel frame with roll-formed stiffening beads up to 12" (300mm) diameter, 20 guage (0.91mm) over 12" (300mm) diameter.
ii. 22 gauge (0.86mm) galvanized steel blade up to 12" (300mm) diameter, 20 guage (1.0mm) over 12" (300mm) diameter.
iii. Blade axle / drive shaft shall be 0.25" (6mm) square plated steel.
iv. Hand locking quadrant.
v. Where dampers are installed in thermally insulated ductwork, provide 2" (50mm) stand-off bracket for hand quadrant.

.2 For rectangular ductwork, provide single blade dampers for ducts sizes up to 24" x 12" (600x300mm), Nailor model 1870 or approved equal. Dampers shall be constructed and configured to the recommendations of SMACNA. Provide the following construction features:

i. 18 gauge (1.3mm) galvanized steel frame with structural ribs for maximum strength and low profile for maximum free area.
ii. 20 gauge (1.0mm) galvanized steel blades up to 24"x12" (600x300mm) complete with structural ribs for extra strength.
iii. Blades shafts shall be 0.25" (6mm) square plated steel complete with a hand locking quadrant.
iv. Where dampers are installed in thermally insulated ductwork, provide 2" (50mm) stand-off bracket for hand quadrant.
v. For dampers installed in aluminum ductwork, provide aluminum frame and blades with stainless steel linkage, bearings, axles and related hardware.

.3 For rectangular ductwork, provide multi-blade were duct sizes exceed 24" x 12" (600x300mm), Nailor model 1820 or approved equal. Dampers shall be constructed and configured to the recommendations of SMACNA. Provide the following construction features:

i. 16 gauge (1.6mm) galvanized steel hat channel frame with die-formed corner gussets.
ii. 16 gauge (1.6mm) galvanized steel vee groove design blades on maximum 6" (150mm) centers in opposed configuration.
iii. Blade axles shall be 0.5" (13mm) diameter plated steel, double bolted to blades.
iv. Bearings shall be 0.5" (13mm) Celcon molded synthetic type
v. Plated steel blade linkage shall be concealed type, totally enclosed within the frame and out of airstream.
vi. Provide 6" (150mm) long by 0.5" (13mm) diameter lock-on drive shaft on each damper section complete with a hand locking quadrant.
vii. Where dampers are installed in thermally insulated ductwork, provide 2" (50mm) stand-off bracket for hand quadrant.
viii. For dampers installed in aluminum ductwork, provide stainless steel construction.

.4 Where manual balancing dampers are installed in exposed locations, the damper operator shall be installed on the top of the duct.

3.12 Grilles and Diffusers

.1 Krueger or approved equal. Refer to Diffuser and Grille Schedule on drawings for model and type.

.2 All aluminum grilles shall be fastened with stainless steel screws.

3.13 Duct Acoustic Insulation

.1 Johns Manville Linacoustic RC or approved equal flexible duct liner made with glass fibers bonded with a thermosetting resin. The airstream surface shall be protected with a Permacote acrylic coating with a flexible glass cloth reinforcement. A factory applied coating shall be applied to the edges of the liner core.

.2 Unless noted otherwise on the drawings, provide 0.5" (13mm) thickness having an R value of 2.2 hr.-sq.ft.-deg.F / Btu (0.38 sq.m.-deg.C/W) for all ductwork where indicated on the drawings. NOTE: WHERE ACOUSTIC LINING IS INSTALLED, SIZE OF DUCTWORK IS ACTUAL OUTSIDE DIMENSION OF DUCT.

.3 All portions of duct designated to receive duct liner shall be completely covered with liner. Transverse joints shall be neatly butted and there shall be no interruptions or gaps. The liner surface designed to be exposed shall face the air stream. Duct liner shall be adhered to the sheet metal with 100% coverage of adhesive and all exposed leading edges and all transverse joints coated with adhesive. The liner shall be additionally secured with weld-on pins which shall compress the duct liner sufficiently to hold it firmly in place.

.4 Duct liner shall be cut to assure overlapped and compressed longitudinal corner joints. For velocities to 2,500 ft./min. (762 m/min.) the weld-on pins shall start within 3" (75 mm) of the transverse edges of the liner. Space with a maximum separation of 12" (300 mm) around the perimeter of the duct except that pins shall be a maximum of 4" (100mm) from a corner break. Elsewhere they shall be a maximum of 18" (450 mm) o.c.. All transverse edges shall be coated with adhesive.

.5 All insulation shall be applied according to manufacturer's recommendations.

.6 All insulation and components shall have maximum flame and smoke spread ratings of 25 and 50 respectively.

3.14 In-line Exhaust Fans

.1 Where listed in the Equipment Schedule, fans shall be PennBarry Zephyr or approved equal complete with permanently lubricated motor, built-in overload protection, backdraft damper, molded white plastic grille having 85% free area and held in place with quick attach springs (for ceiling mounted fans), dynamically balanced fan wheel, acoustically insulated galvanized steel housing and insulated access door (for in-line fans). The fan shall be capable of being changed from right angle discharge to top discharge or into an inline configuration in the field.

.2 Where listed in the Equipment Schedule, fans shall be PennBarry Centrex In-Liner or approved equal having the following features:

a. The housing shall utilize galvanized steel corner post framework and panels (provide aluminum construction where listed in the Equipment Schedule).
b. A minimum of three removable access panels.
c. Prewired to a junction box on the exterior and equipped with an electrical disconnect switch.
d. Two support angles.
e. Statically and dynamically balanced backward inclined centrifugal wheels shall be aluminum, spark resistant, non-overloading and matched to deeply spun venturis.
f. Motors shall be continuous duty, ball bearing design, permanently lubricated, mounted out of the main airstream and furnished with an enclosure.
g. Shafts shall be turned, ground, polished and rust protected.
h. Heavy duty ball bearings shall be rated for a minimum L50 life exceeding 200,000 hours.
i. Pulleys shall be adjustable, cast iron, machined, keyed, securely attached and sized for 150% of the horsepower at its rated maximum speed.
j. Each fan shall bear the AMCA Licensed Ratings Seal for Air and Sound Performance, and shall be UL and CSA listed.

.3 Suspended units shall be complete with vibration isolation pads at all support points.

.4 For model, accessories and performance requirements, refer to Equipment Schedule on the drawings.

3.15 Centrifugal Utility Blower-Style Exhaust Fan

.1 Fans shall be PennBarry Dynamo or approved equal.

.2 The fan housing shall be heavy gauge galvanized steel, field rotatable to any of eight 45 degree incremental air discharge positions. Fan scrolls shall be equipped with a bolted, gasketed quick release access door.

.3 The bearing supports shall be constructed of welded structural steel members. Bearings shall be heavy duty, self-aligning pillow block ball type, grease lubricated and selected for minimum life (L50) of 200,000 hours at maximum operating speed. Shafts shall be turned, ground, polished and rust protected, sized so the first critical speed is at least 20% over the maximum operating speed. Close tolerances shall be maintained along the length of the shaft.

.4 The fan wheel shall be aluminum, non-overloading backward inclined type, statically and dynamically balanced. The wheel and inlet shall be aerodynamically designed and constructed to provide maximum performance and efficiency.

.5 Pulleys shall be adjustable cast iron, machined, keyed and securely attached. Belts and pulleys shall be sized for 165% of the installed motor horsepower.

.6 Motors shall be heavy duty ball bearing open drip proof type. After assembly of the entire unit, with the drive train installed and set to the specified RPM, the unit shall have a computerized vibration analysis performed. Vibration shall be measured in the horizontal, vertical and axial directions at each bearing to assure quality and smooth operation. The computerized print out shall be filed and made available upon customer request.

.7 Fans shall be licensed to bear the AMCA air and Sound Certified Ratings Seal.

.8 For model, accessories and performance requirements, refer to Equipment Schedule on the drawings.

3.16 Downblast Roof Mounted Exhaust Fans

.1 Fans shall be PennBarry Domex or approved equal having the following features: Units shall have the following features:

a. Weatherproof housing utilizing heavy gauge spun aluminum construction with a large rolled bead for strength, a galvanized base and rigid galvanized steel internal support structures. The housing shall not provide any of the internal structural support.
b. Oversized electrical conduit chase through the curb cap and into the motor compartment.
c. Pre-wired to a junction box mounted in the motor compartment and equipped with an electrical disconnect device.
d. Statically and dynamically balanced, backward inclined, centrifugal wheels shall be aluminum, spark-resistant, non-overloading, matched to deeply spun venturis.
e. Direct drive fan motors shall be as follows:
    i. Motors shall be continuous duty, permanently lubricated, multi-speed (for applicable models), have thermal overload protection, be mounted out of the main airstream and be easily accessible for service.
f. Belt drive fan assemblies shall be as follows:
    i. Motors shall be continuous duty, ball bearing design, permanently lubricated, mounted out of the main airstream.
    ii. Shafts shall be turned, ground, polished, and rust protected.

iii. Heavy duty ball bearings shall be selected for a minimum L50 life exceeding 200,000 hours.
iv. Pulleys shall be adjustable, cast iron, machined, keyed, securely attached and sized for 150% of the horsepower at its rated maximum speed.

.2 Each fan shall bear the AMCA Licensed Ratings Seal for Air and Sound Performance, and shall be UL and CSA listed.

.3 For model, accessories and performance requirements, refer to Equipment Schedule on the drawings.

3.17 Louvres

.1 Ventex or approved equal series 2430/2435, 4" (100mm) 35 degree storm proof blades at 3.5" (89mm) centers.

.2 Provide channel or flange frame to suit application.

.3 Frame and blades shall be constructed of extruded aluminum, alloy 6063-T5. Minimum thickness of frame and blades shall be .081" (2.06mm). Blades shall have a weather stop.

.4 Provide stainless steel fasteners.

.5 Multiple panels shall be made of equal size with hidden mullions to achieve an uninterrupted blade appearance.

.6 All materials shall be factory finished after assembly with a Polyester Powder coat finish in a colour to suit Architect selected from the standard colours.

.7 Provide 0.5" x 0.5" (13x13mm) 19 gauge galvanized birdscreen mounted to inside face in removable frame and extended sill for channel frames.

3.18 Boiler Vents

.1 General:

a. Submittals:
i. Catalogue cuts / Diagrams / Descriptions
ii. Sizing calculations
iii. Installation Instructions
iv. Installation Drawings
v. Copy of product warranties
b. Codes and Applicable Standards:
i. All products furnished under this Section shall conform to the requirements of The National Fuel Gas Code, ANSI Z223.1 / NFPA-54 where applicable and shall comply with and be listed to UL 1738, the U.S. Standard for Venting Systems for Gas –Burning Appliances, Category II, III and IV and ULC-S636-95, the Canadian Standard for Type BH gas vent systems. Components coming in direct contact with products of combustion shall carry the appropriate UL or cUL.
c. Warranties:

i. The Manufacturer shall warrant the Positive Pressure Vent System against defects in material and workmanship for a period of 15 years from the date of original installation. Any portion of the vent repaired or replaced under the warranty shall be warranted for the remainder of the original warranty period.

.2 Products:

a. Vent shall be positive pressure type.
b. The vent shall be of the double wall, factory built type, designed for use in conjunction with Category I, III or IV condensing or non-condensing gas fired appliances or as specified by the heating equipment manufacturer.
c. Maximum continuous flue gas temperature shall not exceed 550 degree F (288 degree C).
d. Vent shall be listed for a maximum positive pressure rating of 6" w.c. and shall have passed at 15" w.c.
e. The vent system shall be continuous from the appliance's flue outlet to the vent termination outside the building. All system components shall be UL / cUL listed and supplied from the same manufacturer.
f. The vent shall be constructed with an inner and outer tube, where the annular air space between the tubes is 0.5 inches.
    i. The inner tube (flue gas conduit) shall be constructed from AL29-4C® or UNS S44735 stainless steel, with a minimum wall thickness of .016" for 3" through 7" diameter vents, .019" for 8" through 12" diameter vents and .024" for 14" and 16" diameter vents.
    ii. The outer tube (jacket) shall be constructed from 304 or 430 stainless steel, with a minimum wall thickness of .016" for 3" through 6" diameter vents and .024" for 7" through 16" diameter vents.
g. All system components such as vent supports, roof or wall penetrations, terminations, appliance connectors and drain fittings require to install the vent system shall be UL listed and provided by the vent manufacturer.
h. All system components shall include a factory – installed gasket in their female – end to render the vent air and water tight when the male / female ends are pushed together as per manufacturers instructions. Vent systems requiring field installed sealants or compounds shall not be acceptable.
i. All system components shall include a factory – installed internal mechanical locking band for fastening and securing all vent components against each other.
j. Vent layout shall be designed and installed in compliance with manufacturer's installation instructions and all applicable local codes.
k. Venting supplier shall make prevision for barometric dampers for boilers if required at the time of startup
l. Venting supplier shall include venting calculation and venting layout in shop drawing package for review and approval.

.3 Installation:

a. Vent system layout:
    i. The vent system shall be routed to maintain minimum clearance to combustibles as specified by the manufacturer.
    ii. Vent installation shall conform to the manufacturer's installation instructions, its UL listing and state / local codes.

iii. The vent system and breechings shall be inspected and cleaned before the final connection to the appliances.

b. Mechanical equipment:

i. If dampers or fans are installed in conjunction of the vent system, such equipment shall be supported independently from the vent system. Protect the vent system from twisting or movement due to fan torque or vibration.

3.19 Hydronic Heating Coil

.1 General:

a. Submittals:

i. Shop Drawings: Indicate coil fin height & length AND overall height, length and depth, connection sizes & location, flange mounting dimensions, and direction of airflow.

ii. Product Data.

1) Certification - Acceptable coils are to be certified in accordance with ARI Standard 410 and bear the ARI label. Coils exceeding the scope of the manufacturer's certification and/or the range of ARI's standard rating conditions will be considered provided the manufacturer is a current member of the ARI Air-Cooling and Air-Heating Coils certification programs and that the coils have been rated in accordance with ARI Standard 410. Manufacturer must be ISO 9002 certified.

2) Identify fin, tube & casing material type and thickness.

3) Show coil weight (shipping & operating).

4) State air and water flow amounts with its associated pressure drops.

5) Indicate entering & leaving air and water temperatures.

b. Qualifications:

i. Manufacturer: Company specializing in manufacturing water cooling and heating coils specified in this section must show a minimum of five years experience and issues complete catalogue data.

c. Delivery, storage and handling:

i. Deliver, store, protect and handle products to site.

ii. Accept products on site on factory-installed shipping skids. Inspect for damage.

iii. Store in a clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage.

.2 Products:

a. General description:

i. Coils to have extended surface, staggered tube, and plate fin design.

b. Unit construction:

i. Fabricate unit with heavy gauge channel posts and panels secured with mechanical fasteners. All panels, access doors, and ship sections shall be sealed with permanently applied bulb-type gasket. Shipped loose gasketing is not allowed.

ii. Panels and access doors shall be constructed as a 2-inch nominal thick; thermal broke double wall assembly, injected with foam insulation with an R-value of not less than R-13.

1) The inner liner shall be constructed of G90 galvanized steel.
2) The outer panel shall be constructed of G90 galvanized steel.
3) The floor plate shall be constructed as specified for the inner liner.
4) Unit will be furnished with solid inner liners.

iii. Panel deflection shall not exceed L/240 ratio at 125% of design static pressure, maximum 5 inches of positive or 6 inches of negative static pressure. Deflection shall be measured at the panel midpoint.

iv. The casing leakage rate shall not exceed 0.50 cfm per square foot of casing surface area at design static pressure up to a maximum of +5" w.c. in positive pressure sections and -6" w.c. in negative pressure sections (.0025 m3/s per square meter of cabinet area at 1.24 kPa static pressure)

v. Module to module field assembly shall be accomplished with an overlapping, full perimeter internal splice joint that is sealed with bulb type gasketing on both mating modules to minimize on-site labor and meet indoor air quality standards.

vi. A 8-inch formed G60 galvanized steel base rail shall be provided by the unit manufacturer for structural rigidity and condensate trapping. The base rail shall be 10-gauge.

c. Headers:

i. Made of seamless copper tubing to assure compatibility with primary surface.

ii. Headers to have intruded tube holes to provide maximum brazing surface for tube to header joint, strength, and inherent flexibility. Header diameter should vary with fluid flow requirements.

iii. Vent and drain plugs shall be provided on the coil header.

d. Connections:

i. Coil connection should be compatible with the piping to the coil to minimize chance of "galvanic action/electrolysis".

ii. Connections shall be a diameter adequate for specified gpm flow:
1) The connections are located to assure equal pressure through all the circuits.
2) Handing to suit floor plans.

iii. Connection and material type:
1) Connection material to be carbon steel pipe. Connection type to be threaded.

iv. Coils are circuited to provide maximum mean effective temperature difference for heat transfer rates.

v. Coils, greater than 2 rows, must be arranged for counter flow.

e. Testing and pressure ratings:

i. Completed coils are tested at a minimum of 315 PSIG air pressure while submerged in warm water.

ii. Hydronic tests alone are not acceptable.

iii. Standard coil construction is rated for 250 PSIG working pressure at 300 degrees F.

f. Primary surface:

i. Tubes to be 5/8" O.D., staggered in direction of airflow, and must be on 1 ½" tube centers.

ii. Wall thickness to be .020" nominal copper and water pressure drop of coil selection adjusted to wall thickness specified.

iii. Tubes to be mechanically expanded in to fin collars to provide a continuous primary to secondary compression bond over entire coil length, assuring maximum heat transfer.
iv. Coil Tube Type:
1) Standard smooth bore.

g. Secondary surface:
i. Plate style fins shall be corrugated for high capacity and structural strength.
1) Fin thickness shall be .0075" aluminum.
ii. The fins to have collars to determine fin spacing per inch and support the heat transfer bond to primary surface. Tubing should not be visible between the fins.
1) Fin Style to be a New Ripple fin type.

h. Casings:
i. Casing Style
1) Air Handler unit coil w/ flanged casing designed for replacement applications.
ii. Casing Material.
1) Galvanized Steel.

i. Face and bypass:
i. Face and bypass section shall be provided to modulate airflow through and around heat transfer coils. Dampers shall be an integral part of the unit assembly.
ii. Internal face and top bypass shall be contained in the standard cabinet height. Blank-off and division sheets, internal linkage, access panel installed by unit manufacturer.
iii. Face and bypass dampers shall be of low leak design, opposed blade, with vinyl bulb edging and stainless-steel edge seals, galvanized steel frame and axles in self-lubricating nylon bearings.

j. Packaging:
i. Coil to be fully crated in a wood enclosure with protective cardboard covering the finned area.

.3 Installation:

a. Install in accordance with manufacturer's recommendations.

3.20 Indoor Air Handling Unit, Hydronic Heat, No Cooling

.1 General:

a. Submit shop drawings and product data in accordance with Division 20.
b. Indicate the following: complete specifications; weight; performance details.
c. Provide data for inclusion in the Operating and Maintenance manuals in accordance with Division 20.

.2 Products:

a. General:
i. Air handling units shall be ETL-Canada safety listed to conform to UL Standard 1995 and CAN/CSA Standard C22.2 No. 236. Air handling unit water heating & cooling coils shall be certified in accordance with the forced

circulation air cooling and air heating coils certification program, which is based on ARI Standard 410.

b. Casing:
   i. Fabricate unit with 16 gauge nominal channel posts and panels secured with mechanical fasteners. All panels and access doors shall be sealed with bulb-type gasket.
   ii. Panels and access doors shall be constructed as a 2-inch (50-mm) nominal thick, thermal broke double wall assembly, injected with foam insulation for an R-value of not less than R-13. The outer casing shall be constructed of G60 galvanized steel, phosphatized and painted with baked on enamel.
   iii. The inner liner shall be constructed of G90 galvanized steel. Panel deflection shall not exceed L/240 at 125% of design static pressure, minimum +/- 8". Deflection shall be measured at the midpoint of the panel height.
   iv. The casing leakage rate shall not exceed 0.5 cfm per square foot of cabinet area at 6 inches of negative static pressure or 5 inches of positive static pressure.
   v. Access doors shall be flush mounted to the cabinetry and secured with heavy-duty stainless steel hinges. The door latch handle assembly shall be provided with a full-size grip handle and roller pall for smooth operation. The assembly shall be gasketed and sealed to prevent thermal bridging. All access doors shall open against pressure.
   vi. A 2" thick sound baffle shall be secured to the inner liner and constructed of G90 galvanized perforated steel filled with 3 lb. per cu ft. density, neoprene coated, glass fiber insulation. Sound baffles shall be installed in the discharge plenum section.
   vii. Provide unit with a factory installed 4-inch high full perimeter channel base rail.
   viii. Floor plate shall be constructed of 20 gauge G90 galvanized steel.

c. Mixing Section:
   i. Provide mixing box sections with factory mounted outside and return air dampers.
   ii. Return air damper shall be Tamco 1000 low leakage type as follows:
      1) Extruded aluminum damper frame shall be 4" (100mm) deep and not less than .080" (2.03mm) thickness.
      2) Blades shall be of extruded aluminum profiles and complete with EPDM gaskets secured in an integral slot within the extrusion.
      3) Frame seals shall be of extruded TPE.
      4) Linkage hardware shall be installed in the frame side and shall be constructed of aluminum and corrosion-resistant, zinc-plated steel, complete with cup-point trunnion screws for slip-proof grip.
      5) Bearings shall be composed of a celcon inner bearing fixed to a 7/16" (11.1mm) aluminum hexagon blade pin, rotating within a polycarbonate outer bearing inserted in the frame.
      6) Based on a 48"x48" (1200x1200mm) damper, air leakage shall not exceed 10.3 CFM/sq. ft. (52 L/S/ sq. m.) against 4" (1 Kpa) w.c. differential static pressure.
      7) The pressure drop through a fully open damper shall not exceed .02" (.004 Kpa) w.c. at 1000 FPM (5.08 m/s).
      8) Dampers shall be made to the sizes indicated on the drawings without blanking off free area.

iii. Outdoor air damper shall be Tamco 9000 BF low leakage and insulated type as follows:
1) Extruded aluminum damper frame shall be 4" (100mm) deep, not less than .080" (2.03mm) thickness, with mounting flanges on both sides of the frame.
2) The entire frame shall be thermally broken by means of polyurethane resin pockets complete with thermal cuts.
3) Blades shall be of extruded aluminum profiles, internally insulated with expanded polyurethane foam and shall be thermally broken. The complete blade shall have an insulating factor of R-2.29 and a temperature index of 55.
4) Blade and frame seals shall be of extruded silicone, for reduced air leakage at colder temperatures. Blade and frame seals shall be secured in an integral slot within the aluminum extrusions and shall be mechanically fastened to prevent shrinkage and movement over the life of the damper.
5) Bearings shall be composed of a celcon inner bearing fixed to a 7/16" (11.1mm) aluminum hexagon blade pivot pin, rotating within a polycarbonate outer bearing inserted in the frame.
6) An adjustable 7/16” (11.1mm) hexagonal drive rod, u-bolt fastener, and hexagonal retaining nuts shall be zinc-plated steel.
7) Aluminum and corrosion-resistant zinc plated steel linkage hardware shall be installed in the frame side, complete with cup-point trunnion screws for a slip-proof grip.
8) Dampers shall be designed for operation in temperatures ranging from -40 deg. F. (-40 deg. C.) to 212 deg. F. (100 deg. C.).
9) Dampers shall be leakage Class 1A at 1” w.c. (0.25 Kpa) static pressure differential. Standard air leakage data shall be certified under the AMCA Certified Ratings Program.
10) Dampers shall be opposed blade action.
11) Dampers shall be made to the sizes indicated on the drawings without blanking off free area.

d. Filters:
i. Provide filter box section with filter guides, hinged and latching access doors on one side, for side loading of filters.
ii. Filter media shall be UL 900 listed.
iii. Provide flat arrangement with 2-inch deep pleated MERV 13 panel filter.
iv. Provide Magnehelic filter gauges for each filter bank flush mounted into unit casing with factory mounted probes.

e. Fan:
i. Provide direct drive plenum fans as scheduled. Dynamically balance fans before and after installation in fan cabinet section. Ensure maximum fan RPM is below the first critical speed fan.
ii. Inverter shall be integral to the motor and come as an assembly from the fan manufacturer. Motor shall be brushless DC type with a permanent magnet rotor.
iii. Fan section shall come equipped with a motor control panel shipped loose for remote mounting adjacent to the unit. Both line voltage and low voltage wiring between the EC motor and the remote control panel shall be field installed.
iv. Motor control panel shall come equipped with a fused disconnect switch.

v. Motor control panel shall come with a low voltage terminal strip and shall include terminals for Fan ON/OFF, 0-10v signal and fan fault.
vi. ECM motor control panel SCCR shall be at least 65kA.
vii. Provide access to fan and motor through hinged access door. Provide fan and motor assembly secured to cabinet structure.

f. Heating Coil:
i. Provide access to coils from connection side of unit for service and cleaning. Enclose coil headers and return bends fully within unit casing. Fabricate coil connections, vents and drains to extend beyond unit casing including grommets for an airtight unit casing. Coils shall be removable through side panels and/or top panels of unit without removal and disassembly of entire section.
ii. Coil performance shall be as per schedule.
iii. Construction:
1) Tubes: Copper
2) Fins: Aluminum mechanically bonded to tubes.
3) Headers: Seamless copper with vent and drain connections.
iv. Water heating coils shall be circuited drainable with a vent connection at the highest point and a drain connection at the lowest point. Coil headers shall be copper with steel male pipe connections.

g. Controls:
i. Provide field controls including valves, actuators, sensors and controllers according to Division 25 requirements.

.3 Installation:

a. Install unit ceiling suspended with continuous support around the perimeter of each shipping section in accordance with manufacturer's installation literature.
b. Provide piping connections to coils such that individual coils can be isolated, drained and removed. Provide valved pressure gauge connections and thermometer wells on the entering and leaving piping.
c. Provide valved drain connections with hose end, cap and chain for all coils.
d. Field assemble individually shipped sections as required.

3.21 Fan Coil Unit, DX Cooling / Heat Pump Heating, Back-up Hydronic Heat

.1 General:

a. Submittals:
i. Shop Drawings: Indicate assembly, unit dimensions, weight loading, required clearances, construction details, field connection details, and electrical characteristics and connection requirements.
ii. Product Data: Provide literature that indicates dimensions, weights, capacities, ratings, fan performance, gauges and finishes of materials, and electrical characteristics and connection requirements.
b. Operations and Maintenance Data:
i. Maintenance Data: Include instructions for lubrication and filter replacement.
ii. Refer to Division 20 for additional requirements.
c. Qualifications:

i. Manufacturer: Company specializing in manufacturing Air Handler products specified in this section must show a minimum five years documented experience and complete catalog data on total product.

d. Delivery, Storage, and Handling
   i. Deliver, store, protect and handle products to site.
   ii. Accept products on site wrapped in protective cardboard wrap. Inspect for damage.
   iii. Store in a clean dry place and protect from weather and construction traffic. Handle carefully to avoid damage.

e. Environmental Requirements
   i. Do not operate units for any purpose, temporary or permanent, until ductwork is clean, filters are in place, bearings lubricated, and fan has been test run under observation.

.2 Products:

a. Fan coil type and arrangement
   i. The air handler shall be furnished as a draw-through style hydronic air handler.
   ii. DX coils shall be factory-installed. For units with R-32 refrigerant, the maximum operating pressure should not exceed 600 psig (4137 kPa).

b. General construction
   i. Unit will be supplied with 1-inch, double-wall panels. The cabinet is to be thermally isolated through injected foam insulation inside each cabinet. Single wall cabinets with fiberglass insulation exposed in the airstream are not acceptable. Frame channels which allow heat conductance between the inside and outside of the cabinet are not acceptable. Base rails used for unit mounting/hanging are acceptable. Panel shall have a minimum thermal insulation of R6. Foam injected insulation conforms to:
      1) ASTM C1071 (including C665)
      2) UL 181 for erosion
      3) 25/50 rating for flame spread/smoke developed per ASTM E-84, UL 723 and NFPA 90A

c. Supply fan
   i. Supply fans shall be a DWDI forward-curved type. Fan assemblies shall be balance tested dynamically by the manufacturer. Manufacturer must ensure maximum fan RPM is below the first critical speed.
   ii. The complete fan assembly, including motor and main drain pan shall be easily removable.
   iii. Fan motor(s) assembly shall be direct-drive style and not include belts, pulleys, or sheaves.
   iv. Fan motor(s) shall be of Direct Current Brushless type of minimum motor efficiency of 85 percent when rated in accordance of NEMA Standard MG 1-2016 at full load conditions.
   v. Manufacturer’s supply fan motor must have means to adjust motor speed for field balancing.
   vi. Units shall be certified in accordance with the Central Station Air Handler certification program that is based on AHRI Standard 430.
   vii. Forward-curved fan must be capable of delivering 1.5" w.g. external static pressure and 3.0" w.g. total static pressure at nominal cabinet CFM.

d. Electrical

i. Supply fans shall be driven by Electrically Commutated motors that are run-tested in the assembled unit and permanently lubricated. All motors shall have integral thermal overload protection with a maximum ambient operating temperature of 55°C. Motors shall be capable operating at 90 percent of rated voltage on all speed settings. Motors can operate up to 10 percent overvoltage.
ii. Motor wires shall include a quick-disconnect motor plug.
iii. All controls equipment including ECM control module, low voltage transformers, safety switches, disconnects, fusing, and terminal strips must be located inside the main unit cabinet.
iv. All controls equipment including ECM control module, low voltage transformers, safety switches, disconnects, fusing, and terminal strips must be located inside the main unit cabinet.

e. Cooling and heating
   i. Cooling coils
      1) Cooling performance shall be as specified on the unit schedule.
      2) All steel parts exposed to moisture shall be galvanized.
      3) Unit shall include a galvanized primary and secondary drain pan. The primary drain pan to be positively sloped in every plane. Primary and secondary drain pans to be insulated with anti-microbial closed-cell insulation. The drain pan shall be designed to ensure no pooling of condensate water per ASHRAE 62.2.
   ii. Heating coils
      1) Heating performance shall be as specified on the unit schedule.
      2) Coil fins shall have full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Seamless copper tubes shall be mechanically expanded into the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tubes shall not be visible between fins.
      3) Coils shall be provided with headers of seamless copper tubing with intruded tube holes to permit expansion and contraction without creating undue stress or strain. Coil connections shall be female pipe thread connections with connection size to be determined by manufacturer based upon the most efficient coil circuiting. Vent and drain connections shall be furnished on the coil connection, external to the cabinet. Vent connections shall be provided at the highest point to ensure proper venting. Drain connections shall be provided at the lowest point.

f. Filters
   i. Filter section shall be a 2" flat type furnished with MERV 13 deep pleated panel filters.
   ii. Filter media shall be UL 900 listed, Class I or Class II.
   iii. Filters shall be arranged in a flat manner.
   iv. Filters shall be 2” in depth.
   v. Filter shall be of disposable type with a minimum arrestance greater than 98% and rating of MERV 13.
   vi. Filters shall be easily accessible via a panel or door located on the side of the unit.

g. Controls

i. Unit shall be supplied with a digital controls ready interface. This interface is to be located inside the control box internal to the main unit. This interface shall include a 24VAC transformer and terminal blocks for connections to fan motor control, sensor control, safety switches, valve actuators, and damper control if applicable.
ii. Unit shall be furnished with a disconnect switch. The disconnect switch shall be operable from the outside of the cabinet to reduce hazards during field service and commissioning.
iii. Fan motor control to be furnished as 0-10VDC.
iv. Unit shall be supplied with an enclosed leak refrigerant detection system (RDS).

.3 Installation:

a. The air handling unit shall be installed per manufacturer's Installation & Maintenance Bulletin.

3.22 Indoor Air Handling Unit, VRF Heating / Cooling Coil, Back-up Hydronic Heat

.1 General:

a. VRF system and associated air handling unit shall be supplied by a single supplier.
b. Submittals
i. Product Data: Submit product data for specified products with the following information.
ii. General layout drawing with plan and elevation views including all relevant dimensions.
iii. Performance schedule including airflow, heating and cooling capacities, electrical data, unit weight.
iv. Full fan curve.
v. Sound power data by octave band for all openings and radiated through the cabinet.
vi. Electrical schematics including field wiring connections.
vii. Component details including construction method and materials.
viii. Control point schematic and complete written sequence of operation.
c. Quality assurance
i. Entire unit shall be UL 1995 certified and bear certification label by ETL, UL or CSA.
ii. Unit shall meet ASHRAE Standard 90.1 performance requirements.
d. Delivery, storage and handling
i. Store equipment away from construction areas where it may be damaged and protected from harmful weather conditions.
ii. Keep factory shipping packaging in place until unit is ready to be installed.
iii. Follow manufacturer’s instructions for rigging and placement of equipment.
iv. Units shall be kept clean and isolated from dust and debris.
v. Contractor shall inspect all equipment upon delivery and notify shipping company and manufacturer immediately of any damage.
e. Coordination
i. Coordinate all system connections and building penetrations including electrical and duct connections.
f. Warranty

i. Standard Warranty for the Oxygen8 Terra DOAS Unit: twenty four (24) months (2 years) from shipment date.
ii. The warranty period on all Daikin VRV parts and compressors shall commence on the date of initial start-up and shall continue for a period of Ten (10) years not to exceed one hundred and twenty six (126) months from date of shipment. Proper maintenance of the equipment shall be conducted by certified technicians as per the manufacturer or manufacturer's representative requirements. Maintenance logs shall be supplied by the owner upon request.
iii. All manufacturer warranty shall be for parts only. All diagnosis and labour warranty shall be carried out by installing contractor as per the warranty requirements of this project.

.2 Products:

a. Indoor air handling unit:
i. Units shall be factory assembled and tested. Units shall include insulated steel cabinet, split DX coil, split HGRH coil, hot water coil, fan and motor assembly, filter rack, and integral controls. Unit shall have a single circuit power connection.
b. Cabinet:
i. Cabinet shall be nominal 1-inch double wall panel with R6.5 thermal insulation. Cabinet exterior shall be 22-gauge pre-painted steel that meets or exceeds 650-hour salt spray test based on ASTM B117. Liners and other steel components shall be galvanized steel. All seams shall be sealed to provide airtight casing.
ii. Doors shall be nominal 1-inch double wall panel with the same construction as cabinet. Doors shall be fitted with hinges and door handles. The doors shall have one lockable handle as standard.
iii. The unit will be designed for service and maintenance on the bottom side for major components and front for filter and control panel access only to allow for a compact installation.
c. Filters:
i. Unit shall include 2-inch filter rack for the outdoor air path upstream of the DX coil. Filters shall be accessed through hinged filter access door. Supply one set of MERV 13 pleated filters for the outdoor air stream. All filters must be UL approved.
ii. Provide factory mounted pressure sensors to measure filter pressure drop across filters. Pressure drop shall be digital feedback to controller for utilization in control and alarm sequencing. Unit controller shall monitor filter pressure level and report when filter changes are required.
d. Fans:
i. Fans shall be mixed flow plenum type with direct drive motor. Fan and motor assembly shall be factory mounted and balanced. The fans will be capable of operating in ambient temperatures of up to 40°C.
ii. Fan motors shall be permanent magnet, synchronous motor type with integral digital motor controller. Fan bearings shall be serviceable type with an L-10 life of 40,000 hours. Fan motors will be UL approved.
iii. All fans shall be equipped with integral airflow monitoring system connected to the unit controller.

iv. Provide means to easily remove fan-motor assembly for service through standard doors.
v. Fans should be designed such that all service can be performed in the field, including replacement of bearings.
vi. Fan motor drives shall be 208/60/1 and be UL approved. Fans will be protected by UL approved motor protection circuit breaker.

e. Plastic components:
i. All plastic components that are in the airstream, must be of a UL94 rated material.
ii. If gasketing is used to join unit sections together, gasketing must be a UL94 approved compound.

f. Hydronic heating coil:
i. Where indicated, unit shall include AHRI 410 certified fin tube type hot water coil. Fins shall be aluminum with a minimum thickness of 0.0075" and shall be free of oils and oxidation; aluminum properties are to be Alloy 1100 per ASTM B209. Tubes shall be round 5/8" OD and minimum 0.016" wall thickness seamless copper tube, mechanically expanded into fins; copper is to be Alloy 11000 per ASTM B152-06. Coils shall be brazed with a minimum 5% silver content filler material to ensure joint integrity. Coil casings shall be G90 galvanized steel, minimum 16 gauge. Coils shall include external drain and vent connections.
ii. Coils shall be tested at 550 psig using dry nitrogen while submerged under water. Coils shall be designed to withstand a maximum operating temperature 250°F and a 300 psig maximum operating pressure.
iii. Coil headers shall be constructed of seamless UNS C12200, Type L copper sized to match the specified connection size.

g. DX cooling / heat pump heating coil:
i. Where indicated, unit shall include AHRI 410 tested fin tube type DX coil for use with R-410A. Fins shall be aluminum with a minimum thickness of 0.0060" 0.0075". Tubes shall be 3/8" OD, 0.013" 0.016"tube wall seamless copper tube mechanically expanded into fins. Coil shall have interlaced circuits to match remote condensing unit when required. Coil casings shall be galvanized steel. Coils shall include external drain and vent connections. Coil shall be mounted in a rack over a stainless-steel double sloped condensate pan. Coil shall be shipped with nitrogen holding charge and tested to 700 psi.
ii. When VRV integration is used, the AHU integration controller (EKEQ) must be factory mounted and wired to EKEXV expansion valve kit.
iii. Liquid and Gas thermistors are to be mounted to coil and wired to EKEQ kit in the factory.
iv. EKEXV expansion valve kit will be mounted, and connections will be brazed to coil. Liquid and Gas lines to be capped at outside of AHU. Coil and EKEXV kit must be tested to 400 psi, and then nitrogen charged for shipment to site.

h. Refrigerant hot gas reheat coil:
i. Where indicated, unit shall include AHRI 410 tested fin tube type DX coil for use with R-410A. Fins shall be aluminum with a minimum thickness of 0.0060". Tubes shall be 3/8" OD, 0.016" tube wall seamless copper tube mechanically expanded into fins. Coil shall have interlaced circuits to match remote condensing unit when required. Coil casings shall be galvanized steel. Coils shall include external drain and vent connections. Coil shall be mounted

in a rack over a stainless-steel double sloped condensate pan. Coil shall be shipped with nitrogen holding charge and tested to 700 psi.

ii. When VRV integration is used, the AHU integration controller (EKEQ) must be factory mounted and wired to EKEXV expansion valve kit.

iii. Liquid and Gas thermistors are to be mounted to coil and wired to EKEQ kit in the factory.

iv. EKEXV expansion valve kit will be mounted, and connections will be brazed to coil. Liquid and Gas lines to be capped at outside of AHU. Coil and EKEXV kit must be tested to 400 psi, and then nitrogen charged for shipment to site.

v. Refer to VRF System specification for additional reheat coil functionality.

i. Expansion valves:

i. Refer to VRF System specification expansion valve requirements.

j. Controls:

i. Unit shall include an integrated microprocessor-based unit controller. The controls shall be located in the electrical panel. All unit controls shall operate off a transformer from the main power supply for single point power connection. All internal controls and sensors shall be factory prewired and tested.

ii. The control system will regulate temperatures, airflows and other functions as required. Unit controller shall be pre-programmed with factory tested software for all possible functions.

iii. The controller shall provide the following, refer to sequence of operation for specific unit control sequences;

1) Control of fans correcting for both changes in total static pressure and air density.
2) Fan performance monitoring.
3) Ventilation airflow monitoring and control.
4) Airflow density correction for winter and summer conditions.
5) Energy recovery optimization including operation of bypass damper.
6) Supplemental heating and cooling when included.
7) Frost protection.
8) Monitoring alarms, faults and maintenance points including filter changeout.
9) Time and date schedules.
10) Humidity control.
11) Data logging and trending.

iv. Include wireless capability that will allow the client to access remotely via internal wi-fi network.

v. Controller shall be BACnet MSTP and BTL certified and include Modbus communication. Communication shall include monitoring, control, alarms, faults and maintenance information.

vi. Provide factory installed and tested contactors, overloads, fusing, starters motor speed controllers for supply fans. Include all necessary control transformers.

vii. Provide unit mounted non-fused disconnect switch with single point power connection.

viii. Supply all necessary temperature and pressure sensors complete with plug in wiring harnesses for proper option of unit.

ix. When VRV integration is used, the AHU integration controller (EKEQ) must be factory mounted and wired to EKEXV expansion valve kit.

x. Liquid and Gas thermistors are to be mounted to coil and wired to EKEQ kit in the factory.

k. Electrical:
   i. Independent electrical power shall be 208/230 volts, 1 phase, 60 hertz. The unit shall be capable of operating within the limits of 187 volts to 253 volts.
   ii. The control voltage between the indoor and outdoor unit shall be 16VDC. The control wiring shall be communication type stranded non-shielded 18-2 AWG.
   iii. Control wiring shall be installed in a daisy chain configuration between all VRF components as per Manufacturer.

.3 Installation:

a. Install equipment in accordance with manufacturer instructions, these specifications, best practices, and all applicable building codes.
b. Provide all necessary control wiring as recommended by the manufacturer.
c. High/low pressure gas line, liquid, and suction lines must be individually insulated between the outdoor and indoor units.
d. Contact supplier prior to installation to review and confirm piping layout and lengths.
e. Use refrigeration best practice to allow pipes to expand and contract freely. Review manufacturer installation instructions to ensure expansion joints are properly designed.
f. Pressure test ALL systems to 550 PSI after system was vacuumed and held to below 500 microns for at least one hour. Review manufacturer installation instructions for proper pressure test procedures.
g. Start-up service:
   i. Engage factory authorized service technician to start up and commission units. Provide start up report to owner.
   ii. Installing contractor must be certified by VRF manufacturer. The bidders shall be required to submit training certification proof with bid documents and submittal documents.
   iii. The manufacturer shall provide a factory trained service technician to start-up each unit. Manufacturer shall provide instruction to the owners' personnel on proper unit operation and maintenance.

3.23 Standing Unit Ventilator

.1 General:

a. Unit shall be constructed following ISO: 9001 quality control program procedures and be fully assembled, wired, and tested prior to shipment.

.2 Products:

a. Cabinet:
   i. Insulation: 1-inch thick, acoustic Hushcloth Polyester/Polyurethane foam with density of 2-pounds per cubic foot containing no fibrous materials. 1-inch thick, acoustic Hushcloth Melamine with barrier and 2" acoustic Hushcloth Melamine with density of 0.56 pounds per cubic foot. Fire-Hazard Classification: Insulation shall have a fire rating of UL94HF-1. Airstream

Surfaces: Surfaces in contact with the airstream shall comply with requirements in ASHRAE 62.1-2010.

ii. Cabinet Construction: Constructed from aluminized steel with 20 gauge panels, degreased and coated with electrostatically applied baked-on polyester powder paint, except back panel will remain unpainted.

iii. Provide STUDY Acoustic Package: Unit to be constructed with multi-layered premium foam insulation with barrier, and revised airflow paths to maximize acoustic dampening.

iv. Cabinet Interior: Interior right and left hand sides shall employ 20 gauge galvanized steel full double wall construction.

v. Cabinet Finish: The unit color shall be Beige (Hammertone Finish). Paint finish shall be easily cleanable and hard wearing to give maximum protection.

vi. Service and Maintenance Access: All service and maintenance access shall be possible through the front of the unit only. Return air openings shall be integrated into the cabinet sides. Access door is factory installed on the front of the unit. Door interior shall be fully insulated to provide for superior noise deadening at front of unit. Door shall employ heavy duty ¼" zinc plated steel plunger hinges with a spring-loaded ¼" zinc plated steel pin to allow for easy removal, if required. Door is secured with two (2) key locks. Door swing designed to turn into itself allowing side of the unit to be installed directly against a wall in the corner of a room.

vii. Condensate Connection: Factory installed condensate connection stub provided for connection to the field installed building condensate drain. Tube dimensions 3/4" ID, 1" OD.

b. Refrigeration system:

i. Compressor: Two stage hermetic scroll compressor mounted on four (4) 125# all neoprene rubber 35-45 durometer vibration isolators for quiet operation. Compressor contains an internal unloading mechanism to provide capacity control and enable part load efficiencies to be increased. An internal overload protector included to protect compressor against excessive motor temperatures and currents. Compressor is equipped with a crankcase heater to guard against liquid flood-back conditions and the elimination of oil foaming upon start up. Factory set high and low-pressure switches, automatic reset high pressure cutout, and automatic reset low-pressure cutout.

ii. Compressor Acoustic Wrap with Base: For improved sound attenuation, compressor casing consists of 18oz PVC barrier laminated to 1/2 inch non-woven polyester. Casing includes integral 4 inch foil backed fiberglass heat shield for use with crankcase heater. Compressor base consists of 2 pound EVA barrier with embedded ¼ inch layered closed cell foam. Cover is easily removable for service.

iii. Refrigeration Circuit (Air Source Heat Pump): Heat pump systems shall utilize R-454B and shall be fitted with dual thermal expansion devices and a reversing valve to enable the unit to operate in either cooling or heat pump mode. A factory set defrost control fitted allows defrosting of the outside coil when in heat pump mode. Heat pump mode is operational down to 28°F. Fitted with factory set automatic reset high-pressure and low-pressure cut-out switches and a sight glass for system observation.

iv. Indoor Coil: Coil shall be high capacity 4 row design with copper tubes and mechanically bonded aluminum fins at a spacing of 14 fins per inch. Coil shall

be designed, tested and fabricated by unit ventilator manufacturer for optimal airflow and heat transfer specific to the unit. The quick draining coil shall be fitted to an insulated non-corrosive stainless steel drain tray.

v. Outdoor Coil: Enhanced, high efficiency, cross rifled coil designed, tested and fabricated by unit ventilator manufacturer for optimal airflow and heat transfer specific to the unit. Coil is fitted to non-corrosive stainless steel drain trays.

vi. A2L Refrigerant Leak Dissipation System Leak dissipation system shall consist of two A2L sensors certified to UL 60335-2-40

vii. Sensors shall be designed for the life of the unit. Single use refrigerant leak sensors shall not be permitted.

viii. Dissipation system shall be automatic, ship pre-wired, and require no additional field connections to function.

ix. Refrigerant leak sensors shall be installed in UL-certified location and orientation. Sensors shall be self-correcting and resettable. When the system detects a leak, the following mitigation actions will be initiated until refrigerant has not been detected for at least 5 minutes: Energize the supply fan on high speed to deliver a required minimum amount of circulation airflow. Disable compressor operation. Provide an output to energize additional mechanical ventilation (if needed). If the unit is equipped with a powered relief fan, it will be energized to operate on high speed. Disable electric heat sources.

x. Provide a 24V alarm dry contact to allow for external notification of leak detection. The contact will also open if the A2L sensors lose power from a loss of utility power, opening of the unit disconnect switch, upstream circuit fuse or protective trip, etc. Provide recallable dissipation alarm history on Modine Control System Carel controller.

xi. Building fire and smoke systems may override this function via the remote shut down terminals on the unit controls.

xii. Dissipation system shall be “Fail Safe” per UL requirements. If a refrigerant sensor has a fault or is disconnected, the unit will initiate the mitigation actions.

c. Fans and motors:

i. The indoor fan assembly consists of one blower inside teardrop housing assembly engineered specifically for optimal airflow with low noise and minimal power consumption. Blower is powered by electronically commutated motor (ECM). The DC motor features brushless, permanently lubricated ball bearing construction for maintenance free operation. A wide range of programmable speeds and torque characteristics is possible for ultra-high efficiency and low audible noise. The ECM provides constant airflow by automatically adjusting the speed if the external static pressure changes. Electrical and control wiring to fan assembly includes quick disconnect plug local to assembly.

ii. Outdoor (Condenser) Fan Assembly: The outdoor fan assembly consists of one backward curved plug fan with centrifugal blower wheel powered by an electronically commutated motor (ECM). The DC motor features brushless, permanently lubricated ball bearing construction for maintenance free operation. A wide range of programmable speeds and torque characteristics are possible for ultra-high efficiency and low audible noise. Fan design capable of overcoming external static pressures brought on by rear extensions backs and duct work connected to the fan discharge 3 opening.

Fan is sized such that powered relief shall be integral to the unit to prevent over pressurization of the space when the unit is introducing outside air. Capable of relieving 100% equivalent of the fresh air intake of the unit. Electrical and control wiring to fan assembly includes quick disconnect plug local to assembly.

d. Filter:
   i. Filter: 2" thick and utilize 17.5 pleats per foot. Filter shall be constructed from 100% Synthetic media and be LEED/Green compliant. Minimum Efficiency Reporting Value of MERV 13 per ASHRAE standard 52.2. 99% Arrestance and 70-80% Dust Spot Efficiency based on the ASHRAE 52.1 - 1992 test method.

e. Control panel:
   i. Control Panel: Located at top of the unit behind the front door for direct, centrally located access to controller, controller transformer (24V), and all necessary contactors, relays, and circuit breakers. Wiring: Individually numbered terminal blocks and wires are to match job-specific wiring diagrams. All electrical wires in the control panel will run in an enclosed trough. Wiring outside the control panel to be contained in a protective sleeve. All controls and wiring is factory installed in a clean, organized arrangement. Plug and Socket Wiring: Supply and relief fan decks, compressor, damper assembly, and energy wheel assembly (if applicable) wiring includes plugs local to the assembly allowing for quick wiring disconnect when the component requires removal for service.

f. Economizer:
   i. Single-blade damper that pivots using a central single shaft attached to a single actuator allowing for complete balance of the return, outside, and relief air streams. Capable of full modulation allowing any mixture of outside air and return air to be possible. Will allow for 100% of the units airflow to be taken from the outside during conditions allowing for full economizer savings. Damper blade edges lined with rubber gasket to prevent air infiltration in full recirculation or full economizer operation. Complete damper assembly slides out of unit on rails allowing for the damper assembly to be removed through the front of the unit if it requires service. Electrical and control wiring to damper assembly includes quick disconnect plug local to assembly.
   ii. Outside Air Damper: Outside air damper and actuator provided for protection from outdoor elements when unit is not in use. Damper Actuator: Low voltage modulating damper actuator with spring-return, fail safe. When power is cut to actuator, damper actuator will force damper blade closed to outside air.

g. Hot water heating:
   i. Hot Water Coil (unit mounted): Unit is equipped with a one row hot water heating coil integral to the unit mounted in the reheat position relative to the evaporator coil. The coil is manufactured from refrigeration quality copper tubing mechanically bonded onto aluminum fins. Coil is fitted with both an air bleed and a drain plug.
   ii. The hot water heat option shall include the following piping package features:
      1) Two ¾" manual shut-off valves
      2) ¾" hot water strainer
      3) ¾" hot water balancing valve
      4) ¾" hot water circuit setter

5) ¾" hot water drain with hose and bib
6) ¾" PT Ports

h. Additional accessories:

i. Disconnect Switch: A power disconnect switch sized for the full load amperage of the unit. Allows the unit to be disconnected from the power supply prior to any maintenance. In the off position the switch can be locked out.

ii. Top Inlet/Outlet Rear Extension: Where site conditions do not permit the use of the standard locations for outside air intake and relief air discharge, an insulated top inlet/outlet air rear extension is supplied for site installation between the back of the unit and the outside wall by the mechanical contractor. The top inlet/outlet air rear extension is 15" deep and incorporates channels that move supply and relief air openings to the top of the unit.

iii. Plenum: 10" discharge plenum mounted on top of the unit allowing for supply air to discharge through the top only. Lined with acoustic foam to minimize noise levels. Finished and painted to match the unit. Start-up units in accordance with manufacturer's start-up instructions. Test controls and demonstrate compliance with requirements. Replace damaged or malfunctioning controls and equipment.

iv. Modine's Extended Parts Warranty Includes: Provide for supplemental warranty of parts for five years from date of first beneficial use by buyer or within 60 months from date of shipment from seller, whichever occurs first. All other terms and conditions of the Commercial Warranty apply.

.3 Installation:

a. Install in accordance with manufacturer's recommendations.

3.24 Below Window Unit Ventilator

.1 General:

a. Work included:

i. The contractor shall furnish and install packaged unit ventilator systems, of the capacities, performance, and configuration, as indicated in the unit schedule. Each unit shall be complete with factory furnished components and accessories as shown in the plans and as specified herein.

ii. Electrical work required as an integral part of the temperature control work is indicated on the mechanical drawings, and is the responsibility of the HVAC contractor to hire the services of a temperature control contractor and/or system integrator contractor to provide a complete system to perform the sequence of operation shown, or as described in this specification. The full sequence of operation must be provided and installed by this contractor for all trades.

b. Submittals:

i. Submit schedule for all types, sizes and accessories. Schedule shall include certified performance data, room locations and all operating data.

ii. Submit shop drawings for all units including all dimensional information, construction details, installation details, required opening sizes, roughing locations for piping and electrical work and accessory equipment. Equipment

must meet specifications. Where deviations from the specifications exist, they must be identified.

iii. Provide field wiring diagrams for all electrical power and temperature control field-wiring connections.

iv. Submittals shall also include complete operating and maintenance instruction manuals and unit specific replacement parts lists.

c. Quality Assurance:

i. Unit ventilators shall be listed by Underwriters Laboratories Inc. (U.L.) for the United States and Canada.

ii. Motors shall conform to the latest applicable requirements of NEMA, IEEE, ANSI, and NEC standards.

iii. Unit ventilation rate to be certified and tested per Air Conditioning and Refrigeration Institute (ARI) standard 840.

iv. Unit to be certified and labeled compliant with the seismic design provisions of the International Building Code (IBC) Chapter 16 and independent test agency requirements of Chapter 17.

.2 Products:

a. Cabinets and chassis:

i. Unit frames shall be of unitized, welded construction, with structural elements aligned in an assembly jig prior to welding, to insure proper dimensions, rigidity, and squareness. Frames assembled with mechanical fasteners shall not be acceptable.

ii. Internal sheet metal parts shall be constructed of galvanized steel to inhibit corrosion.

iii. Exterior cabinet panels shall be fabricated from furniture grade steel of not less than 16 gauge steel with no sharp edges and no unsightly screw heads and shall receive an electro-statically applied powder paint, and be oven baked with environmentally friendly thermosetting urethane powder finish to provide a high quality appearance. Finish color shall be as selected by Architect from manufacturer's standard colors.

iv. The interior areas of the unit ventilator shall be insulated for sound attenuation and to provide protection against condensation of moisture on or within the unit. The unit shall be provided with an ultra-quiet sound package consisting of acoustically matched low speed fans to fan housing, sound barrier insulation material (non-fiberglass) adhered to the bottom underside of the unit top panel, sides of the fan section and sound absorbing insulation (non-fiberglass) material applied to the unit front panel.

v. Units shall be constructed so that testing and troubleshooting can be accomplished in the end pockets of operating units, without affecting the normal air flow patterns through the unit.

vi. Each unit shall be provided with a non-fused power interrupt switch that disconnects the main power to the unit for servicing or when the unit is to be shut down for an extended period of time. The fan motor and controls shall have the hot line(s) protected by factory installed cartridge type fuse(s).

vii. The manufacturer shall have published cataloged sound data available for the engineer's review. Sound data shall have been conducted using a qualified reverberant room per ANSI S1.31 and ANSI S12.32. Sound test data shall be based on standard cfm at standard air (fixed density of air at 70F) in accordance with ARI procedures based upon ARI 350. The engineer shall

have the right to reject equipment not conforming to the specified manufacturer's sound data, as a minimum.

b. Floor units:
   i. Floor mounted units shall have an integral pipe tunnel for convenient crossover of piping and a built-in metal wire raceway from right end compartment to left end compartment to contain any line voltage electrical wiring separate from the air stream. Line voltage wiring shall not be touchable in the air stream of the unit during normal maintenance procedures of oiling bearings or motors. Unit shall come standard with a factory installed and wired disconnect switch.
   ii. Unit top surface shall be supplied with a charcoal bronze textured finish, to resist scuffing, reduce glare and help hide fingerprints. Unit top shall have two access doors, one at each end (for access to motor and bearings for easy servicing). The front and ends shall be available in a selection of architecturally pleasing colors by the manufacturer, for selection by the Architect.
   iii. Unit discharge grille shall be constructed of continuous rounded edge steel bars to provide 10 degree vertical deflection. A 1/4" painted, galvanized mesh screen shall be provided beneath the discharge grille to protect against objects being dropped through the discharge grille.
   iv. The unit top and grille shall be of a modular construction so that it is removable for service and maintenance.
   v. The unit front surface shall be comprised of three separate removable panels. The controls and piping shall be accessible without removing the entire front panel. Panels shall be secured to the unit with recessed, tamper resistant, Allen head fasteners. Slots for flat head screwdrivers shall not be acceptable as tamper resistant.
   vi. An extended cabinet depth unit, 21 7/8” deep, shall incorporate a full adapter back with closed pipe tunnel with the same features of the standard cabinet depth units with the additional capability of bringing in fresh air from 1” to 28” from the floor. The unit top, back and vertical adapter back partitions shall be insulated and sealed to form a thermal barrier. The vertical and horizontal insulated metal extensions shall have a 1” wide compressible gasket to form an airtight seal between the wall and the unit. A field removable horizontal support plate between the unit bottom and top to achieve the 1” to 28” fresh air access shall not be acceptable.

c. Coils:
   i. Coil assembly shall be of a modular construction so that it is removeable from the front of the unit.
   ii. All coils shall be installed in a draw through position to assure uniform air distribution over the full-face area of the coil, and an even unit discharge temperature.
   iii. All heating and cooling coils shall be constructed with copper tubes and mechanically bonded aluminum corrugated plate type fins. All coils shall have aluminum individual unshared fin surfaces. An air break shall exist between coils.

d. Drain pan:
   i. The drain pan shall be able to be sloped in either direction for proper condensate removal.
   ii. Drain shall be provided with a secondary, overflow drain connection on both ends of the pan.

e. Fans and motor:
   i. The fan and motor assembly shall be of a low speed design to assure maximum quietness and efficiency.
   ii. Fans shall be double-inlet, forward-curved, centrifugal type with offset aerodynamic blades. Fans and shaft shall be statically and dynamically balanced as an assembly in the unit before shipment.
   iii. Fan housings shall be constructed of galvanized steel incorporating logarithmic expansion for quiet operation. Fan and motor assembly shall be of the direct drive type. Belt drive fans shall not be allowed.
   iv. Motors shall be 208 volt, single phase, 60 Hz, ECM with auto reset internal thermal overload device designed specifically for unit ventilator operation. Motors shall be located out of the conditioned air stream.
   v. All components of the fan/motor assembly shall be removable from the top of floor-mounted units.
   vi. Units shall have sleeve type motor and fan shaft bearings , and shall not reqiure oiling more than annually. All bearings shall be located out of the airstream. Bearings in the air stream are not acceptable.
   vii. ECM Motor speed shall be factory programed for three (3) speeds, HIGH-MEDIUM-LOW-OFF (not accessible from the exterior of the unit). Fan motor shall have hot leg protected by a factory installed cartridge fuse.

f. Face and bypass damper:
   i. Each unit shall be provided with a factory-installed face and by-pass damper, constructed of aluminum. The long sealing surfaces of the damper shall seal positively against stops fitted with extruded EPDM rubber seals. Face and bypass dampers without sealing edges to prevent air bypass shall not be acceptable. The damper ends shall have blended mohair seals along the ends glued to the damper end for a positive seal. Plastic clip-on brush end seals shall not be acceptable as an end seal. The unit design shall incorporate the face and bypass damper to prevent coil surface wiping and be before the fan in a draw-thru configuration. The face and by-pass damper shall be arranged to have a dead air space to minimize heat pick-up in the by-pass position.

g. Outdoor and room dampers:
   i. Each unit shall be provided with separate room air and outdoor air dampers.
   ii. The room air damper shall be two-piece, double-wall construction fabricated from aluminum, and be counterbalanced against backpressure to close by gusts of wind pressure, thereby preventing outdoor air from blowing directly into the room.
   iii. The outdoor air damper shall be two piece, double wall construction fabricated from galvanized steel, with ½" thick, 1½ lb. density glassfiber insulation encapsulated between the welded blade halves for rigidity and to inhibit corrosion. The outdoor air damper shall have additional foam insulation on the exterior surface damper blade and on the ends of the outdoor air chamber. A single blade damper, which can be twisted and will leak air, will not be considered.
   iv. Dampers shall be fitted with blended mohair seals along all sealing edges. Pressure adhesive sponge neoprene or plastic clip-on brush type sealers for damper seals are not acceptable. Rubber type gasket using pressure adhesive for fastening to metal and exposed to the outside air is not acceptable.

v. Dampers shall use the turned-metal principle on long closing ends with no metal-to-metal contact for proper sealing.
vi. The damper shaft shall be mechanically fastened to the blade, and shall operate in bearings made of nylon or other material which does not require lubrication.

h. Filter:
i. Each unit ventilator shall be equipped with a one-piece filter located to provide filtration of the return air/outdoor air mixture, in lieu of separate filters for each air stream. The entire filter surface must be useable for filtration of 100% room air or 100% of outdoor air. The filter shall be easily accessible from the front, and removable in one piece without removal of the unit return air damper stop. The unit shall ship with a factory installed 1" thick MERV 13 filter.
ii. Spare filters shall be:
1) 1" thick MERV 13, single-use type.

i. Control components:
i. Each unit ventilator shall be furnished capable of accepting direct coupled damper actuators and, if a hot water coil is furnished, with a factory installed low temperature freezestat provided on the discharge airside of the unit's hydronic coil closest to the unit's intake in a wave-like configuration to sense multiple locations and shall react to possible freezing conditions. The temperature control contractor shall be responsible for the proper operation of controls to prevent damage of any unit ventilator components while ensuring comfort.

j. Options/accessories:
i. The floor mounted unit ventilators shall be designed for use with, and provided with Draft/Stop window down draft protection system, installed continuously under the sill. Unit ventilators shall be designed to accommodate either Draft/Stop wall enclosures or Draft/Stop accessory cabinets.

3.25 Outdoor Heat Pump / Condensing Unit

.1 General:

a. The system and the design shall be in compliance with CSA B52:23 Mechanical Refrigerant Code.
b. Unit shall be AHRI Certified and ETL Listed

.2 Product:

a. Standard features:
i. Unit compressor shall be a two-Stage Copeland® UltraTech scroll type.
ii. Unit shall have a high-density foam compressor sound blanket
iii. Unit shall be compatible with Daikin One+ smart thermostat Daikin One Touch, and other Daikin communicating equipment
iv. Unit shall be compatible with ComfortAlert™ diagnostics
v. Condenser fan motor shall be two-speed ECM type
vi. Unit shall have diagnostic indicator lights and storage of six fault codes
vii. Unit shall have color-coded terminal strip for non-communicating set-up
viii. Unit shall have high and low-pressure switches

ix. Unit shall have time-delay technology with short-cycle protection to ensure quiet, reliable defrost
x. Unit shall be supplied with factory-installed bi-flow liquid-line filter drier
xi. Unit shall be supplied with factory-installed suction-line accumulator
xii. Unit shall be supplied with factory-installed compressor crankcase heater
xiii. Unit shall be supplied with factory-installed high-capacity muffler
xiv. Unit shall be supplied with factory-installed coil and ambient temperature sensors
xv. Unit shall use R-32 refrigerant.

b. Construction:
i. The outdoor unit shall have a custom Nickel Gray powder-paint finish
ii. Cabinet shall be 500-hour salt-spray tested
iii. Unit shall include a wire fan discharge grille to prevent contact with fan operation.
iv. Cabinet shall include a steel louver coil guard
v. Unit shall have single panel access to controls with space provided for field-installed accessories
vi. Unit shall have sweat connection service valves with access to gauge ports
vii. Unit shall have copper tube/enhanced aluminum fin coil - 5mm

c. Refrigerant piping:
i. The system shall be designed to operate with a maximum refrigerant pipe length of 150 feet, with 80 feet maximum vertical difference
ii. Refer and comply with the refrigerant piping specifications

d. Electrical:
i. The condensing unit shall be powered with 208-230 volts, 1 phase, 60 hertz power.

.3 Installation:

a. Install units on a flat surface level within 1/8 inch. Provide intermediate supports as recommended by the equipment manufacturer.
b. Install as noted on the drawings.

3.26 Variable Refrigerant Flow (VRF) System

.1 General

a. VRF system and associated air handling unit shall be supplied by a single supplier.
b. Submit shop drawings and product data in accordance with Division 20.
c. Submittals shall include the following:
i. Performance and capacity details of all units at specified indoor and outdoor conditions, piping schematics outputted from manufacturer specific software including pipe sizes and estimated piping lengths, refrigerant charge per system including CSA B-52 analysis, wiring diagrams, and 10-year parts only warranty information.
ii. unit selections, refrigerant piping layout, refrigerant charge with ASHRAE 15 analysis, branch selector box layout and locations, heating and cooling capacities at design temperatures and including capacity losses from piping lengths, defrost cycles, and combination ratios, dimensional and weight differences, and any other aspect of the system that differs from the system specified if approved alternate products are used.

d. Submittal shall include a copy of the installing contractor's certification of VRF manufacturer approved training.
e. Warranty:
   i. The warranty period on all Daikin VRV parts and compressors shall commence on the date of initial start-up and shall continue for a period of Ten (10) years not to exceed one hundred and twenty six (126) months from date of shipment. Proper maintenance of the equipment shall be conducted by certified technicians as per the manufacturer or manufacturer's representative requirements. Maintenance logs shall be supplied by the owner upon request.

.2 Products

a. General:
   i. This section includes the design, performance, refrigerant details, controls and installation requirements for Daikin VRV systems (Variable Refrigerant Volume) distributed by DXS Ontario (416-661-3400).
   ii. All units shall be listed and rated by ANSI/AHRI Standard 1230-2010 and meet all minimum IEER performance requirements as scheduled.
   iii. The units shall be ANSI/UL STD 1995 listed and listed by Electrical Testing Labs (ETL) and bear the cETL label.
   iv. All wiring shall be in accordance with the National Electric Code (NEC).
   v. The system will be produced in an ISO 9001 and ISO 14001 facility, which are standards set by the International Standard Organization (ISO). The system shall be factory tested for safety and function.
   vi. The system and the design shall be in compliance with CSA B52 Mechanical Refrigerant Code.
b. System Description:
   i. VRF system shall automatically vary the target evaporating and condensing temperatures based on building load and weather conditions to increase part load efficiency (Variable Refrigerant Temperature). The condensing unit shall also feature customizable operating modes which allows for the manual setting of target evaporating and condensing temperatures.
   ii. Heat Recovery:
      1) System shall permit simultaneous heating and cooling of each indoor unit. Multiple indoor units connected to a single branch selector port shall operate in the same mode (heating or cooling), similar to a two pipe heat pump system. Refer to the controls section of this specification for any central controller and/or mode switchover sequence that may be required.
c. Start-up and Warranty:
   i. Installing contractor must be certified by VRF manufacturer. The bidders shall be required to submit training certification proof with bid documents and submittal documents. Untrained contractors who wish to bid this project may contact DXS Ontario (416-661-3400) to arrange training prior to bid day.
   ii. The manufacturer shall provide a factory trained service technician to start-up each unit. Manufacturer shall provide instruction to the owners' personnel on proper unit operation and maintenance.
   iii. The warranty period on all parts and compressors shall commence on the date of initial start-up and shall continue for a period of Ten (10) years not to exceed one hundred and twenty six (126) months from date of shipment.

Proper maintenance of the equipment shall be conducted by certified technicians as per the manufacturer or manufacturer's representative requirements. Maintenance logs shall be supplied by the owner upon request.

iv. All manufacturer warranty shall be for parts only. All diagnosis and labour warranty shall be carried out by installing contractor as per the warranty requirements of this project.

d. Refrigerant Piping:
   i. Refer and comply to the refrigerant piping specifications (Section 3.7), including the special considerations for VRF refrigerant piping section.
   ii. Standard T style joints are not acceptable for a variable refrigerant volume system. Manufacturer specific Y joints shall be supplied by the VRF manufacturer.

e. Air Handling Unit Integration:
   i. Direct Expansion (DX) Coil:
      1) Certification - Acceptable refrigerant coils are to be certified in accordance with AHRI Standard 410 and bear the AHRI label. Coils exceeding the scope of the manufacturer's certification and/or the range of AHRI's standard rating conditions will be considered provided the manufacturer is a current member of the AHRI Air-Cooling and Air-Heating Coils certification programs and that the coils have been rated in accordance with AHRI Standard 410. Manufacturer must be ISO 9002 certified.
      2) VRF systems, where indicated, are to be integrated with air handling unit(s), utilizing VRF DX coil(s), electronic expansion valves and appropriate controls. VRF manufacturer shall provide the DX coil(s), electronic expansion valves and controllers.
      3) Coils designed for use with Refrigerant R-410A. Fins shall have a minimum thickness of 0.0075" of aluminum plate construction with full drawn collars to provide a continuous surface cover over the entire tube for maximum heat transfer. Tubes shall be mechanically expanded into the fins to provide a continuous primary-to-secondary compression bond over the entire finned length for maximum heat transfer rates. Bare copper tube shall not be visible between fins.
      4) Refrigerant coils shall be provided with round seamless 3/8" O.D. copper tubes on 1-1/2" centers, staggered in the direction of airflow. All joints shall be brazed.
      5) Sweat type copper suction connections located at the bottom of the suction headers for gravity oil drainage. Coils shall be uniformly circuited in a counterflow manner for interlaced face split capacity reduction. Pressure type liquid distributors used. Coils shall be tested with 315 pounds air pressure under warm water, and suitable for 250 psig working pressure.
   ii. Expansion Valve:
      1) VRF system shall monitor and maintain the unit superheat (cooling mode) or subcooling (heating mode) using a computerized PID control. Internal unit components shall be factory wired and piped, and complete with electronic proportional expansion valve, flare connections, condensate drain pan, self-diagnostics, and auto-restart function.

2) Electronic expansion valves shall be brass body, needle valve with floating needle and machined seat, stepper motor drive and compatible with R410A and PVE oil.
3) Electronic expansion valves shall have a temperature operation of -40F to 300F.
4) Electronic expansion valves shall have a working pressure of 550 psig and should be able to handle up to 700psig
5) The access port of the expansion valve must be on the valve body and not on the piping
6) Electronic expansion valves shall be able to handle the flow without any pressure drop
7) Electronic expansion valves shall be able to work with bi-directional flows

iii. Hot Gas Reheat (HGRH):
1) Appropriate VRF equipment and accessories shall be provided for fully modulating hot gas reheat:
I 3-pipe VRF heat recovery condensing unit
II DX coil
III Reheat coil
IV Expansion valve kit
V VRF branch box
VI AHU-integration control box with re-heat control features
2) The reheat coil capacity index shall not exceed 50% of the DX coil capacity index.
3) The DX coil capacity index shall be within 50% to 105% range of the outdoor unit capacity index for all outdoor unit nominal sizes, with the exception of 6-ton nominal size which shall be within 70% to 105% range of the outdoor unit capacity index.
4) The combined capacity indexes for the DX coil and the RH coil shall be within appropriate range relative to the outdoor unit capacity index and number of module.

Outdoor unit type	**Combined Capacity Index**	
	6T Outdoor Unit	**Outdoor units 8T and over**
Single outdoor module	70% - 150%	50% - 150%
Double outdoor modules	70% - 140%	50% - 140%
Triple outdoor modules	50% - 130%	50% - 130%

f. Condensing Units:
i. The condensing unit shall be factory assembled in North America and pre-wired with all necessary electronic and refrigerant controls. The refrigeration circuit of the condensing unit shall consist of Daikin inverter scroll compressors, motors, fans, heat exchanger, electronic expansion valves, solenoid valves, 4-way valve, distribution headers, capillaries, filters, shut off valves, oil separators, service ports, liquid receiver (heat recovery only) and suction accumulator.
ii. The system will automatically restart operation after a power failure and will not cause any settings to be lost.
iii. The unit shall incorporate an auto-charging feature to ensure proper refrigerant charge.

iv. The following safety devices shall be included on the condensing unit: high pressure sensor and switch, low pressure sensor, control circuit fuses, crankcase heaters, fusible plug, overload relay, inverter overload protector, thermal protectors for compressor and fan motors, over current protection for the inverter, and anti-recycling timers.

v. The Daikin inverter scroll compressors shall be high efficiency reluctance DC (digitally commutating), hermetically sealed, variable speed type. Temperatures and pressures shall be read every 20 seconds and calculated. With each reading, the compressor capacity (INV frequency) shall be controlled to eliminate deviation from target value. Non inverter-driven compressors shall not be accepted.

vi. Neodymium magnets shall be adopted in the rotor construction to yield a higher torque and efficiency in the compressor instead of the normal ferrite magnet type. Upon complete stop of the compressor, the neodymium magnets will position the rotor into the optimum position for a low torque start.

vii. The compressors' motors shall have a cooling system using discharge gas, to avoid sudden changes in temperature resulting in significant stresses on winding and bearings.

viii. Inverter board shall be refrigerant-cooled to prevent inefficient and unstable operation that can result from air-cooled inverter boards due to varying ambient conditions.

ix. The compressor shall be internally isolated to avoid the transmission of vibration.

x. In the case of multiple condenser modules, operation hours of the compressors shall be balanced by means of the Duty Cycling Function.

xi. Air Cooled:

1) The variable speed inverter compressors in Air-Cooled systems shall also use Flash Vapor injection technology with back pressure control for reduced leakage and additional balancing weights on main shaft for increased for increased compressor lifetime.

2) The fan motor shall have inherent protection and permanently lubricated bearings. The motor shall be provided with a fan guard to prevent contact with moving parts. The condensing unit shall consist of one or more propeller type, direct-drive 600 W fan motors that have multiple speed operation via a DC (digitally commutating) inverter.

3) Motors shall be capable of delivering design air at high external static pressures up to 0.32 in WG (factory set as standard at 0.12 in. WG) to accommodate field applied condensing unit discharge ductwork.

4) The condensing unit shall have configurable settings for intermittent fan operation to help minimize snow accumulation on fan blades when the system is off.

5) Night setback control for low noise operation shall automatically limit the maximum speed of the fan motor.

6) The heat exchanger on the condensing units shall be manufactured from Hi-X seamless copper tubes with N-shape internal grooves mechanically bonded on to aluminum fins to an e-Pass Design. The heat exchanger coil shall be of a waffle louver fin and rifled bore tube design to ensure high efficiency performance.

7) The fins are to be covered with an anti-corrosion hydrophilic blue coating as standard with a salt spray test rating of 1000hr (ASTM B117 & Blister Rating:10), Acetic acid salt spray test of 500hr (ASTM G85 & Blister Rating:10).
8) The connection ratio of indoor units to condensing unit shall be permitted and optimized for operation up to 200% of nominal capacity.
9) The outdoor unit shall be capable of heating operation down to -13°F ambient temperature. Tested factory data on heating capacity and efficiency shall be available.
10) Continuous heating shall be provided during defrost mode for multi-module systems.
11) The outdoor unit shall be capable of cooling operation down to +23°F without any additional low ambient controls.
12) The outdoor coil shall have a three-circuit heat exchanger design. The lower part of the coil shall be used for inverter cooling, enhancing defrost during heating operation.

g. Branch Selector Box:
i. Branch Selector box cabinets shall have a galvanized steel plate casing and shall house multiple electronic expansion valves and a sub-cooling loop. The unit shall contain sound absorption thermal insulating material made of flame and heat resistant foamed polyethylene.
ii. Branch selector boxes shall not require drain pan and drain connections. Manufacturers with branch selector boxes requiring secondary drain pans and drain connections shall coordinate with the installing contractor at no extra cost to the owner.
iii. Branch selector boxes shall allow for field selectable LEFT/RIGHT/PASS THROUGH piping configurations. Refrigerant piping connections shall follow the configurations in the plans to minimize space requirements and piping elbows.
iv. Branch selector boxes shall allow multiple branch selector boxes to be connected downstream of the first branch selector box in series using a pass through configuration and no additional Y-joints / REFNETs.
v. The electrical box of the 4-port branch selector box shall be field re-locatable to left, right, and back side of the main cabinet. Electrical box location shall follow planned access door locations. Manufacturers than require different unit or access door locations shall coordinate with the installing contractor at no extra cost to the owner.
vi. Branch selector box height shall be 9 1/2". Branch selector boxes shall be designed to fit within 12" ceiling plenums. Manufacturers with branch selector box sizes, arrangements, or locations that differ from what is specified shall make the necessary arrangements to ensure their alternative branch selector boxes both fit in the space and that CSA B52 compliance is still met (CSA compliance shall include the life-safety maximum refrigerant charge allowance). See unit sizes below.
vii. Manufacturers shall provide sound data for all branch selector boxes. If sound data is unavailable or exceeds the values below, or if branch boxes make use of solenoid valves instead of electronic expansion valves, necessary precautions shall be taken. Precautions shall include the supply and install of sound blankets, or the relocation of branch boxes away from

the occupied spaces, or extra insulation to the ceilings and walls around the branch selector boxes, all at no extra cost to the owner.

Model	Voltage	MCA	Operating Sound	Max Sound	W x H x D	Weight
		A	dB(A)	dB(A)	inch	lbs
BSF4Q54TVJ	208-230V 1ph	0.4	37	47	13.8 x 9.5 x 23.8	27
BSF6Q54TVJ	208-230V 1ph	0.6	40.5	50	23.4 x 9.5 x 23.8	73
BSF8Q54TVJ	208-230V 1ph	0.8	40.5	50	23.4 x 9.5 x 23.8	81

h. Controls:
   i. Controls integral to associated indoor air handling unit.
   ii. Refer to Indoor Air Handling Unit, VRF Heating / Cooling section for control requirements.

i. Electrical:
   i. Independent electrical power for branch selector boxes shall be 208/230 volts, 1 phase, 60 hertz. The unit shall be capable of operating within the limits of 187 volts to 253 volts.
   ii. Unless limited by local electrical codes and standards, multiple branch selector boxes can be connected to the same breaker. Field provided individual disconnect switches for each fan coil are required.
   iii. Electrical power for condensing units shall be 575 volts, 3 phase, 60 hertz.
   iv. The control voltage between the indoor and outdoor unit shall be 16VDC. The control wiring shall be communication type stranded non-shielded 18-2 AWG.
   v. Control wiring shall be installed in a daisy chain configuration between all VRF components as per Manufacturer.

.3 Execution

a. Delivery, Storage and Handling:
   i. Units shall be stored and handled according to the manufacturer's recommendations. Units shall be kept clean and isolated from dust and debris.
   ii. Contractor shall inspect all equipment upon delivery and notify shipping company and manufacturer immediately of any damage.

b. Installation:
   i. Install condensing units on a flat surface level within 1/8 inch and elevated a minimum of 18" from ground or roof surface. Provide intermediate supports as recommended by the equipment manufacturer.
   ii. Provide EcoFoot support system for mounting condensing units complete with condensate drip trays. Entire drip tray and condensate piping shall be heat traced and insulated. Refer to electrical specifications for heat trace requirements and Division 20 for insulation requirements (drain pan insulation shall be equal to that required for piping).
   iii. Provide all necessary control wiring as recommended by the manufacturer.
   iv. High/low pressure gas line, liquid, and suction lines must be individually insulated between the outdoor and indoor units.
   v. Contact DXS (416-661-3400) prior to installation to review and confirm piping layout and lengths.

vi. Use refrigeration best practice to allow pipes to expand and contract freely. Review manufacturer installation instructions to ensure expansion joints are properly designed.

vii. Pressure test ALL systems to 550 PSI after system was vacuumed and held to below 500 microns for at least one hour. Review manufacturer installation instructions for proper pressure test procedures.

3.27 Approved Products List

.1 Manual Dampers

a. Tamco
b. Nailor
c. Ruskin
d. Controlled Air
e. Alumavent

.2 Combination Fire / Smoke Dampers

a. Controlled Air
b. Nailor
c. Ruskin
d. Alumavent

.3 Access Doors

a. Nailor
b. Controlled Air
c. Ruskin

.4 Flexible Connectors

a. Duro-Dyne
b. Dyn-Air
c. American Elgen

.5 Flexible Ductwork

a. Thermaflex
b. Flexmaster
c. Wiremold

.6 Exhaust Fans

a. Twin City
b. Cook
c. Greenheck
d. PennBarry

.7 Diffusers / Grilles

a. Titus
b. E.H. Price
c. Krueger
d. Nailor
e. MetalAire

.8 Hydronic Heating Coil

a. Daikin
b. Carrier
c. Trane
d. Krueger
e. Aaon
f. Engineered Air

.9 Indoor Air Handling Unit with Hydronic Heat Only

a. Daikin
b. Carrier
c. Trane
d. Envent
e. Aaon
f. Engineered Air

.10 Fan Coil Unit

a. Daikin
b. Carrier
c. Trane
d. Krueger
e. Aaon
f. Engineered Air

.11 Indoor Air Handling Unit paired with VRF System

a. Oxygen 8 with Daikin VRV
b. Envent AHU with LG VRF
c. Trane AHU with Mitsubishi VRF

.12 Standing Unit Ventilators

a. Daikin
b. System Air
c. Engineered Air

.13 Below Window Unit Ventilators

a. Daikin
b. System Air
c. Engineered Air

.14 Outdoor Heat Pump / Condensing Unit

a. Carrier
b. Trane
c. Lennox

END OF SECTION

1. GENERAL

1.1 General Requirements

.1 Refer to the following related sections:

a. Division 20 – Mechanical.
b. Division 22 – Plumbing.
c. Division 23 – HVAC.
d. Section 25 90 00 – CONTROL SEQUENCES

.2 Comply with the conditions of Division 0 and 1.

2. BUILDING AUTOMATION SYSTEM (BAS)

2.1 Description of System

.1 Furnish and install all components, devices and control wiring for a fully integrated energy management and building control system incorporating Direct Digital Control (DDC), and equipment monitoring. The system shall control/monitor HVAC and plumbing equipment and systems as specified in this section. The work shall include but is not limited to the following:

a. All necessary hardware, software, control panels, web access modules, control wiring, field devices, installation, documentation and owner training as specified.
b. 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.
c. Control valves shall be installed in the piping system complete with transitions and unions as required.
d. Testing, debugging, calibrating, adjustment, programming and confirmation of total system operation.

.2 Distech System Integration (SI) Partners

a. The fundamental purpose of BAS integration at the WRDSB consist of four primary objectives:
   i. to maintain continuity of the Central Command Structure (a.k.a. Global/Local)
   ii. to allow for future expansion of centrally adjusted network variables/parameters
   iii. to maximize the administrative efficiency in which we can optimize the functionality and performance of the BAS systems inside 125+ buildings.
   iv. Maintain Web Security of entire BAS Infrastructure.
b. Distech BAS SI Partners must incorporate the integration of the WRDSB NIAGARA BAS server as specified in this document. Upgrading or circumventing the functionality of the existing central WRDSB NIAGARA BAS server will not be considered. No unequivocal or irrevocable substitutions of the WRDSB BAS server allowed.

.3 Central Command Structure: (two servers during transition period to Niagara-based software)

a. WRDSB Vista BAS Server
   i. Update name to VISTA (formerly EC-TACBAS) on the WRDSB network.

ii. is based on the Lonworks (LNS) Based Interface
iii. utilizes Remote Network Interfaces (RNI) Ethernet adapters at each site to communicate to the Lonworks network at each site.
iv. distributes all network variables via the RNI using the LNS protocol and Loytec NIC-IP to each site.
v. used to administer the TAC Xenta and Lonworks based BAS devices with the Echelon Lonmaker Network configuration tool, Schneider Electric TAC Vista System Plug-in Tool, and Schneider TAC Menta programming software.

b. WRDSB Niagara BAS Server
i. Update name to NIAGARA (formerly EC-TACBAS-T) on the WRDSB network
ii. is based on the Niagara N4-based Distech EC-NET server software to administer the EC-BOS networking devices at each site
iii. utilizes Niagara N4-based Distech EC-BOS networking servers complete with adapters at each site to communicate to the BACnet and Lonworks (where applicable) network at each site.
iv. distributes all network variables via the Tridium Niagara FOX protocol to each site
v. used to administer the Distech BACnet and Lonworks (where applicable) based BAS devices with the Distech GFX programming/controller configuration and Tridium Niagara WorkBench software
vi. utilizes Baudrate Schneider Electric TAC driver software (where applicable) to support the Lon-based TAC Xenta Controllers.

.4 Network Variables

a. Over 30 network variables (as detailed in Appendix I) are distributed from the central WRDSB BAS server to all 125 sites at varying intervals:
i. for the purpose of zone temperature setpoint adjustment
ii. to place lockouts on heating/cooling systems in response to changing seasonal conditions
iii. to manage setpoints for night setback heating and cooling modes
iv. to manage minimum outside air setpoints for ventilation requirements
v. to adjust the beginning and end of heating season
vi. to manage boiler water temperature setpoint outdoor reset parameters
vii. to set the morning warmup and night setback offset for boiler water temperature.
viii. to place lockouts on ventilation based on building use requirements.
ix. to place restrictions on ventilation based on humidity for additional energy savings measures.
x. to distribute humidity information from one of the three WRDSB humidity averaged zones
xi. to distribute the central holiday schedule for setback mode operation
xii. for Outdoor Lighting Astroclock Control adjustments to sundown and sunset times
xiii. for the purpose of after-hours alarms and troubleshooting
xiv. a dashboard is used at the central server to provide a user interface for all the variables and corresponding time/calendar schedules used in the BAS system.
xv. a central alarm display is used to capture all incoming BAS alarms from each site.

.5 Quality Assurance

a. The system components shall be listed by Underwriters Laboratories Inc. and Canadian Standards Association.
b. The system control products shall be stored and handled according to manufacturer's recommendations.
c. The work shall be performed by skilled technicians all of whom shall be properly trained and qualified for this work.

.6 Approved vendors:

a. Energy Controls and Mechanical Services
   i. Contact - Jasmin McCaskie jasmin@energycontrols.ca
   ii. 519-893-2638
   iii. energycontrols.ca
b. Ingenuity Controls
   i. Contact - Peter Rochus prochus@ingenuitycontrols.com
   ii. 226-599-0470
   iii. ingenuitycontrols.com
c. Touchstone Building Technologies
   i. Contact - Brent Divell bdivell@touchstonebti.ca
   ii. 519 997-2792
   iii. www.touchstonebti.ca

2.2 Products

.1 Hardware requirements:

a. LON board inside Distech EC-BOS: Installed on site, interfaces between site BAS system, Distech Lonworks Controller and Loytec NIC-IP.
b. Loytec NIC-IP RNI: Installed at each site, interfaces between site BAS system and WRDSB NIAGARA server via Ethernet and Lonworks networks.
c. a LON-based Distech controller: Must be current version. Installed on site, holds the network variables for use by both the WRDSB NIAGARA server and the site BAS system, and also the switching logic between local and global variable selection.
d. Licensing for LON board, Baudrate Schneider TAC Xenta driver for the Distech EC-BOS: Allows access to TAC Xenta controllers points, time schedules and alarms for use in the EC-BOS. Licensing confirmation of LON boards, Schneider TAC Xenta Driver, current Distech BAS SI Partner confirmation as a minimum.
e. Distech BACnet MS/TP based controllers are accepted for use with all the remaining systems.
f. WRDSB Ethernet Drops: Installed on site, to be co-ordinated with WRDSB IT department, fixed IP address to be assigned by IT.
g. All existing functioning BAS devices within each of the 125+ WRDSB buildings including but not limited to Lonworks, BACnet controllers as well as other field controls including sensors, valve or damper actuators, VFD drives, chiller systems, unit vents, air handlers, accessories or others, shall remain integrated. Approaches that require the replacement of existing functioning BAS devices other than the required LAN interfaces for proper integration (EC-BOS / NIC-IP) will not be considered.

.2 Software requirements:

a. Loytec Lconfig: Used as setup tool to configure IP address on the Loytec NI-IP for use on WRDSB Ethernet network.
b. Distech gfx: Used as setup tool to program the Distech Lonworks controller to accept the network variables.
c. Distech Workbench N4: Used as a setup tool for the Distech EC-BOS

.3 The system shall integrate the operation of intelligent building management controllers distributed into the network.

.4 Provide web based access. Two ethernet connections for communication shall be provided by the Electrical Trade.

.5 The DDC system shall be generally comprised of the following devices to achieve the control functions described in this section:

a. Distech 200, 300, 400 and 600 series programmable controllers.
b. Distech input/output programmable controllers.
c. Network repeaters as required by network lengths.
d. Control relays.
e. Control dampers and valves.
f. Sensors, actuators and other input/output devices.

.6 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.

.7 Controllers shall be capable of full control functionality and alarm reporting independently or as a part of the DDC network.

.8 The system shall be stored in flash ram so no batteries are required.

.9 Each control device shall be modular and expandable to provide additional inputs and outputs and control functionality for that device.

.10 Each controller shall be able to transfer and receive data via the network for performance of control functions.

.11 The system shall be modular, permitting expansion by adding hardware and software without changes in communication or processing equipment.

.12 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.

.13 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.

.14 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.

.15 The controllers shall have sufficient memory to support their own operating system and data bases including:

a. Control processes.
b. Energy management applications.
c. Alarm management.
d. Trend data.
e. Operator input/output.
f. Remote communications.
g. Manual override monitoring.

.16 Controllers shall incorporate the following software features:

a. Energy management:
    i. Time of day scheduling.
    ii. Calendar based scheduling.
    iii. Holiday scheduling.
    iv. Optimal start and stop.
    v. Demand limiting.
    vi. Heating/cooling interlock.
b. Alarm management:
    i. 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.
    ii. All alarm or point change reports shall include the points' English language description and the time and date of occurrence.
    iii. The user shall be able to define the specific reaction for each point, the priority level (three in total) and ability to inhibit alarm reporting for each point.
    iv. 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.
    v. The user shall be able to print, display or store a unique sixty character alarm message to more fully describe the alarm condition or direct operator response. The message shall be customizable to describe each individual alarm.
    vi. 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 fifty alarms) is full.
c. Trend logs:
    i. 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.
    ii. Sample intervals shall be from one minute to twenty-four hours.
    iii. Provide graphical and tabular displays.
d. Runtime totalization:

i. The controllers shall automatically accumulate and store runtime hours for binary points with a sampling resolution of one minute. The user shall have the ability to define a warning limit to trigger maintenance or user-defined messages.

e. Event totalization:
   i. Controllers shall have the ability to count events (such as on/off) and store up to ten million events before reset with a user-defined limit used to trigger a user-defined message.

f. Custom programming:
   i. 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.

g. The custom processes may be triggered by:
   i. Time-of-day.
   ii. Calendar date.
   iii. Events (point, alarm, etc.).

.17 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.

.18 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.

.19 Control Panels

a. Control panels shall be fully enclosed cabinets with all steel construction. Cabinets shall have a hinged door with locking latch or bolt-on cover plate. All cabinet locks shall be common keyed. Cabinets shall be finished with two coats of paint.

.20 Temperature Sensors

a. Provide thermistor temperature sensors, not requiring transmitters, to measure temperature.
b. Accuracy shall be +/-0.2°C from 0 to 70°C.
c. Space sensors in occupied areas shall be Greystone TE200 series, type AE or equal having an integral push button for unoccupied override and an integral slider to adjust set point (LED display not required).
d. In corridors and where noted on the drawings, provide stainless steel plate type sensors (push button override and LED display not required), Greystone TE200 series, type AS or equal.
e. Duct temperature sensors shall be Greystone TE200 series, type B or equal having a stainless steel probe length to suit application and ABS enclosure. Duct averaging temperature sensors shall be Greystone TE200 series, type FD or equal having an element length to suit application, copper probe and ABS enclosure.

f. Outdoor temperature sensors shall be Greystone TE200 series, type F or equal having an ABS gasketed cover. A thermal radiation cover shall limit the sensor to solar radiation exposure.

.21 Humidity Sensors

a. Sensors shall have 0-100% RH operating range, 0.01% RH resolution, +/- 0.8% RH hysteresis at 25°C (77°F) and 8 second response time.
b. Space sensors shall be Greystone HRC series room humidity transmitter or equal complete with +/- 2% accuracy and 0°C to 50°C (32°F to 122°F) ambient temperature operating range.
c. Duct mounted sensors shall be Gerystone HSDT series duct humidity transmitter or equal complete with stainless steel probe length to suit application, ABS enclosure, +/- 2% accuracy and -40°C to 60°C (-40°F to 140°F) ambient temperature operating range.

.22 Carbon Dioxide Sensors

a. Sensors shall Greystone CDD series or equal having the following features:
    i. 0-2000 ppm factory default detection range, field adjustable.
    ii. Non-dispersive infrared sensing element with self-calibration algorithm.
    iii. Guaranteed five year calibration interval.
    iv. Powered by either AC or DC source.
    v. Accuracy: within 50 ppm or 3% of reading (whichever is greater).
    vi. Operating humidity range: 0-95% RH.
    vii. Operating temperature range: 0 to 50°C or greater.
    viii. Stability: less than 2% full scale in 15 years.
    ix. Response time: less than 2 minutes for 90% step change.
b. Duct mounted sensors shall be complete with ABS enclosure complete with sampling tube.

.23 Water Control Valves

a. Heating and cooling control valves shall be Belimo CCV series characterized ball valves, complete with chrome plated brass trim and NPT female pipe connections. Radiation valves shall be complete with non-spring return modulating actuators. Control valves for coils heating a portion of outdoor air shall have spring return modulating actuators.
b. Control valves shall be sized to provide approximately one half the circuit branch pressure drop to obtain good modulation control but they shall be no smaller than two pipe sizes less than the pipe they are installed in.

.24 Motorized Damper Actuators

a. Belimo or approved equal as follows:
    i. Modulation proportional control (2-10VDC / 4-20mA with 500 ohm resistor)
        1) Model LF24-MFT(-S) US, 24 volt for dampers up to 6 sq. ft. (0.56 sq. m.).
        2) All actuators shall be direct coupled, spring return.
    ii. Where required by damper size, provide multiple actuators to serve one damper.

iii. Provide all accessories required for mounting and balancing, including angle of rotation limiter where required, and end switches where required by control configuration.

b. Provide damper actuators where indicated on the floor plan, details, equipment schedules or control sequences.

.25 Freezestats

a. Freezestats shall be complete with a vapour filled 20 foot bulb and 4 foot capillary. Wire freezestats to shut down the respective fans should temperature over any 12 in of sensor length drop below the adjustable setpoint (2°C). Freezestats shall have manual resets.

b. Provide freezestats where indicated on the floor plan, details, equipment schedules or control sequences.

2.3 Execution

.1 Installation

a. 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.

b. Locate room sensors in the locations shown on the mechanical drawings. All sensors shall be mounted at barrier free height (3'-11" above finished floor).

c. All control components for off site system access shall be located where noted on the drawings. The Electrical Trade shall provide all required connections / cabling for off site access to the web access components.

d. 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.

e. The supply of all motorized temperature control dampers complete with actuators shall be by this section, except for dampers and actuators supplied with packaged air handlers.
The supply of all automatic control valves shall be by This Section.

.2 Security and serviceability:

a. Supply username and password.

b. Source programming software tools with never expiring licenses

c. Source files and databases for all BAS controllers, networking hardware to be able to network, initialize and replace BAS controllers.

d. Remote access to school BAS system will not be via VPN or similar method. It will be a managed firewall when available. WRDSB IT firewall and networking rules will need to be followed when integrating the BAS system to the WRDSB NIAGARA BAS Server.

.3 Reporting requirements:

a. Network Transfer Diagram: List in a matrix format, all Distech BAS controllers and associated the network variables, indicating the source and destination for each network variable.

b. Version Control: Maintain a variable for version number for each Distech BAS controller's software with a description of what changes and updates to the controller software were made, initialled, and dated by the programmer in the source code of the controller.

c. Graphical User Interface:
   i. MAIN graphic: Display all the global network variables, the adjustable local network variables, the adjustable local/global mode switch and the actual network variables in current use, which are actually sent to all the controllers on the local BAS network. Refer to attached sample graphic.
   ii. SYSTEMS graphics (e.g., AC1, AHU1, RTU3): Indicate the current status of the heating enable, cooling enable, adjustable Holiday Exemption flag, final zone setpoint, Minimum Outside Damper position, Maximum Outside Damper position, Minimum Outside Air Schedule status. Night setback heating and cooling setpoints.
   iii. MAIN graphic: A link to a notepad file application where an operator can maintain a running day and timestamp in logbook format for any changes/adjustments made to the system, noting any issues that may arise.

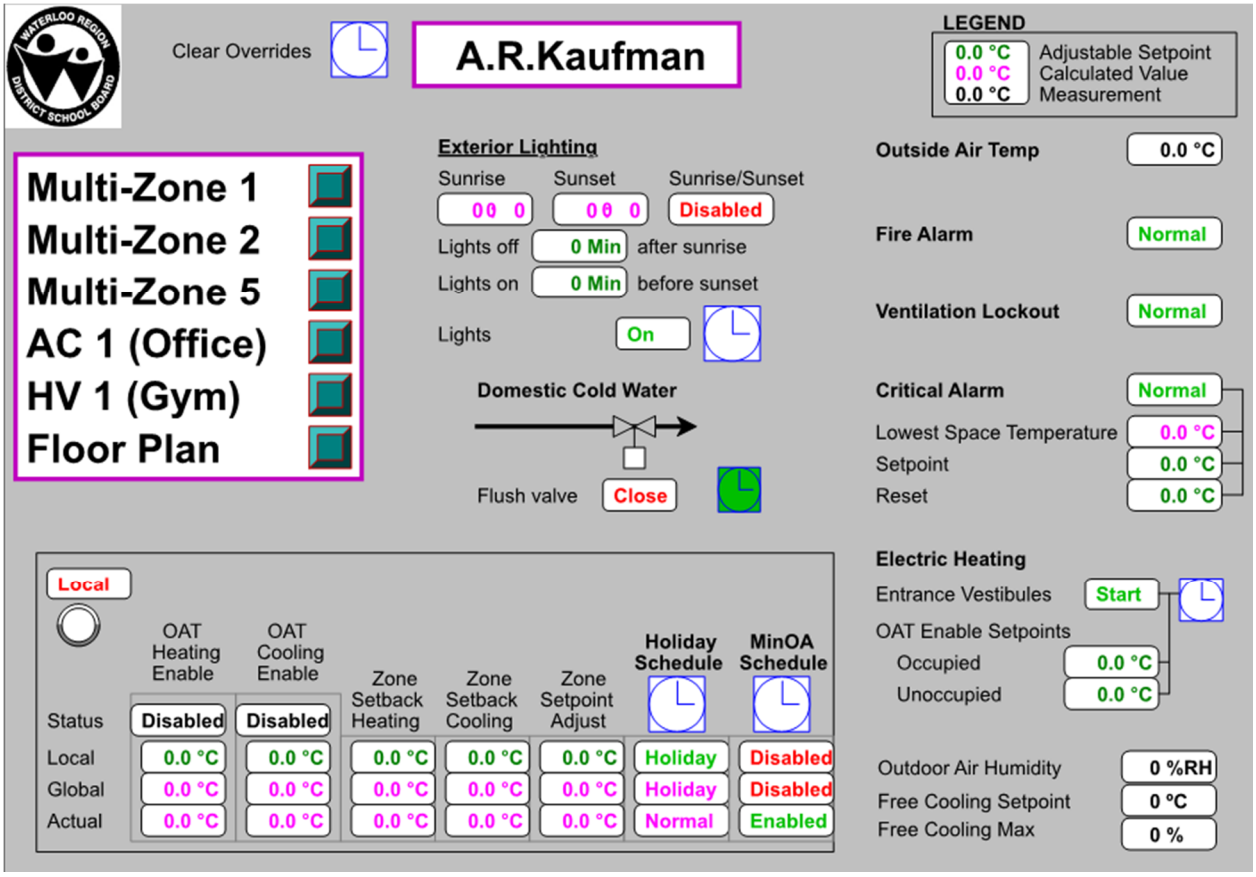
.4 Implementation:

a. Chain of Data Custody Sequence:
   i. Network Variables/Parameters are written to the Distech Lonworks Controller by the WRDSB NIAGARA server via the Loytec NIC-IP adapter.
   ii. The Distech EC-BOS reads the network variables and then stored on the Lon controller and then distributes them to each controller on the local BAS network for use in its sequence of operations.
   iii. These network variables are to have a parallel set of local network variables stored in the Distech EC-BOS to be used in the local mode. The local mode when selected will transfer the use of the local network variables from the Distech EC-BOS to each controller on the local BAS network instead of the global network variables written to it by the WRDSB EC-TACBAS server.
   iv. The local/global mode switch will be adjustable by the WRDSB NIAGARA server and shown on the main page graphic also adjustable by the operator.

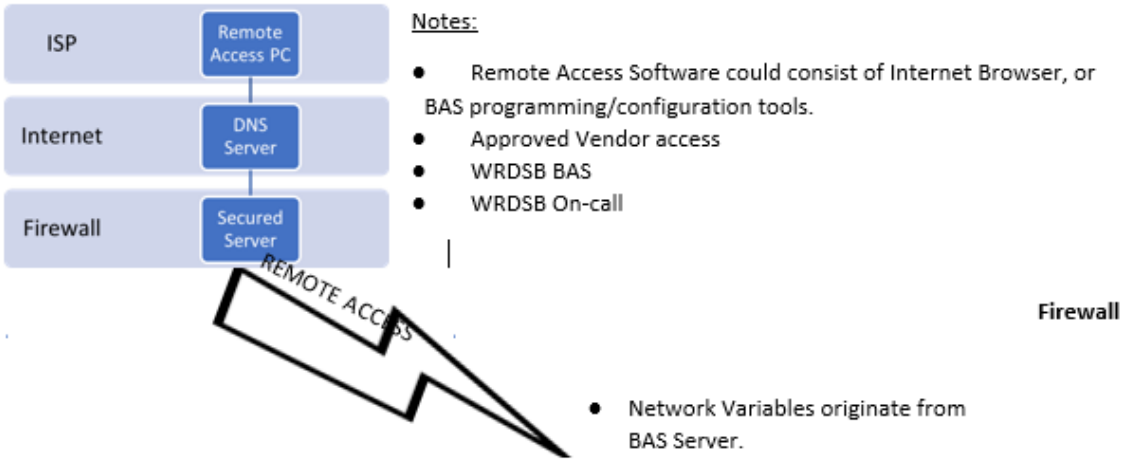
b. Data Functionality and Persistence:
   i. All network variables/parameters must be backed up into non-volatile RAM so that the network variables are automatically restored after a reboot/cold start.
   ii. Local/Global Mode Flag to be read/writeable from the WRDSB NIAGARA Server.
   iii. Critical Alarms reported back to WRDSB NIAGARA server.
   iv. If site is designated to have an outdoor humidity sensor, the real time value is to be sent back to the WRDSB EC-TACBAS server.

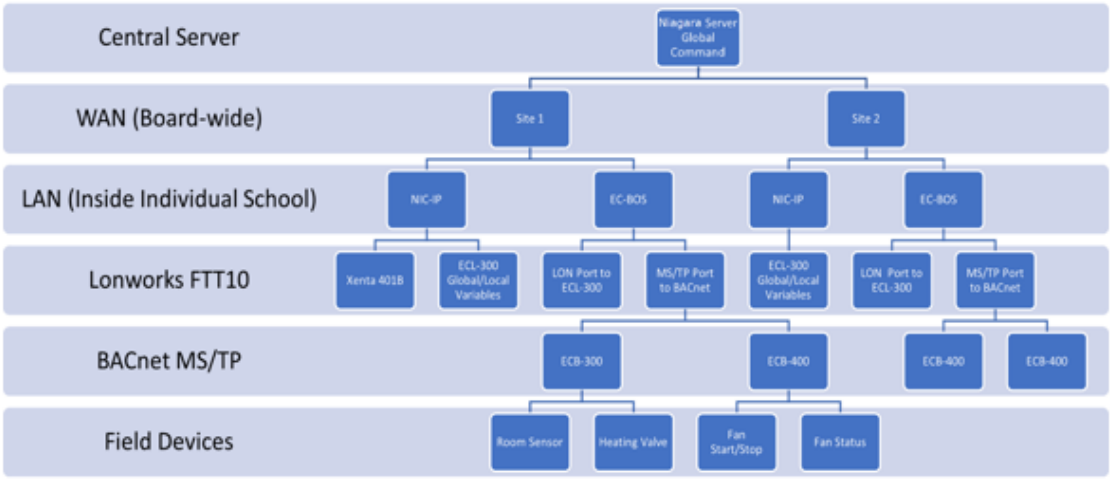
c. Overview:
   i. Service office within 1 hour of all WRDSB Facilities during school hours and after hours.
   ii. Written confirmation of Distech SI partnership for WRDSB territory.
   iii. Written confirmation of Schneider/TAC Xenta License for NIAGARA Server for WRDSB territory.

d. Sample:
   i. Typical MAIN graphic for each site representing the expected functionality and data representation of the local/global system:


Clear Overrides
A.R.Kaufman
LEGEND
0.0 °C Adjustable Setpoint
0.0 °C Calculated Value
0.0 °C Measurement
Multi-Zone 1
Multi-Zone 2
Multi-Zone 5
AC 1 (Office)
HV 1 (Gym)
Floor Plan
Exterior Lighting
Sunrise
Sunset
Sunrise/Sunset
Disabled
Lights off 0 Min after sunrise
Lights on 0 Min before sunset
Lights On
Domestic Cold Water
Flush valve Close
Outside Air Temp 0.0 °C
Fire Alarm Normal
Ventilation Lockout Normal
Critical Alarm Normal
Lowest Space Temperature 0.0 °C
Setpoint 0.0 °C
Reset 0.0 °C
Local
OAT Heating Enable
OAT Cooling Enable
Zone Setback Heating
Zone Setback Cooling
Zone Setpoint Adjust
Holiday Schedule
MinOA Schedule
Status Disabled Disabled
Local 0.0 °C 0.0 °C 0.0 °C 0.0 °C 0.0 °C Holiday Disabled
Global 0.0 °C 0.0 °C 0.0 °C 0.0 °C 0.0 °C Holiday Disabled
Actual 0.0 °C 0.0 °C 0.0 °C 0.0 °C 0.0 °C Normal Enabled
Electric Heating
Entrance Vestibules Start
OAT Enable Setpoints
Occupied 0.0 °C
Unoccupied 0.0 °C
Outdoor Air Humidity 0 %RH
Free Cooling Setpoint 0 °C
Free Cooling Max 0 %

e. From Remote Access PC to WRDSB BAS Server to Site – General Architecture:





- Network Variables are received at each site via the NIC-IP and onto the Distech ECL-300 or TAC Xenta 401B Controller and distributed for use at each BAS controller by the EC-BOS.

.5 All carbon dioxide levels which are measured by the carbon dioxide sensors shall be made available to the Owner in the form of trend logs. Record readings at 10 minute intervals and keep them for at least 30 days.

.6 Freezestats shall be installed so that their sensing element runs horizontally across the coil face (not diagonally) with no more than 12" vertical drops at the outside coil frame. The full face of the coil shall be covered with no horizontal runs being more than 12" apart. The top and bottom horizontal run shall be within 6" of the coil frame. If more than one freezestat is required they shall be wired in series in order to detect a low temperature in portion of the

coil. The sensing elements shall be firmly secured in place to avoid vibration without added air restriction.

.7 System Start-up and Acceptance

a. Upon completion of installation, test, adjust and calibrate controls provided under this Section.
b. On system completion, a demonstration of complete system operation shall be made to the Owner's authorized representative and Consultant.
c. The Consultant shall verify through the Owner's representatives that the entire system is complete and operating to the satisfaction of the Owner before final acceptance is approved.

.8 Close-out Documentation

a. Provide master schedule of all BAS controlled mechanical equipment affected by work indicating equipment tag and brief description. Master equipment schedule shall be expanded in future projects.
b. Demonstrate full functionality of the integration from the WRDSB server altering the settings on each of the BAS controllers on site.
c. Database files: to be backed up and given to WRDSB facilities on USB drive.
    i. Loytec NIC-IP: Configuration File
    ii. Distech EC-BOS with Lonworks board and 5-year software updates license: database file
    iii. Distech Lonworks controller: controller program file
    iv. Menta: controller program file for the existing TAC Xenta controllers (supplied by WRDSB to integrator)
d. Complete and submit WRDSB commissioning sheets for all equipment (new and existing) upgraded to BAS control as part of this project.
e. Refer to Division 20 for additional requirements.

.9 Training

a. The Controls Trade shall provide competent instructors to give full instruction to designated personnel in the adjustment, operation and maintenance of the system installed rather than a general training course. Instructors shall be thoroughly familiar with all aspects of the subject matter they are to teach. All training shall be held during normal work hours of 8:00 a.m. to 4:30 p.m. weekdays as follows:
b. Provide 4 hours of training for Owner's operating personnel. Training shall include:
    i. Explanation of drawings, operations and maintenance manuals.
    ii. Explanation of web access program.
    iii. Explanation of adjustment procedures.
    iv. Trend analysis.

.10 Identification

a. Provide system identification and provide nameplates identifying the following (nameplates shall be keyed to the wiring diagrams):
    i. Duct mounted sensors.
    ii. Control panels (identify as to equipment / systems controlled). Each panel shall include an as-built drawing showing all the connected control points.

.11 Testing and Balancing

a. During the system testing and balancing by the Balancing Trade, 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.
b. To ensure excessive noise is not generated by the VVT systems, the following shall be performed:
    i. For each VVT system, the Balancing Trade shall measure the static pressure in the main duct using a manometer when the system has been stabilized (all zone dampers are full open and the bypass damper is full closed). This information shall be given to the Controls Trade for verification that the VVT system is properly calibrated.
    ii. For each VVT system, 10% of the dampers shall be set to the full open position and 90% shall be set at their minimum position (fully closed). When operating with these damper positions, the static pressure in the main duct shall again be measured by the Balancing Trade using a manometer to ensure it remains at the value measured when in the stabilized mode. This information shall be given to the Controls Trade for verification that the VVT system is operating correctly and is properly calibrated.

.12 Electrical Wiring

a. Control transformers for the building automation systems shall be supplied and wired by the Controls Trade from 120 V power sources in junction boxes (at least one at each end of each floor accessible above ceiling tile in a corridor). All low voltage wiring (below 50 V) to the building automation systems shall be by the Controls Trade.
b. All wiring shall be installed to the standards specified in the Electrical Division.
c. Use Echelon recommended orange jacket cable for all network wiring.
d. Run all wiring in EMT conduit where exposed, where running within concrete block walls and where required by the Ontario Electrical Code (conduit supplied and installed by the Controls Trade). Plenum rated cable shall be used in return air ceiling plenums.
e. Where wiring runs through corridor suspended ceiling spaces, run in wall hooks where possible. The wall hooks shall be provided by the Electrical Trade where indicated on the electrical drawings.
f. Control relays necessary for BAS operation shall be provided by the Controls Trade but all contactors and their power supplies handling power wiring to the equipment shall be by the Electrical Trade.

2.4 Appendix: WRDSB BAS Network Variables

.1 Globally Distributed Variables from Central BAS Server to Each Site: Each controller on the BAS network on each site will use the following network variables/parameters to integrate into their sequence of operations.

.2 For all Air Handling/Rooftop/Unit Vent Systems:

a. Heating Outside Air Temperature Enable
b. Cooling Outside Air Temperature Enable
c. Zone Temperature Night Setback Heating Temperature Setpoint
d. Zone Temperature Night Setback Cooling Temperature Setpoint
e. Zone Temperature Setpoint Adjust
f. Holiday Scheduling
g. Minimum Outside Air Enable Schedule (Zone 1)
h. Minimum Outside Air Setpoint (Zone 1)
i. Minimum Outside Air Setpoint (Zone 2)
j. Minimum Outside Air Setpoint (Zone 3)
k. Minimum Outside Air Setpoint (Zone 4)
l. Outdoor Air Humidity (Zone 1 calculated average from 3 local sites)
m. Outdoor Air Humidity (Zone 2 calculated average from 3 local sites)
n. Outdoor Air Humidity (Zone 3 calculated average from 3 local sites)
o. Outdoor Air Humidity Maximum Damper Position (Zone 1 Free Cooling Maximum)
p. Outdoor Air Humidity Maximum Damper Position (Zone 2 Free Cooling Maximum)
q. Outdoor Air Humidity Maximum Damper Position (Zone 3 Free Cooling Maximum)
r. Outdoor Air Humidity Maximum Damper Position (Zone 4 Free Cooling Maximum)
s. Free Cooling Maximum Mode (Zone 1)
t. Free Cooling Maximum Mode (Zone 2)
u. Free Cooling Maximum Mode (Zone 3)
v. Free Cooling Maximum Mode (Zone 4)\

.3 For Outdoor Lighting Astroclock Control:

a. Lights Off After Sunrise Offset (in minutes) Area 1
b. Lights Off After Sunrise Offset (in minutes) Area 2
c. Lights Off After Sunrise Offset (in minutes) Area 3
d. Lights Off After Sunrise Offset (in minutes) Area 4
e. Lights On Before Sunset (in minutes) Area 1
f. Lights On Before Sunset (in minutes) Area 2
g. Lights On Before Sunset (in minutes) Area 3
h. Lights On Before Sunset (in minutes) Area 4

.4 For Boiler Systems:

a. Boiler Systems Area 1:
    i. Outside Air Temperature 1
    ii. Hot Water Temperature High Setpoint
    iii. Outside Air Temperature 2
    iv. Hot Water Temperature High Setpoint
    v. Morning Warmup Hot Water Temperature Offset
    vi. Night Setback Hot Water Temperature Offset

vii. Gas and Boiler Systems Heating Enable/Disable Dates (4 variables):
1) Heating On Month
2) Heating On Day
3) Heating Off Month
4) Heating Off Day

b. Boiler Systems Area 2:
i. Outside Air Temperature 1
ii. Hot Water Temperature High Setpoint
iii. Outside Air Temperature 2
iv. Hot Water Temperature High Setpoint
v. Morning Warmup Hot Water Temperature Offset
vi. Night Setback Hot Water Temperature Offset
vii. Gas and Boiler Systems Heating Enable/Disable Dates (4 variables):
1) Heating On Month
2) Heating On Day
3) Heating Off Month
4) Heating Off Day

c. Boiler Systems Area 3:
i. Outside Air Temperature 1
ii. Hot Water Temperature High Setpoint
iii. Outside Air Temperature 2
iv. Hot Water Temperature High Setpoint
v. Morning Warmup Hot Water Temperature Offset
vi. Night Setback Hot Water Temperature Offset
vii. Gas and Boiler Systems Heating Enable/Disable Dates (4 variables):
1) Heating On Month
2) Heating On Day
3) Heating Off Month
4) Heating Off Day

d. Boiler Systems Area 4:
i. Outside Air Temperature 1
ii. Hot Water Temperature High Setpoint
iii. Outside Air Temperature 2
iv. Hot Water Temperature High Setpoint
v. Morning Warmup Hot Water Temperature Offset
vi. Night Setback Hot Water Temperature Offset
vii. Gas and Boiler Systems Heating Enable/Disable Dates (4 variables):
1) Heating On Month
2) Heating On Day
3) Heating Off Month
4) Heating Off Day

.5 Additional Parameters used to calculate final values for distribution from Central Server:

a. Winter Outside Air Temperature Heating Enable Setpoint
b. Summer Outside Air Temperature Heating Enable Setpoint
c. Summer Winter Heating Schedule
d. Winter Outside Air Temperature Cooling Enable Setpoint
e. Summer Outside Air Temperature Cooling Enable Setpoint
f. Summer Winter Cooling Enable Schedule
g. Normal Night Setback Temperature Heating Enable Setpoint

h. Economy Night Setback Temperature Heating Enable Setpoint Calculated
i. Comfort/Economy Night Setback Heating Schedule
j. Outside Air Low Reset for Economy Night Setback Reset Heating Setpoint
k. Night Setback Low for Economy Night Setback Reset Heating Setpoint
l. Outdoor Air High Reset for Economy Night Setback Reset Heating Setpoint
m. Night Setback High for Economy Night Setback Reset Heating Setpoint
n. Normal Night Setback Temperature Cooling Enable Setpoint
o. Economy Night Setback Temperature Cooling Enable Setpoint Calculated
p. Comfort/Economy Night Setback Cooling Schedule
q. Normal Setpoint Adjust
r. Economy mode Setpoint Adjust
s. Comfort Economy Setpoint Adjust Schedule
t. Minimum Outside Air Damper Position Setpoint Schedule to Send Area 1
u. Minimum Outside Air Damper Position Setpoint Schedule to Send Area 2
v. Minimum Outside Air Damper Position Setpoint Schedule to Send Area 3
w. Minimum Outside Air Damper Position Setpoint Schedule to Send Area 4
x. Astroclock Lights Off After Sunrise /On Before Sunset Send Schedule Area 1
y. Astroclock Lights Off After Sunrise /On Before Sunset Send Schedule Area 2
z. Astroclock Lights Off After Sunrise /On Before Sunset Send Schedule Area 3
aa. Astroclock Lights Off After Sunrise /On Before Sunset Send Schedule Area 4
bb. Heating Systems Send Schedule Area 1
cc. Heating Systems Send Schedule Area 2
dd. Heating Systems Send Schedule Area 3
ee. Heating Systems Send Schedule Area 4

.6 Locally Distributed Network Variables Distributed between Master controller and each Controller within each site: These Network Variables are centrally managed and distributed to each controller. A local copy of these variables are maintained and are adjustable when the site is set to local mode operation.

a. Outside Air Temperature
b. Local Holiday Schedule
c. Fire Alarm Status
d. Ventilation Lockout Status
e. Heating Outside Air Temperature Enable/Disable
f. Cooling Outside Air Temperature Enable/Disable
g. Zone Temperature Night Setback Heating Temperature Setpoint
h. Zone Temperature Night Setback Cooling Temperature Setpoint
i. Zone Temperature Setpoint Adjust
j. Holiday Scheduling
k. Minimum Outside Air Enable Schedule

.7 Additional calculated parameters used in the sequence of operations and shared across the site network:

a. Minimum Zone Temperature per Controller
b. Maximum Zone Temperature per Controller
c. Minimum Zone Temperature per Site (data is aggregated across all the controllers and concentrated at the single master controller that triggers the low temperature alarm contacts)

d. Maximum Zone Temperature per Site (data is aggregated across all the controllers and concentrated at the single master controller)

END OF SECTION

1. 26 05 00 COMMON WORKS

1.1 General Requirements

.1 The Procurement and Contracting Requirements as outlined under Division 00, and the General Requirements as outlined under Division 01, and all addenda thereto shall apply to and govern all portions of the electrical work.

.2 Reference Division 27 and Division 28 for additional requirements.

.3 Points not specifically mentioned shall be in strict accordance with the Ontario Electrical Safety Code (OESC) and regulations of the Electrical Inspection Department from which the permit was obtained. The latest revisions and/or amendments to this Code, with applicable date restrictions, shall also govern work on this contract.

.4 It is the intent of these specifications to supply and install all materials and equipment as herein specified, and/or shown on the drawings in such a manner as to leave each of the systems of the electrical trades complete and in satisfactory operating condition. Provide all products and methods specified or shown complete with incidentals necessary for a complete operating installation. The contract documents are not intended to enumerate each and every detail which may be necessary to furnish and install the complete system connected up ready for service operation. The bid shall include all such details, and all associated labour and materials, to provide a complete and working system. The omission of any details in the contract documents shall not be a warrant for the installation of poor workmanship or materials, or the omission of such details. The scope of the work to be performed by the Contractor shall be obtained by a careful examination of these specifications and all electrical drawings.

.5 These specifications are to be considered as an integral part of the plans which accompany them, neither the plans nor the specifications shall be used alone. Any item or subject omitted from one but which is mentioned or reasonably implied in the other shall be considered as properly and sufficiently specified and must, therefore, be provided by the Contractor. Misinterpretation of either the plans or the specifications shall not relieve the Contractor of responsibility.

.6 The Electrical Subcontractor shall be held responsible for the satisfactory completion of all work bearing upon their trade.

.7 The Electrical Subcontractor must make note of any inaccuracies or inconsistencies in the drawings and/or specifications. Prior to bid close, any such items shall be disclosed, following the procedure outlined in the Invitation to Proponents.

.8 Within this design, the term “provide” is defined as “supply and install”.

.9 Extra charges for premium time labour shall be included in the bid price as required to comply with the construction schedule and the restrictions on when work will be permitted in the existing building. Allow for after hours, weekend and holiday labour requirements.

.10 Re-mobilization of any resources or sub-trades as required to maintain schedule or construction sequencing shall be included.

1.2 Codes, Permits and Submissions

.1 All work shall comply with the OESC (current edition, including all bulletins and amendments) and all local and municipal codes and Government agencies having jurisdiction.

.2 It is understood that the Subcontractor has examined and checked all drawings and specifications with the local authorities and the equipment and materials supplied by the Subcontractor shall have the approval of CSA, ULC, Factory Mutual (FM) and any other authority having jurisdiction.

.3 The Electrical Subcontractor shall obtain and pay for all necessary permits and inspection fees as may be required by the public administrative authorities having jurisdiction. Any changes or alterations required by an authorized inspector shall be rectified by the Electrical Subcontractor without charge to the Owner.

.4 Plans have not been submitted to the Electrical Safety Authority (ESA) Plans Approval Department. In accordance with the requirements of 2-010 of the OESC, plan submission is not required for this project.

.5 All new electrical equipment must conform to the regulations of the Ontario Electrical Safety Code (OESC). Anything necessary to make the equipment comply with these requirements shall be provided without additional cost to the Owner.

.6 Submit all required documentation to the authorities for their approval and comment before starting any work. Provide all additional drawings, details or information as may be required.

.7 Inform the Consultant in writing if modifications to the work are requested by the authorities. Provide complete written description of the concerns raised.

1.3 Standards of Workmanship and Materials

.1 All materials supplied by the Contractor shall be new and of the quality specified. All such materials shall be certified by CSA or other organization approved by the ESA. For any material not so certified, the Electrical Subcontractor shall obtain special approval of the local Inspection Authority and shall bear all inspection charges levied and any modification cost required.

1.4 Quality Assurance and Regulatory Agencies

.1 All materials, installations supplied and performed by the Electrical Subcontractor shall be new and meet the standards of quality as specified herein:

a. Canadian Standards Association - CSA.
b. Ontario Regulation 163/24 (2024 Ontario Building Code) - OBC with amendments.
c. Local Fire Codes.
d. Ontario Ministry of Labour.
e. Ministry of the Environment.
f. Ontario Electrical Safety Code.
g. Local Electrical Inspection Department.

1.5 Contractor's Shop

.1 Each Subcontractor shall provide their own office, workshop, tools and materials storage as required, and be responsible for any loss or damage thereto.

1.6 Setting Out of the Work

.1 The electrical trade shall be responsible for correcting all work completed contrary to the intent of the drawings and specifications and shall bear all costs for same. Where the intent of the documents is not clear the electrical trade shall obtain the clarification of the Engineer before proceeding with the work.

.2 Where any equipment supplied by the electrical trade must be built-in with work of the other Subcontractors, the Electrical Subcontractor shall be responsible for the supplying of the equipment to be built-in or measurements to allow necessary openings to be left so as not to hold up the work.

.3 The electrical trade, In setting out of the work, shall reference Architectural, Structural and Mechanical drawings. Electrical shall consult with the respective trades in setting out locations for conduit runs, lighting fixtures, panel assemblies, etc. so that conflicts are avoided and symmetrical even spacing is maintained. Being there first is not a permissible excuse.

.4 Do not scale drawings for installation purposes. Obtain all dimensions from Architectural plans, manufacturers Shop Drawings and onsite inspections.

.5 Before submitting bid, carefully examine the site of the proposed work so as to ascertain all existing conditions affecting the work. No extras will be allowed for work necessitated by conditions ordinarily evident on the site.

.6 Installation of conduits, outlets and equipment in mechanical areas shall not proceed until the installation of mechanical equipment is far enough progressed to avoid conflicts. Position of electrical equipment and outlets shall be adjusted in these areas to coordinate with mechanical equipment.

1.7 Preparation

.1 Cutting and Patching

a. The Electrical Subcontractor shall be responsible for all cutting and patching of any building construction made necessary by the installation of the work except in such instances as may be otherwise assigned by the specifications or shown on the drawings. All cutting and patching shall be to the satisfaction of the Consultant.
b. Finishing shall be by General trades.

.2 In areas otherwise unaffected by the work of this contract, trades that are required to disturb existing finishes shall patch the existing surfaces and provide new finishes to the area of the wall or ceiling surface affected. Paint colour shall be selected to match existing. Repainting of entire walls or surfaces is not required unless a reasonable paint match cannot be obtained.

.3 Existing ceiling tiles and grids shall be removed and replaced as required to permit the work. Ceiling tiles and grids that are damaged, or left with holes shall be replaced with new to match existing.

.4 All devices required to be removed in existing walls shall have suitable blank cover plates installed.

.5 Existing structure may contain concealed conduits. The Electrical Subcontractor shall retain the services of a qualified concrete imaging company to scan for existing buried services prior to cutting/coring/drilling.

.6 The Electrical Subcontractor shall provide all sleeves, inserts, hangers, flashings, back boxes, tubs, junction boxes, etc. required for the completion of the work. Locations shall be coordinated with the respective subtrade into whose materials they are being installed.

.7 Roof pavers shall be 610x610x45mm, dry-cast concrete slabs, diamond surface pattern, 55MPa average compressive strength, natural colour complete with a rigid foam insulated base. Recommended product is Pedslab by Armtec (Brooklin Concrete Products).

.8 Structural members shall not be cut without the consent of the Structural Engineer. For all necessary cutting, channelling, core drilling, sleeving etc., the Electrical Subcontractor shall provide their own forces and necessary equipment required to complete the electrical installation.

1.8 Temporary Construction Service and Construction Lighting

.1 Secure temporary service from existing building distribution system.

.2 Provide construction lighting throughout the structure to meet or exceed Occupational Health and Safety Act requirements.

.3 Connections to site trailers (if required) shall be at the expense of those requesting the connections.

.4 Provide ESA inspection of all temporary services.

.5 Maintain all electrical connections and lighting throughout the construction period.

.6 Remove all electrical services at project completion.

1.9 Continuity of Services

.1 Service and distribution system power interruptions shall be kept to an absolute minimum.

a. Power interruptions must be coordinated with the Owner and all other trades by the Electrical Subcontractor.
b. Written application for electrical interruptions must be received from the Contractor indicating the date, time and estimated duration of the interruption.
c. Application for approval of the power interruptions must be submitted to the Owner and Consultant at least two weeks prior to the requested shutdown date.

.2 No Electrical work of any description will be permitted during normal school hours in areas inside the building that are normally accessible to students.

.3 All barricades as required shall be by the Contractor.

.4 All work shall be coordinated so that there is complete and continuous life safety protection throughout the entire facility (fire alarm and detection, emergency and exit lighting). System down times shall be kept to an absolute minimum.

.5 Access control, intrusion detection, fire alarm and detection, and emergency lighting systems must be operational at all times when the contractor is not physically on site. Failure to keep these safety features operational may result in the contractor performing after-hours and weekend fire watch at their own cost.

.6 At times when the fire alarm and detection system must be in a non-functional state, the following procedure shall be followed:

a. Contact the monitoring company to inform them of the shutdown.
b. Contact the local fire department to inform them of the shutdown.
c. Establish an alternate source of alarm, i.e., telephone, siren, etc.
d. Carefully monitor all high risk fire areas such as kitchens and mechanical rooms.
e. Ensure all building occupants are aware of the shutdown, the alternate source of alarm, and the time at which the system will be back on line.

.7 All necessary system interruptions shall occur at a time suitable to the Owner and may be required to be at times that the building is not occupied or outside of regular business hours.

.8 If overtime work or temporary wiring provisions are required to maintain services as required herein such work shall be included in the bid.

1.10 Demolition

.1 Existing lighting shall remain for construction purposes. Provide temporary support for existing fixtures to permit demolition. Ensure that there is adequate lighting for construction throughout the entire process.

.2 The Electrical Subcontractor shall visit the site to examine the existing conditions and make necessary allowances in the bid for removal, rerouting, relocation, and reconnecting of equipment as may be necessary for the execution and completion of this project.

.3 Wiring, conduits, etc., located in areas being altered or demolished, but feeding outlets or equipment required to remain in service shall be rerouted as required to maintain the continuity of these services, to the satisfaction of the Engineer.

.4 In areas requiring installation of new duct risers for roof-mounted mechanical equipment, refrigeration piping, roof curbs, etc. include for relocating conduits that may interfere with new openings. Confirm exact extent of work on site prior to close of bids.

.5 Include for strapping existing conduits and cables that are not properly supported and are required to remain above ceilings. Determine exact extent of work on site.

.6 The Electrical Subcontractor shall provide adequate protection to existing equipment throughout the project and particularly where wiring, piping, equipment, etc., have become exposed to mechanical injury or moisture.

.7 Existing distribution equipment shall be permitted to be reused only as indicated on the drawings.

.8 Existing equipment being reused shall be checked for proper operation. Reused equipment shall not have any sign of physical abuse or corrosion. Any knockouts removed in existing equipment being reused shall be plugged.

.9 All wiring made redundant due to demolition/renovation work shall be disconnected and removed to the nearest distribution point upstream that is not affected by demolition/renovation work. All concealed conduit made redundant due to demolition/renovation work may remain provided it does not adversely affect any new installations, unless it is noted to be removed on the drawings. All exposed conduit in finished areas made redundant due to demolition/renovation work shall be removed and the surface patched.

.10 Existing wiring devices shall not be permitted to be reused. Existing outlet boxes may be reused if in "as new" condition. Existing branch circuit wiring will only be permitted to be reused in existing non accessible walls/ceilings where the existing wiring is of adequate size, has acceptable bonding conductor and is in as new condition.

.11 Asbestos Containing Material (ACM) is not expected to be disturbed in the execution of this contract. Refer to the Owner's Designated Substances Report. However, should ACM be uncovered during the work, notify the Consultant immediately so that appropriate instruction can be given.

.12 Include the cost of retaining an owner-approved subcontractor for the abatement of all ACM within a 600mm radius of any electrical work. Refer to the Owner's Designated Substances Report.

.13 All existing panel directories, zone legends and distribution equipment identification shall be reworked to reflect any changes made by the work. All existing wiring device tags shall be replaced to reflect any changes made to the upstream distribution designations.

.14 The Electrical Subcontractor shall be responsible to ensure that all existing communications and security systems are undamaged during the course of demolition and renovations.

1.11 Disposal

.1 The Electrical Subcontractor will be responsible for the complete removal of all electrical equipment and systems to permit alterations, all as shown and noted on the plans. This includes removal of all such equipment from the site.

.2 All miscellaneous equipment being removed shall become the property of the Owner unless shown otherwise. If the Owner has no use for it, all material shall be responsibly disposed of, in a timely manner, by the subcontractor in accordance with all applicable federal, provincial and municipal acts, bylaws and regulations.

.3 All appropriate measures to the health and safety of employees and WRDSBER personnel shall be observed.

.4 Existing light fixtures being deleted shall have the ballasts removed and examined for the presence of Polychlorinated Biphenyls (PCB)'s. Ballasts manufactured before March 1978 could contain PCB capacitors. Refer to the Owner's Hazardous Materials Building Survey, and Appendix A for the Environment Canada / CCME Guideline for Identifying Ballasts Containing PCB's.

.5 If the ballasts do not contain PCB's, clip off all wire leads as close as possible to the ballast housing, package in drums indicating scrap material for recycling and transport to a scrap metal recycling facility. Provide a certificate of recycled ballast to ensure it has not been land filled.

.6 If PCB's are present in the ballasts, all such ballasts shall be sorted according to manufacturer, packed in 170 litre, 16 gauge open top steel drums, complete with lid and sealing ring, and consolidated on skids or poly in the secure location outlined on the drawings. Each drum shall be lined with heavy duty plastic liner filled with an approved absorbent material. Drum capacity shall not exceed 225 ballasts, or 350kg. Once full, seal the plastic liner and lid. Ballasts may be stored a maximum of one month before moving to a designated storage facility or MOE approved destruction facility. Once the PCB waste has left the site, they shall not be returned. All liabilities to the Owner shall end the moment the PCB ballasts have left the site.

.7 Care must be taken to prevent lamps from breaking. Intact lamps must be packaged as listed below without foreign debris or objects. Lamps must not be taped together. Broken lamps to be placed into a separate sealed container.

.8 Leather Gloves, CSA approved safety glasses with side shields and respirators shall be worn. Respirators shall be CSA approved with activated carbon filters suitable for removing mercury vapours with life span indicators. In the event of a large quantity of lamps breaking or imploding suddenly, stop work and evacuate area. Don proper respiratory protection and immediately clean area. Collect bulk material using broom and place into sealed containers. Spray floor/surface area with mercury-neutralizing agent that is capable of minimizing the continual release of mercury vapours.

.9 All mercury-bearing lamps shall be packed in suitable lamp containers (rigid plastic, or other puncture resistant material), and consolidated in the secure location outlined on the drawings. Container capacity shall not exceed 100 lamps. Lamps shall not be exposed during storage. A mercury spill kit must be available and a sealable container for broken lamps. Provide a typed and signed transmittal for each transfer of lamps indicating the quantity, type (length) of lamps, as well as the date of transfer.

.10 Costs associated with the transportation and destruction of the lamps and PCB ballasts by approved Canadian destruction facilities shall be included in the base bid.

1.12 Shop Drawings

.1 The Electrical Subcontractor shall submit Shop Drawings to the Project Manager and/or Engineer for review. They shall show in detail the design, construction and performance of all apparatus.

.2 Shop Drawings shall be submitted electronically in editable Portable Document Format (.PDF). Hard copy (paper) format Shop Drawings shall not be processed and shall be recycled.

.3 Submissions shall be made in a timely manner after award of the contract. The first Application for Payment may not be approved unless all Shop Drawings have been received.

.4 The Engineer's and/or Project Manager's review of Shop Drawings and manufacturer's specifications is general and is not intended to serve as the final check. It shall not relieve the Contractor from responsibility for errors.

.5 Before submission, the subcontractor shall check all Shop Drawings for accuracy of details, dimensions etc. Do not proceed with work on any item for which shop drawing review has not been performed by the Engineer.

.6 Any deviations whatsoever from the materials and methods specified herein must be clearly outlined in writing and such an outline must accompany the Shop Drawings of the proposed deviation.

.7 All Shop Drawings shall be arranged so that all drawings of a particular system are in one file and are in logical order. Shop Drawings that are submitted individually or are not arranged by system shall be rejected. For example, the lighting system Shop Drawings shall be submitted to include each fixture in order as listed in the "LIGHTING FIXTURE SCHEDULE".

.8 Any materials that require a colour selection shall have colour samples submitted for Owner/Architect review and acceptance. Arbitrary colour selection by the supplier is not acceptable. Any item for which a formal colour selection is not submitted and approved will not be permitted on site.

.9 Allow maximum two (2) weeks for the Consultant review.

.10 Shop Drawings outlining all components shall be submitted for the following:

a. Power distribution equipment including the following:
    i. Panels.
    ii. Transformers.
    iii. Disconnect switches.
    iv. Starters.
    v. Breakers in Panel SE.
b. Lighting fixtures.
c. Emergency lighting and exit signage.
d. Lighting controls.
e. Wiring devices (refer to Section below).
f. Fire stopping systems.
g. Fire alarm and detection system components.
h. Integrated Testing Plan for fire protection and life safety systems.

1.13 Use of Electronic Files

.1 A waiver must be executed prior to release of any electronic files or digital data.

.2 Electronic documentation for release may consist of drawing files in formats such as Portable Document Format (.PDF), AutoCAD (.DWG), or Revit (.RVT). Specifications, details, schedules, legends, etc. shall generally not be released.

.3 Electronic documents shall be used only for the specific use outlined in the waiver. The recipient may use this data for this purpose, at their own risk.

.4 Copyright and ownership of the data are not transferred to the recipient, nor to any other party. The design professional and/or owner retain all rights to the data.

.5 Data delivered in electronic form may vary from that contained on copies of previous issues. This information is not guaranteed to be accurate. The method of data transfer cannot be guaranteed to be error free, or compatible with the recipient's hardware, software, or systems. Contractors and subcontractors are not relieved of their normal responsibilities to independently check, coordinate, and verify information and dimensions, and to familiarize themselves thoroughly with the project. The documents may have been changed or amended by addendums, bulletins, supplemental instructions, shop drawings, other documents, meetings, and understandings not represented on these files.

.6 The electronic files shall not be used as a substitute for the contract documents. The author offers no warranty or guarantee, express, implied, or statutory as to the accuracy, reliability, suitability, completeness or fitness of this data for a particular purpose. The company in receipt of these files agrees to the fullest extent permitted by law, to defend, indemnify, and hold the author, their directors, officers, partners, employees, harmless from all losses, claims, liabilities, injuries, damages, and expenses, including attorneys' fees and costs of defense, arising out of the use, misuse, misapplication, or misinterpretation of this data.

.7 The recipient will not distribute the data to any other firm or individual. Redistribution and copying of the digital data without written authorization from the author writing is prohibited.

1.14 As-Built Drawings

.1 The Contractor shall provide redline drawings that accurately record the location of all outlets and conduit runs etc., and all circuiting of devices, as installed on site.

.2 The Consultant shall provide, at no cost, AutoCAD drawing files incorporating Changes and Instructions.

.3 Prior to Substantial Performance of the work, the Contractor shall edit the electronic files to provide AutoCAD as-built drawings that incorporate all redline information. Associated costs shall be carried in the bid.

1.15 Closeout Documentation

.1 Upon Ready-for-Takeover, the Contractor shall submit a Maintenance and Instruction Manual as well as as-built drawings. Submit two paper hard copies in a three-ring binder, and one .PDF electronic copy on a suitably sized USB thumb drive. Each manual shall contain one copy of the following:

a. Shop Drawings (revised as reviewed by the Engineer).
b. Digital photos:
    i. Indicating each labeled new/modified distribution panel with the cover off.
c. Megger Test Results.
d. Updated panel directories.
e. ESA Final Inspection Certificate.

f. Emergency Lighting and Exit Sign Test Report.
g. Fire Alarm System Verification Report(s).
h. Integrated Testing Report for fire protection and life safety systems.
i. Written Guarantee (Warranty).
j. Sign back of the latest Site Review Report to confirm completion.

.2 Include for updating the Owner's Continuous Safety Services (CSS) ESA log book for all electrical work.

1.16 Testing

.1 At the date when Ready-for-Takeover has been attained, the Electrical Subcontractor shall provide acceptance tests to demonstrate that the equipment and systems actually meet the specified requirements. Tests may be conducted as soon as conditions permit. These shall include but shall not be limited to the following:

a. Lighting system control.
b. Emergency lighting function.
c. 3000VDC Megger tests on all XLPE insulated feeders, 60A and larger, 15s duration.
d. 1000VDC Megger tests on all PVC insulated feeders, 60A and larger, 15s duration.
e. Technical Shop interlock controls.
f. Fire alarm and detection system function.
g. Voltage drop measurements.
h. Transformer tap adjustments (adjust to within 2.5%).
i. Proper phase rotation.

.2 Concurrently, written approvals or acceptances by local authorities shall be presented. In testing, vary loads to illustrate start-up, sequence, normal shut down and simulate emergency conditions. Final tests may be conducted in the presence of the Consultant.

1.17 Training and Demonstrations

.1 The Electrical Subcontractor shall arrange for onsite instruction and training to the Owner on the operation and maintenance of the new installations.

.2 All such training sessions shall be video recorded by the Contractor. Media to be handed over to the Owner upon project completion.

1.18 Commissioning

.1 The Electrical Subcontractor shall retain the services of an Integrated Testing Coordinator (ITC) for all systems that are designed to operate together to achieve an overall fire protection and life safety objective, in accordance with OBC 3.2.9.

.2 Refer to Division 01 for additional commissioning details.

1.19 Warranty

.1 The electrical trade shall furnish a written guarantee stating that all work executed under this contract will be free from defects of workmanship and materials for a period of two (2) years

from the date when Ready-for-Takeover has been attained. The period shall in no way supplement any other warranty of a longer period.

.2 The Electrical Subcontractor will at their own expense, repair and replace all such defective work and other work damaged thereby which fails or becomes defective during the term of the warranty provided that such failure is not caused by improper use.

.3 The Electrical Subcontractor shall be responsible to ensure that all "Owner-Supplied" equipment is functional at the time of commissioning. At that time, if components are noted as being defective, the subcontractor shall coordinate with the Owner's supplier to correct the problems, so that the system is in perfect working condition. Beyond the time of commissioning, the Owner shall relieve the Contractor of any warranty work on the "Owner-Supplied" equipment.

.4 Refer to the Division 01 specifications for additional warranty details.

.5 Include for completion of the WRDSB Project Warranty Card prior to Substantial Performance of the work.

1.20 Electrical Equipment Approved Equals

.1 Unless specifically stated otherwise, this project has been designed based on the first named manufacturer of each section in the "ALTERNATE MANUFACTURERS LIST" or that specifically listed in the schedules. If the Electrical Subcontractor chooses to use a manufacturer other than the first named manufacturer, it will be their responsibility to ensure that the alternate is equal in all respects to that of the first named manufacturer. The Engineer reserves the right to approve or reject any alternate based upon an evaluation of the equipment proposed. If only one manufacturer is listed then only that manufacturer shall be acceptable.

1.21 Alternate Manufacturers List

.1 Distribution Equipment

a. Eaton
b. Schneider Electric (Square D)
c. Siemens

.2 Motor Starters, MCC's, Contactors

a. Eaton or Klockner Moeller
b. Schneider Electric (Square D) or Telemecanique
c. Siemens
d. Allen Bradley

.3 Dry Type Transformers

a. Hammond
b. Atlas
c. Rex
d. Marcus
e. E-Factor

f. Delta

.4 Switches, Receptacles and Wiring Devices

a. Hubbell
b. Eaton Wiring Devices
c. Pass and Seymour
d. Leviton

.5 Lighting Controls

a. Acuity
b. Lutron
c. Hubbell
d. Steinel Lighting Controls
e. Cooper Lighting Solutions
f. Wattstopper

.6 Support Channels and Hangers

a. Cooper (B-Line)
b. Hubbell
c. Unistrut
d. Canstrut
e. Caddy (Erico)
f. T.J. Cope (Tyco)

.7 Surface Raceway

a. Hubbell
b. Wiremold
c. Panduit

.8 Fire Stopping

a. 3M
b. Hilti
c. AD Firebarrier
d. STI

.9 Lighting Fixtures (Luminaires) - Interior

a. Refer to "LIGHTING FIXTURE SCHEDULE"
b. Lithonia
c. Hubbell
d. Signify (Cooper/Philips)

.10 Emergency Lighting and Exit Signage

a. Refer to “LIGHTING FIXTURE SCHEDULE”
b. Stanpro

c. BeLuce
d. AimLite
e. Emergi-Lite/Ready-Lite/Lumacell (Thomas & Betts)
f. Dual-Lite (Hubbell)

.11 Fire Alarm and Detection

a. Edwards

1.22 Access Doors

.1 Supply access doors to the Contractor for installation for all concealed electrical equipment requiring accessibility for service and maintenance such as junction boxes, pull boxes, relay enclosures, controls, etc. All doors shall be a minimum size of 8" x 8" (200mm x 200mm) and a minimum size of 24" x 18" (600mm x 450mm) where human access is required unless otherwise noted and shall be complete with positive locking self-opening screwdriver lock. The exact size of all access doors shall be as recommended by the manufacturer to suit the application.

1.23 Equipment Supplied By Others

.1 The Electrical Subcontractor is to supply all wiring, disconnect switches, motor starters, etc., for all Owner-supplied and mechanical equipment, unless noted otherwise. Detailed equipment information is given on drawings "WIRING FOR EQUIPMENT SCHEDULE".

.2 The Electrical Subcontractor shall ensure that all equipment is certified by an agency recognized by ESA (CSA, Entela, etc) prior to energization. If such certification is not present, this subcontractor shall arrange for special inspection by ESA, and all costs for this extra work shall be paid by the Owner.

.3 Coordinate exact electrical requirements for all equipment with Shop Drawings and actual nameplate data. Revise electrical requirements to suit.

1.24 Allowances

.1 Refer to Section 01 21 00 for allowance details.

.2 Any ESA inspection charges shall be included in the project cost and shall be paid for by the Contractor.

1.25 Provisional, Itemized, Alternate, Separate Prices and Unit Rates

.1 Refer to Bid Form for details.

1.26 Substantial Performance Certificate

.1 Before the Contractor can make application for a Certificate of Substantial Performance of the work, the Electrical Subcontractor will be required to provide the following as detailed within this section:

a. Maintenance and Instruction Manuals.

b. As-Built drawings.
c. Testing.
d. Commissioning.
e. Training and Demonstrations.

1.27 Contractor's Liability Insurance

.1 The successful bidder is to maintain adequate insurance as specified by the Owner's Standard Form of Contract. This insurance is to firmly protect both himself and the Owner from public liability claims and property damage, and all claims under the Workman's Compensation Act. Evidence of insurance coverage shall be filed and approved.

1.28 Payment Certification

.1 Submit monthly draws to the consultant for review and certification. Draws shall provide a complete breakdown of project in a manner acceptable to the consultant. Submit sample Application for Payment and a proper invoice template to the consultant four weeks prior to first draw for review.

1.29 Extras and Credits

.1 Only extras and credits approved by the Electrical Engineer or their representative will be allowed and must be submitted for approval before such work commences. They shall be priced individually with a complete breakdown clearly indicating labour costs, material cost, mark-up and taxes. Labour rates and material costs for extras and credits shall be identical. Material shall be valued at current trade prices incorporating all discounts. Only the net difference between an extra and a credit will subject to overhead and profit mark-up.

2. 26 05 14 EQUIPMENT IDENTIFICATION

2.1 General

.1 Provide all nameplates for equipment such as panels, starters, disconnect switches, contactors, etc.

.2 Nameplates shall indicate Equipment Name, Source and Electrical characteristics (ampacity, voltage, phases, number of conductors), i.e.,

a. Panel “42B” fed from Board “12S”, 100A, 120/208V, 3-phase, 4-wire.
b. Contactor “MSA” fed from Panel “DDA”, 60A, 600V, 3-phase, 3-wire.

.3 All equipment/circuits/devices that reference room names or numbers shall be modified as required to reflect the finalized Owner designated room names/numbers. Do not duplicate the room numbers indicated on the drawings.

.4 Nameplates shall be a stock white lamacoid, with black lettering and with beveled edges. Letters shall have a minimum 0.06", (1.5mm) stroke.

.5 Nameplate engraving shall be as follows:

a. Electrical equipment name: 0.5", (13mm) high.
b. Electrical equipment characteristics: 0.25", (6mm) high.

.6 Equipment nameplates shall be mechanically fastened with tamperproof screws. Equipment nameplates that are fastened with adhesives shall not be acceptable.

.7 Provide clear adhesive labeling with black letters for wiring devices such as receptacles, switches, speed controllers, etc. Labels shall indicate the circuit(s) that serve the device, i.e., “42D22".

.8 Provide all warning signs and labels as required by the ESA.

.9 Provide typed directory cards in all new and revised distribution panels. Hand written directory cards are not acceptable.

.10 Provide preprinted slip on conductor identification tags for all conductors as they enter electrical enclosures, equipment, and outlet boxes (switches, receptacles, light fixtures, etc). Tags shall be Thomas and Betts “EZCode” SMC series or approved alternate. Cloth or vinyl markers are not acceptable.

.11 All empty or spare conduit shall be identified with black indelible marker.

.12 All junction boxes shall be identified with black indelible marker showing the systems with which they are associated, i.e., lighting, receptacles, fire alarm, etc. Where boxes are exposed, identification shall be on the inside of the cover.

.13 Wiring for power and systems shall be coloured with a 3" (78mm) taped band and shall be coded as follows:

a. Phase A - Red
b. Phase B - Black
c. Phase C - Blue
d. Neutral - White
e. Ground - Bare or Green
f. Control - Yellow

.14 Colour code outlet boxes, pull boxes and junction boxes by applying a small dab of paint to the inside and outside of each item during installation. Use the following paint colour code:

a.	White:	208/120V Power.
b.	Yellow:	600/347V Power.
c.	Red:	Fire alarm and any other emergency control systems.

.15 Repaint or refinish all damaged factory applied finishes.

3. 26 05 21 RACEWAYS, WIRE AND CABLE

3.1 General

.1 All wiring in noncombustible areas, unless otherwise noted, to be CSA approved soft copper, type T90/TWN75 in conduit, unless otherwise required by the Electrical Code for specific areas or environmental conditions.

.2 Maximum voltage drop at most remote outlet not to exceed 3% in accordance with OESC #8-102. The minimum wire size shall be #12 AWG.

.3 Neutral feeder conductors (where noted on the single line diagrams) shall be a minimum of two gauges larger than the respective phase conductor, i.e., 3-#3/0 phase conductors shall include 1-#250 neutral.

.4 There shall be one neutral conductor for each phase conductor in a branch circuit. Sharing of neutrals shall not be permitted.

.5 Where single conductor cables are installed in free air, they shall be spaced minimum one cable diameter apart based upon the largest cable.

.6 Armored cable (BX) may be used in metal stud partition walls, in concrete block walls, and for final drops to fixtures in accessible ceiling spaces. Cable length shall not exceed 3.1m (120") horizontally in accessible ceilings. BX cable shall under no circumstances be run exposed.

.7 EMT shall be used in dry concrete slabs and for interior exposed surface applications (where permitted). Surface mounted EMT may be permitted on existing finished walls only in areas where there is existing surface mounted EMT within 24" (600mm).

.8 Rigid PVC (IPEX Scepter or approved alternate) raceways shall be used in or below concrete slabs, for direct burial, or exposed exterior surface applications. Conduit shall be FT4 rated.

.9 Raceways in concrete block walls shall be installed vertically within in block cavities. Horizontal installations shall not be permitted.

.10 Provide hot-galvanized, colour-coded EMT to identify branch circuit types. Conduit shall be by Atkore/Tyco or approved alternate. Use the following colour coding:

a. Red: Fire alarm and any other emergency control systems.

.11 All conduit and wiring is to be concealed in all finished areas unless otherwise approved. EMT conduit shall be permitted above and below surface mounted panels.

.12 In finished areas with exposed ceilings, conduit and wiring shall be run concealed if possible. If not possible, conduits shall be EMT, surface mounted or suspended to suit the application.

.13 Exposed or concealed conduits above ceilings shall be run in straight lines parallel to building structure. Diagonal runs will not be permitted.

.14 Provide 9mm (3/8") polypropylene pull rope and pull tape in all empty conduits 53mm (2") and larger.

.15 Provide nylon pull tape in all empty conduits smaller than 53mm (2").

.16 Securely fasten pull rope/tape in empty conduits/raceways at each end.

.17 Pull tape shall be Neptco WP900P, 0.5" (13mm) wide, 900lb (409kg) pull strength, lubricated, with sequential metric distance markings.

.18 Conduits and cables shall not enter an exit stair shaft, unless they serve devices/fixtures within the exit stair, i.e., route all conduits and cables around the stair to maintain the integrity of the exit.

.19 Install flexible conduit section in all locations on either side of an expansion joint where rigid conduit is fastened to structure.

.20 All wiring serving rotating or vibrating equipment shall be stranded and shall be in a flexible raceway. Raceway length shall not exceed 1.5m (60").

.21 Coordinate with HVAC trades to run feeders to rooftop equipment through the curb or alongside refrigerant lines. Separate roof penetrations/cones for feeders shall not be permitted.

.22 Where separate roof penetrations are required, provide roof sleeves complete with flashing and rain shields. Recommended product is PortalsPlus Alumi-Flash.

.23 Standard trade conduit connectors and fittings are acceptable unless noted on the drawings or specification to be a specific manufacturer trade name, catalogue no. or series.

.24 All outlet boxes shall be metal. The use of nonmetallic boxes shall not be permitted.

.25 Outlet boxes located in areas normally accessible to building occupants shall have no exposed holes or knockouts. Support all boxes independently of connecting conduits.

.26 In areas where it is not possible to run conduits concealed in existing structures, surface mounted raceways shall be permitted. The Electrical Subcontractor shall verify the proposed locations of all surface mounted conduits with the Engineer prior to installation.

.27 Where permitted, all surface mounted raceways shall be “Wiremold” series 2000, 500, or 700, as required to match the quantity and size of conductors. Surface mounted raceways shall be complete with all “Wiremold” fittings and accessories (couplings, bushings, clips, straps, elbows, outlet boxes etc.) to form a complete installation.

.28 All exposed surface mounted raceways shall be painted by the Electrical Subcontractor to match the colour of the surface upon which it is installed if the surface is not specified to be painted by general trades.

.29 All wiring situated in a return air plenum shall be totally enclosed in a non-combustible raceways or shall be FT6-rated (also known as Communications Media Plenum, or CMP).

.30 All conduits and raceway systems shall be provided complete with plastic bushings on both ends.

.31 In general, raceways shall not be permitted to run along the roof unless specifically noted otherwise. Only in circumstances where it is impractical to reach equipment from below will limited exposed conduits along the roof be permitted.

3.2 Fire stopping

.1 Provide fire stop sealant / devices of a type to suit piping, building construction, opening size, etc. Supply and install according to manufacturers detailed installation instructions.

.2 Indicate the fire stopping systems to be used at all conduit and wiring penetrations of fire rated building construction. Include certified drawings prepared by the fire stop manufacturer which are applicable to the application. These drawings shall indicate all certifications, wall / floor construction details, pipe size / material details, SP numbers, F and T ratings, etc. and they shall be keyed to floor plan blue prints which indicate the location of each fire stopping application.

.3 Combustible outlet boxes shall not be permitted.

.4 Noncombustible outlet boxes recessed in vertical fire separation forming part of an assembly required to have a fire-resistance rating shall be fire stopped to match the rating of the assembly. Exceptions are permitted only as follows:

a. The boxes do not exceed 0.016m² (24.8 in^2) in area or four gang, and do not exceed an aggregate area of 0.065m² (101 in^2) or sixteen gangs in any 9.3m² (100 ft^2) of surface area.
b. The annular space between the membrane and noncombustible electrical outlet boxes does not exceed 3mm.

.5 Outlet boxes located on opposite sides of a vertical fire separations shall not be closer than 600mm (24") horizontally or shall be fire blocked to maintain the integrity of the separation. Fire block shall be 13mm gypsum board or 0.38mm sheet steel. Arrange and pay for fire block materials.

.6 Firestop behind panels, enclosures, and outlet boxes greater than 160cm2 (24.8 in^2 or four gang) recessed in fire rated separations using 3M Interam Endothermic Mat E-5A-4.

.7 Firestop behind all enclosures and outlet boxes recessed in opposite sides of a required vertical fire separation and closer than 600mm (24") apart using Hilti CP617 or CFS-PA Firestop Putty Pads. Alternatively, fire block materials may be used subject to OBC 3.1.11.7 (2).

.8 Coordinate with General Trades to be consistent with the fire stopping manufacturer throughout the project.

4. 26 27 26 WIRING DEVICES

4.1 General

.1 Provide all wiring devices and their associated fittings as indicated in the "Wiring Device Schedule" in this specification or as specifically noted on the drawings.

.2 Wiring devices shall be black unless noted otherwise. Verify colour with Owner prior to ordering and adjust if required.

a. New receptacles circuited to a distribution panel under contactor control shall be coloured red grey.

.3 Wiring devices for general purpose shall be of heavy-duty specification grade.

.4 Devices shall be manufactured and tested in accordance with CSA and EEMAC standards. Attachment plugs and receptacles to conform to CSA configurations.

.5 In areas being renovated where existing devices are to remain, all new devices shall be coloured to match existing.

.6 All 15A and 20A receptacles (CSA 5-15R and 5-20R) shall be tamper resistant.

4.2 Wiring Device Schedule

.1 Hubbell or Acuity serves as the basis for this specification. If the Contractor chooses to use an Approved Alternate manufacturer, as listed above, it will be their responsibility to ensure that the alternate is equal in all respects to that named herein. The Engineer reserves the right to approve or reject any alternate based upon an evaluation of the equipment/device proposed.

.2 120V Switches

a. Decorator Style - 20A
   i. DS120, DS320, DS420

.3 120V Receptacles

a. Ground Fault Circuit Interrupter (Weather and Tamper Resistant) - 15A
   i. GFTWRST15
b. Ground Fault Circuit Interrupter (Weather and Tamper Resistant) - 20A
   i. GFTWRST20
c. Decorator Style, Tamper Resistant - 15A
   i. DR15xTR
d. Decorator Style, Tamper Resistant - 20A
   i. DR20xTR

.4 250V Devices

a. Welding Receptacles - 50A
   i. HBL9450
   ii. Confirm with owner prior to order.

.5 Technical Shop Controls

a. Modify existing per drawings and schematic.
b. Integration with the owner's access control system may be completed under a future contract.

.6 Control Relays (BAS system, HVAC system)

a. Relays shall be Functional Devices Inc, type RIB, SPDT, contacts rating to suit connected load (minimum 10A at 120V), Coil voltage: 10-30VAC/DC or 120VAC, LED on indicator, open/closed/auto manual over ride switch. Relays shall have adequate number of poles to suit the loads being controlled.

.7 Occupancy Sensors for Switching Environments

a. Refer to the Lighitng Control Schedule for specific sensor/device details.
b. The sensors shall operate at 24VDC, supplied by the PP20 power supply/relay pack. Locate PP20 units on as-built drawings. Up to fourteen sensors per PP20 unit.
c. Power supply/relay pack input voltage 120V to suit application. Relay contact rating 20A per pole at supply voltage.
d. Sensors may be wired in parallel to allow coverage of larger areas.
e. Standard and/or extended range 360 degree.
f. White colour.
g. Set to minimum 20 minute operation.
h. Provide quantity of relay packs and slave packs to suit required load and switching arrangement indicated on the plans.
i. Sensors shall be located and adjusted per manufacturer's instructions to provide detection within the defined area.

.8 Cover plates

a. Plates shall be specification grade type 304 brushed stainless steel.
b. Surface Exterior While-In-Use Weatherproof Covers:
    i. Die-cast metal construction, gasketed.
    ii. Lockable open or closed.
    iii. Hubbell (Taymac) MX3300.
    iv. Use only for mechanical equipment or other areas where recessed installation is not possible.
c. Sheet steel utility box cover for wiring devices installed in surface-mounted utility boxes.

4.3 Execution

.1 All wiring devices to be flush mounted in all finished areas.

.2 All switches shall be rated 20A minimum.

.3 Where GFCI devices are shown on the drawings, an actual GFCI device must be installed. Feed through type arrangements are not acceptable.

.4 Receptacles connected to 20A branch circuits shall be CSA 5-20R configuration.

.5 Install boxes so as to be accessible after building is complete, set to be flush with finished lines of building structure, where recessed, and lined and leveled where surface mounted.

.6 Switch and receptacle mounting heights shall be coordinated with Architectural details and shall be adjusted, if required to the satisfaction of the Architect/Engineer at no additional cost to Owner.

.7 Where outlets occur in exterior walls, the electrical trade shall ensure that there is insulation and a vapour barrier behind the outlet box to prevent condensation through the boxes.

.8 Receptacles for maintenance of HVAC and similar equipment shall be mounted on the exterior of the equipment.

.9 Outlet boxes on opposite sides of a vertical fire separation having a fire-resistance rating shall be separated by one of the following:

a. A horizontal distance of not less than 600 mm,
b. A suitable fire block material, or,
c. Firestop installed on each outlet box that has an FT rating not less than the fire-resistance rating of the fire separation.

.10 Install switches with handle in the "Up" position when the switch is in the "On" position.

.11 Outlets located in masonry, textured or otherwise uneven wall/surfaces shall be mounted such that the cover plate is flush with the wall/surface. Grind or modify the face of the material so that the cover plate fits flush. The cover plate shall have an opening no larger than 1/8" (3.0mm) from the surface. Caulking shall not be permitted as a method of filling gaps larger than 1/8" (3.0mm).

.12 Install switches and/or receptacles in ganged type outlet boxes, with matching wall plate when more than one switch or receptacle is required in one location.

.13 Remove plastic protective film on stainless steel plates only after painting and other work has been completed in that area.

.14 Do not use cover plates designed for flush outlet boxes on surface mounted boxes. Do not use outlet boxes designed for flush mounting in surface mount applications.

.15 Install decorator style devices in all areas of the building.

.16 Locate BAS system relays in location to suit the mechanical trades.

.17 Locate HVAC system relays in accessible location where shown on the floor plans.

.18 Locate power connections to Mechanical Power Supplies (MPS) in approximate accessible location shown on the floor plans and in location to suit Mechanical Subcontractor.

4.4 Mounting Heights

.1 Mounting heights to centre of box above finished floor (AFF), unless noted otherwise:

a. 18", (450mm): receptacles.
b. 30", (750mm): exterior receptacles above finished grade/roof.
c. 41.5", (1050mm): light controls, push buttons, variable speed controllers.
    i. Minimum height is 36" (900mm), maximum height is 43" (1100mm).
d. 47", (1200mm): fire alarm manual stations, thermostats, end of line devices. Situate all fire alarm manual stations such that there is a minimum of 2" (50mm) of flat wall space on each side, and a minimum of 4" (100mm) of flat wall space above and below to allow for the installation of a future manual station protective guard.
e. 92", (2340mm): fire alarm visual and audible devices without silencing means. Install at least 6", (150mm) below ceiling to the top edge of the device. Visual devices shall not be lower than 78", (2000mm).
f. Devices above counter shall be 4" above millwork/back splash. Coordinate with Architectural details.
g. Fire alarm device modules and zone isolators shall be recessed in walls at 92" (2.34m) AFF or 6", (150mm) clear below ceiling, whichever is lowest. Clearly indicate location of modules on as-built drawings. Verify locations on site with Architect.

.2 Lighting controls shall be located within 150mm (6") from latch side of the door where possible. Do not mount on hinge side of door or behind door swing.

.3 Where devices are to be mounted in block walls, outlet boxes shall be cut into the top or bottom of the nearest block course that is lower than the height specified.

.4 Where a conflict of device mounting occurs, the Contractor shall contact the Engineer for clarification.

5. 26 24 01 DISTRIBUTION EQUIPMENT

5.1 General

.1 The Electrical subcontractor shall provide the distribution equipment required for the complete installation.

.2 All distribution equipment shall be complete with drip shields suitable for use in a sprinklered environment.

.3 Maintenance and operating instructions, parts lists, etc., shall be provided for any special function equipment.

.4 Equipment shall be delivered to the site and shall be protected all around with a plastic covering. Additional onsite protection must be provided to keep the equipment protected from the elements and other trades. If there is any sign of rusting or corrosion or severe physical abuse on the equipment, the affected parts shall be replaced at no cost to the Owner.

.5 All distribution equipment shall have tested and approved series ratings for fault currents and shall have identifying labels.

.6 All distribution equipment shall have lugs with termination temperatures rated at 75°C minimum.

5.2 Service Entrance

.1 Maintain existing. Modify as outlined on the Single Line Diagrams.

5.3 Panels

.1 Provide surface or recessed panels of type, voltage, ampere capacity, number of poles, branch circuit, capacity, etc., as indicated.

.2 All panel bus bars shall be tin plated aluminum unless specifically noted otherwise.

.3 Panels shall have a hinged door with flush lock for access only to the breakers.

.4 Panel interior shall be centered within the tub.

.5 Balance all panels to give as near as possible equal current in all phases under full load conditions.

.6 Provide 200% rated neutral lugs where outlined.

.7 Provide a minimum of two 1.5", (41mm) spare conduits from each recessed panel to the nearest accessible ceiling space or utility space. Cap conduits and label as “spare.”

5.4 Load Centers

.1 Load centers shall not be permitted for use on this project.

5.5 Disconnect Switches

.1 Disconnect switches shall have visible blades in the off position, quick make, quick break mechanism and shall have steel reinforced clips. Fuses shall be easily removable when the switch is in the off position. All switches shall have ample gutter space for top or bottom wiring.

.2 Provision for padlocking in on-off switch position by one lock.

.3 Switch mechanically interlocked door with front accessible defeat to prevent opening when handle in ON position.

.4 Provide relocatable fuse holders suitable for use without adaptors, for type and size of fuse indicated.

.5 Fuse holders shall be suitable for Class J.

.6 Switches with pull out style contact devices shall not be permitted.

.7 Coordinate with HVAC equipment to procure a suitably sized disconnect switch for the rooftop condensing units.

5.6 Fuses and Breakers

.1 Fuses shall be Class J (600A and under) as appropriate dual element time delay as manufactured by Bussmann unless otherwise specified. Fuse rating shall be as noted or as required for proper protection. Fuses shall be rated for 200kAIC minimum.

.2 Unless indicated otherwise, breakers shall be moulded case type, thermal-magnetic, ambient temperature compensated, of the frame size and with trip settings as indicated on the drawings. Breakers mounted in panels shall be bolt-on type.

.3 All breakers shall be fully rated for the fault current levels indicated on the single line diagram. Alternatively all breakers shall have tested and approved series ratings for fault current levels indicated and shall have identifying labels.

.4 Breakers serving transformers shall be of a type to withstand the inrush current. Manufacturer shall provide time-current curves for all such breakers demonstrating the ability to withstand transformer inrush currents for the specific transformer being supplied for the project.

.5 Unless otherwise noted all breakers shall be rated minimum 10kA symmetrical interrupting capacity at 208V and 25kA at 600V.

.6 All breakers indicated as “spare” shall be installed in the “OFF” position.

.7 Breaker supplier shall allow for up to 10% of breakers to be returned and traded for equal breakers of two standard ampacity sizes higher or lower than that originally provided at no additional cost to the project.

.8 The manufacturer shall arrange breakers in panels, boards, load centres as applicable, in the order indicated on the schedules. Rearrangement of breakers on site is not recommended.

5.7 Contactors

.1 Power contactors shall be of the voltage, ampacity and number of poles as indicated on the drawings. Contacts shall have mixed load ratings (lighting and motor) and be electrically held.

.2 Provide 120V coil control to match existing PLC control arrangement.

5.8 Transformers

.1 Three phase transformers 45kVA and larger shall be Class 220 insulation system rating, 150°C temp rise, less than 4.5% regulation at unity power factor, min 4.0% impedance, copper wound, not T wound. They shall be of the voltage and size as shown on the drawings.

.2 Transformers located in sprinklered buildings or on the exterior of the building shall be rated NEMA 3R.

.3 All transformers shall be isolation type. Auto transformers permitted only where specifically stated.

.4 Dry type transformers shall comply NRCan 2019 for energy efficiency.

.5 Transformers shall have internal vibration absorbing pads and optional external moulded neoprene and steel vibration isolators.

.6 Neutral generated by transformers shall be tied to building ground with ground conductor sized to code requirements.

.7 Transformers shall have four (4) 2.5% full capacity taps, two (2) FCAN and two (2) FCBN.

.8 Connections on HV and LV sides shall be flexible conduit or equivalent.

.9 Transformers shall be mounted so that there is a minimum of 6", (150mm) clear space between unit and any adjacent noncombustible surface.

.10 Transformers shall be mounted so that there is a minimum of 12", (300mm) clear space between unit and any adjacent combustible surface, unless specifically noted otherwise.

.11 Provide minimum 1m (40") clearance on “front” side of transformer where terminations are made.

.12 Sound pressure noise levels shall comply with CSA C9: 10-50kVA: 45dBA at 1.0m, 51-150kVA: 50dBA at 1.0m.

.13 Drawings have been based upon Hammond transformer dimensions. If an alternate manufacturer is selected from the Alternate Manufacturers List, the Electrical Subcontractor shall ensure that the alternate products will fit into the space allocated while maintaining the proper clearances.

.14 Warrantee period shall be five years from date of Ready-for-Takeover.

5.9 Bonding

.1 Include bonding as required by OESC, ESA Inspection Department, and as shown on drawings.

5.10 Motor Protection and Control

.1 Each starter shall include manual reset thermal overload elements, one for each power supply line, i.e., three for three-phase motors. Overloads shall be sized to suit the connected load.

.2 All starters and disconnects shall be listed as "Suitable as Motor Disconnects".

.3 All starters shall be NEMA rated with a minimum Size 0 and be rated at minimum 15A continuous current. IEC design starters shall not be permitted.

.4 Motor starters shall be rated for minimum 10kA withstand rating and shall not be less than the available fault current.

.5 Manual Motor Starters

a. Heavy duty toggle mechanism.
b. Thermal overload relay and red neon pilot light.
c. Rated to match the motor requirements.
d. In finished areas, starters shall be flush mounted with cover plates coloured to match other wiring devices. In other areas provide enclosures to suit specific application.

.6 Magnetic and Combination Starters

a. Provide combination starters complete with fused disconnect switch protection suitable for use with Class J fuses.
b. Provide two sets of normally open and normally closed extra auxiliary contacts in each starter for connection to the building automation system by the controls subcontractor.
c. Integral control voltage transformer with fused secondary, rated for min 50VA. All control wiring and devices shall function on a 120VAC control circuit unless indicated otherwise.
d. Thermal overload protection.
e. Red pilot lamp indicating starter is energized.
f. Door mount overload reset switch.

5.11 Execution

.1 Wall mounted distribution equipment shall be mounted in an approved manner. The equipment shall be mounted in a well-organized and planned arrangement. The backboard shall be mounted on a non-combustible surface.

.2 Install disconnecting means within sight and less than 9m from motor loads.

.3 Install disconnecting means within sight and less than 3m from air conditioning and refrigeration equipment.

.4 Provide hardware to wall mount transformers less than 75kVA.

.5 Install transformers in level upright position.

.6 Loosen isolation pad bolts until no compression is visible.

.7 Starters and disconnect switches installed in areas that are accessible by the public shall be lockable in the on and off positions.

.8 Panels shall generally be wall mounted. Provide strut standoffs or strut frame where required if wall surface is not uniform, or where wall structural capacity is not adequate to support weight of panel.

6. 26 50 00 LIGHTING

6.1 General

.1 Supply and install lighting with all accessories and lamps as shown in "LIGHTING FIXTURE SCHEDULE," and as described.

.2 Submit Shop Drawings containing the following information:

a. Picture of fixture, fixture model number, fixture colour.
b. Lens data, mounting details, photometric data.
c. Fixture manufacturer (include address and telephone number).

.3 No allowance or change in fixture type will be permitted for the failure of the Electrical Subcontractor to allow sufficient time for the delivery of the fixtures when required to the site. Should the approved fixtures not arrive on time, this subcontractor shall supply and install temporary fixtures at no cost to the Owner and shall replace same with the approved fixtures when they arrive and make good all surfaces disturbed by this operation.

6.2 Solid State (LED) Lighting

.1 Quality Assurance

a. Luminaires shall be of uniform quality and appearance.
b. Manufacturers of LED luminaires shall demonstrate a suitable testing program incorporating high heat, high humidity and thermal shock test regimens to ensure system reliability and to substantiate lifetime claims.
c. The LED fixture assembly/manufacturing facility shall be ISO 9001 certified and produce product in compliance to RoHS.
d. At time of manufacture, electrical and light technical properties shall be recorded for each luminaire. At a minimum, this should include lumen output, CCT, and CRI. Each luminaire shall utilize a unique serial numbering scheme. Technical properties must be made available for a minimum of 7 years after the date of manufacture.
e. Luminaires shall be provided with a 5 year warranty covering, LEDs, drivers, paint and mechanical components.

.2 Material and specifications for each luminaire are as follows:

a. Each luminaire shall consist of an assembly that utilizes LEDs as the light source. In addition, a complete Luminaire shall consist of a housing, LED array, and electronic driver (power supply).
b. Each luminaire shall be rated for a minimum operational life of 60,000 hours of operations at an average operating time of 10.5 hours.
c. The rated operating temperature range shall be -40°C to +40°C.
d. Photometry must be compliant with IES LM-79-19 and shall be conducted at 25°C ambient temperature.
e. Each luminaire shall meet all parameters of this specification throughout the minimum operational life when operated at the average nighttime temperature.
f. The individual LEDs shall be constructed such that a catastrophic loss or the failure of one LED will not result in the loss of the entire Luminaire.

g. Luminaires shall be constructed such that LED modules may be replaced or repaired without replacement of whole Luminaire.
h. Each luminaire shall be listed with CSA or cUL under UL1598 for luminaires.

.3 Electrical Requirements

a. Maximum power consumption allowed for the Luminaire shall be determined by application. The Luminaire shall not consume power in the off state.
b. The luminaire shall operate from a 60Hz ±3Hz AC line over a voltage ranging from 108VAC to 350VAC. The fluctuations of line voltage shall have no visible effect on the luminous output.
c. The luminaire shall have a power factor of 0.90 or greater.
d. Total harmonic distortion (current and voltage) induced into an AC power line by a luminaire shall not exceed 20 percent.
e. The luminaire on-board circuitry shall include surge protection devices (SPD) to withstand high repetition noise transients as a result of utility line switching, nearby lightning strikes, and other interference.
f. The LED circuitry shall prevent visible flicker to the unaided eye over the voltage range specified above.
g. LED drivers must meet Class A emission limits referred in Federal Communications Commission (FCC) Title 47, Subpart B, Section 15 regulations concerning the emission of electronic noise.
h. Drivers shall have a Class A sound rating.

.4 Photometric Requirements

a. Optical assemblies shall have a minimum efficiency of 85% regardless of distribution type. All optical assemblies will be mounted parallel to the ground, aimed in the same direction and shall provide the same optical pattern such that catastrophic failures of individual LEDs will not constitute a loss in the distribution pattern.
b. All photometric data will be measured by the IES LM-79-19 standard and formatted per IES LM-63-19 as an electronic .ies file.
c. The illuminance shall not decrease by more than 30% over the expected operating life. The measurements shall be calibrated to standard photopic calibrations.
d. The luminaire shall have a Correlated Colour Temperature (CCT) range of 3,000K to 4,500K as indicated in the Lighting Fixture Schedule. The colour rendition index (CRI) shall be 80 or greater.

.5 Thermal Management

a. The thermal management (of the heat generated by the LEDs) shall be of sufficient capacity to assure proper operation of the Luminaire over the expected useful life.
b. The LED manufacturer's maximum thermal pad temperature for the expected life shall not be exceeded.
c. Thermal management shall be passive by design. The use of fans or other mechanical devices shall not be allowed.
d. The luminaire shall have a minimum heat sink surface such that LED manufacturer's maximum junction temperature is not exceeded at maximum rated ambient temperature of 40°Celsius (supply Heat test).
e. The heat sink material shall be aluminum.

.6 Physical and Mechanical Requirements

a. The luminaire shall be a single, self-contained device, not requiring on-site assembly for installation. The power supply for the luminaire shall be integral to the unit.
b. The assembly and manufacturing process for the LED Luminaire shall be designed to assure all internal components are adequately supported to withstand mechanical shock and vibration from high winds and other sources.
c.

6.3 Exit Signage

.1 All new exit signs shall conform to the performance of internally lighted exit signs standards as outlined in the Ontario Electrical Safety Code.

.2 All new exit signs shall conform to the visibility and symbol specifications referred to in ISO 3864-1 and ISO 7010.

.3 All exit signs to be connected to emergency electrical power supply.

.4 All exit signs shall be supplied complete with DC connection unless outlined to be self-powered, i.e., with integral batteries.

.5 Fixture Features

a. Running man pictoral signs. Field modify pictograms as outlined.
b. Double-sided signs shall have two pictograms.
c. White, baked powder coat finish.

6.4 Execution

.1 Provide all fastenings, supports etc. to install in an appropriate and approved manner. Adequately support all ceiling mounted fixtures, from the building structure. Use safety chains for all accessible ceilings. The accessible ceiling shall not solely support the fixture. The requirement for independent support for fixtures may be waived only if the accessible ceiling manufacturer provides written confirmation that the ceiling has been designed to carry the load.

.2 Fasten fixtures to studs, joists, furring channel or other structural ceiling framing with screws. Drill holes in fixtures if required for alignment to ceiling structure. Coordinate with ceiling installed to ensure sufficient structure is provided for the fixtures. Toggle bolts or drywall anchors alone is insufficient.

.3 All fixtures installed in/on acoustic tile in T-bar ceilings shall have safety chains. All fixtures recessed into T-bar ceilings shall be provided with grid clips, or fly-out tabs to restrict the fixture from being pushed up during maintenance.

.4 All fixtures in T-bar ceilings shall be wired with sufficient spare conductor coiled in the ceiling to allow fixtures to be moved 4"-0", (1.2m) in any direction.

.5 All fixtures recessed into ceilings serving as fire-rated separations shall be approved for such use, and shall be provided with suitable enclosures. The Electrical Subcontractor shall be

responsible for providing the enclosures. Suggested products may be procured from GlobalNgineering https://globalngineering.com or Tenmat https://www.tenmatusa.com

.6 Any boxes around any recessed fixture shall be constructed to provide the necessary clearances to suit the manufacturer's recommendations. The Electrical Subcontractor shall verify the necessary clearances with the manufacturer and shall pass this information to the constructor of the drywall boxes.

.7 Recessed fixtures shall not be installed in an insulated ceiling unless approved for that installation.

.8 Adjust fixture location onsite as required to avoid interference with swing of adjacent doors.

.9 All cabling associated with lighting control system shall be CMP CAT5e green. Performance shall meet or exceed that of Nexans HyperPlus 5e Plenum Part Number 10032232.

.10 Exit signs shall be wall or ceiling mounted to suit site conditions. Wall mounted exit signs shall be mounted at 96" (2430mm) above finished floor or 12" (300mm) above doors. Exit signs may be ceiling mounted if the ceiling height does not exceed 144" (3658mm). Exit signs location and mounting arrangements shall be coordinated onsite so that the fixture is visible from the exit approach. Modify location as required to ensure visibility.

.11 Coordinate position of lighting fixtures in mechanical areas with mechanical duct work and equipment. Modify installation to suit.

.12 Suspended light fixtures in areas near ceiling fans or supply air diffusers shall be rigidly mounted, or suspended with two chains, set at an angle so as to eliminate sway.

.13 Provide an adjustable hanger system for areas requiring fine adjustment of fixture suspensions. System shall be Gripple, or approved alternate, rated for fixture mass with minimum 5:1 safety factor.

.14 The location of fixtures as shown on the drawings are approximately correct, but the Consultant reserves the right to alter the location of any number of them up to 120", (3.0m) without incurring extra costs, provided the request is made before the fixture is installed.

7. 26 52 13 EMERGENCY LIGHTING (UNIT EQUIPMENT)

7.1 General

.1 Supply and install an emergency lighting system consisting of the following, to activate and provide egress lighting in the event of a power failure:

a. 24VDC battery unit(s), lighting heads, conduit, wiring etc.
b. Battery-backed lighting fixtures, conduit, wiring etc.

.2 Batteries to automatically recharge after normal power is restored.

.3 Provide complete working system utilizing products as outlined in "LIGHTING FIXTURE SCHEDULE."

.4 Equipment shall conform to CAN/CSA-C22.2 No. 141-10 (or latest edition).

7.2 Products

.1 Self-Contained

a. High quality, corrosion, flame and vandal resistant, polycarbonate housing.
b. Vandal resistant latch clips.
c. Ceiling or wall mounted. Adjust the position of the LED board for all wall mount applications to direct lighting down.
d. IP65 rating. Suitable for wet location installations.
e. Auto-test circuitry. External test switch for momentary test operation.
f. Sealed Ni-MH batteries for minimum 90 minute emergency illumination.
g. Nine year pro-rata warranty on the assembly. Ten year battery warranty.

.2 Remote Heads

a. Die cast heads with twist lock collar.
b. Fully adjustable with tilt and swivel.
c. LED lamps.

.3 Battery Units

a. 18 gauge, ventilated steel enclosure.
b. Low gloss beige enamel corrosion resistant painted finish.
c. AC “ON” light (charging).
d. High charge light.
e. Test switch.
f. 60 cycle input, voltage as indicated, c/w fuse.
g. 120mm minimum u-ground plug and power cord for 120V systems.
h. 24VDC output.
i. The battery shall be long life lead calcium type (maintenance free).
j. The capacity of the battery shall be in accordance with that shown in the "LIGHTING FIXTURE SCHEDULE."
k. Battery to provide power to the fixtures for 30 minutes without dropping below ninety-one percent voltage drop.

l. Provide self-diagnostic circuitry option for units in generator rooms and rooms containing automatic transfer switches.
m. Charger to be solid state, with HI/LO charge indicator and capable of recharging in 24 hours.
n. Provide suitable mounting brackets for safe and permanent mounting of the battery.

7.3 Execution

.1 DC System

a. Battery pack to mount at 90", (2.3m) or above doors. Power feed for battery packs shall be mounted at 98", (2.5m) wherever practical.
b. Wall mounted remote heads shall be mounted at 96", (2.5m) AFF or 12", (300mm) below ceiling whichever is lowest. Verify locations on site with Architect.
c. Battery packs possessing multiple output circuits shall divide the connected load as equally as possible between all output circuits.
d. Power from this system must be connected to the DC backup specified in the exit signs.
e. Wire size shall limit voltage drop to five percent to the most remote fixtures.
f. Provide T90 wiring in EMT. Use min #10AWG copper.
g. All DC wiring shall be installed in an independent raceway.
h. Provide lamicoid nameplate on each battery pack indicating area served. Refer to "LIGHTING FIXTURE SCHEDULE" for suggested labeling.
i. Rooms required to contain emergency lighting shall have a minimum of two heads installed.

.2 Self-Contained

a. Orient ceiling mounted fixtures perpendicular to axis of corridor.
b. Procure recessed back boxes in advance to permit suitable rough-ins.

.3 Perform an Emergency Lighting and Exit Sign test as soon as the systems are operational. Test shall indicate the following in chart form on Company letterhead:

a. Building name and location.
b. Physical location of each remote device.
c. The device designation, i.e, EA, EXB, etc.
d. Battery pack designation, manufacturer and name plate data.
e. Proper operation under normal AC power.
f. Duration of operation under emergency DC power.
g. Current load check on each output circuit.
h. Location and voltage at most remote fixture.
i. Charging current at the end of the test.
j. Date of testing.
k. Signature and name of testing individual.

.4 Once system is free of defects, remove all AC and DC power sources at a time suitable to the Owner, so as to schedule subsequent self-diagnostic Auto-Tests for minimal distraction to building occupants.

END OF SECTIONS

1. 27 05 13 COMMON WORKS

1.1 General Requirements

.1 The Procurement and Contracting Requirements as outlined under Division 00, and the General Requirements as outlined under Division 01, and all addenda thereto shall apply to and govern all portions of the communications work.

.2 Reference Division 26 and Division 28 for additional requirements.

1.2 Work to be Included in the Bid

.1 The electrical subcontractor shall supply and install and/or modify the following systems:

a. Pathways for Communications and Security.

.2 The subcontractors shall ensure that all cabling in spaces being used as a return air plenum is totally enclosed in non-combustible raceways, or is Communications Media Plenum (CMP), or FT6 rated.

.3 All systems and components shall be ULC listed.

1.3 Work by Allowance

.1 The following systems shall be supplied and installed and/or modified under the specified allowance(s):

a. Public address.

.2 The work shall include all equipment, cabling, terminations, testing, programming, integration and commissioning as applicable.

.3 The electrical subcontractor shall coordinate with the successful Division 27 subcontractor(s) to provide all rough-in work, including power and pathways.

2. 27 05 28 PATHWAYS FOR COMMUNICATIONS AND SECURITY SYSTEMS

2.1 General

.1 This section will generally refer to empty conduits, sleeves, junction boxes, etc. associated with the following systems:

a. Communications, i.e., Division 27.

.2 Provide all material and labour necessary for a complete installation of pathways.

2.2 Installation - Interior

.1 Unless otherwise noted, all outlets shall be single gang deep boxes. Each single gang box shall be provided with 0.75" (21mm) conduits. Outlets that indicate more than two drops shall feature 1.0" (27mm) conduits. Allow for punching holes in metal outlet boxes if available knockouts cannot meet this specification.

.2 All conduit runs shall follow building grid lines and shall be concealed.

.3 EMT bushings shall be Arlington AL-EMTxx series, size to suit conduit specified.

2.3 Specific Rough-ins

.1 Coordinate with the Communications Subcontractor to procure public address speaker back boxes for any wall or drywall ceiling installations.

2.4 Execution

.1 Provide a conduit from each outlet box to the nearest accessible ceiling space. Conduit shall extend minimum of 6.0" (150mm) above ceiling and shall have smooth 90 degree bends. Do not terminate conduits above non-accessible ceiling systems.

.2 All empty conduits and raceway systems shall be provided complete with nylon pull tapes and plastic bushings.

.3 Pull tapes shall be suitably fastened to the ends of each conduit to prevent accidental pull outs.

END OF SECTIONS

1. 28 05 00 COMMON WORKS

1.1 General Requirements

.1 The Procurement and Contracting Requirements as outlined under Division 00, and the General Requirements as outlined under Division 01, and all addenda thereto shall apply to and govern all portions of the electronic safety and security work.

.2 Reference Division 26 and Division 27 for additional requirements.

1.2 Work to be Included in the Bid

.1 The electrical subcontractor shall supply and install and/or modify the following systems:

a. Fire detection and alarm.

.2 The work shall include all equipment, cabling, terminations, testing, programming, integration and commissioning as applicable.

.3 The electrical subcontractor shall obtain the services of qualified security subcontractor(s) for the satisfactory completion of the work, and shall carry all such subcontractor costs in the bid.

.4 All rough-in work, including power and pathways, shall be performed by Division 26.

.5 The subcontractors shall ensure that all cabling in spaces being used as a return air plenum is totally enclosed in non-combustible raceways, or is Communications Media Plenum (CMP), or FT6 rated.

.6 All systems and components shall be ULC listed.

2. 28 46 00 FIRE ALARM AND DETECTION

2.1 Scope of Work

.1 This specification provides the requirements for the modification of the addressable fire alarm and detection system. The system shall includes a control panel, annunciator(s), alarm initiating and indicating peripheral devices, conduit, wire and all accessories.

2.2 Quality Assurance

.1 Edwards has been specified as the manufacturer and as such, sets the standard of quality and type of equipment to be provided.

.2 Each and all items of the fire alarm and detection system shall be covered by a one-year parts and labour warranty covering defects resulting from faulty workmanship and materials.

.3 All equipment shall be new and unused. All components and systems shall be designed for uninterrupted duty. All equipment, materials, accessories, devices, and other facilities covered by this specification or noted on contract drawings and installation specifications shall be the best suited for the intended use and shall be provided by a single manufacturer or if provided by different manufacturers recognized as compatible by both manufacturers and ULC.

.4 Installing contractor shall be certified by a program or course acceptable to the Office of the Fire Marshal. Evidence of membership in the ECAO Fire Alarm and Protection Certification Program, or proof of registration as a CFAA Fire Alarm Technician may be requested.

2.3 Control Panel (FACP)

.1 The existing fire alarm control panel shall remain. The existing fire alarm control panel is an Edwards model EST3 setup as follows:

a. A hybrid configuration of addressable and conventional zones.
b. A data loop on each floor.

.2 The consultant understands the control panel has capacity for the following:

a. Twenty (20) additional alarm initiating zones.
b. Twelve (12) additional supervisory initiating zones.

.3 The system program shall meet the requirements of this project, current codes and standards, and satisfy the local authority having jurisdiction.

.4 Provide optional relay cards as required to support all ancillary devices and equipment as described herein.

2.4 Remote Annunciators

.1 The existing annunciator(s) shall remain. Modify to reflect existing/new zoning modifications/additions.

.2 The annunciator(s) shall continue to indicate the system alarm, supervisory, monitor and trouble status.

.3 The annunciator shall feature one led for each new zone as outlined.

2.5 Passive Graphic

.1 An updated passive zoning graphic (if required) shall be provided by others above/adjacent to the annunciator(s).

2.6 Addressable Initiating Devices

.1 Addressable Devices

a. Each remote device shall have a microprocessor with non-volatile memory to support its functionality and serviceability.
b. Each device shall be capable of electronic addressing, either automatically or application programmed assigned, to support physical/electrical mapping and supervision by location.

.2 Addressable Detectors

a. The system addressable detectors shall be capable of full digital communications using both broadcast and polling protocol.
b. Each detector shall have an integral microprocessor capable of making alarm decisions based on parameter information stored in the detector head.
c. Each detector shall have a separate means of displaying communication and alarm status.
d. The detectors shall be suitable for mounting on any Signature Series detector mounting base.
e. The addressable detectors and devices shall be as follows:
    i. Smoke, SIGA-OSD.
    ii. Heat Rate-of-Rise, SIGA-HRD. (57C)/Rate of Rise (9C per minute).
    iii. Heat Fixed, SIGA-HFD.
    iv. Duct Smoke, SIGA-SD. Provide sampling tube and remote alarm LED.
f. All addressable detectors shall be suitable for use with the following bases:
    i. Standard, SIGA-SB.

.3 Addressable Modules

a. It shall be possible to address each Intelligent Signature Series module without the use of DIP or rotary switches.
b. The personality of multifunction modules shall be programmable at site to suit conditions and may be changed at any time using a personality code downloaded from the Analog Loop Controller.
c. Input and output circuit wiring shall be supervised for open and ground faults.
d. The addressable module devices shall be as follows:
    i. Single Input, SIGA-CT1.
    ii. Dual Input, SIGA-CT2.
    iii. Universal, SIGA-UM with SMK power module for use connecting conventional devices requiring LED power to an addressable system.

iv. Control Relay, SIGA-CR (form C contacts, 2A @24VDC, 0.5A @120VAC).
v. Control Relay, SIGA-CRH (form C contacts, 6A @24VDC, 7A @120VAC).

2.7 Conventional Initiating Devices

.1 The system shall possess the capability of incorporating the following conventional system devices:

a. Photoelectric Smoke Detectors for use in duct applications: EC30DU-3 head with CSBU-1 base, 6261 sampling tube (size to suit), 6260A-CU housing and EC-LED alarm indicating LED. Provide standalone signal circuit relay for equipment shutdown.

2.8 System Accessories

.1 Provide independent devices as follows:

a. Addressable Fire Detector Guard, SIGA-GRD. Include mounting flange where required.
b. End of line device cover plates, Model No. EOL-P1, white.

2.9 Signaling Devices

.1 All appliances shall be ULC Listed for Fire Protective Service.

.2 All appliances shall be of the same manufacturer as the Fire Alarm Control Panel to ensure absolute compatibility between the appliances and the control panels, and to ensure that the application of the appliances is done in accordance with the single manufacturer's instructions.

.3 Signaling pattern and sound shall be consistent throughout the facility. Mixing of different sounding devices shall not be permitted.

.4 Bells

a. MB6-24 motor driven.

.5 Bell/Strobe Combination

a. 403-7A-R LKW-1 complete with Bell as specified above.

2.10 Fire Alarm Monitoring Equipment (FAME)

.1 Existing equipment shall remain to allow for offsite monitoring of the fire alarm and detection system.

.2 At time of occupancy, coordinate with Owners to provide a certificate indicating compliance with offsite monitoring facilities.

2.11 Sequence of Operation

.1 The system shall continue to function so that operation of any alarm initiating device shall cause the following:

a. Signal devices to operate throughout building at the alarm rate.
b. Transmit an alarm signal to remote monitoring agency.
c. Display an event type, alarm time, and a location message for each active device or zone at control panel and at remote annunciators.

.2 The system shall continue to function so that operation of any supervisory initiating device shall cause the following:

a. Internal signal to sound at the control panel and remote annunciators.
b. Display a location message for active device(s) at the control panel and remote annunciators.
c. Transmit a supervisory signal to remote monitoring agency.

.3 Program interlocks with all ancillary equipment as follows:

a. Fire smoke dampers: Close on alarm or any smoke detector associated with the damper or the associated air handling unit.
b. Air handling system: Shut down on alarm or local duct smoke detector.
c. For equipment and system interlocks not referenced above, contact consultant for clarification.

.4 Program initiating devices as follows:

a. Alert/Alarm:
    i. Smoke detectors.
    ii. Heat detectors.
    iii. Manual stations.
    iv. Kitchen hood fire suppression.
    v. Sprinkler Flow Switches (FS), (60s delay).
    vi. Deluge fire suppression
b. Supervisory:
    i. Sprinkler Electronically Supervised Valves (ESV).
    ii. Sprinkler Low pressure Switches (LPS).
    iii. Sprinkler heat trace (60s delay).
c. For equipment system interlocks not referenced above, contact consultant for clarification.

.5 Indicate trouble condition at control panel and remote annunciator(s) for the following conditions:

a. Field wiring open circuit.
b. Field wiring ground fault.
c. Battery disconnect.
d. Low battery.
e. AC power failure.

.6 Program signal devices as follows:

a. Single stage operation.
b. Temporal 3-3-3 pattern for alarm.

.7 Provide signals to offsite monitoring facility for a supervisory, trouble and alert/alarm condition.

.8 Duct detectors and smoke detectors associated with adjacent smoke dampers shall be programmed to activate the initiating zone on the floor where the device is located.

2.12 Installation

.1 General Installations

a. The new components system shall be installed in accordance with CAN/ULC-S524-19 and approved manufacturers manuals and wiring diagrams. The Electrical Subcontractor shall furnish all conduit, wiring, outlet boxes, junction boxes, cabinets and similar devices necessary for the complete installation. All wiring shall be of the type recommended by the OESC, approved by local authorities having jurisdiction for the purpose, and shall be installed in dedicated conduit throughout.
b. All penetration of floor slabs and fire walls/separations shall be fire stopped in accordance with all local fire codes.
c. Install all initiating circuit wiring and all signal circuit wiring in separate, red raceways.
d. End of Line resistors shall be furnished as required for mounting as directed by the manufacturer.
e. Panel and annunciator zone labels shall be typed. Hand written labels shall not be permitted.
f. Provide all programming and labels that reference room names or numbers to reflect the finalized Owner designated room names/numbers. Do not duplicate the room names/numbers indicated on the drawings.
g. All wiring shall be minimum #14 AWG copper with 300V insulation rating, unless specifically noted otherwise.
h. All device outlet boxes shall be selected to suit manufacturer's equipment and shall be coordinated prior to rough in. Outlet boxes for manual stations shall be 100mmx100mm (4"x4") with single gang plaster ring and depth to suit manufacturer's requirements.
i. If fire alarm remote booster power supplies are provided in lieu of extension of the power supply in the main panel, it shall be provided with internal back up batteries connected to the 120VAC power source. The breaker shall be painted red and locked on. As-built drawings shall be modified to suit.

.2 Initiating Installations

a. Locate and install all new isolation modules and connect to data loop wiring.
b. Locate and install all new initiating circuits and detectors and connect to zone wiring.
c. Install spot type fire detectors on ceiling unless otherwise specified herein with minimum and maximum distances as required for the respective type of detector.
    i. Mount at highest point where variations in ceiling height exist.
    ii. Maintain a clear space of at least 18" (450mm) on the ceiling, below and around the fire detector.
    iii. Maintain a horizontal minimum of 36" (900mm) between a fire detector and the peak of a sloped ceiling.

iv. Fire detectors shall not be located a direct air flow or within 18" (450mm) from an air supply or exhaust outlet.

d. Install duct detector sampling tubes in straight section of duct to manufacturer's recommendation. Install so that the smoke detector and sampling tube are accessible for servicing. Obtain actual duct dimensions onsite prior to ordering air sampling tubes.

e. Manual stations shall be located within 1500mm (60") of an exit door. Where possible, locate on the latch side of a single door.

f. Install conventional initiating devices in unconditioned attic spaces.

.3 Signaling Installations

a. Locate and install all new signaling devices and connect to notification circuit. Provide suitable back boxes and back plates for signaling appliances, surface or recessed type to suit the specific application.

b. Provide adequate signal circuit wiring so that circuits are not loaded beyond 65%, regardless of the zoning arrangement indicated on the plans.

c. Provide a dedicated signal circuit for motorized bells when used in combination with strobes.

d. Provide rough-in and wiring to suit a future conversion to horn/strobes.

e. Notification devices shall be set to match existing pattern at maximum volume unless noted otherwise. Changes to a temporal 3-3-3 pattern will be implemented at a later date.

f. Visual notification devices shall be set for 30cd, unless noted otherwise.

2.13 Conventional System Notes

.1 All wiring shall be minimum #14 AWG copper with 300V insulation rating, unless specifically noted otherwise. Other conductor sizes may be permitted if recommended by the manufacturer and approved by the consultant.

.2 New signaling devices shall be fed from the control panel using notification appliance circuits (NAC)s. NAC wiring shall be #14/2 copper in metallic raceway. Other conductor sizes may be permitted if recommended by the manufacturer and approved by the consultant. BX cable is acceptable where specified.

2.14 Addressable System Notes

.1 Locate and install all new isolation modules and connect to data loop wiring. Locate zone isolators directly adjacent to zone separation at the point where it enters and exits the zone. There shall be a minimum of two zone isolators for each initiating zone. The location of the isolators may be adjusted onsite to optimize wiring. Clearly indicate isolator location on as-built drawings.

.2 Data loop wiring shall be ULC S524 Style C.

.3 Data loop wiring shall exit/enter the control panel separate raceways and shall be separated 1.2m horizontally and 0.3m vertically thereafter.

.4 The following OBC zones need not have zone isolators:

a. Sprinkler ESV, FS, LPS.
b. Duct smoke detectors.
c. Other devices that are situated completely within a floor area.

.5 Data loop home run shall be permitted to pass through OBC zone/floor area/shafts without zone isolators. If devices are installed on the home run data loop, additional zone isolators shall be provided. Floor plans assume additional isolators will not be required.

.6 Addressable sensors and modules shall be connected directly to the data loop wiring. T-tapping off the data loop to form a Class "B" (zone wiring) circuit shall not be permitted.

.7 Zone wiring shall be #14/2 copper in a metallic raceway. AC90 (BX) cable is acceptable where specified. In all cases, the sensors and modules shall be located between the isolators serving the particular zone. Alternate cabling/wiring may be considered if suggested by the fire alarm system manufacturer.

.8 Ensure data loop device count does not exceed 80%. Provide additional data loops if required. Proposed zone layout shall be prepared by the manufacturer and submitted to the Consultant for review.

.9 The address of each sensor and module shall be assigned by means of computer polling of the data loop(s) once installations are complete. The Electrical Subcontractor shall ensure that each addressable detector and module is assigned an identifying name in accordance with its installed location upon project completion.

.10 All signaling devices shall be fed direct from the control panel using Notification Appliance Circuits (NAC)s. NAC wiring shall be #14/2 copper in metallic raceway. AC90 (BX cable is acceptable where specified.

.11 Connect addressable relay module outputs to the data loop nearest the module.

.12 Field measure all loads connected to addressable relay modules where the ratings on contacts is exceeded, provide additional relay suitable for the connected load.

2.15 Field Quality Control and Programming

.1 Perform verifications in accordance with CAN/ULC-S537-19 Standard for the Verification of Fire Alarm Systems. Include inspections and testing as outlined in CAN/ULC-S536 latest addition.

.2 Perform audibility tests if required by the local Building officials or if requested by the consultant.

.3 Check annunciator panels to ensure zones are shown correctly.

.4 The system shall be installed and fully tested under the supervision of trained manufacturer's representative. The system shall be demonstrated to perform all the functions as specified.

.5 Verification(s) shall be performed by the manufacturer's representative authorized by the CFAA. Verification by the Contractor shall not be permitted.

.6 Include for multiple verifications and integrated tests where the construction schedule warrants. Coordinate exact requirements with General trades.

.7 System installation and operations shall be verified by the manufacturer's representative and a verification document presented upon completion. The manufacturer's representative shall be responsible for an on-site demonstration of the system operation and initial staff training as required by the Architect and/or Consulting Engineer.

.8 Changes made to an existing fire alarm system shall require the following:

a. Verification of all new and modified devices.
b. Testing of all devices on the data loops affected. Software polling of devices on modified data loops shall not be acceptable.
c. Testing of one device on each zone data loop not affected.

.9 System changes shall be verified by the manufacturer's representative and a verification document presented upon completion.

2.16 Integrated Systems Testing of Fire Protection and Life Safety Systems

.1 The Electrical Subcontractor shall retain the services of an Integrated Testing Coordinator (ITC) for all systems that are designed to operate together to achieve an overall fire protection and life safety objective, in accordance with OBC 3.2.9.

.2 The Contractor shall not act as the ITC. The ITC shall be an independent provider that has been certified by ULC to perform this function and shall provide proof of certification prior to proceeding.

.3 The Electrical Subcontractor shall cover the costs of the ITC and shall be responsible for coordinating and scheduling all affected parties including owners, operators, occupants, inspectors, consultants, installing subcontractors and verifying parties to participate in the testing.

.4 The ITC shall be knowledgeable and experienced in the design, installation and operation of fire protection and life safety systems as well as associated building systems.

.5 The ITC shall provide a project-specific, written report outlining the testing procedure and necessary functional results in accordance with CAN/ULC-S1001. A cause and effect matrix shall be used to outline the sequence of operation for the systems integration. The matrix shall be prepared by the ITC based on sequence of operation and fire alarm drawings and schematics. Specifically, this integrated testing plan shall outline the fire alarm system's integration with the following equipment and systems:

a. Smoke Control, including Air Handling.
b. Signals to Fire Department.

.6 Submit the integrated testing plan to the Engineer concurrently with shop drawings. Prior to testing, the Contractor shall provide all occupancy-related documentation to the ITC.

.7 Unless otherwise outlined, the testing procedure shall consist of the functional operation of the device or system, i.e., testing of relay contacts alone is insufficient. Sample testing is also insufficient.

.8 Once testing is completed, the ITC shall provide a signed report documenting the implementation of the systems integration. Include the report in the project close out for subsequent periodic systems testing as required.

END OF SECTIONS

26-7860-RFT - Galt Collegiate Institute Boiler Replacement and H&V Upgrades - Phase 2

Opening Date: March 18, 2026 4:30 PM

Closing Date: April 9, 2026 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

The amounts stipulated on the Bid Price Form(s) are intended to cover the cost of the complete Work as described in this Procurement and must remain fixed and firm for the term of the Contract unless otherwise specified in this Procurement.

All prices shall be in Canadian Funds, Free On Board (FOB) Destination, and Freight Prepaid (Board locations). and shall be exclusive of Harmonized Sales Tax (HST) but shall include all materials, labour, equipment, disbursements, expenses, insurance, bonding, customs charges, freight, shipping and handling costs, travel costs and all other charges of every kind attributable to the Work and Services provided.

Bid Price includes Cash Allowance

Line Item	Description	Unit of Measure	Quantity	Bid Price *	Total
1	As per scope of work outlined in 26-7860-RFT Galt Collegiate Institute Boiler Replacement and H&V Upgrades - Phase 2	Lump Sum	1		
				Subtotal:	

Summary Table

Bid Form	Amount
Bid Price Form	
HST (13%)	$ 0.00
Total Contract Amount:	

Bid Questions

Bidder Instructions

Answer all questions that are marked Mandatory.

Bill S-211 - This enactment enacts the Fighting Against Forced Labour and Child Labour in Supply Chains Act, which imposes an obligation on certain government institutions entities to ensure measures are taken to prevent and reduce the risk that forced labour or child labour is used by suppliers or in their supply chains. The Board principles align with Bill S-211. Please confirm that your organization will comply with this Act. YES or NO. If no, please explain.	
As per the “Ontario Business” definition as per the BOBI Act is a supplier, manufacturer or distribution of any business structure; conducts its activities on a permanent basis in Ontario; and has either a) its headquarters or main office in Ontario, or b) at least 250 full-time employees in Ontario at the time of the applicable procurement process. Does your company qualify as an Ontario Business under the BOBI Act? YES or NO	
is your company a Canadian business? YES or NO	
Is your company a U.S. business, as defined by the Ontario Treasury Board / Management Board of Cabinet (TB/MBC) as a supplier, manufacturer or distributor of any business structure (includes a sole proprietorship, partnership, corporation or other business structure) that: has its headquarters or main office located in the U.S., and has fewer than 250 full-time employees in Canada at the time of the applicable procurement process? Yes or No. (Comments are allowed).	

Specifications

Bidder's Contact Information

A Project Manager and Site Supervisor to manage and supervise the Work, must be named in this form. A dedicated Site Supervisor shall be in full-time attendance at the Place of the Work while the Work is being performed. Personnel will be subject to Board approval and may not be changed without prior written approval from the Board.

Note: resumes are required to be uploaded in the document section.

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.

- Project Manager * (mandatory)
- Site Supervisor * (mandatory)
- Certificate of Recognition (COR) Certification * (mandatory)

BONDING UPLOAD SECTION

Refer to the Bonding Requirements Section of the Terms and Conditions.

Instructions to Bidders

Bidders shall upload their electronically verifiable and enforceable (e-Bond) format for Bid Deposit Bond and Agreement to Bond separately in this section. If both Bonds are in the same file, please upload it to both fields and indicate one is a copy.

Tender # and Project Title must be included on the Bonds.

Bonding requirements are based on the total base bid amount, inclusive of all applicable taxes.

- Bid Deposit Bond * (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.		